AUTOMOTIVE HISTORY *Review*

WINTER 1975-1976 ISSUE NO. 4

JOHN NORTH WILLYS, 1873-1935

The Society of Automotive Historians


THIS IS THE
100,000th
Whippet

AUTOMOTIVE HISTORY Review

A PUBLICATION OF THE SOCIETY OF AUTOMOTIVE HISTORIANS

RICHARD B. BRIGHAM, EDITOR

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THE COVERS -

FRONT - John N. Willys, about 1917. Picture loaned by John A. Conde, American Motors Corporation.

BACK - Overland advertisement, from May 13, 1915, issue of *The Automobile*.

INSIDE FRONT - John Willys with 1927 Whippet Roadster. Photo loaned by John A. Conde, American Motors Corporation.

INSIDE BACK - 1924 Winton Six. Picture from the files of Brigham Press.

EDITORIAL COMMENT

LET'S HEAR IT FOR THE "LITTLE" MAKES!

In the VIEWPOINT section of this issue there is a letter from Mr. Walter F. Robinson in which he makes an obvious but neglected point. He suggests that there seems to be little information about the large number of makes of automobiles produced in the teens and twenties, and that articles about them would be of interest to many of our members.

It was during those years that the number of manufacturers was at its peak. The experimental years were past, and the automobile had, with the exception of a very few makes, evolved into a standard, basic design. Chain drives, high wheels, friction transmissions - to name only a very few of the ideas tried and rejected - had become relics of the previous decade. Standard components such as engines, clutches, transmissions, rear axles, steering gears and even complete bodies were available from a large choice of suppliers, and an automobile builder could set up shop on a modest scale.

Some auto companies bought complete chasses already assembled, added bodies and tires, and offered the finished product to the motoring public. Others had no factories or even assembly buildings, but bought cars, complete and running, to be sold under their own names.

Most of the producers of these assembled vehicles lasted only a few years, but some of them managed to survive for five, ten or even 20 years. A lot of our older members have owned, or at least driven, many of these makes. Our younger members are acquainted with them as cars they have seen at meets and in museums, and a number of us own some remaining examples of these makes.

But many of our friends and neighbors under 40, who have read all about the Duesenbergs, the Packards, the Pierce-Arrows and the Rolls-Royces, have never even heard of the cars which are so familiar to most of our members.

The history of such cars as the Elcar, Columbia, Dixie Flyer, Davis, Gardner, Pilot - and dozens (perhaps hundreds) of makes just like them - should be researched and preserved.

SHOULD AHR BE A QUARTERLY?

For some time our SAH Newsletter has been published ten times a year. When this schedule was established it was decided that AUTOMOTIVE HISTORY REVIEW should be published twice a year. Thus all members would receive 12 publications annually. On a somewhat irregular schedule, this plan has been followed.

We feel that the time has come to put this magazine on a four-times-a-year timetable - but it will take some help from the membership. In the issues published thus far, including this one, regular contributions of articles have come from just a few members, plus a scattering of most welcome items from others. If we are to publish more often we'll need a lot more material, and just about anything pertaining to automotive history will be welcomed - articles, letters, questions, answers to previous questions, long items to fill several pages and short ones to fill an otherwise empty space, personal accounts (like MORE ABOUT COLES, this issue), and anything or everything which might interest your fellow member.

As a suggestion, go back and re-read the first editorial on this page.

VIEWPOINT
COMMENTS OF OUR READERS

COLE PRODUCTION (Issue No. 3)
Harlan Appelquist, Minneapolis, Minn.

I enjoyed the latest issue of Automotive History Review. The story on the Cole car by Dr. R. F. Croll was very interesting but I question the production figure given for 1920. I think the figure should have been 5606. A 2 sometimes looks like a 5.

Having been a real nut on production figures for years, I checked on the figures listed for Cole by the late James Dalton, who was for many years the editor of MoToR magazine. Here are some of the figures comparing Delancy's with Dalton's:

	Delancy	Dalton
1913	3547	3500
1914	1748	2000
1915	2703	2700
1916	4445	4400
1917	?	3700
1918	2439	2400
1919	6255	6200
1920	2606	5800
1921	1722	1900
1922	?	1800
1923	1522	1800
1924	632	750

Dalton's figures are from a story in MoToR magazine for November, 1925.

In a 1920 issue of Automotive Industries, an item was published which stated that the Cole dealer in London, England, ordered 5000 new Cole cars. This dealer was Cole's major overseas outlet. I don't believe he ever got his 5000 cars, but I do think he got hundreds of cars from Cole.

Editor's Note: Cole serial numbers for 1920 were 60,000-65,000. Serial numbers are an admittedly unreliable source for production figures, but in this case they seem to confirm Mr. Appelquist's opinion.

ROEBLING-PLANCHE (Information in several issues)
Frederick D. Roe, Holliston, Mass.

I have been looking at the Connecticut 1915 Registration list (loan from Marshall Naul). Following item is relevant to the story on Walter-Roebling-Planche-Mercer:

1915 Connecticut Registration #8412 was carried by a ROEBLING-PLANCHE car; 48 H.P.; Ser. No. AT8; date of manufacture 1909; owner George Ibey, 90 Golden Hill Street, Bridgeport, Connecticut.

How do you like that? So one, at least, was sold and was still running six years later. Sometime I will try to trace the owner.

I wonder about the Roebling-Planche serial number but really don't think we can draw much of a conclusion from it. In the case of my Crane (in the same 1915 list under its original owner) the registration number is given as the serial number also, probably because they could not find the real one. Sometimes the makers of odd cars used odd numbers, and the owners of some of these cars might read odd casting numbers or the like as serial numbers.

THE SILENT WONDER — WILLIS (Issue No. 3)
Bernard J. Weis, Rochester, New York

The article on the nine-cylinder Willis in the current issue was very interesting and brings to mind Studebaker's experiments with an in-line ten-cylinder engine in the early Thirties.

According to a retired Studebaker engineer, Otto H. Klausmeyer (who is Technical Advisor for Pierce-Arrow Society), the engine was installed in a large Studebaker touring car. The head was originally a one-piece casting, which gave problems, and a two-piece head was later tried out. The engine and idea were eventually discarded as offering no advantages over the current 6 and 8 engines. I have no further details on this odd engine.

IDENTITY OF CARS (Issue No. 3, P. 28)
William R. Tuthill, Daytona Beach, Florida

Photo Number 5 was taken in 1905 at Daytona Beach, Florida. Car is a "Pipe", which was owned and entered by Joseph H. Heller, sales representative for the company in New York City with an office and salesroom on 52nd Street. The driver was Charles Deplus. *Pipe* was made in Belgium and the name was in italics wherever used. There is no question regarding this identity as it was the only Pipe car entered in the annual winter speed carnival.

The Brighton Beach track was not in England but in Brooklyn and was the scene of many races including 24-hour events. It was a one-mile dirt track built around 1902.

Re: Simplex wreck which resulted in the death of young Frank Croker, son of the Tammany Hall boss, Richard Croker — it occurred in a practice run before the 1905 speed carnival. Croker lost control and ran into the surf, killing both himself and his French mechanic. It was the first auto fatality at Daytona Beach.

ASK THE MAN WHO OWNS ONE — plus a very worthwhile suggestion (Issue No. 3)
Walter F. Robinson, Jr., Bellevue, Washington

I can move up the date of first use of the slogan "Ask the Man Who Owns One" by Packard. A few years ago someone gave me a copy of the January 15, 1902, issue of HORSELESS AGE, and it has the same ad that was reproduced in AHR for Spring 1975. It is on the inside front cover.

May I make the suggestion that there are a lot of makes of the teens and twenties which have had little published about them, and which might be worth articles in AHR? I'm thinking of Velie, Dort, Case, Patterson, R & V Knight, Winther, National and Mitchell, to name a few. The faster cars, and those which fitted in the "fine car" category, have had a lot more attention. I know very little about them and wish that someone who does would work up the facts.

From the Newsletter of a few issues ago I was pleased to get the first solid information I had ever read about the Crane cars which preceded the Crane-Simplex.

I noted that you and Grace Brigham, who I assume is your wife *(Assumption correct-Ed.)* made it to the June SAH meeting in Detroit, and I'd like to applaud your public spirit.

ASK THE MAN WHO OWNS ONE - Further comments

Maurice A. Harrison, Middlesex, England

The two old advertisements reproduced in the *Automotive History Review* Issue No. 3 on page 14 are very interesting but, I venture to say, inconclusive. "The Cycle Age..." advertisement is a definite indication that the now well-known words were used in November 1901 but this does not necessarily mean that they were NOT used earlier.

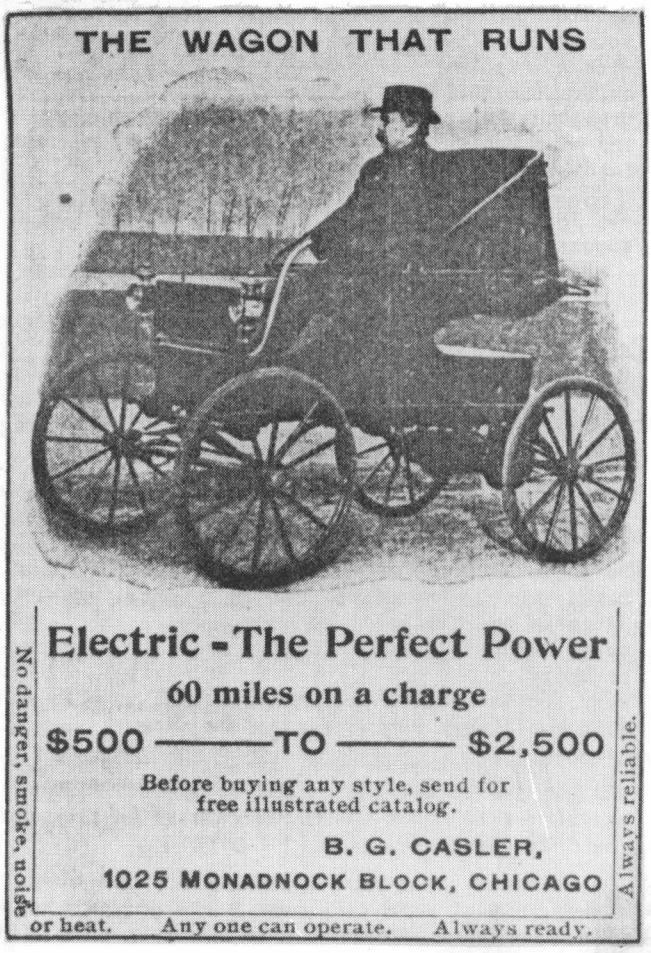
My reasons for suggesting earlier use of the sentence or slogan are that the phrase was coined accidently by James Ward Packard in November 1900 during the New York Automobile Show (in Madison Square Garden November 5 to 10). On going through his mail one morning, Packard found a letter in which the writer requested sales literature. The Packard cars were creating considerable interest at the Show but no sales literature was available and J. W., being a busy man, told his secretary: "Tell him that we don't have any sales literature. Tell him – just tell him to ask the man who owns one."

It is very unlikely that such impact-creating words would NOT be used for twelve months after the 1900 Show and I would therefore suggest that, at most, the famous words first appeared in an advertisement or catalogue not much more than three months after they were first used. But, perhaps I am wrong!

THE CAS(E)LER ELECTRIC?

Henry C. Hopkins, London, England

This ad is from the March, 1901, issue of *Mc'Clure's Magazine*. Could this be the CASELER which *American Car Since 1775* lists as 1901, but unsubstantiated?

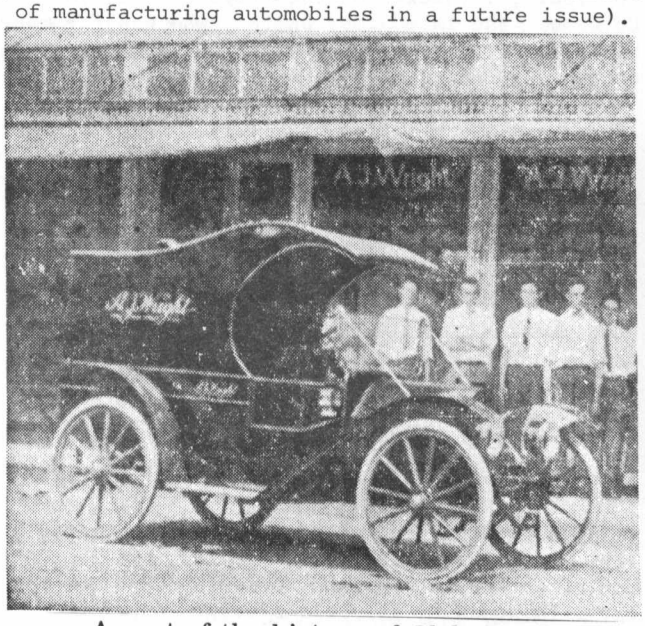


THE CLEBURNE MOTOR CAR MANUFACTURING COMPANY

D. J. Kava, Beaumont, Texas

This photo is of the second vehicle produced by the company with a locally designed delivery body. I think I have located the founder's son, and hope to have a few more photos to complete my article.

(Editor's Note: The picture below and its accompanying text are a reproduction of a newspaper item which appeared in the CLEBURNE TIMES-REVIEW, Cleburne, Texas, dated Sunday, May 2, 1954, which was sent to us by Mr. Kava. He has been researching the history of the Cleburne company, and as a result of his efforts we hope to publish an account of this company's venture into the business of manufacturing automobiles in a future issue).



A part of the history of Cleburne which has almost been forgotten in the passing years, is the automobile manufacturing plant that was located here in the early days of the horseless carriage. Above is one of the first cars turned out.

Before the manufacture of automobiles became a mass production job, a plant was set up in Cleburne on Sept. 30, 1911. H. E. Luck was president of the company, R. H. Crank served as secretary, E. N. Brown was first vice-president and F. L. Deal was the organization's second vice-president.

The firm was known as the Cleburne Motor Car Manufacturing Company and automobiles were actually built and sold here. The first car was completed on Dec. 20, 1911. It was a classy convertible job and sold quickly to a local purchaser.

Three different models were manufactured in the plant and two of them were named for the company president. The automobiles were called the "Luck," the "Luck Utility" and "The Chaparral."

Nine cars were produced in the first year and all but one were immediately sold. However, the company did not flourish, and soon the competition of the larger manufacturers caused the abandonment of the venture.

THE COVER PICTURE -

JOHN N. WILLYS

by Richard B. Brigham

John North Willys was born on October 25, 1873, at Canandaigua, New York, where his father owned a small brick and tile company and a paper box factory.

By the time he was twelve years old he was working for his father at 25 cents a day for after school labor. Later, as a teen-age book salesman, he tried selling a volume entitled "The Life of Garfield" This venture was the only out-and-out failure of his career. Otherwise, salesmanship was the principal ingredient in the Willys success story.

In 1889, at the age of 16, he joined forces with a young friend who worked in a laundry. Together they bought a small laundry in Seneca Falls, New York, put it on a paying basis, and sold it a year later at a profit of $100 each.

Willys used his $100 to buy a sample "New Mail" bicycle, and became an authorized local agent for the manufacturer. By the time he was 19 years old he had organized a sales company and set up a bicycle repair shop. Here he was to learn that selling bicycles was easier than collecting payment for them, and this situation, together with the business slump of 1896, spelled the end of Willys' first bicycle venture.

He became a travelling salesman for the Boston Woven Hose and Rubber Company. One of his customers was the Elmira Arms Company, a sporting goods store which had bankrupted four owners and was about to repeat the process with the present one, who offered to sell the business and $2800 worth of stock for $500.

Willys bought. He installed a manager, gave him explicit instructions as to how the business was to be conducted, and returned to his job as a travelling salesman - but not for long. One day he learned, through a newspaper item, that the Woven Hose Company had failed. With his job gone, he hurried back to Elmira to take personal charge of the store. He specialized in bicycles, and in less than a year became the largest retailer in the district.

Logically, the next step was to become a wholesale distributor. Bicycle agencies were set up in the area surrounding Elmira in hardware and sporting goods stores, and he also wholesaled such items as guns, pistols, ammunition, Victor phonographs and other items. By the time he was 27 his sales totaled $500,000 annually.

However, his own analysis of his business convinced him that he could not expect to enlarge it much further than a 100-mile radius from his headquarters in Elmira, for at about that point his salesmen encountered stiff competition from other centers. At this point he decided upon two basic premises. One was that he must someday be able to offer a trademarked item carrying his own name. The other was that this article would enjoy a world-wide market. And the product he was seeking was revealed to him in Cleveland, Ohio, in 1899. This was the first horseless carriage he had ever seen - a Winton. He had no opportunity to examine the machine, but he knew that this was what he wanted.

The following year an Elmira doctor purchased a Pierce Motorette, a product of the George N. Pierce Company in Buffalo, whose fine bicycles Willys already handled. He travelled to Buffalo, discussed the automobile business with Mr. Pierce, placed an order for one car, and became the Elmira dealer for the Motorette.

Public acceptance of this new-fangled mode of transportation was less than enthusiastic, but in 1901 Willys managed to sell two cars. In 1902 he added the Rambler to his line and sold four of them. Sales for 1903 totaled 20 cars, and by 1905 the demand for cars was far greater than Willys could satisfy. The time had come for him to have his own product, but he lacked the capital and the mechanical ability. The next best thing was to set up a sales organization and contract for the whole output of one or more factories. This would relieve the manufacturer of the problems of sales and distribution, and at the same time provide manufacturing facilities for Willys until such time as he could set up his own.

In 1906 he organized the American Motor Sales Company in Elmira. The first line of cars to be handled by this new company was the American, a sporty-looking, expensive underslung vehicle made in Indianapolis. For a lower priced line, another Indianapolis product - the Overland - was added in 1907.

Overland's history had begun in 1902 when the first one was made by the Standard Wheel Company of Terre Haute, Indiana, a subsidiary of the Parry Manufacturing Company, Indianapolis. It was a one-cylinder machine, tiller steered, with its engine under the hood. The designer was Claude E. Cox.

Almsot immediately the factory was in financial difficulty, and Cox persuaded the parent company to take over production, such as it was. A new organization, the Overland Automobile Company, was formed and manufacture of the car was continued.

Willys placed an order for 500 Overland cars for 1908 delivery - quite a substantial order for a company which in its best year, 1907, had built only 47 automobiles. He also advanced $10,000 to help the factory produce the cars he had ordered, but in spite of this financial help, the Overland company was soon again in trouble. Late in November, 1907, Willys went to Indianapolis to see what was delaying delivery of 25 cars which were due to be delivered in Elmira.

It was Friday - payday - and the employees of the company had been paid with worthless checks. There was no way for the plant to open again on Monday, unless money could be found to cover those checks. Willys tried to cash a check for $350 at his hotel, but the cashier informed him that there was nothing like such a sum readily available. At this point Willys' ability as a salesman saved the day. He persuaded the hotel maganger to order the cashier to pay out no cash, and to cash no other checks until $350 had been accumulated. And on Monday morning, Willys went to the bank and made a deposit to cover the outstanding checks. He also became president of the Overland Automobile Company, and persuaded the creditors to take stock for their claims.

Early in 1908 the reorganization was complete and Willys moved his family to Indianapolis. Only nine months later the company had produced 465 cars and had a net worth of $58,000. By the end of

1909 the company had built and sold 4000 cars, did a gross business of more than $5 million, showed a net profit of over $1 million, and had $600,000 cash in the bank. With $285,000 of this money, the Pope-Toledo plant in Toledo, Ohio, was acquired[1].

The Overland Automobile Company was moved to the Toledo plant and reorganized as the Willys-Overland Company. Production rose from 4000 cars in 1909 to 18,000 in the following year.

In 1912, to acquire manufacturing facilities in the motor truck field, Willys bought into the Gramm Motor Truck Company, Lima, Ohio, and also acquired control of the Garford Company, Elyria, Ohio. These truck ventures were less than satisfactory, and in 1915 Willys withdrew from both companies[2].

Mr. Willys' interest in the sleeve-valve engine began early in 1914, when he met Charles Y. Knight, inventor of this engine, while vacationing on a cruise ship in the Mediterranean. Knight's invention dated back to 1905, but he had met with little success in selling it to American automobile makers. The really important users of the Knight motor were Daimler in England, Minerva in Belgium. Willys lost no time in investigating the success of these fine cars, became convinced of the practicality of the sleeve-valve design, and immediately acquired the Edwards Motor Car Company of Long Island City, New York, builders of the Edwards-Knight. The Edwards manufacturing operations were moved to the old Garford plant in Elyria, and the car was renamed Willys-Knight. By 1915 an improved model had been developed, and production was transferred to the Toledo factory. 3600 Willys-Knight cars were made that year, along with 18,000 Overlands. Willys was now in second place in the production race.

In the manner of W. C. Durant, with whom he had much in common, Willys, in 1916, embarked on a program of merger and expansion. A plan to merge Willys-Overland, Hudson, Chalmers and the Willys-controlled Electric Auto-Lite Company did not materialize, but the Willys Corporation, organized in 1917, did control Auto-Lite, Duesenberg Motors of Elizabeth, New Jersey, and the New Process Gear Company of Syracuse, New York. The corporation also owned a third of the stock of Willys-Overland which controlled the Curtiss Aeroplane Company, the Moline Plow Company and the Wilson Foundry and Machine Company of Pontiac, Michigan.

In 1919, development of a new six-cylinder car was begun at the Duesenberg plant in Elizabeth. This car was designed by the team of Fred Zeder, Carl Breer and Owen Skelton - three men who were to play important parts in the organization of the future Chrysler Corporation. Because of the depression of 1920, this car was never built under the Willys name.

The depression found Willys over-extended and in financial difficulties. The Chase Securities division of the Chase National Bank came to his rescue, but insisted that Walter P. Chrysler be put in complete charge. Chrysler started a program of retrenchment, disposing of several of the properties of the Willys Corporation, but in spite of his efforts, this corporation entered receivership in 1921.

Liquidation followed, and when the Duesenberg plant at Elizabeth was put up for sale - including the plans for the new six-cylinder car - Chrysler made his bid for it, but lost. The high bidder was W. C. Durant, and the car which might have been named for Chrysler eventually emerged as the Flint.

Willys, however, still had Willys-Overland. A syndicate of Toledo business men advanced funds to buy the stock held by the defunct Willys Corporation and John Willys was again in the driver's seat. In a few years, in typical Willys fashion, he had the company out of debt and, again in the manner of Durant, was ready to embark on another round of automotive empire building.

In 1925 he bought control of the F.B. Stearns Motor Car Company of Cleveland, which had used the Knight engine in its cars since 1911. By 1926 the combination included the Willys-Morrow Corporation of Elmira, New York, which made transmissions, and the Wilson Foundry and Machine Company, Pontiac, Michigan, which produced engines and castings. A Willys-Overland subsidiary, the Falcon Motor Corporation, made the Falcon-Knight at Elyria, presumably in the old Garford plant. Except for the most minor details, the Falcon-Knight was the same car as the Willys-Knight Model 56. Late in 1928 the Falcon Motor Corporation was absorbed by its parent company and the car was discontinued.

Willys retired from active management upon his appointment as ambassador to Poland in 1929. He returned in 1932, after the depression of the 30's had created another financial crisis for Willys-Overland. The company collapsed after the bank failures of 1933. Willys and David R. Wilson, of Wilson Foundry, were appointed receivers. The company remained in operation.

John North Willys died on August 26, 1935.

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[1] *An unsuccessful bidder for the Pope plant was a gentleman from Virginia by the name of Apperson, not related to the Apperson Brothers of Kokomo. He planned to build a car named Apperson-Toledo. This plan, of course, did not materialize, but the name appears incorrectly in some rosters of auto makers.*

[2] *Gramm and Garford then merged, and the Garford operation was moved to Lima.*

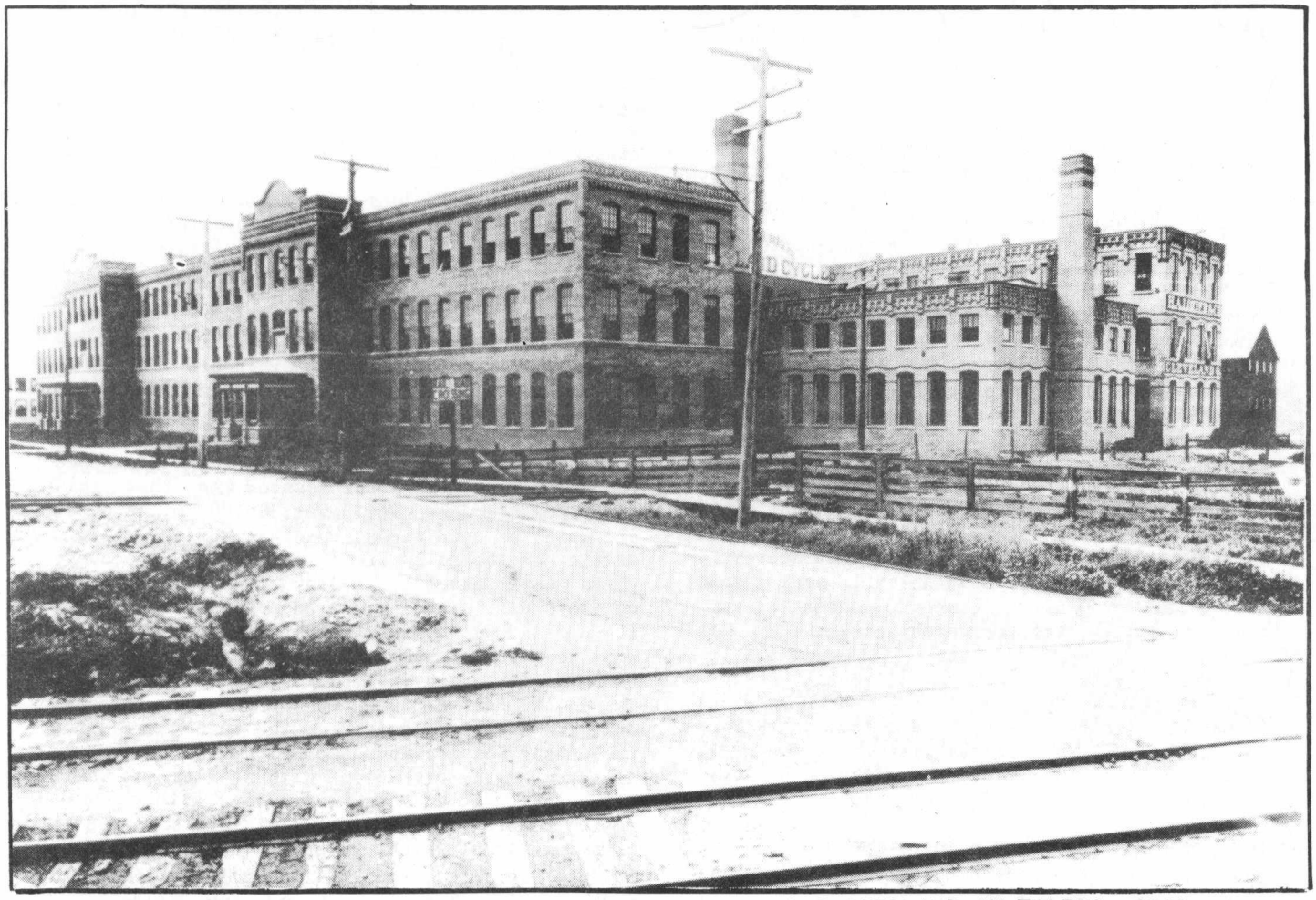
POST-SCRIPT

Following the death of John Willys, the work of reorganization was continued by David R. Wilson and Ward M. Canaday, a Toledo advertising executive, and the corporate name became Willys-Overland Motors, Inc. The Willys Americar was manufactured until 1942.

During the years of World War II the company produced the military Jeep, and after the war a somewhat modified civilian version of this vehicle was built, production of which continues to this day.

Another change of name occurred in 1953 when Willys-Overland Motors was merged with the Kaiser-Frazer Corporation to become Willys Motors, Inc. The product was a small passenger car, the Aero-Willys, built from 1952 through 1955. Another name change was made in 1963, when Willys Motors became the Kaiser-Jeep Corporation.

Yet another name was added to the list when, on February 5, 1970, the plant and its products were acquired by the American Motors Corporation. The company is now known as the Jeep Corporation, a subsidiary of AMC, which continues to produce modernized versions of the Jeep in a number of 2-wheel and 4-wheel drive models.



THE LOZIER BICYCLE FACTORY, FIRST PLANT OF WILLYS-OVERLAND IN TOLEDO, OHIO

There are few buildings anywhere in the United States which have played such a long and continuing part in the history of the American automobile as this venerable structure. H. A. Lozier and Company made bicycles here in the 1890's and, in 1899, built steam powered trucks. Ever since that time the building has been in continuous use as a part of an automobile manufacturing enterprise.

At about the time that Lozier began to make his steam trucks, Colonel George Pope, of the Pope Manufacturing Company, was putting together the American Bicycle Company, and the Lozier company was among the properties acquired. The plant became the Automobile Department of the American Bicycle Company; the product was the Toledo steam car. In 1902 the company became the International Motor Car Company, and a 3-cylinder gasoline car was added to the line. The steam car was discontinued in the following year, and the Toledo gasoline car was renamed the Pope-Toledo. Also in 1903 the company name was changed again to Pope Motor Car Company.

This is the plant which John Willys bought when the Pope empire collapsed. As the Willys-Oveland Automobile Company prospered and grew, more and larger buildings were added to the plant until it had become the world's largest automobile factory, with this original building still a part of it. For the next half-century, through changes in the corporate structure and changes of ownership, the name of Willys was associated with this old building. Then, in 1963, Willys Motors became the Kaiser-Jeep Corporation.

Now, as a subsidiary of the American Motors Corporation, the present Jeep Corporation as it is now called, continues the manufacture of motor vehicles which began in the 19th century with Lozier's steamers.

The picture shows the plant as it looked when it housed the Lozier bicycle business. The unpaved road is now a wide, paved street - Central Avenue, Toledo, Ohio. An underpass takes it under the railroad, then the Lake Shore & Michigan Southern, later the New York Central, and now Penn Central, connecting Toledo with Detroit.

More About Coles

by Maurice A. Harrison

Issue No. 3 of Automotive History Review was particularly interesting, for it brought back a flood of memories, memories of fine cars I knew long ago. These were Coles and they were all seen outside of the United States.

During the first quarter of this century the world's automobile industry had grown steadily, and before World War 1 cars were being exported from their home countries, although the number of automobiles interchanged between America and Europe was not very large. But India, Australia, Africa, China and some other countries were ready markets for motor vehicles from all manufacturing countries, and those of us who were fortunate enough to live "abroad" in those days were in a position to see many more makes of automobiles than we would have seen at home. I was one of the lucky ones, for my father was a District Official in India, and as a youngster (whose interest in motor vehicles commenced at an early age) I spent most of my days in that country, observing automobiles and making childish notes which I find invaluable now.

On going through my notes I recall seeing a Cole for the first time in 1921; seen in Delhi, it was an open tourer which belonged to the Maharajah of Alwar's stable. A large car with a wheelbase of 127 inches, it had a V-8 engine with cylinders 88.9 mm bore x 114.3 mm stroke, giving a capacity of 5.6 litres (3½ in. x 4½ in. = 346 cu. in.), a cone clutch and a three-speed and reverse gearbox; its large body provided more than sufficient leg and elbow room.

Shortly after seeing this Cole I saw another one in Delhi. It, too, was a 1921 model tourer and it carried Calcutta registration plates.

The next car of this marque to be seen was a 1923 Opera Coupe, a smart-looking automobile with wire wheels; chassis details were more or less unchanged. This car was seen in Pearey Lall and Sons' Motor Showroom in Delhi and was an impressive machine which had been given an advantageous position in front of lesser cars.

My father was a friend of Mr. Pearey Lall and we children had the run of the Showroom, consequently we were able to examine and climb into the cars without hindrance. I well remember my sister saying that the Cole had "a better inside" than all the other cars in the place.

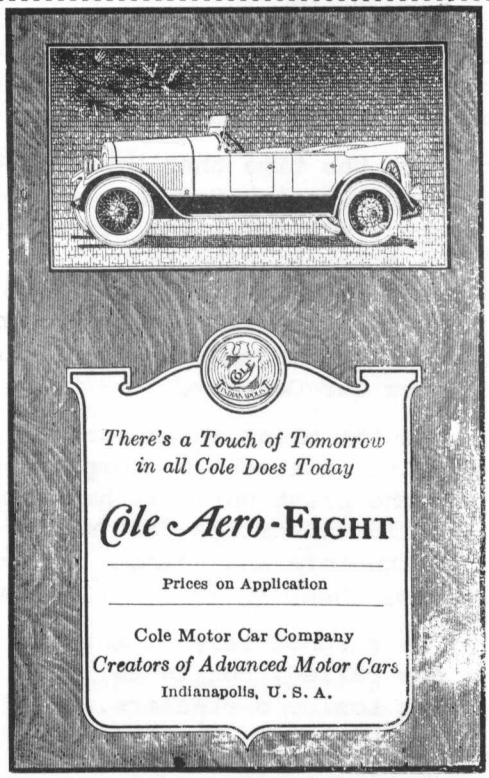
Pearey Lall and Sons were the largest motor dealers in Delhi (in fact, in Northern India) but at that time they did not represent any one make of automobile; they offered a variety of machines within a wide price range and, according to my early notes, a Daimler and the Cole were the most expensive. For some reason, Pearey Lall and Sons did not have another Cole in for some months, the next being an equally luxurious sedan which, unlike the Opera Coupe, had wooden wheels.

Towards the end of 1923 my father was posted far from Delhi, and opportunities for seeing cars in Showrooms as well as those belonging to Maharajahs and other Indian princes was considerably reduced. It was not until 1925 that I saw another Cole, also a tourer but of 1918/19 vintage, which had seen better days. Nevertheless, entries were made in my note book from which I now see that this car was registered in the Punjab province. A few months later this same car was seen in Karachi, 755 miles from Lahore where I had first seen it and from where it had been driven. At that time the Lahore-Karachi road had not been built and the cross-country journey (which included a large tract of desert) must have been an arduous one.

In the middle 20's Pearey Lall & Sons opened a branch in Lahore and became agents for Austins, after which they offered no more Coles, especially as production of these fine cars was just about to stop. Never again was I to see a new Cole.

In the middle 30's, when I had started working, business took me to Singapore and while there I was delighted to see a Cole again. It was a 1922 car which had once been owned by a wealthy tin-mine owner but which had changed hands many times over the years. Its speedometer had stopped functioning but the owner assured me that this old-timer had done well over 200,000 miles under all sorts of conditions. This was not surprising, as the car looked as if its best days were over; there were plenty of signs of mishandling and carelessness. The top had been replaced by local labour and was now anything a top should not be. But the Cole was still running.

The next (and last) Cole to be seen (1952) was in the West African town of Benguela (Angola) and it was being driven up the road towards the table-land which stands about 5000 feet above the coast. Grossly overloaded with natives and their belongings, it climbed noisily but without hesitation towards the interior. This car appeared to be a 1920 model which, in spite of the neglect it had suffered, was still a willing worker. It had long since lost its top and one fender — but it was still a Cole!



From *Chilton's Automobile Directory*, July, 1920

The Establishment and Growth of the Peerless Motor Car Company

by Dr. Robert F. Croll

The firm that was the forerunner of the Peerless Motor Car Company was first organized in 1869 in Cincinnati, Ohio, in the legal form of a partnership.[1] The firm was then known as Simpson and Goff and was organized for the purpose of manufacturing machine tools. Within the next 20 years this firm turned from machine tools to general metal fabricating, specializing in the manufacture of clothes wringers.

When the firm transferred its base of operations to Cleveland in 1889 it was known as the Peerless Wringer Company.[2] During 1891 Peerless took up the manufacture of bicycles as a sideline. The demand for bicycles during the next few years took on the proportions of a boom and with it the bicycle sideline grew to become Peerless' main line. The Peerless Wringer Company became the Peerless Manufacturing Company, and the capacity of the firm was increased until by the end of the decade the company could produce 10,000 units annually.[3]

Around the turn of the century the bicycle boom collapsed almost as rapidly as it had developed, and the change caught most bicycle producers unprepared. Peerless, no exception to the immediate results of the collapse, suffered rather substantial losses.[4] However, in an act of foresight, the firm had in the late 1890's undertaken a series of developmental experiments with motor-powered vehicles.[5]

Peerless had acquired the services of Louis B. Mooers who fulfilled the functions of engineer and designer for the motor vehicle experiments. He had been a mechanic for Panhard in France and, as early as 1898, had built a one-cylinder vehicle in Watertown, Massachusetts.[6] His personal experience compensated for Peerless' lack of firm experience in designing motor vehicles.

Late in 1901 the firm first introduced to the domestic market a three-wheeled "motorette" built under French DeDion-Bouton patents.[7] This model combined Peerless' experience gained in designing and producing bicycles, Mooers' motor vehicle knowledge, and the DeDion single-cylinder 2 3/4 horse-power engine. The first vehicle was sold on December 12, 1901, to a Mr. G. T. Young of New York City.[8] This model was continued through the early part of 1902 and was successful enough to convince the men at Peerless to try their hands at automobile manufacturing.

During 1901 under Superintendent Mooers, Peerless began the development of a new model.[9] The new design, to be intorduced during the coming year, was the basic modern arrangement borrowed from Emil Levassor of Panhard. The two-cylinder engine was mounted vertically in front under a hood. The engine was followed by a transmission, shaft drive, and bevel-gear rear end.[10] The car was introduced and put into production near the middle of 1902 and was among the first, if not the first, modern automobile design produced in America.

The new design was introduced on schedule during the middle of 1902 and was an immediate success. The Peerless was offered with a choice of two engines with either 12 or 16 horse-power, and three body styles. The company had contracted with Banker Brothers, then the largest automobile dealers in the world, to distribute Peerless automobiles in New York and Pennsylvania. Agents independent of Peerless ownership were also established in Detroit, Cleveland, Chicago, Boston and Pasadena. These firms were swamped with orders for the Peerless, orders which could not be filled.[11]

The output of the Peerless Manufacturing Company was pushed to four cars a week during July, the highest rate of output in the firm's short history.[12] The company soon found that within the old bicycle plant production of three cars a week was the sustainable maximum and, anticipating the production problem, began to seek new finances with which to expand production and build a new factory.

[1] John B. Rae, *American Automobile Manufacturers* (Philadelphia: Chilton Company, 1959), p. 15.

[2] Lawrence H. Seltzer, *A Financial History of the American Automobile Industry* (Boston: Houghton Mifflin, 1928), p. 24.

[3] *Cleveland Plain Dealer*, April 8, 1928, p. 6.

[4] These losses were in the form of work in progress and inventory of finished products which could not be sold except at scrap iron prices.

[5] It is interesting that Peerless early decided to produce motor-powered vehicles as the firm refused to join the American Bicycle Company, an organization composed of surviving bicycle concerns designed to monopolize and stabilize the declining industry.

[6] E. Stanley Cape, "The Edwardian Peerless", *Antique Automobile*, Vol. 26, No. 2 (March 1962) p. 86.

[7] *Ibid.*

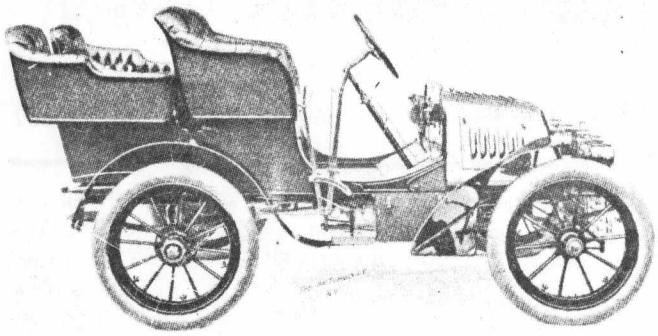
[8] *Wall Street Journal*, January 11, 1926, p. 4.

[9] Mooers, in addition to his task as chief engineer, had also become plant superintendent.

[10] The pistons in the two-cylinder engine moved in the same direction. When idling, the front wheels were said to have bounced.

[11] The market success of the Peerless was attributed to its imitation of French design. Its competition in America still produced automobiles that looked like a buggy without a horse. The consumers of automobiles during this period were well aware of French styles in all fashion goods.

[12] *The Automobile and Motor Review*, July 19, 1902, p. 15. Hereafter cited as *The Automobile*.



1902 Peerless Style F, 16 horsepower

Negotiations were entertained with a group of citizens of Lorain, Ohio, to establish a plant in that city.[13] The city was to support a stock issue by Peerless, and Peerless -- in turn -- would purchase a large plant in the city. The proposed factory was to cover 70,000 square feet and employ 400 men. Negotiations broke down when the company believed that the city would not support a stock issue of sufficient size to make the move profitable.

During October of 1902, the Peerless Manufacturing Company took out papers of incorporation in West Virginia as the Peerless Motor Car Company.[14] The authorized capital was $300,000 of which $96,000 in dollars and real goods was paid in. The incorporators were the same owners and managers who had seen Peerless through the transfer from bicycle production to motor car production. These five men who composed both the ownership and management group were: I. M. Blanchard, L. H. Kittridge, John McGregor, Jr., F. A. Quail, and G. B. Siddell. Blanchard served the firm as president and Kittridge as secretary-treasurer and general manager. Mooers continued as superintendent and chief engineer.

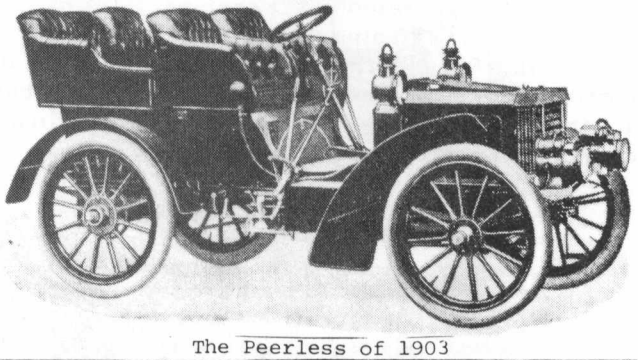
When negotiations with Lorain collapsed, Peerless remained for the time being in its cramped Cleveland quarters. Capaicty output stayed at three to four cars a week despite the introduction of new capital goods in the form of machine tools.[15] The 1902 model was sold out by the middle of July, the capacity of the firm being less than 150 units. Banker Brothers took the vast majority of Peerless output, the Pennsylvania branch alone accounting for 65 automobiles.[16]

The 1902 model was continued virtually unchanged during 1903; the single significant change was an increase of horsepower on some models to 24. The design of this automobile "....after the style of a locomotive, carrying out the idea that a motor car is a road locomotive rather than a horseless carriage" had gained wide popularity, and during 1903 several imitations appeared on the market.[17] These imitations were also generally successful, thereby establishing this basic arrangement of chassis components as standard in the new American automobile industry. The 1903 Peerless was offered in three color combinations with a 60-day warranty. Its biggest attraction was the fact that 90 percent of its running could be done in high gear.[18] This resulted from a combination of a relatively high-powered engine and a low total weight of 1800 pounds.

This model thus found its way onto local race tracks with excellent results. However "...in the year 1903 when American automobile competition really began to blossom..." Peerless found itself without a model readily adaptable to "serious racing."[19] Winton had just introduced a special racer and the Peerless two-cylinder engine would not do the job.[20] Mooers and the Peerless staff set out to remedy the situation.

Developmental work began immediately upon a project to design and build a racer to compete for the 1903 Gordon Bennett Cup in Ireland.[21] The completed racer had a four-cylinder engine producing 70 horsepower. This was the first four-cylinder engine Peerless had built and it marked the beginning of serious racing for the firm. The Peerless Gordon Bennett car was only a mixed success as a winner of races, but it brought much favorable publicity to the company. Nonetheless, organized racing was - as it still is - an expensive occupation, and the firm was not convinced of its worth. Mooers encouraged racing, but President Blanchard was uncertain of its value since Peerless could now sell more cars than it could produce.

The result of the conflict was a compromise. Mooers would himself pay the variable cost of building a racer and would own the completed car while Peerless would provide the facilities and resources to promote the car. On this basis an agreement was reached with the added condition that racing would not interfere with - but would contribute to - the development of Peerless production cars.



The Peerless of 1903

[13] *Ibid.*, August 16, 1902, p. 17.

[14] *Ibid.*, October 11, 1902, p. 17.

[15] The increased use of machine tools at this time at Peerless, as well as in the industry as a whole, was intended mainly to improve the quality of the metal work, i.e., closer tolerances rather than to increase the quantity of output.

[16] *The Automobile*, August 2, 1902, p. 15.

[17] John Bentley, *Great American Automobiles* (New York: Bonanza Books, 1957), p. 52.

[18] *Ibid.*, p. 53.

[19] *Ibid.*, p. 53.

[20] Alexander Winton, the first American manufacturer of automobiles, was also the first to cash in on the free publicity gained by an automobile that could travel the fastest. His success immediately lured competitors, and Peerless was to be one of the most successful competitors.

[21] This was part of a project to make Cleveland the center of motor vehicle production. Winton, White and Peerless, all Cleveland producers, were to build special racers. Their success would help to establish Cleveland as the home of the quality car.

The internal split over the extent to which the firm would commit itself to organized racing was settled when Blanchard left the company and Kittridge moved up to the presidency. Mooers was promoted to the position of secretary of the company at this time, and racing temporarily became company policy. Racing circuits had seemingly sprung up overnight in all parts of the country, and the sport developed a loyal following in the trade journals and among automobile enthusiasts. The Peerless racing policy was designed to take advantage of this potential free publicity.

During 1903 the company developed a four-cylinder model to be introduced during the next season which was a direct off-shoot of the Gordon Bennett racer owned by Mooers.[22] Meanwhile the 1903 two-cylinder Peerless was sharing honors with the Pope-Toledo on local racing circuits. Peerless rushed the new design into production and by June of 1903 was selling a four-cylinder touring car with a 35 horsepower engine to automobile enthusiasts for use on local tracks. The same car was to be the 1904 production Peerless.

Also during June Peerless purchased adjoining sites to its Cleveland plant upon which to build a new modern factory.[23] After negotiations with Lorain, Ohio, had broken down Peerless attempted to make similar arrangements with Canton, Ohio, again unsuccessfully.[24] A prime incentive to move were the labor problems of 1902 and 1903 which Peerless shared with other Cleveland automobile producers.[25] Labor demanded a twelve and a half percent wage increase, a nine hour working day instead of the usual ten, and time and a half for overtime. The Peerless factory - besides being very labor intensive - was working considerable amounts of overtime during this period. Since, however, the firm could not raise sufficient capital to make a move worthwhile, the management decided to remain in Cleveland in spite of labor problems.

Even working overtime, Peerless could manufacture only 177 units during 1903. These were sold through the same agents who distributed their automobiles in 1902 with the addition of one new agent in Washington, D.C., as a retail outlet.[26] The firm had no trouble selling or distributing its output during this season since its capacity was sold out in October.

In addition to insufficient capital, another limiting factor which restricted the firm's production was the necessity to import from France the springs, axles, bearings, ignition systems and gery iron castings used in Peerless automobiles.[27] The metals used in American components during this early period were of insufficient strength to be employed in a quality car which might be raced. Much of the reoutation for reliability enjoyed by the Peerless at this time was due to the superior metals used in the French made automobile components.[28]

Since, at the same time, there existed extreme design uncertainty, no company in as precarious a financial position as Peerless would commit itself to accept more parts than it was reasonably certain it could use.[29] This policy was adopted even though it meant a high probability of losing some sales due to the existence of a level of demand greater than the planned output at the list price.[30]

The close of the 1903 season saw the last of the two-cylinder Peerless automobiles. This model, an imitation of French design, had helped to establish the Peerless Motor Car Company as a quality producer of automobiles, and was instrumental in establishing the Levassor conception of an automobile as the standard American design. The financial and production problems yet unsolved by the firm at the end of 1903 were, in the main, unsolved by the rest of the industry.[31] It was the notable design and quality of the Peerless automobile that set the company apart from its rivals. Indeed, the ability to design and produce a car of this caliber in America before 1905 was a notable achievement.

The 1904 Peerless was built in three body styles and with two engines. The engines each had four cylinders with 24 and 35 horsepower respectively. The 35 horsepower model was equipped with a four speed transmission and sold for $6000, while the 24 horsepower model cost $4000. During the year these cars generally became champions at the local tracks, a fact that further enhanced the growing Peerless reputation for speed and durability.

During 1903 and 1904 Peerless built special racers for sportsmen who could afford them. In general, these models were based on the prototype design for the next season's product; Peerless thus tested its intended model at someone else's expense. Such an arrangement resulted in the development of the most famous Peerless racer and one of the most renowned automobiles in history - the Peerless Green Dragon.[32]

The 1904 Peerless owed its existence to the Peerless Gordon Bennett Racer; the 1905 Peerless was

[22] *The Automobile*, March 28, 1903, p. 357.

[23] *Ibid.*, June 27, 1903, p. 671.

[24] The failure of Peerless to obtain expansion capital as a location fee caused President Blanchard to lose interest in the firm. He left the active management soon after negotiations with Canton, Ohio, collapsed.

[25] *The Automobile*, June 20, 1903.

[26] The firm had representatives in all the large urban markets. There were seven independent agents franchised in 1902 and eight in 1903. Those agents had exclusive territorial rights and could act as distributors if they so desired.

[27] Cape, *loc. cit.*, p. 86.

[28] One of the myths of the industry is that Henry Ford discovered vanadium steel in the wheel of a wrecked French race car. Vanadium steel was in a large measure responsible for the success of the Model T.

[29] The necessity to pay cash on delivery plus a down-payment also limited Peerless' output.

[30] Peerless compensated for some of the lost sales by heavily loading the models it could produce with options which went along with the car at extra cost. Running lights, windshields and tops were all extra cost items.

[31] Peerless was caught in a vicious financial circle. It needed additional capital to increase its output; if it had a larger output it could obtain a larger anount from its dealers in the form of advances. However, since it had to rely upon imported components which could not be purchased on credit it could not expand output without additional capital.

[32] *The Automobile*, March 28, 1903, p. 357.

to be essentailly the 1904 35 and 24 horsepower models with the addition of a larger 60 horsepower model. The prototype of the 60 horsepower machine was just being completed when W. H. Kirkpatrick, a wealthy sportsman, approached the company with an offer to purchase a special racing car on the lines of the Gordon Bennett racer. Peerless accepted the offer, dropped the basic running gear of the 60 horsepower prototype into a light chassis, painted the whole machine Peerless green and christened it the Peerless Green Dragon.[33] In purchasing the car Kirkpatrick paid the development costs of the 1905 Peerless production model.[34]

Barney Oldfield, the famous driver of the Ford 999, was engaged to race the Green Dragon, and between August 6 and December 31 of 1904 Oldfield and the Green Dragon were billed at all of the major tracks in the country. In the process the team managed to break every world speed record for all distances between one and 50 miles.[35] and Oldfield and his Peerless became the most famous racing combination in the land.

Racing was an expensive business and while it cost Peerless thousands of dollars to campaign the Green Dragon - which had to be built in triplicate in case of accident or malfunction - the firm received thousands of dollars worth of free publicity. The Green Dragon was exhibited at automobile shows during its off season, and it was always the star attraction.[36]

Peerless cut its advertising budget while the Green Dragon was so successful, and those advertisements it did run called attention to the fact that the Green Dragon was just a larger version of the production Peerless. Production was, in fact, the company's main unsolved problem. A new factory was being built on a site across from the present plant;[37] yet this did nothing to aid production during 1904. The old plant limited production to 220 units, and that number was produced only by using considerable overtime labor.

The year 1904 marked the beginning of a new marketing policy at Peerless. The firm began to shape its image as a producer of quality automobiles for the socially prominent - vehicles which performed better than any other. It began to seek the closed car or limousine trade by producing special-bodied, luxuriously appointed closed cars.[38] Advertising in non-automotive journals, such as Harpers, featured "Peerless Girls" in socially prominent activities such as a fashionable young lady going to an opera in her Peerless. This change in attitude showed an awareness of the limited market for sports and racing cars relative to luxury car demand. Peerless was, during 1904, attempting to combine both features: performance and luxury.

In 1905 Peerless introduced the 60 horsepower machine, the Model 12, upon which the Green Dragon was based. This model was the largest American pleasure car built up to that time. In its advertising the firm emphasized the similarity to the Green Dragon ststing "...the only difference between the Green Dragon and our 1905 model 60 horsepower touring car is that the racing car is built on lines minimizing weight and wind-resistant surfaces."[39] The price for the model 12 was $6000, a great deal of money in those days. Yet buyers of the 1905 Peerless could rest assured that they had acquired automobiles which, in both prototype and production form, were given the most thorough and important forms of testing of any contemporary machine.[40]

Demand again topped the ability of the firm to produce automobiles in 1905. Despite its unique success on the race tracks, the firm had been unable to interest outside capital and was still in the old bicycle plant. Forced to rely on internal sources of capital. Peerless found that the inability to produce enough automobiles to satisfy existing demand limited the extent of the firm's profits. During this period Peerless had averaged over 30 percent return on an increasing investment. A policy had been established which distributed ten percent of the increasing capital invested every year as a cash dividend and reinvesting the residual in the firm. Development and promotion costs were high even though partially borne by outside sportsmen.[41] The concern of the company to produce cars of the highest quality had caused it to concentrate on the quality of output and not the quantity. Machine tools which would increase the accuracy of the machine work were added as soon as they became available, and component parts were imported from France although less expensive but admittedly inferior domestic parts were available. Due to all of the above factors Peerless did not grow as rapidly as it might have throughout the period under study. The basic limitation seems to have been a lack of capital.[42]

However, such criticism benefits greatly from hindsight, since Peerless did grow as rapidly as the median firm during this period, although slightly less rapidly than the average size firm.[43] It should be remembered that Peerless began to manufacture as many components of its automobile as possible earlier than most motor car makers. The company built its own engines beginning in 1902 and added the transmission shortly thereafter. To restate a cardinal point: during this experimental period the

[33] Bentley, *op. cit.*, p. 56

[34] *The Automobile*, March 28, 1903, p. 351.

[35] Bentley, *op. cit.*, p. 58. The 24 horsepower Peerless also broke ten world's speed records. *Ibid*, p. 65.

[36] Oldfield and the Green Dragon received the same type of publicity that Lindbergh and The Spirit of St. Louis and John Glenn and Friendship 7 were later to receive.

[37] The new plant was financed entirely out of retained earnings.

[38] *The Automobile*, March 5, 1904, p. 28.

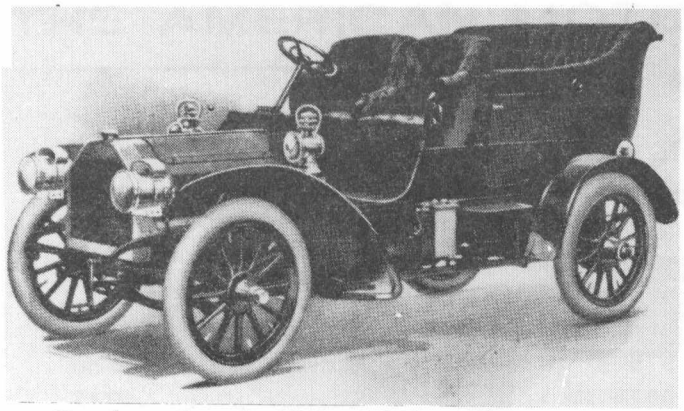
[39] Bentley, *op. cit.*, p. 64.

[40] *Ibid.*, p. 65.

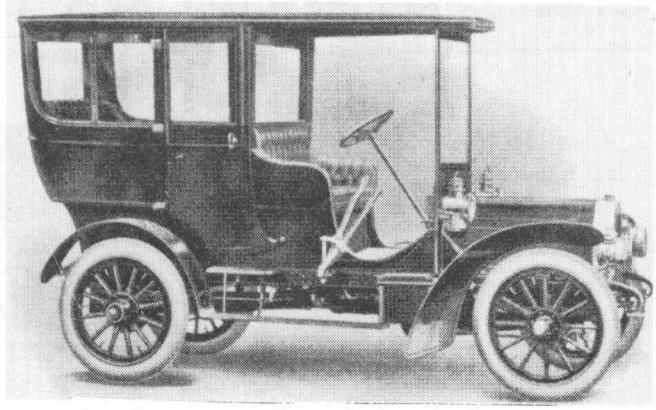
[41] Peerless was an important innovator on the American automobile scene during this period. Besides being the first to introduce the Levassor chassis arrangement, it introduced the channel-iron frame, an underslung frame, the regular production of closed bodies, and the side entrance tonneau.

[42] Shortage of capital was an industry-wide problem. The development of the automobile industry occurred in spite of organized capital markets in the United States.

[43] See Seltzer, *op. cit.*, pp. 14-82.



Peerless Type 7, 1904. $6000; with top, $6250



Peerless Limousine, 24 hp, 1905. $4000

firm was more interested in designing and building a quality car than in producing vehicles in quantity.[44]

After the achievements of Barney Oldfield, Peerless had little left to prove at the close of the first five years of this century. Substantial racing has always been a tremendously costly business when organized on the grand scale. The firm had evolved and launched a uniquely successful luxury car that put it among the quality leaders of the automobile industry. It was time to cut the racing budget and cash in on the publicity.[45]

Between 1905 and 1908 Peerless began a program of planned expansion composed of three parts: (1) the firm decided to expand output by expanding production facilities; (2) it was determined to integrate backstream by making many of the components it had previously purchased in France, and (3) the company integrated downstream by opening factory branches to sell Peerless cars exclusively in large urban markets. The firm withdrew from organized racing, reduced its expenditures, and concentrated its attention on planned expansion.

This decision was not supported unanimously by all members of the management team: Louis Mooers, who in large measure was responsible for the design of the Peerless automobile and whose talents had made Peerless a success at organized racing, resigned in protest. He immediately took a similar position with the Moon Motor Car Company.[46] His departure left an important vacuum which was admirably filled by the addition of Charles Schmidt, formerly with Packard where he had been responsible for designing the Packard Model L.[47] Schmidt redesigned the Peerless engine at once, and the 1906 Peerless was introduced with an overhead valve engine for the first time. Schmidt was also responsible for the design of the first Peerless six-cylinder engine, which was fitted with overhead valves and was introduced in 1908.[48] Although he was an extremely competent engineer - and while he was chief engineer Peerless remained among the engineering leaders of the industry - his influence within the firm was confined to the area of design. He was never to be as important to the business organization as Mooers had been.

Peerless continued to seek success and publicity in competition but not with a factory team. Independent dealers entered Peerless cars in reliability runs and staged endurance contests. Oldfield raced his own Green Dragon, and used Peerless cars for his theatrical show, "The Vanderbilt Cup".[49] However, the factory was paid for all services rendered to Oldfield or any other sportsman.

The new factory was completed in September of 1905 and began production of the 1906 Peerless. It contained 110,000 square feet and facilities to triple Peerless' output. Capacity was thus increased to ten cars a week. The plant operated near capacity level all year, producing 493 cars. The firm contemplated moving to Detroit to solve its labor problems, going so far as to purchase a plant site on the west side of that city.[50] For unknown reasons the move was never made, and two new additions to the Cleveland plant were begun, which were to give Peerless one of the largest factories in the city.

During the latter part of 1906 these additions were completed. Included was a new foundry which allowed the company to make its own castings instead of importing them from France. New facilities made it possible for the company to produce all the brass and aluminum castings required in the production of its automobiles. The second addition was an extension of the machine shop which was needed to process the castings made in the foundry. Furthermore, factory offices and drafting rooms were begun early in 1907. Capacity was estimated to have increased to 700 units annually with the new additions, and Peerless operated at near capacity levels producing 689 cars in 1907.

During 1908 business continued good with the introduction of the six-cylinder Peerless: the plant operated at three-fourths capacity or better during the entire season. Consequently, another expansion program was announced in which Peerless expected to invest $750,000 for new buildings.[51] The additions were to include a repair shop, an assembly building and a machine shop. Peerless was beginning to arrange its machinery so that goods-in-process

[44] The firm obviously had the choice of expending its limited resources in further development or of using them to increase production. It chose the former practice during the early period.

[45] Bentley, *op. cit.*, p. 67.

[46] *The Automobile*, June 21, 1906, p. 981

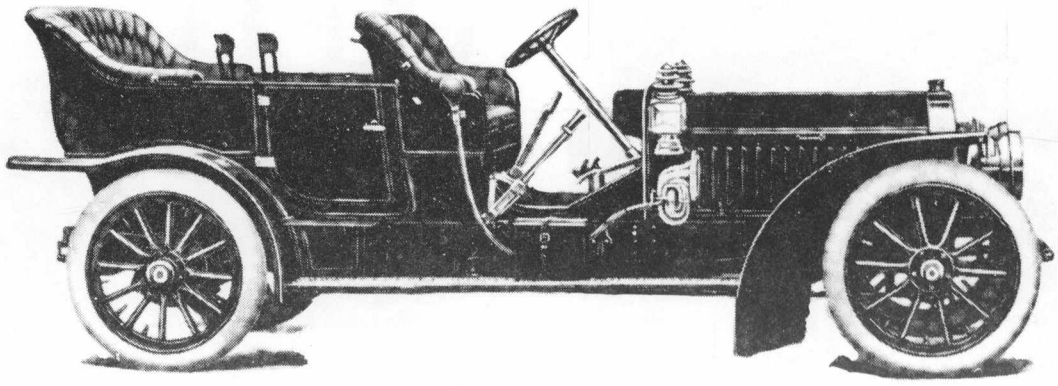
[47] *Ibid*, September 2, 1907, p. 379.

[48] Cape, *loc. cit.*, p. 86.

[49] *The Automobile*, February 1, 1906, p. 326.

[50] *Ibid.*, August 9, 1906, p. 190.

[51] *Ibid.*, September 10, 1908, p. 373.



Peerless Model 20, 1908, the first six-cylinder model. Bore and stroke were $4^{7}/_{8} \times 5^{1}/_{2}$. Wheelbase was 132 inches. Price, $6000; with optional top, $6175.

flowed through the plant instead of being taken to the machine shop. A new painting and finishing shop was to be erected on the second floor of the new addition. Output increased to 905 units during 1908.

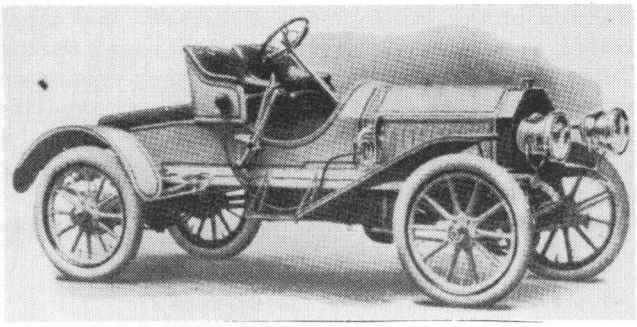
Coincidental with the firm's manufacturing capacity the company began to alter its distribution policies. The contract with Banker Brothers was cancelled, and branches were opened in Boston and New York City. E. H. Parkhurst, vice-president of Peerless, stated that "...the move was made necessary by the great increase in Peerless business in the metropolitan districts."[52] The opening of branches reflected a change in attitude toward distribution by the firm's management. The establishment of the company's image as a luxury car producer demanded exclusive agencies with luxurious appointments, and Banker Brothers had also handled Pierce-Arrow and the Thomas Flyer - both cars in direct competition with the Peerless. The firm obviously believed that it could better handle the local promotion of the Peerless than could a dealer who distributed two makes as well.[53]

Peerless immediately purchased large temporary quarters in both New York and Boston, and bought land upon which to build more suitable facilities. A factory showroom and sales agency were opened in Cleveland. Where the local market would not support a branch, independent agents were appointed and allowed to deal with non-competing makes.

The close of 1908 saw the Peerless Motor Car Company firmly established among the leaders of the automobile industry producing luxury machines. The assets of the firm had grown, through a conscientious policy of reinvesting profits, by over 320 percent. Peerless, which had begun the serious production of automobiles with a total paid-in capital of $96,000, was now in control of assets of over $3,000,000. Profits had averaged 20 percent over the period on an increasing investment. The company had done business totalling $22,817,259 out of which $3,161,486 had been earned as profit, and the owners of Peerless had received more in dividends than their original investment. At the end of 1908 Peerless was a going automobile concern. There were more than 900 other firms which had attempted to enter the industry prior to 1908 about which that much could not be said. Indeed, the firm was among the leaders of the luxury car producers - a notable accomplishment for a company which had a severe capital shortage but a few years before.

PEERLESS PRODUCTION FIGURES DURING THE EARLY YEARS -

1903	177
1904	220
1905	
1906	493
1907	689
1908	905



Peerless Roadster, Model 14, 1906. $3750

[52] *Ibid.*, December 3, 1908, p. 800.

[53] The establishment of factory branches also marked the end of Peerless' capital shortage. Since the independent agent had always been a source of working capital to the automobile firm, Peerless must have felt that not only could it do without that source of capital but also it could replace the source. The branch houses reflected the growing ability of the firm to finance itself.

THE AMERICAN MOTOR CAR INDUSTRY, 1915

by Harlan E. Appelquist

At the New York Automobile Show in January, 1915, there were 80 makes of cars on display. 15 of these makes were Electrics, but there were no steamers shown. Of the gasoline powered types, there were 126 four-cylinder models, 134 six-cylinder models, eight V-8's and no twelves.

Up to the end of 1915 the industry had produced some three million cars, two million of which were still in service. Factory sales during 1915 totaled 895.930 units - nearly a third of all of the cars made in the United States up to that time. Sales of the Model T had boosted the Ford Motor Company to unquestioned industry leadership. By the end of 1915 Ford had built more than 800,000 cars, and one of every three cars still running was a Ford.

Imports fell from 1,400 in 1910 to 322 during 1915. 111 came from Italy, 72 from England, 62 from France, six from Germany and 42 from Canada. Exports were a different story, however, and the United States exported 23,880 completed cars and 13,996 trucks that year.

Some 200 truck builders produced a total of 74,000 units during the year.

By 1915 the motorcycle industry had narrowed down to about 15 manufacturers, who built 58,000 new cycles during the year. Of these, 8,166 units were exported.

The cyclecar boom, which began in mid-1913, had reached its peak and was of little importance by the end of 1915. These were small, narrow-tread vehicles, usually seating two people in tandem. Most of them were powered by air-cooled engines, motorcycle type, with one or two cylinders. Motorcycle wheels were used on most cyclecars, as were friction transmissions and belt drives, although there many variations of design in this small segment of the indsutry. The public soon realized that the Model T Ford, for just a little more money, was a much better buy.

Random Notes on the Industry for 1915.

Cadillac shipped 20,415 cars, and had 7500 employees.

Lozier built 750 cars during its 1915 model year.
In January of 1915 Jeffery had 1,700 employees

Some 450,000 cars were built in Detroit in 1915.

The F. B. Stearns Company of Cleveland had 1,000 employees in October.

In July, 1915, Russell Erskine became president of Studebaker.

The Locomobile Company of Bridgeport, Conn., had 3,000 employees in August.

General Motors' Oakland Division announced a V-8 in October, following Cadillac by one year.

The Milburn Wagon Works, Toledo, Ohio, reported production of 1,000 Milburn Electric cars in 1915.

The Ohio Electric Car Company, Toledo, listed 1915 production as 300 cars.

Dodge Brothers, Detroit, began delivering cars to customers in January.

The Oldsmobile Division of General Motors had 2,000 employees.

The Crawford Company of Hagerstown, Md. built 103 cars in 1915.

The 1915 production of the Arbenz company at Chillicothe, Ohio, was 20 cars.

Reo, Lansing, Mich., built 1,700 trucks. Reo also shipped 2000 six-cylinder passenger cars during 1915.

The 1915 Pacemaker at the Indianapolis Memorial Day Race was a Packard Roadster. Packard announced the "Twin Six" at the showrooms, June 1915.

The Hudson Motor Car Company, Detroit, shipped 12,864 cars in 1915.

Ben Briscoe took over the plant of the Standard Electric Car Company in Jackson, Mich., to build a light car, the Argo. (*Editor's Note: The ARGO, a light roadster advertised at $295, was almost, if not exactly, identical to the GALLOWAY that was offered by the William Galloway Company of Waterloo, Iowa, in 1915 for $289. The relationship is obvious but unclear.*)

Walter P. Chrysler became works manager of Buick on January 11, 1915. He was 39 years old at the time.

The Elgin Motor Car Company, Elgin, Ill., built 50 cars in 1915; the Ogren Motor Works of Chicago produced 150.

Some new makes which appeared during 1915 were: Bell, Biddle, Bimel, Daniels, Drummond, Elgin, Farmack, Fostoria, Jones, Hollier, H.A.L., Madison, Mecca, Moore, New Era, Sterling, Stewart, and Sun.

As of January, 1915, 73 automobile builders belonged to the National Automobile Chamber of Commerce. Ford did not, nor did some 60 small producers. This does not include an additional 60 or so cyclecar makers, most of which did not last long. American during 1915 had some 120 builders of standard type gasoline autos, about 70 of which were considered to be active.

More than a hundred firms tried to market steam cars during the early years, but by 1915 only Stanley remained active with the production of 403 vehicles. Doble built 35 cars between 1915 and 1925, plus 42 more during the next five years.

1915 PASSENGER CAR PRODUCTION BY LEADING MANUFACTURING STATES

NO.	STATE	PRODUCTION	STATE'S MAJOR BUILDER
1	Michigan	636,721	Ford Motor Co., Detroit
2	Ohio	102,562	Willys-Overland, Toledo
3	Wisconsin	22,795	Mitchell-Lewis, Racine
4	Indiana	17,329	Haynes, Kokomo
5	New York	6,550	Franklin, Syracuse
6	Pennsylvania	4,300	Pullman, York
7	Illinois	3,099	Velie, Moline
8	Missouri	1,055	Moon, St. Louis
9	Connecticut	943	Locomobile, Hartford
10	New Jersey	527	Mercer, Trenton
11	Virginia	22	Kline Kar, Richmond
Eleven State Total		795,903	

(Electric, steam and cyclecars are not included in the above figures.)
Willys-Overland built cars at Toledo and at Detroit; Studebaker built cars at Detroit and wagons at South Bend. The Wisconsin total seems to include some Model T Fords assembled there. If a chassis was built in one state and the body mounted in another, the latter state got credit for its manufacture.

1915 PRODUCTION BY PRICE RANGE - Cycle Cars, Steamers & Electrics not included

Under $1,000	591,900	72.3% of total
$1,001 to $2,000.	199,700	24.4% " "
$2,001 to $3,000.	18,000	2.2% " "
$3,001. & up	9,000	1.1% " "
Total	818,600	100%

PRODUCTION OF U. S. MAKES IN 1915

Compiled by H. E. Appelquist

POSITION	MAKE	1915 PRODUCTION	HIGHLIGHTS
1	Ford 4	283,161	Model T; the Universal Car; Henry Ford
2	Overland 4 & 6	83,000	Super Salesman, John N. Willys, Toledo
3	Studebaker 4 & 6	46,800	Russell Erskine, Detroit; $985. & up
4	Dodge Bros. 4	45,000	John & Horace Dodge; Detroit; $785. up
5	Maxwell 4	44,000	Walter Flanders, Detroit; $695.-$920.
6	Buick 4 & 6	43,900	Walter Chrysler, Flint; $950.-$1650.
7	Cadillac V8	20,600	Henry Leland, Detroit; $1975.-$3600.
8	Reo 4 & 6	19,300	R. E. Olds, Lansing; $1000.-$1575.
9	Saxon 4	19,000	Harry Ford, Detroit; $395.; Hugh Chalmers
10	Chevrolet 4 & 6	13,600	Billy Durant, Flint; $750.-$1425.
11	Hudson 6	12,900	9 models; $1550-$3500. Detroit
12	Hupmobile 4	10,400	E. R. Nelson, Detroit; $1200. 2 models
13	Chalmers 6	9,800	Hugh Chalmers, Detroit; $1650.-$3200.
14	Packard V12	9,300	$3740.-$6150., Detroit also Trucks
15	Oakland 4,6 & V8	8,500	$1100.-$1685., Pontiac, Mi., G.M.
16	Paige 4 & 6	7,749	Harry Jewett, Detroit; $1075.-$1600.
17	Oldsmobile 4,6 & V8	7,700	$1285.-$2975. at Lansing, G.M.
18	Metz 4	7,230	Light small car; friction drive; Waltham
19	Chandler 6	6,400	Frank Chandler, Cleveland; $1595.-$2750.
20	Mitchell 4 & 6	6,190	Mitchell-Lewis, Racine; $1250.-$1585.
21	Haynes 6	5,500	Elwood Haynes, Kokomo; $1485. 2 models
22	Regal 4	3,900	$1085. Underslung chassis; 1 model 1915
23	Briscoe 4	3,600	Ben Briscoe; Jackson, Mi.; $785. & up
24	Willys-Knight 4	3,600	1916 models built during 1915; Toledo
25	Franklin 6	3,462	Air cooled; H. Franklin; Syracuse; $2150.
26	Jeffery 6	3,100	Also built 7600 trucks; $1650. Kenosha
27	Allen 4	3,100	$875.-$895.; Fostoria, Ohio. Many ads
28	Kissel Kar 6	3,000	$1650.-$2300. Hartford, Wi. will 1930
29	King 4 & V8	3,000	$1075-$1490. Detroit; Charles King
30	Stearns Knight 4 & 6	2,900	$1750.-$6200. Cleveland; Fred Stearns
31	Cole 4,6 & V8	2,700	J.J. Cole, Indianapolis; $1485.-$3750.
32	Grant 4	2,300	A light small Ohio product
33	Scripps Booth 4 & V8	3,000	Became Div. of G.M. in 1918; Detroit
34	Monroe 4	2,300	2 Models; Sold by Chevrolet dealers
35	National 6 & V12	2,100	$2375.-$2850. Indianapolis; Highway King
36	Auburn 4 & 6	2,100	$1075.-$1550. Auburn, Ind. till 1936
37	Inter-State 4	2,000	$1000. Muncie, In. G.M. bought plant 1918
38	Pullman 4 & 6	2,000	Made in York, Pa. till 1918
39	Peerless 4 & 6	1,800	$2000-$6000. Cleveland till 1931
40	Velie 4 & 6	1,800	W. L. Velie, Moline, Il. till Dec. 1928
41	Marmon 6	1,500	$3250.-$5000. Indianapolis; Walter Marmon
42	Jackson 4 & 6	1,490	$1250.-$1650. at Jackson, Mi.
43	Pierce Arrow 6	1,400	$4300.-$7200. Buffalo till 1938
44	Apperson 4 & 6	1,400	$1350-$1485. Kokomo, In. till 1926
45	Moon 6	1,390	$1575. at St. Louis; Joseph Moon
46	Detroit Electric	1,300	Anderson Electric Co., Detroit, Mi.
47	Argo 4	1,200	A small car backed by Ben Briscoe
48	White 4 & 6	1,100	$2650.-$5500. Cleveland plus 6623 trucks
49	Stutz 4 & 6	1,079	$2000-$3800. Indianapolis. Harry Stutz
50	Stanley Steamer	403	Stanley Brothers, Newtown, Mass.

Identification Requested

From Hayden R. Shepley, Box 171, Toughkenamon, Pennsylvania 19374, the following letter and photographs have been received:

"After reading about the Armac car on page 17 of the Summer, 1974, issue, I was prompted to send you the enclosed photos and description of a little car I have owned for eight years. It is now on display in the Colonial Flying Corps Museum, Toughkenamon, Penna., of which I am the curator. It took nineteen years of asking before the owner agreed to sell it to me. I have called it either a Cox, as the name Jas. I. Cox is carved into the trunk lid, or a Donnegan & Swift, as that is the only name on the mechanical part of the car. Its drip oiler was made by Donnegan & Swift of New York, a company which was in business in New York and Brooklyn from 1887 to 1953. They made machinery, parts for steam and gasoline engines, and complete stationary engines.

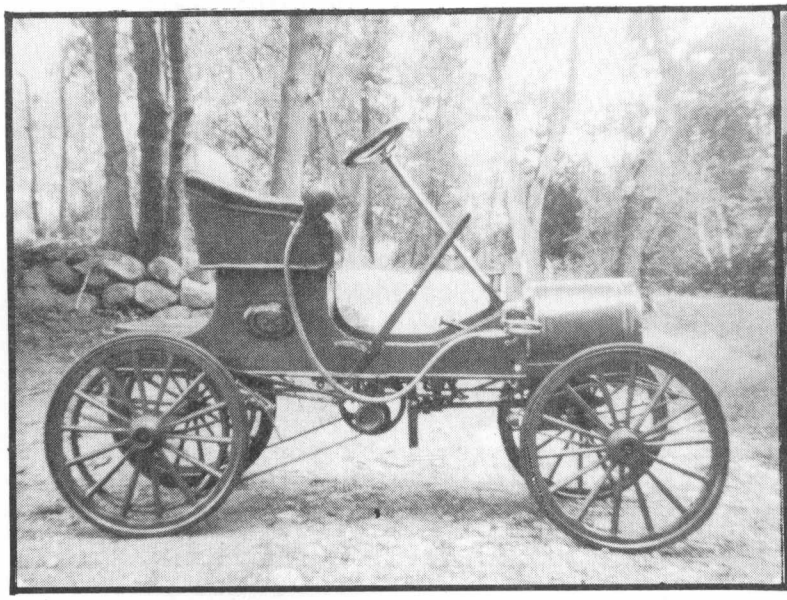
"The car's dimensions are as follows: Length, 72 inches; wheelbase, 52 inches; tread, 25½ inches. It is 45 3/4 inches to the top of the steering wheel. The wheels are 20 inches in diameter and have 1 1/8 inch Goodyear solid tires held on with wire. The patent date of the tires is June 15, 1908. The wheels have roller bearings.

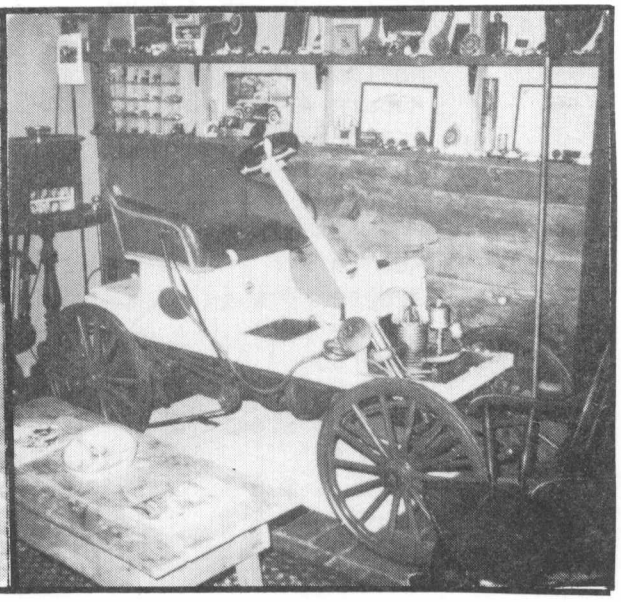
"The two-cycle engine has a bore and stroke of 2 3/8 x 2 5/8 inches. There is a set of points on the end of the crankshaft near where the crank attaches. Half of a Model T Ford coil is used.

"The friction transmission is connected to the rear wheels by two flat belts 1¼ inches wide. The brake pedal has a rachet. The other pedal is the clutch. The seat is 21 inches wide inside, and is hinged to tip forward. Battery and gasoline tank are under the seat. The ignition switch is on the vertical heel board below the seat. The spark and carburetor controls are under the steering wheel spider. The steel brake shoes rub directly on the tires.

"The steering column, dashboard, cockpit and rear of seat support are all trimmed in brass. The bulb horn has been on the car since 1943. At that time it also had a Lunkenheimer mixing valve "Carburetor". The frame is wood, and the axles are of wood reenforced with iron.

"The car weighs 245 pounds. As the floor pedals are evenly spaced I presume it was built to accomodate one person. However, two pre-teenage boys can fit into it, and the steering wheel is not in the middle. An interesting detail is the oval-shaped raised section upon which I have painted a Cox monogram".

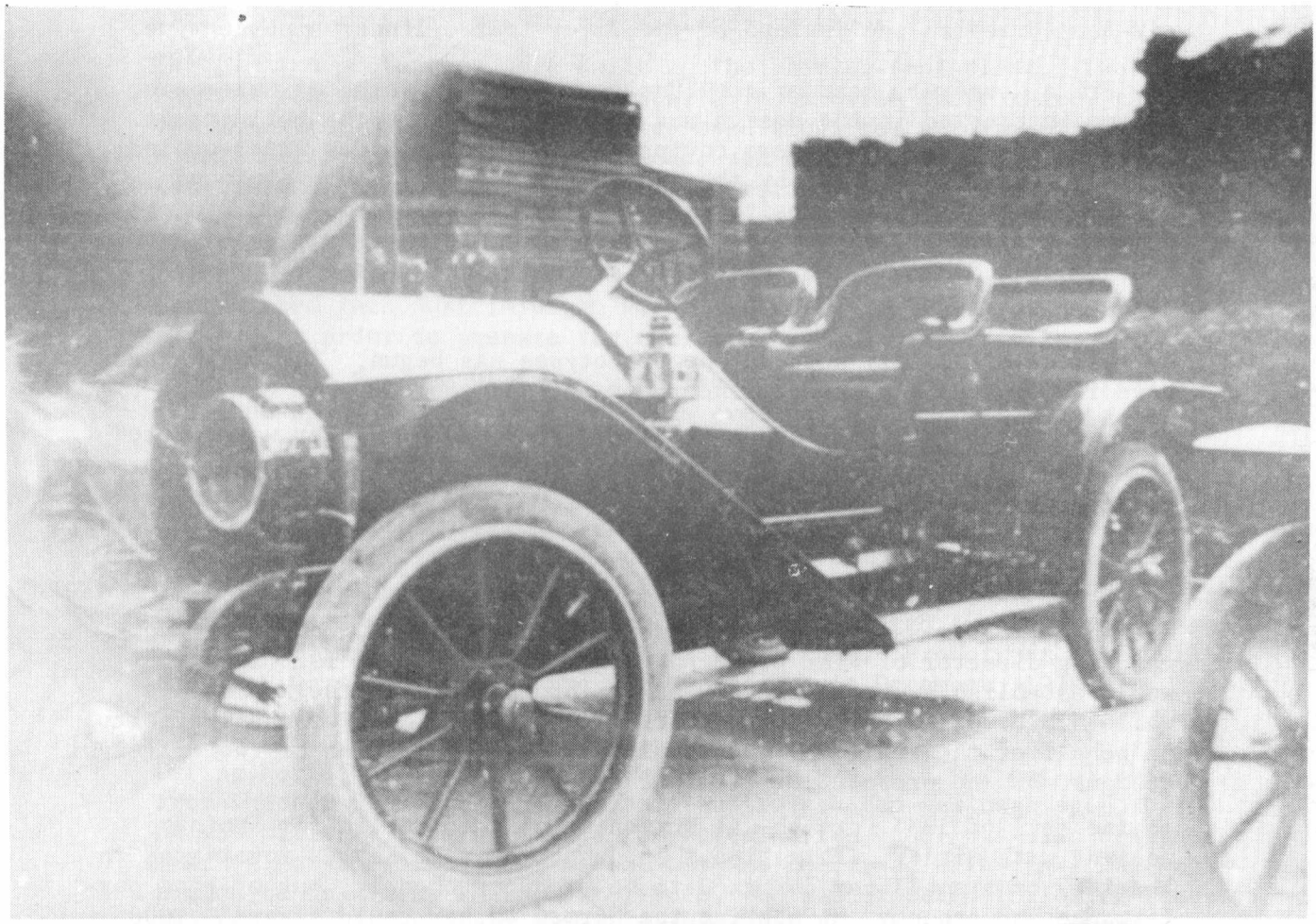


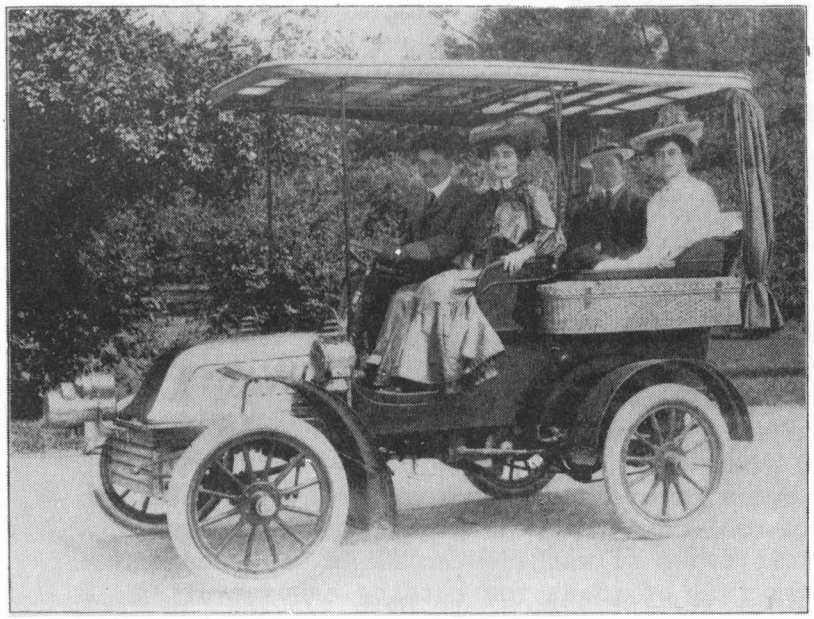


Donald Paul, 415 Monroe Street, Muscatine, Iowa 52761, sent the following letter and photograph:

Enclosed is an enlargement of a photo that I found between the pages of a bound volume of "Horseless Age" of 1909. I don't know what make of car it is or the year and would like it published in the Identification Requested section of the A. H. REVIEW, if possible.

The REVIEW is an excellent publication. Congratulations for a job well done.





This picture is from *Rider and Driver* magazine of uncertain date - either late 1902 or early 1903. The gentleman in the rear seat is C. A. Coey of Chicago, who built the Coey Electric car, 1900-1902, the Coey Flyer in 6 and 4 cylinder models, 1912-1918, and the C.A.C cyclecar, 1914-1917.

Obviously, this car is not a Coey Electric - but what is it?

1931 Project 12 was started as a "fill-in" job, and Porsche's crew of nine draftsmen worked on it as time permitted. By the end of the year, however, a now familiar pattern had emerged and consideration was given to finding an interested manufacturer. The car's general design and dimensions approximated those of the later VW, even to the location of the spare tire, though the engine planned for the car was a three-cylinder air-cooled radial one instead of the later four-cylinder opposed type.

1932 Dr. Fritz Neumeyer, head of the Zündapp motorcycle works at Nuremberg, became interested in the design and agreed to finance the building of three prototypes. These were equipped with five-cylinder water-cooled radial engines. However, by the end of the year Dr. Neumeyer found himself in no financial position to tool up for production and Zündapp dropped the project. Porsche was able to interest Herr von Falkenhayn, manager of N.S.U., in the small car, and was given a contract to build three new prototypes at the expense of N.S.U.

1933 By the end of January work on the prototypes was begun. The engine had been redesigned as a four-cylinder opposed air cooled type.

This was also the month (January 30) in which Adolph Hitler was elected chancellor, an event which was to have tremendous influence on Dr. Porsche's plans. In March he was asked to meet two of the directors of Auto-Union — then a new company — on urgent business. This turned out to be a meeting with Hitler, who agreed to give government backing to an Auto-Union racing project.

Meanwhile, progress on the N.S.U. prototypes continued. However, the managing director of Fiat produced an agreement made in 1930 that Fiat would establish a German factory at Heilbronn to build the N.S.U.-Fiat, while N.S.U. would build motorcycles exclusively. Now Porsche's efforts on behalf of the small car had resulted in six prototypes of two different designs, but no prospect of eventual production.

In the fall of 1933 Porsche was summoned again to Berlin for another meeting with Hitler. This time the chancellor said he was interested in the idea of a small car designed to be produced cheaply, but of good performance and economy, at a price the German worker could afford — 1000 marks or less (about $250 at the time). The name suggested was Volkswagen. Porsche, although stunned by the price limitation, gave much consideration to ways and means of reducing costs, and in September, 1933, started a new design based on the N.S.U. prototypes.

1934 A development proposal was submitted, dated January 17, 1934. After a series of meetings and much negotiation, on June 22, a contract was made establishing the Society of German Motor Manufacturers as sponsors of the project, and Porsche as the designer.

1935 Although designs were far from complete, Hitler, on February 14, at the opening of the 25th International Berlin Automobile and Motorcycle Show, made a speech announcing that the Volkswagen designs were nearing the prototype stage. This was the first time the name "Volkswagen" had been mentioned publicly.

1936 Porsche visited the United States, where he spent nearly a month visiting automobile plants and machine tool factories. He studied mass production methods and examined the latest types of machine tools. He returned to Germany with several notebooks full of ideas for cutting manufacturing costs.

On October 12 three Volkswagen prototypes were delivered to the Society of German Motor Manufacturers for testing. These cars were driven day and night for seventy days, mostly on ice and snow-covered roads. By the end of these tests all three had been driven 50,000 km (approximately 31,000 miles).

1937 Early in the year Hitler approved the construction of a factory. A new company was formed, its German name translating to "Company for the Development of the Volkswagen." Partners in this company were Dr. Porsche, Jakob Werlin (a director of Daimler-Benz) and a Dr. Bodo Lafferentz, an assistant to the Minister of Labor.

Thirty more prototypes were built at the Daimler-Benz plant. Two hundred stormtroopers were made available to drive these thirty cars day and night under regular service conditions for a total of one and a half million miles. Ferry Porsche, son of Dr. Porsche, supervised the testing and analyzed the test reports.

1938 The foundation stone of the VW factory at the newly-created town of Wolfsburg was laid. But the war clouds were gathering. Hitler's troops had marched into Austria eight weeks earlier. Two days later Hitler signed the order to prepare for the march into Czechoslavakia.

Also in 1938 Porsche was busy with the design of a car to establish a new land-speed record. This car was eventually built. It had a V-12 cylinder engine built by Daimler-Benz, a 44 litre affair of over 3000 maximum horsepower. The car weighed 4800 pounds and was 26 feet 4 inches long. The outbreak of World War II prevented the tests of this car, which now is in the Daimler-Benz Museum.

1939 Dr. Porsche received orders directly from A. Hitler to develop a military vehicle based on the VW. Because he had anticipated such an order, some of the preliminary design work was already done. Prototypes were built, and they were accepted by the War Department in December, 1939.

THE WAR YEARS

During World War II Dr. Porsche was kept busy with a torrent of orders from the War Department. An amphibious Volkswagen was developed, based on the military version, and a four-wheel drive model was also designed. Most of Porsche's work during the war was concerned with tanks, but this proved to be a frustrating experience. He was expected to follow closely the specifications given him. Included was the design of an enormous 180 ton tank. Because of its cumbersome size and tremendous weight, this was a flat failure. In September, 1944, Stuttgart became a major target for Allied air strikes. Porsche and his staff were evacuated to Gmünd in southern Austria.

THE POSTWAR YEARS

For several months after the war Dr. Porsche was held in an interrogation camp in Frankfort, then released in October, 1945. Then the French approached him on the matter of a small car design and invited him to Baden Baden. There he was imprisoned again, this time with no explanation. Eventually he was taken to Paris and asked to express his opinion on the design of a small water-cooled rear-engine car, a Renault. He was given no chance to work on it, but was taken to prison in Dijon where he remained for months and not released until a surety payment was made of 1,000,000 francs. When he was free to work again Dr. Porsche concentrated on Project 356 - a high performing two seater coupe. This was to become the "Porsche", and it was completed in time to be shown at the International Motor Show at Geneva in March 1949.

Dr. Porsche died on January 30, 1951.

FEY of Minnesota

by Stanley K. Yost

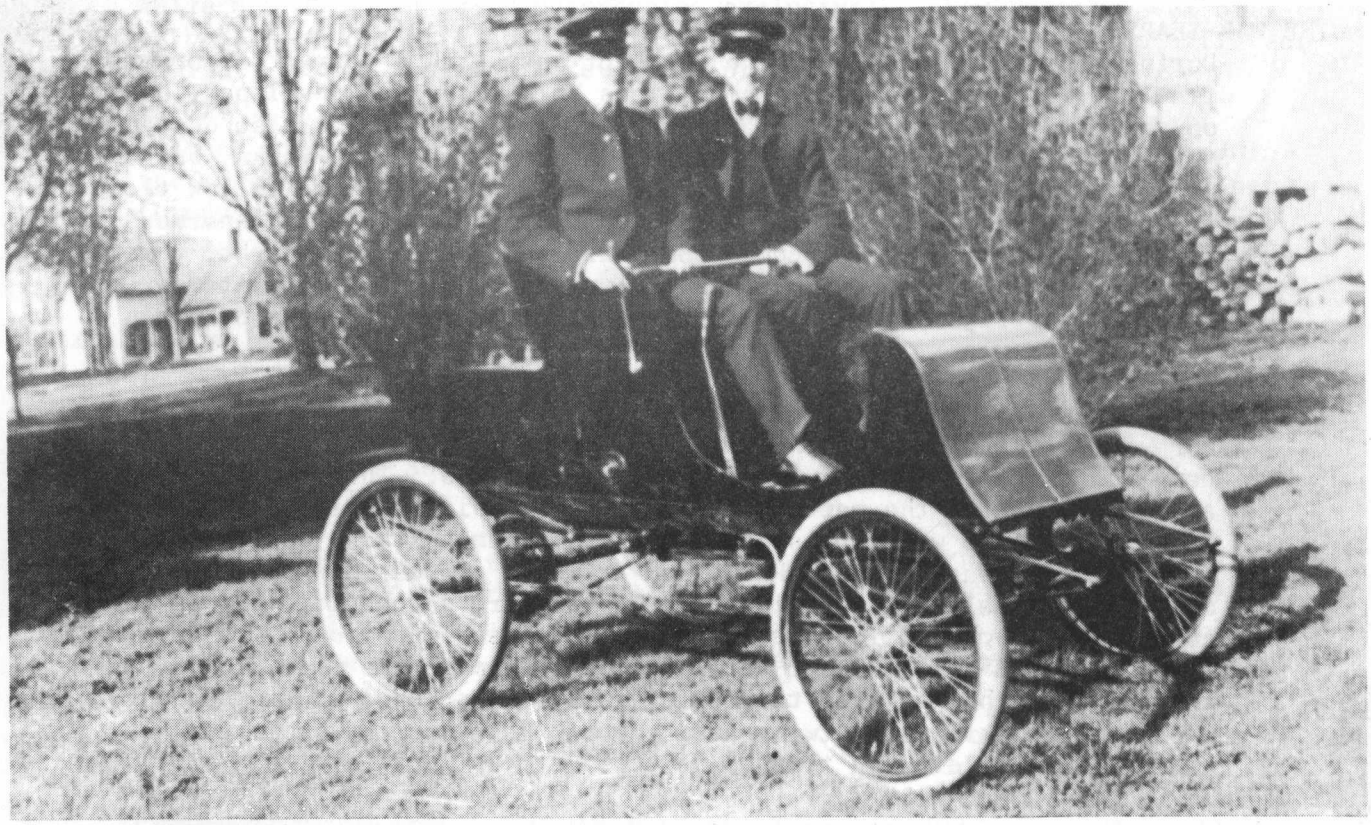
In the annals of auto history, or of any other history for that matter, we are lucky to have those items that remain unknown to most of us. Such is the Fey automobile of Northfield, Minnesota.

Northfield is not now a noted manufacturing center, and in the 1890's it was not a manufacturing center, either. Why, then, was this very advanced motor vehicle built in this small farming community? Well, I would imagine that the best answer would be that this is where the Fey family settled. Sometimes this is the only reason for things happening at the places they happen. Most inventions or innovations are merely the extended thoughts of people, and it doesn't really make a great deal of difference where they live. Such was the case of the Feys.

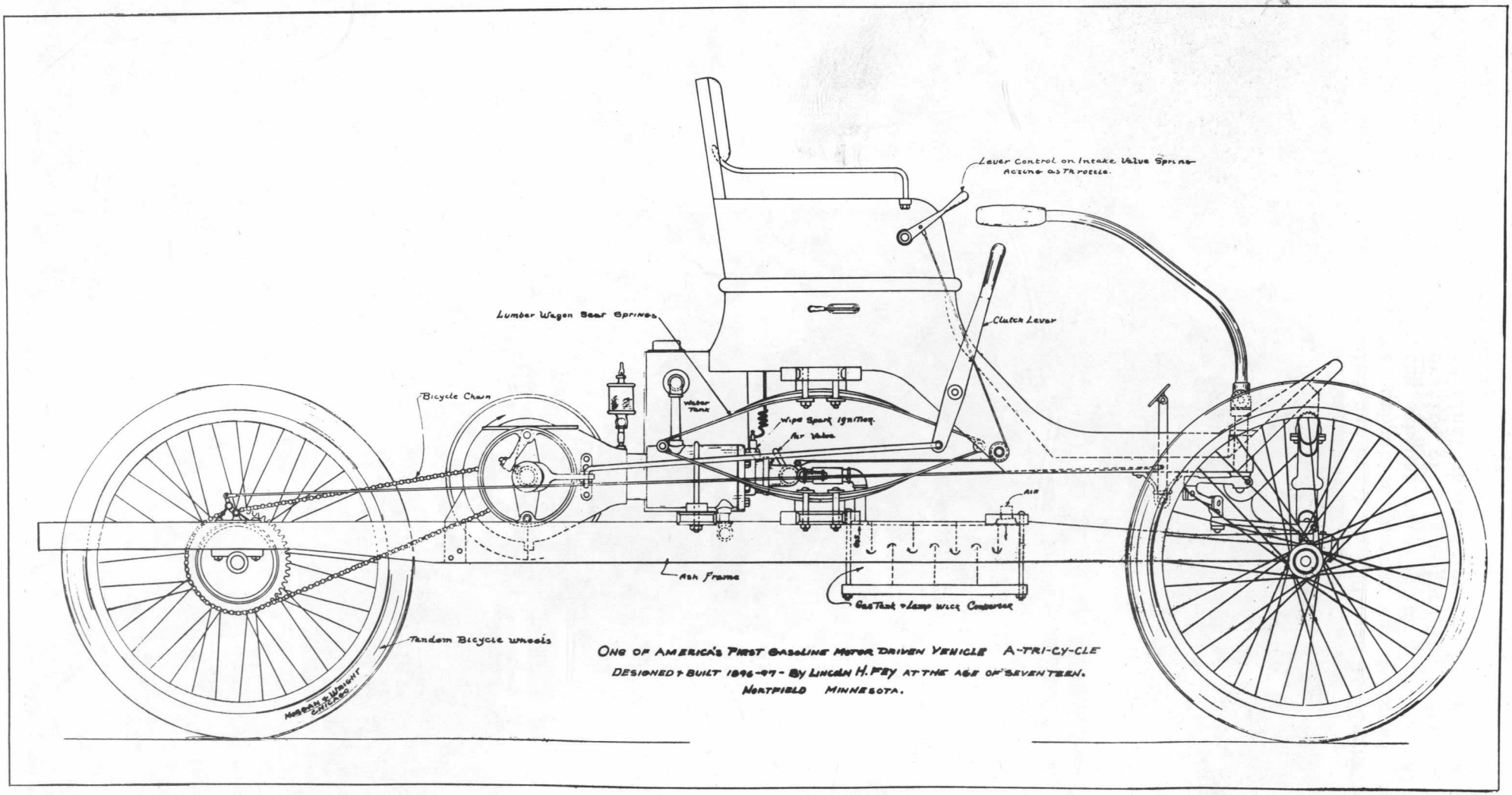
We can only guess the why of this vehicle, and it may be safe to guess that the great Thanksgiving Day race in Chicago had something to do with it. Lincoln Fey was the older of two brothers, and from year one was always tinkering with something. He was at the ripe old age of 15 years when the race was advertised in the newspapers in Minneapolis and St. Paul. Any and all comers were invited to send an entry. This would be the biggest race of the century and all participants would be riding in self-propelled vehicles. This would be the first real test for the new horseless carriages.

Lincoln Fey was not a stranger to these machines, for he had seen one the summer before up in Minneapolis at the fair grounds. But race day came and went without the lad being there. He thought all winter about the occasion and read all he could find, digesting each word and dreaming a bit to fill in the voids. The following spring he decided he had to build his own automobile, and proceeded to draw up plans. There is no record of how many sets he drew, but he finalized on the idea you see here.

He built a heavy ash frame and used the wheels from a couple of tandem bicycles that were unfortunate enough to be in the neighborhood. He decided upon a single rear wheel drive to solve the differential problem. Drive was by bicycle chain from a single-cylinder engine. The engine was a gasoline type, but for the Fey machine it ran on vapor. This was quite innovative, and one wonders just where the idea came from. Through 1896 and



Built in 1898. Single cylinder, bore $3^3/_4$"; stroke 4". Showing Frank and Lincoln Fey.



This is a photographic print of the Tri-cycle taken from a blue print. Note the gas tank. Evaporation of gasoline from lamp wicks furnished gas for the motor. This was accomplished by a series of partitions in the gas tank alternately open at each end. Lamp wicks were riveted on the partitions. Suction from the engine caused a flow of air past the wicks. The result: a rich mixture.

This is the four-cylinder air-cooled car built in 1904 and 1905. The motor had a $3\frac{3}{4}$ inch bore and a 4 inch stroke. The combustion chamber was designed so the incoming gas had to pass over the face of the exhaust valve which kept the valve cool and had much to do with the successful operation of this motor. The drive was thru a planetary transmission and bevel gear and final chain drive to the rear axle. Top speed of this car was about 35 miles per hour.

part of 1897 he worked very hard, and in the fall of '97 the tricycle was given its first trial run. With brother Frank running along side and the family hound sounding off as he ran, the spectacle must have been a bit disturbing to some of the older set. At any rate, Northfield was now famous as an automobile manufacturing center - at least so far as the Fey brothers were concerned.

It took the boys another year to solve the problem of the differential, and then in 1898 they shocked their neighbors again with another machine, this one with four wheels and a new engine of their own design and manufacture. It was a handsome vehicle, and could have competed with the finest at the Chicago fair. There is little to be found about this particular model, but supposedly three were built and sold to local farmers or merchants. It is known that this model is the one that decided the brothers to really go into the automobile business.

The money from the sale of the automobiles went into tools and some machinery. The boys hired some other local people to help in the wood working and upholstering. The new Fey automobile that came from this effort was shown in 1901. It was still a one-cylinder affair, but the engine was large with a bore and stroke of 5 x 6 inches. The car was quite large for its type, and it was available with or without a rear tonneau. There were a number of these cars built, but no records exist of how many. Similar models were made for the three-year period of 1901-1903. The makeup was about the same for all of them.

The most ambitious effort came in 1904. The earlier chassis was reworked to handle a new four-cylinder engine of the air-cooled variety. The unique feature of this engine was that the combustion chamber was so designed as to let the incoming gas mixture pass over the face of the exhaust valve to keep it cooled. A planetary transmission was used with a chain drive to the rear axle.

The car sold for $2000 in 1904 and 1905. That was the last year of production of the Fey automobile, as far as I've been able to find out. There is nothing in the national journals about the total effort, and nothing seems to have been printed locally after 1905. Maybe the boys were able to retire at 25 or 26 - who knows? I'd like to myself.

Built in 1901, this car is a one-cylinder job with five inch bore and six inch stroke. Transmission had individual clutches for three forward speeds and reverse. Top speed was around 20-25 miles per hour. Engine was approximately 8-10 horsepower. This was a rear-entrance tonneau model.

SOME SURVIVING PENNSYLVANIA AUTO PLANTS - Part 2

by Donald J. Summar

In Issue Number 27 of the Society of Automotive Historians Newsletter, on page 4, there appeared photographs of three surviving auto factory buildings in southeastern Pennsylvania. This article shows fourteen additional factories. All photographs were taken by the author in 1974 and 1975.

1. IMPERIAL MOTOR CAR COMPANY, 601 West Third Street, Williamsport. The Imperial runabout was manufactured here from 1907 to 1909. The building was put up by a predecessor company, the Williamsport Automobile Exchange. Since 1944 it has been occupied by Van Campen Motors, a Dodge dealership.

2. PHOENIX AUTO WORKS, 366-368 Bridge Street, Phoenixville. The Phoenix light truck was made in this building from 1908 to 1910. It would appear that the left side (#366) was at one time a triple garage. The building is currently occupied by the G. C. Meyer, Jr. Machine Shop and Manufacturing Works.

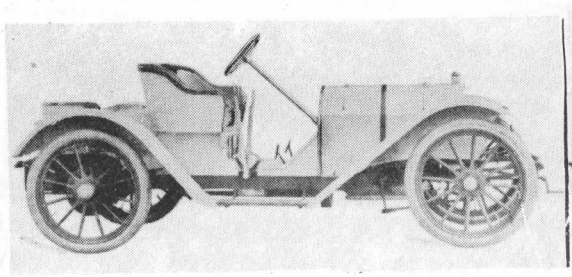
3. HART-KRAFT MOTOR COMPANY, northeast corner Duke and Hay Streets, York. This factory was built in 1907 by Hart-Kraft which manufactured trucks there until 1913. The building was sold at receiver's sale to the SPHINX MOTOR CAR COMPANY which assembled automobiles there from 1914 to 1916. For many years it has been a warehouse, and the building is currently occupied by the Trailer Bright Chemical Company.

4. B. C. K. MOTOR CAR COMPANY, northeast corner Franklin and Hay Streets, York. This building was constructed in 1909. It was used until late 1912 for manufacture of the Kline Kar by B.C.K. Company and its successor, the Kline Motor Car Corporation. The building appears vacant at the present time. Although less than ten blocks from the Hart-Kraft factory, there is no direct route between the two because of the Pennsylvania Railroad main line through York.

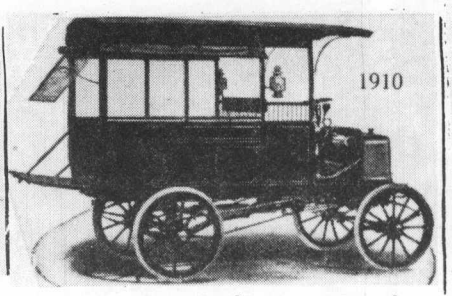
5. YORK CARRIAGE COMPANY, northwest corner Franklin and Hay Streets, York. During manufacture of the Kline-Kar in York, the Kline light truck and bodies for Kline-Kars were made in this building, which was owned by Samuel E. Baily (the "B" in B.C.K. Motor Car Company). It is probable that prior to 1909 some bodies for Pullman automobiles were made in this building. Like the former Kline plant, which can be seen beyond the York Carriage plant, this building appears vacant.

6. THOMAS WAGON COMPANY, North Water Street, Lititz. One Thomas 2-ton truck was made in this factory in 1908. Thomas wagons were manufactured from 1908 to 1910 in Lititz, but the truck failed for a lack of capital. The firm had previously built some trucks in Vernon, New York. The building, apparently last occupied by the Simplex Paper Company, is now vacant.

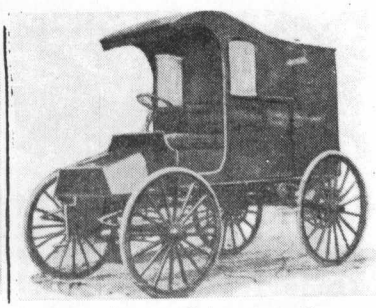
7. CHARLES SCHUTTE BODY COMPANY, 616 South West End Avenue, Lancaster. Schutte made custom automobile bodies in this building from 1920 to 1926. The plant was built about 1917 by the Sinclair Silk Company, and it has been occupied by the Henryson Umbrella Works since about 1938.



1907 Imperial Roadster



Hart-Kraft ½ ton truck



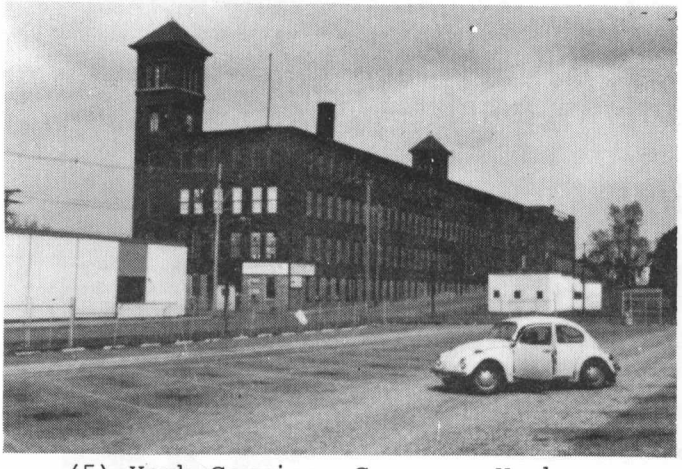
Phoenix Delivery Car, 1910

(1) Imperial Motor Car Co., Williamsport

(2) Phoenix Auto Works, Phoenixville

(3) Hart-Kraft Motor Company, York

(4) B. C. K. Motor Car Company, York



(5) York Carriage Company, York

(6) Thomas Wagon Company, Lititz

(7) Charles Schutte Body Co., Lancaster

8. BOSS KNITTING MACHINE WORKS, northeast corner Reed and Elm Streets, Reading. James Eck manufactured the Boss steamer in this building from 1901 to about 1906. Knitting machines were manufactured from 1896 until Eck retired after World War One. The building is currently occupied by the Barrett-Buchanan Company. Across the railroad tracks (to the right) and one block away is the site of the Reber-Acme-S.G.V. plant, now occupied by a new wing of Luden's candy factory.

9. BUGGYAUTS - CHARLES E. DURYEA, 32 Carpenter Street, Reading. Duryea assembled the Buggyaut air-cooled high-wheeler in this building from 1908 to 1911. Now vacant, the building is in the downtown urban renewal area and may soon be torn down. No trace of the former Duryea Power Company - Middleby Auto Company plant at River Road and Elm Street has survived.

10. AMERICAN DIE & TOOL COMPANY, northeast corner Buttonwood and Second Streets, Reading. This firm built transmissions and other parts for S.G.V., Daniels, and other firms. In 1912 American turned out three of the "Lengle-Dundore" two-cylinder delivery cars but did not go into production. The building is now occupied by a furniture factory.

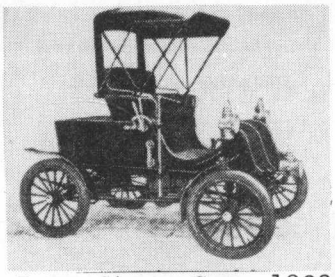
11. SCHWARTZ MOTOR TRUCK CORPORATION, 522 Chestnut Street, Reading. H.B. Schwartz built this structure (the one with the words "Auto Parts" on front) in 1912 and ran a Maxwell agency in it. Schwartz made trucks in the building from 1918 to 1921 and then moved to a new factory at Grace and Noble Streets. The building is now occupied by Car Parts, Inc.

12. RALEIGH MOTORS, INC., 426 North Second Street, Reading. Raleigh assembled automobiles in this building for about six months during the year 1922. The taller building just beyond it (at 430 North Second) does not appear to be connected in any way. The Raleigh plant is currently occupied by an electrical contractor.

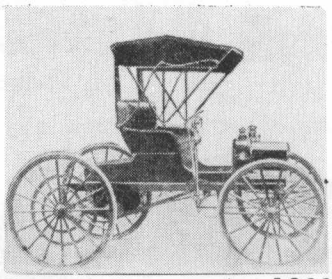
13. DANIELS MOTOR CAR COMPANY, 545 North Third Street, Reading. This building, formerly Mt. Penn Stove Works, was occupied by Daniels from 1915 to 1920. There is a machine shop behind the four story main building. The first two floors are currently occupied by the B.O.R. Corporation, a wholesale Philco distributor while the upper two floors are occupied by factory outlet stores.

14. DANIELS MOTOR CAR COMPANY. A rear view of the Daniels factory, looking from Fourth Street. The peak-roof building was the machine shop for Daniels.

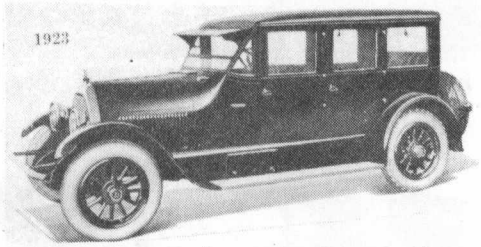
15. DANIELS MOTOR COMPANY, 500 North Third Street, Reading. After reorganization in 1920, Daniels moved across Third Street into this building. It was formerly the Keystone Vehicle Works, which made bodies for Daniels prior to 1920. Just why the move was made is not known. The building is currently occupied by Robert Emid Products, a wholesale distributor.



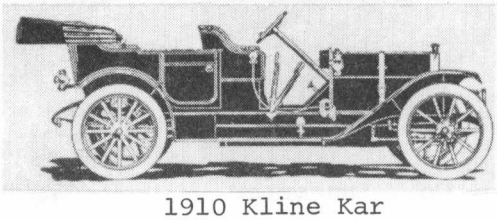
Boss Steam Car, 1903



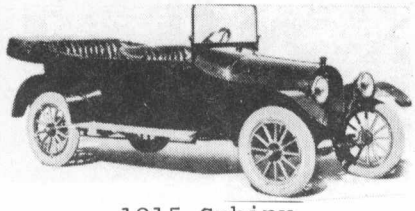
Duryea Buggyaut, 1909



1923 Daniels Touring Sedan



1910 Kline Kar



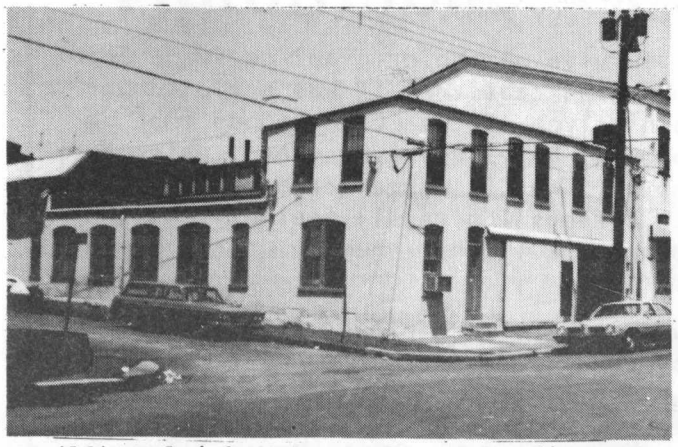
1915 Sphinx

(8) Boss Knitting Machine Works, Reading

(9) C. E. Duryea, Buggyaut, Reading

(10) American Die & Tool Co., Reading

(11) Schwartz Motor Truck Corp., Reading



(12) Raleigh Motors, Inc., Reading

(13) Daniels Motor Car Company, Reading

(14) Rear view of Daniels plant (No. 13)

(15) Daniels moved to this plant, 1920.

The DORMANDY - Made in a Shirt Factory!

by Keith Marvin

Although one would have to stretch a point to admit that the Dormandy automobile was manufactured, at least four of them were actually made and on the road at one time. Also, unless I am really out of line, I'd say the Dormandy was the only motor car that was ever built in a shirt factory.

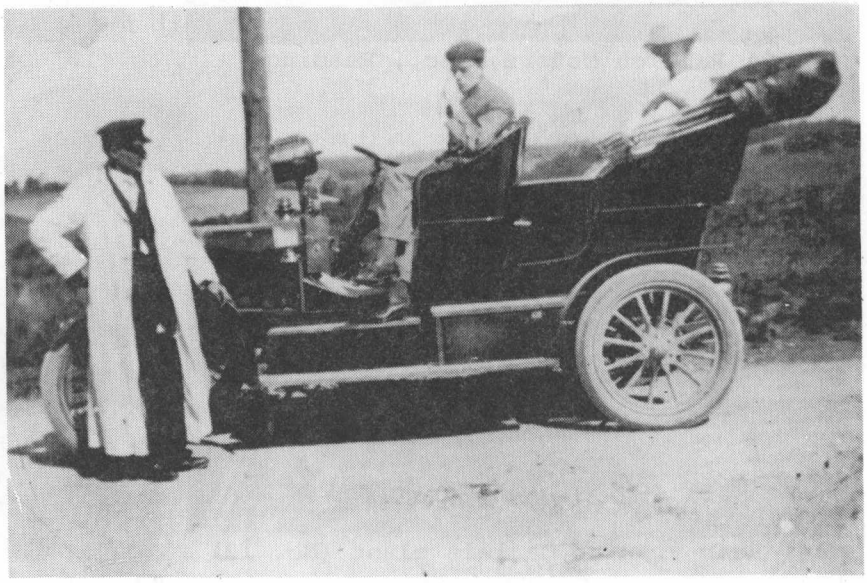
In 1903, no less than 21 shirt, cuff and collar factories dominated the upstate New York Industrial community of Troy. One of these was the United Shirt and Collar Company. President of this concern was the late James Knox Polk Pine; chief engineer and machinist was one Gary Dormandy. A friend of both men and guiding light of the Troy Carriage Works was Myron D. Adams, who had been first to own a horseless carriage in the village of Lansingburgh, which bordered Troy to the north and which, in 1900, was incorporated as an integral part of the Collar City.

Mr. Adams was probably the first person in New York State to hold what might be considered a driver's license, having received a letter from Mayor Francis J. Malloy of Troy on September 6, 1899, allowing him to "operate a horseless carriage upon the streets of Troy, N. Y., at a speed not to exceed six miles per hour", but that's another story.

Somewhere along the line Mr. Pine became enamored with the idea of owning an automobile, although he didn't have much of an idea as to the sort of car he wanted. He thereupon consulted Mr. Adams, who told him that of all the best cars then running on the streets and turnpikes, none were better than those which were made to order. He suggested that he and Mr. Dormandy set to work to construct an automobile for Mr. Pine, and work was begun at two sites: in the shirt factory and in the buggy shop.

It is unfortunate that no pictures survive of the original car made for Mr. Pine, nor do we know very much about it except that it was a closed car (a great curiosity then) and double-chain driven. It was understood that a four-cylinder air-cooled engine was employed, but I've never been able to determine the manufacturer of this motor. That it was a large car for the time I have no doubt, having talked with persons who recall seeing it on the streets of Troy. And for many years I owned the leather number plate which adorned its rear axle.

The car was a success, and subsequent orders were placed for two open models for Mr. Pine's sons, the late Charles L. and Warren A. Pine. Both



GARY DORMANDY, designer and builder of the Dormandy automobile of Troy, New York, (1903-1905) stands beside the last of the four passenger cars which bore his name. The car, which sported a Frayer-Miller air-cooled four-cylinder engine, survived for many years and gave excellent service to the Dormandy family. Picture was taken about 1907. Mrs. Dormandy is seated in the tonneau, and their son, Charles, is shown in the front.

cars were completed in 1904 and differed only from the first one by their open coachwork and the fact that the chain-drive mechanism, open in the large red closed car, were now shrouded. Again, the air-cooled motors were used.

All three of the cars bore the name "Dormandy".

In 1905 Mr. Dormandy decided to build one for himself. This car was similar to the two 1904 tourers built for the Pine brothers, but differed from them in the use of a Frayer-Miller air-cooled engine. Although we know the two 1904 cars did not use this power plant, we know that Dormandy's did. Also, someone brought his Kodak into focus once and took a picture of the last of the four Dormandys, which is included here.

Mr. Pine died in September, 1919, at the age of 78. Mr. Dormandy passed away in 1943 and Mr. Adams a few years later. As to the cars, they have all, presumably, many, many years ago passed on to that large parking lot in the sky where eventually all cars and the memories of them rest forever.

The editor has

A QUESTION

The advertisement of the U. S. Long Distance Automobile Co., reproduced on this page, was published in the August, 1901, issue of *The Automobile Magazine*. The claims made in this ad, especially "150 Miles on One Charge", strongly suggest that at least one model of this early make may have been an electric car, but the relatively few references I have do not indicate that such a car was ever part of the company's line of products.

The U.S. Long Distance was made from 1900 to 1904 (ref.: Duryea's 1909 compilation in *MoToR* magazine). Early models were powered by a one-cylinder 7 hp gasoline engine, and a two-cylinder model was added later. But if there had been a 150 mile per charge electric somewhere in the company's earliest history, perhaps that could have been the basis of the words "Long Distance" in the firm's name.

Your comments, and references to confirm or refute the existence of an electric car in the early history of this make will be welcome.

Richard B. Brigham

A DICTIONARY OF 100 USEFUL WORDS FOR THE MOTORIST

Prepared by Technical Experts of all Six Countries

ENGLISH	FRENCH	GERMAN	ITALIAN	SPANISH	NORWEGIAN	SWEDISH	ENGLISH
Accumulator	Accumulateur	Akkumulator	Accumulatore	Acumulador	Akkumulator	Ackumulator	Accumulator
Anti-freeze	Antigel	Frostschutz	Anti-congelante	Anti-Congelante	Frostfri	Kylvätska	Anti-freeze
Axle	Essieu	Achse	Asse	Eje	Aksel	Axel	Axle
Axle, back	E. arrière	Hinter A.	A. posteriore	Eje Trasero	Bakaksel	Bakaxel	Axle, back
Axle, front	E. avant	Vorder A.	A. anteriore	Eje Delantero	Foraksel	Framaxel	Axle, front
Ball and socket	Joint à rotule	Universal-Gelenk	Giunto a snudo	Articulación de bola	Kuleledd	Ledkula och skal	Ball and socket
Bearing	Coussinet	Lagerschale	Cuscinetto	Cojinete	Lager	Lager	Bearing
Bearing, ball	Roulement à billes	Kugellager	C. a sfere	Cojinete a Rodillo	Kulelager	Kullager	Bearing, ball
Bearing, to run out	Couler une bille	Lager läuft aus	C. si fonde	Cojinete desgastar	Kast i lager	Att smälta ut ett lager	Bearing, to run out
Belt	Courroie	Riemen	Cinghia	Correa	Rem	Rem	Belt
Big-end	Tête de bielle	Pleuelstangenkopf	Testa di biella	Cabecera de Cigüeñal	Veivlager	Storända	Big-end
Bodywork	Carosserie	Karosserie	Carrozzeria	Carrocería	Karosseri	Karosseri	Bodywork
Bolt	Boulon	Bolzen	Bullone	Bulon	Bolt	Bult	Bolt
Bonnet (car)	Caput	Motorhaube	Cofano	Capota	Panser	Motorhuv	Bonnet (car)
Bore (engine)	Alesage	Bohrung	Alesaggio	Calibre	Boring	Borrning	Bore (engine)
Bracket	Support	Stutze	Appoggio	Soporte	Holder	Stöd	Bracket
Brake	Frein	Bremse	Freno	Freno	Bremse	Broms	Brake
Brake, drum	Tambour de f.	Bremstrommel	Tamburo del f.	Tambor del f.	B. Trommel	Bromstrumma	Brake, drum
Brake, lever	Levier de f.	Bremchebel	Leva del f.	Palanca del f.	B. Arm	Bromsspak	Brake, lever
Brake, pedal	Pedale de f.	Bremspedal	Pedale del f.	Pedal del f.	B. Pedal	Bromsspedal	Brake, pedal
Brake, rod	Tige de f.	Bremsstange	Asticella del f.	Varilla del f.	B. Stag	Bromstang	Brake, rod
Brake, shoe	Sabot de f.	Bremsbacke	Pattino del f.	Zapata del f.	B. Sko	Bromsback	Brake, shoe
Brake, to adjust	Ajuster le f.	B. einstellen	Regolare il f.	Ajustar los frenos	B. Justering	Justera broms	Brake, to adjust
Breakdown	Panne	Panne	Panna	Descompostura	Sammenbrudd	Missöde	Breakdown
Broken	Cassé	Gebrochen	Rotto	Roto	Istykker	Bruten	Broken
Brush (carbon)	Charbon collecteur	Kohlenbürste	Spaggola	Cepillo	Kulbørste	Kolborste	Brush (carbon)
Bulb (lamp)	Ampoule	Glühbirne	Lampadina	Lampara	Lyspaere	Glödlampa	Bulb (lamp)
Bumper	Pare choc	Stosstange	Paracolpo	Paragolpes	Støtfanger	Stötdämpare	Bumper
Burst (tyre)	Eclatement	Reinpanne	Fenditura	Reventón	Briste, Ryke	Punktering	Burst (tyre)
Bush (of a bearing)	Manchon	Hülse	Bussola da cuscinetti	Buje del Cojinete	Bøssing	Lagerbussning	Bush (of a bearing)
Camshaft	Arbre à cames	Nockenwelle	Albero a camme	Cigüeña	Kamaksel	Kamaxel	Camshaft
Carburetter	Carburateur	Vergaser	Carburatore	Carburador	Forgasser	Förgassare	Carburetter
Carburetter, float	Flotteur de c.	V.-schwimmer	Galleggiante del c.	Flotante del C.	F. Flottør	Flottör	Carburetter, float
Carburetter, jet	Gicleur de c.	V.-duse	Iniettore del c.	Aguja del C.	F. Spreder	Frögasarmunstycke	Carburetter, jet
Caseharden	Trempe de la surface	Einsatzhartung	Tempera a sartoccio	Endurecer	Overflateherde	Sätthärda	Caseharden
Chain	Chaine	Kette	Catena	Cadena	Kjede	Kedja	Chain
Clearance	Espace libre	Bodenfreiheit	Altezza libera	Espacio libre	Klaring	Spelrum	Clearance
Clutch	Embrayage	Kupplung	Frizione	Embrague	Kopling	Koppling	Clutch
Clutch, slip	Patinage de l'e.	K. schleift	Slittare di f.	Patinaje de e.	K. Slipp	Clutch-efter släpnin	Clutch, slip
Coil	Bobine	Spule	Bobina	Bobina	Spole	Spole	Coil
Compression	Compression	Verdichtung	Compressione	Compresión	Kompresjon	Tryck	Compression
Condenser	Condensateur	Kondensator	Condensatore	Condensador	Kondensator	Kondensator	Condenser
Contact	Contact	Kontakt	Contatto	Contacto	Kontakt	Kontakt	Contact
Contact breaker	Interrupteur de c.	Unterbrecherfeder	Molla dell' interruttore	Interruptor de c.	K. Bryter	Kontaktbrytare	Contact breaker
Crack	Cassure	Bruch	Rottura	Rajadura	Sprekke	Spricka	Crack
Crankshaft	Vilebréquin	Kurbelwelle	Asse a gomito	Cigüeñal	Veivaksel	Vevaxel	Crankshaft
Crossmember	Traverse	Verstrebung	Traversa	Travesano	Tverrbjelke (Rammen)	Tvärbalk	Crossmember
Current	Courant	Strom	Corrente	Corriente	Strøm	Ström	Current
Cylinder	Cylindre	Zylinder	Cilindro	Cilindro	Sylinder	Cylinder	Cylinder
Cylinder head	Culasse	Z.-kopf	Testa del c..	Cabeza de c.	Topplokk	Cylinderlock	Cylinder head
Differential pinion	Pignon de differentiel	Kegelrad	Braccio del differenziale	Piñon de diferencial	Differensial Drev	Differentialdrev	Differential pinion
Drain, to	Vidanger	Ablassen	Asciugare	Desaguar	Tømme	Tömma	Drain, to
Exhaust (of car)	Echappement	Auspuff	Scappamento	Escape	Utblaasing	Avgas	Exhaust (of car)
Fan (of car)	Ventilateur	Ventilator	Ventilatore	Ventilador	Vifte	Fläkt	Fan (of car)
Fibre	Fibre	Fiber	Fibra	Fribra	Fiber	Fiber	Fibre
Fill up, to	Remplir	Tanken	Riempire	Llenar	Fylle (Bensin)	Fylla	Fill up, to
Filter	Filtre	Filter	Filtro	Filtro	Filter	Filter	Filter
Flywheel	Volant	Schwungrad	Volano	Volante	Svinghjul	Svänghjul	Flywheel
Free (to) from grease	Dégraisser	Entfetten	Disgrassare	Librar de grasa	Fjaerne Fett	Rensa fran fett	Free (to) from grease
Funnel	Entonnoir	Trichter	Imbuto	Embudo	Trakt	Tratt	Funnel
Fuse, electric	Fusible	Sicherung	Valvola di sicurezza	Fusible	Sikring	Säkring	Fuse, electric
Gasket	Joint	Dichtung	Guarnizione	Guarnición	Pakkning	Packning	Gasket
Gauge	Indicateur	Anzeiger	Indicatore	Medidor	Maaler	Kaliber	Gauge
Gearbox	Boîte de vitesses	Getriebekasten	Scatola d'ingranaggio	Caja de Velocidades	Drevkasse, Gearboks	Växellada	Gearbox
Gearlever	Levier de v.	Schalthebel	Carter d'i.	Palanca de v.	Gearstang	Växelspak	Gearlever
Grease, to	Graisser	Einfetten	Ingrassare	Engrasar	Smøre	Smörja	Grease, to
Gudgeon pin	Axe de piston	Kolbenbolzen	Spinotto	Perno de muñon	Stempelbolt	Kolvbult	Gudgeon pin
Harden, to	Durcir	Härten	Indurira	Endurecer	Herde	Härda	Harden, to
Horn (of car)	Avertisseur	Horn	Corno	Bocina	Horn	Signalhorn	Horn (of car)
Hub	Moyeu	Nabe	Mozzo	Centros de rueda	Nav	Nav	Hub
Ignition	Allumage	Zündung	Accensione	Encendido	Tenning	Tändning	Ignition
Inner tube	Chambre à air	Luftschlauch	Camera d'aria	Camara de aire	Slange (Bilring)	Innerslang	Inner tube
Jack (of car)	Cric	Wagenheber	Cricco	Crique	Jekk	Domkraft	Jack (of car)
Lamp, head	Phare	Scheinwerfer	Faro	Faro	Lyskaster	Stralkastare	Lamp, head
Lamp, side	Lanterne	Seitenlampe	Laterale	F. lateral	Sidelys	Parkeringslampa	Lamp, side
Lamp, tail	Lanterne arrière	Schlusslicht	Fanalino posteriore	F. de cola	Baklys	Nummerlykta	Lamp, tail
Misfire	Raté d'allumage	Fehlzündung	Guasto d'accensione	Falla	Feiltenning	Feltändning	Misfire
Nut	Ecrou	Mutter	Dado	Tuerca	Mutter	Mutter	Nut
Oil	Huile	Oel	Olio	Aceite	Olje	Olja	Oil
Out of order	Déréglé	Arbeitet nicht	Fuori servizio	Descompuesto	I ustand	Arbetar icke	Out of order
Petrol tank	Reservoir d'essence	Benzinbehalter	Serbatoio della Benzina	Tanque para Nafta	Bensin Tank	Bensintank	Petrol tank
Piston	Piston	Kolben	Pistone	Piston	Stempel	Kolv	Piston
Plug, sparking	Bougie	Zündkerze	Candela	Bujia	Tennplugg	Tändstift	Plug, sparking
Pressure gauge	Manomètre de pression	Manometer	Manometro	Manometro	Trykkmaaler	Manometer	Pressure gauge
Propeller shaft	Arbre de transmission	Antriebswelle	Propulsore	Eje de helice	Kardanaksel	Kardanaxel	Propeller shaft
Puncture	Crevaison de pneu	Panne	Scoppio di pneumatico	Pinchadura	Punktering	Punktering	Puncture
Radiator	Radiateur	Kühler	Radiatore	Radiador	Radiator	Kylare	Radiator
Recharge, to	Recharger	Aufladen	Ricaricare	Cargar nuevamente	Lade Opp Igjen	Ladda	Recharge, to
Reverse	Marche arrière	Rückwärtsgang	Retro-marcia	Marcha-atras	Reversere, Rygge	Backa	Reverse
Shock absorber	Amortisseur	Stossdämpfer	Amorzatore	Amortiguador	Støtdemper	Stötdämpare	Shock absorber
Starter, self	Démarreur	Anlasser	Starter	Arranque	Starter	Självstart	Starter, self
Steering	Direction	Steuerung	Direzione	Dirección	Styring	Styrning	Steering
Stroke, engine	Course de piston	Hub	Colpo	Carrera	Slaglengde	Slag	Stroke, engine
Tappet	Culbuteur	Stossel	Punteria	Aleta	Ventilløfter	Ventillyftare	Tappet
Tyre, to fit	Monter le pneu	Reifen aufziehen	Montare i pneumatico	Colocar un neumático	Passetting av dekket	Att sätta pa en ring	Tyre, to fit
Valve	Valve soupape	Ventil	Valvola	Válvula	Ventil	Ventil	Valve
Wheel	Roue	Rad	Ruota	Rueda	Hjul	Hjul	Wheel
Windscreen	Pare-brise	Windschutzscheibe	Cristallo parabrise	Parabrisas	Frontglass	Vindruta	Windscreen
Wing (of car)	Aile	Kotflügel	Ala	Ala	Skjerm	Flygel	Wing (of car)

This "Dictionary" appeared in one of the older - unidentified - English magazines. Material contributed by Harry Pulfer.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SIX
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Why Our Price Is So Much Less
We are the largest automobile manufacturer in the world producing Sixes.
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