THIS HISTORICAL REVIEW OF TRANSPORTATION REPRESENTS AN EXPERIMENTAL BOOKLET OF ILLUSTRATIONS AND SINGLE TEXT FOR USE BY TEACHERS TO STIMULATE INTEREST IN READING AND IN RELATED MECHANICAL SUBJECT MATTER AREAS. IT AIMS TO HELP YOUNG PEOPLE LEARN BASIC PRINCIPLES AND CONCEPTS OF MECHANICS AND TECHNOLOGY. PHOTOGRAPHS AND ILLUSTRATIONS, SELECTED FROM THE 1900 TO 1910 ISSUES OF THE "SCIENTIFIC AMERICAN," SHOW AIRPLANES, TRAINS, AUTOMOBILES, SHIPS, BALLOONS, DIRIGIBLES, HELICOPTERS, RIFLES, BULLETS, AND FIRE ENGINES OF THAT PERIOD. ADVERTISEMENTS FOR AUTOMOBILES ARE ALSO GIVEN. THE SIZE OF THE BOOKLET IS 11 INCHES X 17 INCHES. RELATED DOCUMENTS ARE VT 604 454 THROUGH VT 604 471. (EM)
TRANSPORTATION

LONG AGO

- AIRPLANES
- TRAINS
- AUTOMOBILES
- SHIPS
- BALLOONS
TRANSPORTATION
LONG AGO

- AIRPLANES
- TRAINS
- AUTOMOBILES
- SHIPS
- BALLOONS

THE GEORGE WASHINGTON UNIVERSITY
EDUCATION RESEARCH PROJECT
WASHINGTON, D.C. 20006
1965
The first airplanes looked like this.
This is a picture taken 60 years ago.
It shows one of the flights by the Wright brothers.
This plane flew at a speed of 45 miles per hour. It was one of the first to carry two men. It had a 30 horsepower motor.
In 1912 an automobile raced an airplane.
The plane won.
The race took place at Galveston, Texas.
BALLOONS
Balloons were also used in races.

In 1906 sixteen balloons raced in Europe.

The winner went 395 miles in 22 hours and 28 minutes.
Airships were filled with gas like balloons. They also had motors. These airships were used in World War I.
HELICOPTER

Full-sized Model of a Helicopter Built for Experimental Purposes.
This shows an old helicopter.
The blades turned in opposite directions.
Helicopters fly straight up.
The drawing in the center is the Wright Biplane in 1910.

A biplane has two wings.

The other planes are monoplanes.

A monoplane has one wing.
BIPLANE

The Farman 50 horse-power biplane.

The Curtiss Biplane
The Curtiss Biplane - 1910.

The motor for this plane had 8 cylinders.

It also had 50 horsepower.

Compare it with the other biplanes.
AIRPLANES

Fig. 1.—This designer was haunted by the fear of edgewise tumbling. He did not know that drums are inefficient lifting surfaces.

Fig. 2.—Marquis's idea of applying the principle of centrifugal force. Too much head resistance here.

Fig. 3.—If two planes are better than one, three must be better than two, argued this designer, taking no account of the head resistance.
is designer was haunted by the fear of edgewise tumbling. He did not know that drums are inefficient lifting surfaces.

If two planes are better than one, three must be better than two, argued this designer, taking no account of the head resistance.

This shows some funny looking planes in 1911. None of these could really fly. They couldn't even get off the ground.
Experimental propellers

A 4 bladed propeller

This propeller had steel arms and wooden blades.

This propeller turned at 1400 r.p.m.
This propeller had steel arms and wooden blades.

A 4 bladed propeller

This propeller turned at 1400 r.p.m.

A radial motor

The double propellers of the Wright Biplane
This propeller had steel arms and wooden blades.

Another 4 bladed propeller

This propeller turned at 1400 r.p.m.
PILOTS

Some Famous American Aviators and Designers

Men Who Are Making Flying Machine History

Charles K. Hamilton, America's most daring biplane operator.

Thomas Scott Baldwin, an old airship captain now an aviator.

Charles A. Willard, first pilot of the Aeronautical Society.

"Bud" Mars, the man who has made many ears.

Wilbur Wright, the elder of the two brothers who built the first practical aeroplane.

J. Armstrong Drexel, American millionaire-Bleriot pilot, noted for his altitude flights.

J. A. D. McCurdy, the Canadian Curtiss pilot, who flew from Key West almost to Havana.

Walter Brookins Wright. He spired.
Charles K. Hamilton, America's most daring biplane operator.

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"Bud" Mars, the Curtiss pilot, has made many cross-country flights.

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J. A. D. McCurdy, the Canadian Curtiss pilot, who flew from Key West almost to Havana.

Walter Brookins and his Wright. He invented the spiral dive.

Glenn H. Curtiss, winner of the Scientific American trophy. First to rise from water in a biplane.

Earle L. Ovington, the first American to own and fly a 70-horse-power Bleriot monoplane.

Frank Cotton, the Wright pilot and instructor. He has made noteworthy cross-country flights.

Clifford R. Harmon, our teur aviator, who flew Island Sour.
PILOTS

Some Famous European Aviators and Designers

Men Who Are Making Flying Machine History

Alfred Leblanc, France's chief representative in the Bennett Cup race.

Claude Grahame-White, England's leading aviator. He won the last Bennett Cup race.

Legagneux, the all-round French aviator, who has made records with both monoplanes and biplanes.

Vedrines, the Frenchman who won a $4,000 flight from Paris.

Wesman, the American, who last summer all but won the $20,000 prize captured this year by Renaux.

Louis Blériot, France's premier monoplane inventor; first to cross the English Channel, July 25th, 1909.

Pierre Prier, the Frenchman who flew from London to Paris without a stop at over 60 miles per hour.

Morane, the Frenchman who has invented and built...
Alfred Leblanc, France's chief representative in the Bennett Cup race.

Weyman, the American, who last summer all but won the $20,000 prize captured this year by Renaux.

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Eugène Renaux, who won the $20,000 Michelin prize. He flew from Paris to the top of the Puy de Dome mountain with a passenger.

Louis Bréguet, leading French inventor and aviator. First to carry a load equaling weight of machine (11 passengers).

Pierre Prier, the Frenchman who flew from London to Paris without a stop at over 60 miles per hour.

Morane, the former Blériot has invented an extremely and efficient monoplane.

Vedrines, the Morane monoplane who won a $4,000 prize by his flight from Paris to Pau in 6.

Pierre Marie Bournique, France's chief representative in the Bennett Cup race.

Robert Esnault-Pelterie, inventor and designer of R.E.P. monoplane. He is one of the best aviation engineers of the day.

Claude Grahame-White, England's leading aviator. He won the last Bennett Cup race.
An aerial fleet in 1911

Taken enthusiasts believe that the money put into battleships would be better spent in creating fleets of airships. Both will be required—battleships for the warfare of the seas; aeroplanes and dirigibles for the battles of the air.
How bombs were dropped in 1911

See how small the bombs were.
The bombs were aimed by a bomb sight.
The bomb sight had a telescope.
These were American planes in 1917.
They were used in World War I.
Some of them were used by the Allies
before the U.S. entered the war.
AIRPLANES

RUMPLER

HALBERSTADT D

ALBATROS D.E.

L.V.G.

GOtha
These were German airplanes in 1917.
This was during World War I.
Some of these planes had 200 horsepower motors.
Some of them carried six bombs and 2 guns.
RIFLES

The Rifles of European Fighters

They have a range of 4,200 to 5,200 yards. But that is not their chief virtue. They shoot to their sharp-pointed bullets, and flatness of trajectory counts for more than range.

Varied indeed are the rifles used by the warring nations. Germany's Mauser is the best, with the 175-grain bullet and initial velocity of 2,000 feet per second. The British use their rifles and ammunition which renders uniform shooting difficult and exposes the troops. The old smoothbore musket of our Civil War had a percussion lock, a bore of 0.50 to 0.58 and used bullets that weighed from 450 to 500 grains. Its range was limited and it was very uncertain in its accuracy. The modern military rifle has a bore of about 0.30 and shoots a bullet of about 215 grains. Its effective range is considerably over 1,000 yards, and up to that distance it is wonderfully accurate.

The French use a rifle, the Lebel, that looks like the M1 in department and army sale stores. The Russian Mauser, with ammunition of the old blunt nose bullet weighs less than one third of the old musket, and means that a soldier can now carry a much greater number of rounds of an necessary as uses ammunition. The old gun from that at a time, he inserts half a time, a man loads the barrel.

The Martini single shot, many of which are the British service hands of the guards and even in the trenches. It was abandoned in 1890, but passed

American Springfield a modified Mauser for which we pay $15 royalty.

Top view Canadian Ross with telescopic sight

How the bolt of a rifle is kept from blowing out under a pressure of 50,000 pounds to the square inch. United States Springfield with solid lugs: Ross with screw lugs. These lugs engage recesses in the receiver of the rifle.

Muzzle open, with clip of cartridges ready to be pressed into magazine. Shells are stripped out of the clip.

Sight and mechanism of the new American Springfield made in our arsenals.
The percussion lock, a hop of 270 grains, and 75- to 150-grain bullets that weighed from 100 to 150 grains. Its range was limited and it was very much bulk in its accuracy. The modern military rifle has a hop of about 270 grains. Its effective range is considerably over 1,000 yards and up to that distance it is wonderfully accurate.

It was inferior in the breech-loading type. The old soldier loaded his gun from the muzzle one shot at a time. The modern system inserts half a dozen cartridges at a time, and simple mechanism loads the charges into the barrel.

The Martini single-shot rifle, one of which are now in the British service, in the hand of the guards at home and even in the trenches. It was a howf used in 1850, but passed into service about the present penny above.

The Mauser open, with clip of cartridges ready to be pressed into magazine. Shells are stripped out of the clip.

Bolt and mechanism of the new American Springfield, made in our arsenal.

German telescope on sporting Mauser (Kels-optical system).

Four types of propellant smokeless powders.

Flaked from French cartridge.
The Rifles of European Fighters

The rifles used by the warring nations are: Germany's Mauser with the 17.2-grain bullet and initial velocity of 1,750 feet per second, the British Lee-Enfield and ammunition, with uniform sights and barrels, and the old smoothbore musket of our Civil War had a bore of 0.50 to 0.52 inches, with a 350-grain bullet. Its range was 1,200 yards. The modern rifle has a bore of about 0.30 inches, with a bullet of about 120 grains. The effective range is 1,000 yards, but at distance it is wound.

The French use a rifle, the Lebel, that looks like the old musket, but has a bore of 0.35 inches and a 5.5-grain bullet. The Russian Mauser, with ammunition of the old blunt nose type. The modern bullet weighs less than one third of the old musket bullet, which means that a soldier can now carry a much larger number of rounds of ammunition. This is necessary as the repeating rifle uses ammunition so much faster. The old soldier loaded his gun from the muzzle one shot at a time. The modern soldier inserts half a dozen cartridges at a time, and simple mechanism loads the charges into the barrel.

The American Springfield, with a bore of 0.30 inches, uses ammunition of the old blunt nose type and has a 150-grain bullet. The old American Springfield with a bore of 0.45 inches, used a 220-grain bullet. The new American Springfield made in our arsenals has a bore of 0.30 inches and a 150-grain bullet.

The Martini single-shot rifle, a modified Mauser, with ammunition of the old blunt nose type. The modern bullet weighs less than one third of the old musket bullet, which means that a soldier can now carry a much larger number of rounds of ammunition. This is necessary as the repeating rifle uses ammunition so much faster. The old soldier loaded his gun from the muzzle one shot at a time. The modern soldier inserts half a dozen cartridges at a time, and simple mechanism loads the charges into the barrel.

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Four types of propellant smokeless powders.

The Martini single-shot rifle, many of which are now in the use of the British service in the hands of the guards at home and even in the trenches. It was aba in 1901, but passed full proof in 1905, and is in service with the American Springfield and in our arsenals.

Rifles of World War I - 1915
Bullets of World War I - 1915

Many different kinds of bullets were used. The U.S. used the Springfield rifle until World War II.
Bullets of World War I - 1915

Many different kinds of bullets were used. The U.S. used the Springfield rifle until World War II.
LOCOMOTIVES

Fig. 1.—Trevithick's Engine. 1803. First Locomotive to Run on Rails.

Fig. 2.—"Stourbridge Lion." 1828. First to Turn a Wheel in the U. S.

Fig. 3.—Stephenson's Engine. 1828. First Locomotive in Actual Service in U. S. 1830

Fig. 4.—"The Best Friend." First Locomotive in Actual Service in U. S. 1830.

Fig. 5.—The "John Bull." 1831. Camden & Amboy R.R.
1. Trevithick’s Engine 1803. First Locomotive to Run on Rails.

Fig. 2. “Stourbridge Lion” 1828. First Locomotive to Turn a Wheel in the U.S.

Fig. 3. Stephenson’s Engine 1828. First Locomotive Seen in America.

Fig. 4. “The Best Friend” 1830. First Locomotive in Actual Service in U.S.

Fig. 5. “John Bull” 1831. Camden & Amboy R.R.

Fig. 6. “Experiment” 1822. First Engine With a Leading Truck.

Fig. 7. Rogers’ Passenger Engine 1845. Hartford & New Haven R.R.

Fig. 8. “Mogul” Engine 1863. New Jersey R.R. & Transportation.

Some types illustrating the development of the locomotive.
LOCOMOTIVES

The Growth of American Locomotives and Rails

From the Baby 7 Ton Engine of 1832 to the 188-Ton Giant
COMOTIVES

The Growth of American Locomotives and Railroads

From the Baby 5-Ton Engine of 1832 to the 188-Ton Giant
This engraving, drawn to uniform scale, shows the growth of the American passenger locomotive from the "Old Ironsides," 5 tons in weight, of 1832 to the powerful Alckon & Santa Fe locomotive of 1910 weighing 260 tons.
SHIP
Sailing ship - 1906
Length on Deck - 441 feet
Beam - 53 feet, 8 inches
Sailspread - 50,000 square feet

Draft, loaded - 26 feet, 9 inches
Carrying capacity - 8,000 tons
Displacement - 11,360 tons
ing ship - 1906
Draft, loaded - 26 feet, 9 inches

th on Deck - 441 feet
Carrying capacity - 8,000 tons

- 53 feet, 8 inches
Displacement - 11,360 tons

Sailspread - 50,000 square feet
A racing yacht - 1903

Tip of main boom to tip of spinnaker boom - 201 feet

From water to highest point of sail - 190 feet

Total area of sail - 16,169 square feet.
CARS

ON THE ROAD.

THE 4 HORSE.
ON THE ROAD.

THE 4-HORSE POWER ENGINE.
The "Locomobile" - 1900

This automobile used a steam engine.
Clement, Jr. Starting in 90-Horse-Power Clement Bayard.

Lyttle in 34-Horse-Power Pope Toledano.

Heath in 90 Horse-Power Panhard.

Wallace in 90-Horse-Power Fiat. W. K. Vanderbilt, Jr.
Finikhea second.

James B. Fly in 90-Horse-Power Clement Bayard.

The 1st powered car that took third place
Lyttle in 24-Horse-Power Pope Toledo.

Broke clinch to last round.

Wallace in 90-Horse-Power Fiat. W. K. Vanderbilt, Jr., the Donor of Cup.
Auto racing in 1904
RACERS

Broke boiler drive shaft in second round.
Start of 90-Horse-Power Renault, Driven by M. Bernin.

Note the drilling out of axle and other parts to lighter machine.
Frank Croker in 75-Horse-Power Simplex

Overturned; machinist killed and Arents injured
Wreck of Arents' 60-Horse-Power Mercer

In fourth place at finish.
24-Horse-Power Packard, Driven by C. Schmidt.

Some of these turns were over 90 degrees.
Clement Taking One of the Sharp Turns.
Broke rear drive shaft in second round.
Start of 90-Horse-Power Renault, Driven by M. Bernin.

Note the drilling out of axle and other parts to lighten machine.
Frank Croke in 75-Horse-Power Simplex.

Overturned; machinist killed and Arens injured.
Wreck of Arens' 60-Horse-Power Mercedes.

In fourth place as finish.
60-Horse-Power Packard, Driven by C. Schmidt.

Some of these turns were over 90 degrees.
Clement Taking one of the Sharp Turns.
Start of 90-Horse-Power Renault, Driven by M. Bernin.

Frank Coker in 75-Horse-Power Simplex.

Wreck of Arens' 60-Horse-Power Mercedes.

Wreck of Arens' 60-Horse-Power Mercedes.

Some of these turns were over 90 degrees.

Clement Taking One of the Sharp Turns.

Before the start.
A racing car on a curve
It was run by steam.
It had 40 horsepower.
See it skid.
The Finale of the Race for the Renault Memorial Plate.
The Finale of the Race for the Renault Memorial Plate.
The Finale of the Race for the Renault Memorial Plate.

Procession of Cars Around the Track

Banked turns made speeds of 100 m.p.h. possible. This racer even had a windshield.
Some automobiles and motor bicycles in 1901
CARS

Electric Surrey in operation.
Some cars were electric in 1899. They ran by batteries.
CARS

The New Reo 16-Horse-Power Side Entrance Tonneau.

The Rambler 20-Horse-Power Tonneau with Cup.

The 30 Horse-Power Franklin Four-Cylinder Air-Cooled Car.

The 15-Horse-Power White Steam Touring Car.
The 15-Horse-Power White Steam Touring Car.

The Rambler 20-Horse-Power Tonneau with Cape Cart Top.

The New Reo 16-Horse-Power Side Entrance Tonneau.

The 15-Horse-Power Franklin Four-Cylinder Air-Cooled Car.
Some Leading 1905 Cars as They Appear in Mid-Winter.
New 20-Horse-Power Autocar Tonneau Fitted with 4-Cylinder Vertical Engine and Bevel Gear Drive.

Thomas 4-Cylinder 40-Horse-Power Side Entrance Drive.

Chassis of Autocar, Showing Bevel Gear Drive.

Chassis of Thomas Car, Showing Chain Drive.

The Packard 28-Horse-Power Side Entrance Tonneau.

Chassis of Packard Car, Showing Transmission.
PorNer Autocer Tonneau Fitted with 4-Cylinder Vertical Engine and Bevel Gear Drive.

Thomas 4-Cylinder 40-Horse-Power Side Entrance Tonneau Fitted with Chain Drive.

Chassis of Autocar, Showing Bevel Gear Drive.

Chassis of Thomas Car, Showing Chain Drive from Countershaft.

The Packard 28-Horse-Power Side Entrance Tonneau.

Chassis of Packard Car, Showing Transmission at the Rear Axle.
American Touring Cars - 1905
The Autocar stands as a triumph in automobile building. Its construction combines with greatest efficiency and durability a simplicity that is the wonder of all who see it. This is a feature that commends itself alike to the novice and the expert. It means minimum liability of derangement, greatest ease and safety of operation, and lowest running expense. Each type of Autocar represents the nearest to perfection in its class. Every Autocar is built upon lines proven correct by service, for durability and freedom from annoyance Autocar is unsurpassed.

The new car, Type XI, illustrated above, with chassis, shows a number of very valuable improvements, accomplishing increased ease of control, and simplicity.

Type VIII, Four-passenger car, and Type X, bent, are the cars which have made the presentation of the Autocar to which the new Type...
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If, for service, for durability and freedom from annoyance, the Autocar is unsurpassed.

The new car, Type XI, illustrated above, with its chassis, shows a number of very valuable improvements, accomplishing increased ease of control, safety, and simplicity.

Type VIII, Four-passenger car, and Type X, Runabout, are the cars which have made the present reputation of the Autocar. In which the new Type XI will
The Autocar stands as a triumph in automobile building. Its construction combines with greatest efficiency and durability a simplicity that is the wonder of all who see it. This is a feature that commends itself alike to the novice and the expert. It means minimum liability of derangement, greatest ease and safety of operation, and lowest running expense. Each type of Autocar represents the nearest to perfection in its class. Every Autocar is built upon lines proven correct by experience; built of absolutely the best material, and with the best workmanship procurable.

Autocar records of actual performance bear out the claim that for good day-in-and-day-out, up-hill-and-down service, for durability and freedom from annoyance, the Autocar is unsurpassed.

The new car, Type XI, illustrated above, with its chassis, shows a number of very valuable improvements, accomplishing increased ease of control, safety, and simplicity.

Type VIII, Four-passenger car, and Type X, Runabout, are the cars which have made the present reputation of the Autocar, to which the new Type XI will surely add.

Write for catalogue and dealer's name.

THE AUTOCAR COMPANY, Ardmore, Pa.

Member A. L. A. M.

Type X
10 H. P.
Runabout
$900

Type VIII
Rear Entrance Tonneau
$1,400

Double Side Entrance Tonneau
$2,000

These ads were used in 1905.
The Vesta Storage Battery

for igniting the gas engine in an automobile is guaranteed to every purchaser.
If not satisfactory, money will be refunded.

60 AMPERE HOUR CAPACITY 60

Securely packed in hard wood.

STANDARD SIZES
60 Amp. hour, 4 volt 9 long x 8½ high x 3½ wide, inches, price, $15.00

60 " " 8 " 9 " x 8½ " x 7 " " " 10.00

Shipped anywhere fully charged ready for use.
Send for catalogue.

VESTA ACCUMULATOR CO.
1336 Michigan Avenue, CHICAGO.
Vesta Storage Battery

The gas engine in an automobile is guaranteed by Vesta, every purchaser. If it is not satisfactory, your money will be refunded.

AMPERE HOUR CAPACITY 60

STANDARD SIZES

- 8 volts 8½ high x 3½ wide, price $15.00
- 8 volts 9 long x 8½ high x 3½ wide, price $22.50
- 8 volts 9 long x 9½ high x 7 long, price $30.00

Vesta Storage Battery are packed in hard wood and anywhere fully charged ready for use.

STA ACCUMULATOR CO.,
Michigan Avenue, CHICAGO.

Peerless

Direct Drive
Touring Cars

For 1905

24 H. P. 35 H. P.
30 H. P. 60 H. P.

Prices from $3,200 to $6,000

Motor construction exactly like that in the famous Peerless Green Dragon racing car driven by Barney Oldfield. Elegant side door bodies—four forward speeds. Powerful brakes applied directly to wheels.

Simplicity of Construction—Perfection of Control—Absolutely Dependable
Catalogue now ready.

Peerless Motor Car Co., 38 Lisbon St. Cleveland, O.
Member Association Licensed Automobile Manufacturers.

1905 STUDEBAKER

"The Automobile with a Reputation behind it."

TWO CYLINDER
MODEL 9502

Price $1,350 side entrance  $1,250 rear entrance, including side lamps, tail light and horn

Style. This is best appreciated when it is compared with other cars.

Size. Capacious seats and ample leg room for five occupants
The Vesta Storage Battery

for igniting the gas engine in an automobile is guaranteed to every purchaser. Money will be refunded if not satisfactory.

60 AMPERE HOUR CAPACITY 60

Securely packed in hard wood.

STANDARD SIZES

- 60 Amp. hour, 4 volt 9 long x 8½ high x 3 wide, inches, price $15.00
- 8 long x 8½ wide, inches, price $22.50
- 8 long x 9 high x 8½ wide, inches, price $30.00

Shipped anywhere fully charged ready for use.

Send for catalogue.

VESTA ACCUMULATOR CO.,
536 Michigan Avenue, CHICAGO.

The MARMON CAR

None of these cars had windshields.
A. L. Riker's Electric Tricycle, Built Twenty Years Ago.
A small battery motor drove the large wheel by friction.

The House Brothers' Steam Wagon of Forty Years Ago.
This is the first machine built along the lines of the present-day automobile.

Richard Dudgeon's Steam Road Car, Built in 1860.
The original machine, of which this is a duplicate, was constructed in 1904.

Mr. R. E. Olds' First Gasoline Machine.
The 5-horse-power motor and 2-speed transmission were amazed.
Electric Tricycle, Built Twenty Years Ago.

The original machine, of which this is a duplicate, was constructed in 1896.

The House Brothers' Steam Wagon of Forty Years Ago.

This is the first machine built along the lines of the present-day automobile.

Richard Dudgeon's Steam Road Car, Built in 1860.

Mr. R. E. Olds' First Gasoline Machine, Built in 1896.

The 5-horse-power motor and 3-speed transmission were arranged on the running gear.
Aitton's Electric Tricycle, Built Twenty Years Ago.
A small battery motor drove the large wheel by friction.

The House Brothers' Steam Wagon of Forty Years Ago.
This is the first machine built along the lines of the present-day automobile.

Richard Dudgeon's Steam Road Car, Built in 1860.
The original machine, of which this is a duplicate, was constructed in 1862.

Mr. R. E. Olds' First Gasoline Machine, Built in 1896.
The 5-horse-power motor and 3-speed transmission were arranged on the running gear.

Ed Haynes's First Gasoline Automobile, Built in 1893.

One of Mr. Charles E. Duryea's Oldest Gasoline Machines, Built in 18-.
CARS

The 30-Horse-Power Studebaker Touring Car.

The 45-Horse-Power Royal Tourist Limousine

The Frayer-Miller 24-Horse-Power Coupe With Driver’s Seat Behind.

The New 20-Horse-Power Cadillac Light Touring Car

The Locomobile 85-Horse-Power, 7-Passenger Touring Car.

The 20-Horse-Power Aeroco
The 30-Horse-Power Studebaker Touring Car.

The 45-Horse-Power Royal Tourist Limousine for Winter Use.

The 24-Horse-Power Cadillac Light Touring Car.

The Locomobile 85-Horse-Power, 7-Passenger Touring Car.

The 20-Horse-Power Aerocar Runabout.
The 30-Horse-Power Studebaker Touring Car.

The 40-Horse-Power Kuyal Tourist Limousine for Winter Use.

The Frayer-Miller 24-Horse-Power Coupe With Driver's Seat Behind.

The New 20-Horse-Power Cadillac Light Touring Car.

The Locomobile 35-Horse-Power, 7-Passenger Touring Car.

The 20-Horse-Power Aerocar Runabout.

The New 16-Horse-Power Maxwell Touring Car Which Ran 3,000 Miles Without Stopping the Engine.

The New White 30-Horse-Power Steam Touring Car With Pullman Body.
Engine: Compound with cylinders of 3 and 4 inch bore by 4 inch stroke. Boiler: Fresh water, manufactured steam, pressure 20 pounds. Wheel base: 110 inches. Tires: 34 x 4 1/4. The new type of steam engine is well provided by means of pistol bulit, one armed by lever or button, is shown in the photograph of the new type of steam engine which is also to be noted.

Some Leading Types of 1907 Automobiles.
The 20-Horse-Power Aerocar Runabout.

Engine: 4 x 4-cylinder, air-cooled. Transmission: 3-speed progressive type. Clutch: Mal-

The New 20-Horse-Power Cadillac Light Touring Car.

Engine: 4 x 6-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Con-}


The 24-Horse-Power Coupe With Driver's Seat Behind.

Body: 4-speed automatic type. Clutch:

What You Get When You Get a CADILLAC

You get a car as scientifically designed and as perfectly finished as if the reputation of this greatest automobile establishment in the world, depended upon that one car.

This painstaking care dominates to the smallest details of Cadillac construction—in the engine it is apparent that the minutely-accurate finish of this vital part has made it a signal achievement in automobile manufacture.

The Cadillac Runabout (Model K) and Light Touring Car (Model M) are fitted with our wonderful single-cylinder engine, to which the dependability and remarkably low cost of maintenance of these models are chiefly attributable. By its great power, its remarkable fuel economy, and hill-climbing ability, this engine has proved itself so worthy in thousands of cars during the past four years that it will be used practically without change in the 1907 models—a fact which alone places the serviceability of these cars beyond question.

In the four-cylinder models a degree of perfection has been attained which hitherto has been found only in the high-priced foreign cars. In fact, an American-made machine of the mechanical finish that characterized the Cadillac was scarcely possible until the development of equipment and system so marvelously efficient as those found in the Cadillac factory.

Simplicity is a cardinal virtue with these four-cylinder wonders, a feature which every operator will appreciate. Add to this, thorough dependability under all weather or road conditions, ease of control truly surprising, comfort of riding unsurpassed in any vehicle, power that will negotiate the steepest grade or furnish ample speed, and you have the Cadillac.
What You Get When You Get a CADILLAC

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Be sure to get a demonstration from your nearest dealer—you will be surprised how great are the possibilities of the "Car that Climbs."

Model H, 30 h.p. 4-cylinder Touring Car, $2,500
(Described in Catalogue H N)

Model G 20 h.p. 4-cylinder Touring Car, $2,000
(Described in Catalogue G N)

Model M, 10 h.p. 4-passenger car, straight line or $950
(Victoria body)
(Described in Catalogue M N)

Model K, 10 h.p. Runabout... $800

Model H: 30 h.p.
$2,500

Model M, 10 h.p.
$800

Send for special Catalog of car in which you are interested, as above designated

CADILLAC MOTOR CAR CO.
DETROIT, MICH.

Member A.A.A.M.
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Model G, 20 h.p. 4-cylinder Touring Car, $2,000
(Described in Catalogue G G)
Model M, 10 h.p. 4-passenger Victoria body
(Described in Catalogue M M)
Model K, 10 h.p. Runabout . . . . . $800
(Described in Catalogue M M)

All prices F. O. B. Detroit—Lamps not included
Send for special Catalog of car in which you are interested, as above designated

CADILLAC MOTOR CAR CO.
DETROIT, MICH.
Member A. L. A. M.
Mr AfrgEk

The Smartest Car Ever Put on the Market.

Mark XLIX
40-45 H. P. $4500

SMARTNESS of style—the most graceful outlines and proportions—have received the same expert attention in the Columbia Gasoline Cars for 1907, as strength and perfection of mechanism.

They are the cars for those who demand artistic appearance as well as reliability, smoothness of operation, and speed.

The designing and manufacturing ability of the largest and best equipped automobile factory in the world has been centered on two Gasoline Models to make them leaders in all respects.

In 1907 Columbia four-cylinder cars, both 40.45 H. P. and 24-28 H. P. models, Chrome Nickel Steel will be found in fact as well as in name. Practically all the genuine crucible-made Chrome Nickel Steel produced in America for Automobile use was secured for the Columbia Cars. The use of this, the toughest steel yet made, places the two Columbia models in the lead of American cars, and in the class with the very best of European manufacture.

Write for separate catalogues of Columbia Cars, Columbia Electric Carriages, and Columbia Electric Commercial Vehicles. A demonstration may be arranged by appointment with our nearest representative.

ELECTRIC VEHICLE COMPANY
HARTFORD, CONN.

In 1907, Wayne made the Type B

SELECTIVE type sliding gear transmission rear axle.
Three speeds forward and reverse, direct high speed.
All working parts easily accessible.
Simplicity and strength making it truly a Metal body. Exceptionally roomy too. Only the best materials procurable.

Other Waynes are Model R, 50 H. P., touring car with Pullman body, selling at $3,500, $5 H. P., five passenger car, selling at $2,500—both selectively made.

CATALOGUE SENT UPON REQUEST.
WAYNE AUTOMOBILE COMPANY
Dept. 10, Detroit, Michigan

The Actual Ability of an Auto

To determine the actual hill-climbing and speeding ability of an automobile, it is best to have a speedometer fitted to the rear wheels, then calculate the ratio of miles with accuracy of the car.
The Smallest Car Ever
Put on the Market.

Mark XLIX
40-45 H. P. $4500

MARTIINESS of style—the most graceful outlines and proportions—received the same expert attention in the Columbia Gasoline Cars for as strength and perfection of mechanism, they are the cars for those who demand artistic appearance as well as utility, smoothness of operation, and speed. The designing, and manufacturing ability of the largest and best equipped automobile factory in the world has been centered on two Gasoline to make them leaders in all respect.

1907 Columbia four-cylinder cars, both 40-45 H. P. and 24-28 H. P. Chrome Nickel Steel will be found in fact as well as in name. All the genuine crucible-made Chrome Nickel Steel produced in America for Audiobile use was secured for the Columbia Cars. The use of the toughest steel yet made, places the two Columbia models in the American cars, and in the class with the very best of European manufacture.

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A demonstration arranged by appointment with our nearest representative.

“Electric Vehicle Company
HARTFORD, CONN.

NEW YORK BRANCH: Electric Vehicle Company, 111-121 East 54th St.
COLUMBUS, OHIO: electric Vehicle Company, 130-132 E. 2nd St.

We shall exhibit at Madison Square Garden, N.Y. Feb. 23, 24, 25, 26, 27, 28, 29, 30 and at the Coliseum, Chicago, Feb. 23-29th, 1897.

The Actual Ability of an Automobile

“28-30 H. P. Motor” actually means very little, and is a misleading statement.

To determine the actual horse-power and speed of any car, you must first and how much horse-power is a horse delivered to the rear wheels, then subtract the weight of the car when filled to its full capacity — weight, and calculate the ratio of actual horse power to gross weight of car.

Wayne

“The car that takes you through”

Model N. 30-35 H. P. $2,500

Selective type sliding gear transmission, located on rear axle.

Three speeds forward and reverse, direct drive on high speed.

All working parts easily accessible.

Simplicity and strength making it trouble proof.

Metal body. Exceptionally roomy tonneau.

Only the best materials procurable.

Other Waynes are Model R, 30 H. P., seven passenger touring car with Pullman body, selling at $3,500, and Model K, 35 H. P., five passenger car, selling at $2,500—both great values.

CATALOGUE SENT UPON REQUEST.

WAYNE AUTOMOBILE COMPANY
Dept. 10, Detroit, Michigan
1907 Deere

TYPE "B"

SPEIFICATIONS

MOTOR. Four-cylinder, water cooled. Cylinders 4 x 5 H. P. 35, 40.
TRANSMISSION. Selective, no gears slide, roller bearings.
REAR AXLE. Clutch driven, floating type.
FRONT AXLE. I-Beam section.
FRAME. Pressed steel, with subframe.
SPRINGS. Elliptic scroll, rear 35 inches long, semi-elliptic front 40 inches long.
LUBRICATION. Crandall, six feed mechanical oiler.
SHAFT DRIVE. With bevel gears.
IGNITION. Storage battery, six dry cells.
BRAKES. Exterior and interior brakes on rear hubs, foot pedal and side lever respectively.
BODY. Wood, straight line design, seats four comfortably.
TIRES. 42 inches by four inches.
GASOLINE. Eighteen-gallon tank under front seat, glass gauge.
WATER. Capacity, four gallons.
MUFFLER. Free, silent with back pressure.
CARBURETOR. Float feed type.
CLUTCH. Dog clutch, metal to metal, roller bearing, carried in flywheel.
WHEEL BASE. One hundred and six inches.
CLEARANCE. Nine inches.
COLORS. Seal brown, standard, any color on time orders.
EQUIPMENT. Three oil lamps, two gas lamps, generator, clock, dragon horn, kit of tools; in fact, car tools for road use.
WEIGHT. Twenty-three hundred and fifty pounds.
PRICE. $2,500, 1, 2, 3, 6, b, factory.

Deere-Clark Motor Car Co., 1907

SMARTNESS, of style—the most graceful outlines and proportions—have received the utmost attention in the Columbia Gasoline Cars for style, and strength and perfection of mechanism. They are the cars for those who demand artistic, apparent as well as substantial, smoothness of operation, and speed.

The design, and manufacturing ability of the largest and best equipped automobile factories in the world has been centered on two Gasoline Models, to make them leaders in all respects.

In 1907 Columbia six-cylinder cars, both 40-45 H. P. and 35-38 H. P. models, Chrome Steel will be found in fact as well as in name. Practically all the genuine crucible-made Chrome Nickel Steel produced in America for Automobile use was secured for the Columbia Cars. The use of this, the toughest steel yet made, places the two Columbia models in the lead of American cars, and in the class with the very best of European manufacture.

Write for separate catalogues of Columbia Cars, Columbia Electric Carts, and Columbia Electric Commercial Vehicles. A demonstration can be arranged by appointment with our nearest representative.

ELECTRIC VEHICLE COMPANY
HARTFORD, CONN.

The Actual Ability of an Automo

"28-30 H. P. Motor" actually means very little, an misleading statement.

To determine the actual hill-climbing and speeding ability of any car, you must how much horse-power is actually delivered to the rear wheels, then find out the weight of car when filled to usual passenger capacity. To calculate the ratio of actual horse-power to weight of car.

Deere-Clark Motor Car Co., 19 Blackhawk Avenue
Moline, Ill.
The Actual Ability of an Automobile

"26-30 H. P. Motor" actually means very little, and is a misleading statement.

To determine the actual hill-climbing and speeding ability of any car, you must first find how much horse-power is actually delivered to the rear wheels, then find out the weight of the car when filled to its full passenger capacity, and calculate the ratio of actual horse-power to gross weight of car.

The Dragon has 24-26 H. P. actually delivered at rear-wheels, the car empty weighs 1,860 lbs, it holds five passengers which if they average 150 lbs each, adds 750 lbs, making gross weight of car 2,600 lbs. Taking the horse-power as 26, we find that the Dragon has an actual horse-power for every 100 lbs. of weight with car filled to capacity. This is the highest ratio of power in weight, or the lowest ratio of weight to power found in any five-passenger touring-car of equal size or power. Hence we claim that the Dragon has greater hill-climbing and speeding ability than any other car of some horse-power and passenger capacity. Our claim is based on the same principle that a light passenger train can be hauled faster by a passenger locomotive than a heavier freight train by a mammoth "camel back."
Everyman’s Car at
1910 BRUSH $485°

RUMBLE SEAT AND TOOL BOX $20.00 EXTRA

Everyman’s Car—

Merchants
Physicians
Salesmen
Corporations
Contractors
Farmers
Clubmen
Suburbanites

The Young Folks—

The Brush knows no class; there is no limit to its use—

Think of it—$485 for the best-built, most proven, easiest riding, most economical small automobile in the world!

The New Brush Runabout not only outclasses all small cars, but is far ahead of its own previous high standard.

Even though we have learned the lessons all manufacturers have to learn by experience—even though we have manufacturing facilities as nearly perfect as money and brains can make them—still we could not build a car of the quality of the 1910 Brush, if we merely imitated the big cars with all their complicated parts and all parts necessarily smaller and weaker.

Here's where the genius of the designer counts. The Brush has always been and still is the only real Runabout built in America. The new 1910 Brush is not a designer's dream but the result of years of experience and a knowledge acquired by manufacturing 3,000 Brushes that are in daily use. It is a car which with one chassis adapts itself perfectly by change of bodies to a hundred different uses.

It is a car new in power, smoothness, speed and looks but built on proven principles by an organization already perfected.

The Brush has the fewest possible parts but they are of sufficient size and strength to stand the hardest knocks. Simplicity makes it right and still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price. As for reliability the Brush and its few parts still sell it at a high price.

Here are some of the many wonderful features of the new Brush:

- With the new Brush, simplicity, reliability, light weight, and oil consumption, large cylinder power, and simplicity, reliability, light weight, and oil consumption.

- Its new balanced four-cylinder power and simplicity, reliability, light weight, and oil consumption.

- The most wonderful Car construction in years.

- While the balanced cylinder power and universal coupling-shaft commutator: multiple clutches: transmission box: and oil-tight: it.

In our magnificent part of the Brush electric equipment. It.

READ THE SPECIFICATION.
man's Car—

Think of it—$485 for the best-built, most thoroughly proven, easiest riding, most economical, handiest small automobile in the world!

The 1910 Brush is the only cut-rate, cut-class car, but it is far ahead of its own price in high standard.

Even though we have learned the lesson manufacturers have to learn by experience— even though we have manufactured cars that are nearly perfect as money and brains can make them— still we could not build a car of the quality of the new Brush if we merely sampled the best car with all our expensive parts and all parts necessary—wheels and steaks.

Here's where the genius of the designer counts—

The Brush has always been and stil is the only real Remington both on wheels.

The new Brush is not a designer's dream but the result of years of experience and a knowledge acquired by manufacturing good cars that are really good. It is a car which makes advertising unnecessary. There are no false promises because it is built to stand every test. Every part of the car is carefully selected and put together by hand. The 1910 Brush is the only car that can be bought in the store and delivered to the buyer pays in

RUMBLE SEAT AND TOOL BOX $20.00 EXTRA

Simplicity makes it possible to build the car right and sell it at the wonderful price.

As for reliability, there is no comparison between the Brush and any of the small imitation of large multi-cylinder cars.

With the new Brush you get single-cylinder economy, reliability, light weight, low gasoline and oil consumption, low tire expense with four-cylinder power and smoothness.

Its new balanced motor runs as quietly as a four-cylinder and is as flexible. Its power is astounding.

The most wonderful improvement in Motor Car construction in years.

While the balanced motor is the most remarkable feature of the new Brush, we have made numerous other improvements and refinements.

If you have one of them which have long been far more graceful and ralph lines. More to your liking, try selecting a style and finish from our wide variety of colors and trimmings, and also the Imperial and special distant colors. The Brush is the only one that can save you.

Every Brush car deserves the highest praise. They don't make ever better cars.

ERTISEMENT

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1910 BRUSH $485.00

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Everyman's Car— Merchants Physicians Salesmen Corporations Contractors Farmers Clubmen Suburbanites

The Young Folks— The Brush knows no class; there is no limit to its usefulness. A tried, proven automobile for less than the cost of a good horse and buggy.

Think of it—$485 for the best-built, most thoroughly proven, easiest riding, most economical, hand-built small automobile in the world!

This New Brush Runabout is not only one of the best cars, but is far ahead of its own previous high standard.

Even though we have learned the lessons all manufacturers have to learn by experience—well, though we have manufacturing facilities as nearly perfect as money and brains can make them—still we could not build a car of the quality of the 1910 Brush if we merely copied the big cars with all their complicated parts and all unnecessary furbelows and weaker.

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It is a car new in power, smoothness, speed and looks but built on proven principles by an organization already perfected.

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BRUSH RUNABOUT COMPANY, DETROIT, MICH.

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BRUSH RUNABOUT COMPANY, DETROIT, MICH.
man’s Car—

Think of it—$485 for the best-built, most thoroughly proven, easiest riding, most economical, handiest small automobile in the world!

This new Brush is not a copy, not only outsells all small cars, but it is far ahead of its own pre-war high standard.

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The Brush has always been and still is the only real "runabout" built in America.

The new 1910 Brush is not a designer's dream, but the result of years of experience and a knowledge acquired by manufacturing 3,000 Brush cars that are in daily use. It is a car which with one chassis adapts itself perfectly by change of bodies to a hundred different uses.

It is a car new in power, smoothness, speed and look but built on proven principles by an organization already perfected.

This car is the lowest possible price but they are of sufficient size and strength to stand the hardest knocks.

READ THE SPECIFICATIONS

Motor—15 H. P., advanced double cylinder, four-cylinder vertical, 49.8 cubic inch, water cooled, located on rear end of car, and enclosed and oil-tight.

Brakes—Disc, new, long-life, electric type, made fully adjustable, new for all cars without any extra charge.

Transaxle—Journal gear type, perfectly smooth, made fully adjustable, new for all cars.

Cooling—Mercedes-type radiator, 28x35 pneumatics, continuous flow.

Steering Gear—Double action ball gear, 28x35 pneumatics, continuous flow.

Axles and Frames—Double action ball gear, 28x35 pneumatics, continuous flow.

Springs—Furnished in four sizes, 28x35 pneumatics, continuous flow.

Drive—Double action, all four wheels.

Control—Single hand lever of selective action for all-speed, eight speeds, a serviceable wheel, four-speed release clicks without touching the hand lever, and also applies the brake. The kick release is made for one of the finest features of the Brush and is found on no other car on the road.

Body—Double action, double front wheels, double back wheels, extra high and long-life.

Radiator—Double action, continuous flow, 28x35 pneumatics, continuous flow.

Rumble seat and tool box $20.00 extra.

This car is not only a car which we believe will stand up to the test of time, but one of the finest cars of its kind and will stand up to the test of time.

It is a car which is not only a car which we believe will stand up to the test of time, but one of the finest cars of its kind and will stand up to the test of time.

The 1910 Brush is a car which is not only a car which we believe will stand up to the test of time, but one of the finest cars of its kind and will stand up to the test of time.

The Brush buyer pays no "bargain-man's or parts-maker's profit."

BRUSH RUNABOUT COMPANY

167 BALTIMORE AVENUE

DETROIT, MICHIGAN
THE WHITE GASOLINE CAR is in a class by itself

If you plan to buy a gasoline car, why not get the latest construction? You can find it only in the White or in the 1910 foreign cars at double the White price.

The White gasoline car is at least one year ahead of any other American-built machine. Some of the advanced features of the White, which are not yet found in any other American car are:

- "Long stroke" engine
- No external manifolds
- Heated intake
- Water-cooled exhaust

Among the White features which are not found in any other American cars, except those of the highest prices, are:

- Four-speed transmission
- Imported cylinder casting
- Bosch magneto

workmanship make the White gasoline car by far the most desirable on the market.

We venture the prediction that the principal changes which will be made by progressive American manufacturing companies in the next year or two will be the adoption of the features which are found in the White gasoline car.

The price of the White gasoline car ranges from $2,000 for the Model "B" touring car to $3,800 for the "G-B" landaulet.

Even if you desire a smaller car than the White, it will be to your advantage to inspect the White, and we suggest that you at least to write to us for a copy at least.
ERTISEMENT

THE WHITE GASOLINE CAR
is in a class by itself

you plan to buy a gasoline car, why not get the very test construction? You can find it only in the White, in the 1910 foreign cars at double the White price.

The White gasoline car is at least one ahead of any other American-built machine. Some of the advanced features the White, which are not yet found in any other American car are:

"Long stroke" engine
No external manifolds
Heated intake
Water-cooled exhaust

Among the White features which are found in any other American cars, except those of the highest prices, are:

Four-speed transmission
Imported cylinder casting
Bosch magneto

The above features combined in good workmanship make the White gasoline car by far the most desirable on the market.

We venture the prediction that the principal changes which will be made by progressive American manufacturers during the next year or two will be the adoption of the features which are found now in the White gasoline car.

The price of the White gasoline car ranges from $2,000 for the Model "G-A" touring car to $3,800 for the Model "G-B" landaulet.

Even if you desire a smaller car or a larger car than the White, it will be to your advantage to inspect the White or at least to write to us for a copy of our catalog, in order that you may inform
If you plan to buy a gasoline car, why not get the very latest construction? You can find it only in the White, or in the 1910 foreign cars at double the White price.

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- Heated intake
- Water-cooled exhaust

Among the White features which are not found in any other American cars, except those of the highest prices, are:

- Four-speed transmission
- Imported cylinder casting
- Bosch magneto

The above features, combined in good design with the best materials which money can buy, and with the famous White workmanship make the White gasoline car by far the most desirable on the market.

We venture the prediction that the principal changes which will be made by progressive American manufacturers during the next year or two will be the adoption of the features which are found now in the White gasoline car.

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Even if you desire a smaller car or a larger car than the White, it will be to your advantage to inspect the White or at least to write to us for a copy of our catalog, in order that you may inform yourself as to the latest developments in gasoline car design.

A POSTAL TO US BRINGS A COPY OF OUR CATALOG

THE WHITE COMPANY

838 East 79th Street
CLEVELAND
OHIO
LICENSED UNDER SELDEN PATENT

New York City, Broadway and 62d St.
Boston, 320 Newbury St.
Philadelphia, 629-33 N. Broad St.
Pittsburg, 138-146 Beatty St.
Toronto, 170 King St., West

Chicago, 240 Michigan Ave.
Atlanta, 120-122 Marietta St.
Cleveland, 407 Rockwell Ave.
San Francisco, Market St.
Van Ness Avenue
If you plan to buy a gasoline car, why not get the very latest construction? You can find it only in the White, or in the 1910 foreign cars at double the White price.

The White gasoline car is at least one car ahead of any other American-built machine. Some of the advanced features of the White, which are not yet found in any other American car are:

- "Long stroke" engine
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- Heated intake
- Water-cooled exhaust

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- Imported cylinder casting
- Bosch magneto

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Even if you desire a smaller car or a larger car than the White, it will be to your advantage to inspect the White or at least to write to us for a copy of our catalog, in order that you may inform yourself as to the latest developments in gasoline car design.

A POSTAL TO US BRINGS A COPY OF OUR CATALOG

THE WHITE COMPANY

838 East 79th Street
CLEVELAND
OHIO
LICENSED UNDER Belden Patent
PARTS

Some parts of a car which must be carefully considered in overhauling.
SOME PARTS OF A CAR WHICH MUST BE CAREFULLY CONSIDERED IN OVERHAULING.

HOW PARTS WEAR IN AN AUTOMOBILE.
FIRE ENGINES

A NEW YORK AUTOMOBILE HIGH-PRESSURE SERVICE WAGON.

AN AUTOMOBILE HOSE CART.

FIRE CHIEF'S AUTOMOBILE.

A COMBINATION TRUCK FOR SMALL COMMUNITIES.

MOTOR-FIRE PUMP AT
RE ENGINES

NEW YORK AUTOMOBILE HIGH-PRESSURE SERVICE WAGON.

AN AUTOMOBILE HOSE CART.

FIRE CHIEF'S AUTOMOBILE.

A COMBINATION TRUCK FOR SMALL COMMUNITIES.

MOTOR-FIRE PUMP AT WORK.
A NEW YORK AUTOMOBILE HIGH-PRESSURE SERVICE WAGON.

FIRE CHIEF’S AUTOMOBILE.

A COMBINATION TRUCK FOR SMALL COMMUNITIES.

MOTOR-FIRE PUMP AT WORK.

A COMPLETE AUTOMOBILE FIRE DEPARTMENT.
A COMPLETE AUTOMOBILE FIRE DEPARTMENT.
CARS

Chalmers-Detroit 4-horse-power phaeton.

Cutter, 35 horse-power.

Franklin 42-horse-power touring car.

Hupmobile runabout.

Winton touring car.

Pierce-Arrow touring car.
Franklin 12-horsepower touring car

Winton touring car

The K-E-I-T runabout

Pierce-Arrow touring car

Hupmobile runabout

Maxwell 40-horsepower touring car

Packard 90-horsepower touring car

Purser 90-horsepower touring car
The Cars of 1910

42-horse-power touring car

Winton touring car.

Pierre-Arrow touring car.

Maxwell 40-horse-power touring car.

Royal Tourist

Hupmobile runabout

Premier 40-horse-power touring car.

Cadillac 30-horse-power touring car.

The Hudson

Curtiss, 35 horse-power.
over touring car.

Rambler touring car.

Overland touring car. 35-40

Pope-Hartford 30-horse-power touring car.

Baker electric runabout.

Mitchell touring car.

Stevens-Duryea touring car.
Rambler touring car.

Motor - horse, 4-1/2, stroke 4-1/2 inches; piston, high tension; bore 6-1/2 inches; 3-speed w/wide range; safety valve; 4-wheel disc brakes.

Price: $247

Baker electric runabout.

Bevel gear shaft drive, semi-floating rear axle with 8 bearings, motor four pole 40-h.p.; generator, continuous longer drum type with 8 speeds forward and 3 reverse; brakes, internal and emergency. Price: $1,000.

Oldsmobile 40-horse-power special touring car.

Four cylinders; bore 4-1/2 inches; stroke 4-1/2 inches; water cooled; jump spark ignition built between magneto and dry battery; shaft drive; automatic sliding gear transmission. Price: $1,000.

Stevens-Duryea touring car.

Motor - horse, 4-1/2, stroke 4-1/2 inches; 3-speed with wide range; safety valve; 4-wheel disc brakes.

Price: $1,000
Overland touring car. 35-40.

Baker electric runabout. Belt gear shaft drive, semi-floating rear axle with ball and socket joints, controller, continuous torque drum-type reverse; 8 brakes, external and 2 emergency.

Stevens-Duryea touring car. Horse-power: 30; L. H. D. M. rating; 4 cylinders; bore, 6 inches; stroke, 4 inches; water cooled; pump spark ignition; high-tension magneto; dry battery; with-device transmission; sliding-gear, sliding-reverse.

Mitchell touring car. Horse-power: 5; L. H. D. M. rating; 4 cylinders; bore, 4 inches; stroke, 2 inches; water cooled; dry battery; electric spark ignition; high-tension magneto; with-device transmission; sliding-reverse.

Pope-Hartford 30-horse-power touring car.

Four-cylinder; bore, 4 inches; stroke, 2 inches; water cooled; pump-spool ignition; expanding brake on propeller-shaft and both rear wheels; shaft drive; selective sliding-reverse.

Price: $1,550.

Mitchell touring car.

Horse-power: 5; L. H. D. M. rating; 4 cylinders; bore, 4 inches; stroke, 2 inches; water cooled; dry battery; electric spark ignition; high-tension magneto; with-device transmission; sliding-reverse.

Price: $1,500.

Baker electric runabout. Belt gear shaft drive, semi-floating rear axle with ball and socket joints, controller, continuous torque drum-type reverse; 8 brakes, external and 2 emergency.

Stevens-Duryea touring car. Horse-power: 30; L. H. D. M. rating; 4 cylinders; bore, 6 inches; stroke, 4 inches; water cooled; pump spark ignition; high-tension magneto; dry battery; with-device transmission; sliding-reverse.

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Mitchell touring car. Horse-power: 5; L. H. D. M. rating; 4 cylinders; bore, 4 inches; stroke, 2 inches; water cooled; dry battery; electric spark ignition; high-tension magneto; with-device transmission; sliding-reverse.

Price: $1,500.
Kambler touring car.

Four-cylinder; four-stroke; spark; water-cooled; high-tension; turn signal; selector; shaft drive; selective shifting.

Price: $1,500.

Mitchell touring car.

Four-cylinder; four-stroke; spark; water-cooled; high-tension magneto; turn signal; selector; shaft drive; selective shifting.

Price: $1,500.

White 30-horse-power gasoline car.

Four-cylinder; four-stroke; spark; water-cooled; high-tension magneto; turn signal; selector; shaft drive; selective shifting.

Price: $1,500.

Old-mobile 40-horse-power - special touring car.

Four-cylinder; four-stroke; spark; water-cooled; high-tension magneto; turn signal; selector; shaft drive; selective shifting.

Price: $1,500.

Baker electric runabout.

Bevel-gear shaft drive; semi-floating rear axle with ball bearings; motor, 10-horse-power; controller, automatic torque drum type; 8-speeds forward and 3 reverse; 3 brakes, 2 internal and 1 emergency.

Price: $1,500.

Stevens-Duryea touring car.

Four-cylinder; four-stroke; spark; water-cooled; high-tension magneto; turn signal; selector; shaft drive; selective shifting.

Price: $1,500.

Everett-Metzger-Flanders 30-horse-power touring car.

Four-cylinder; four-stroke; spark; water-cooled; high-tension magneto; turn signal; selector; shaft drive; selective shifting.

Price: $1,500.
A small diamond is relatively just as good and just as valuable as a large one.

In the same sense the Hupmobile is precisely as fine as the largest, the best and the most expensive cars made.

We make the comparison because we want you to learn to associate the Hupmobile in your mind with the finest cars you know.

The Hupmobile claims the right (and that right is conceded by discriminating owners) to travel side by side with the best products of motordom.

It confesses no delinquencies; admits no inferiorities; concedes no advantage save size and carrying capacity, to cars costing twice and thrice its price.

Observe the personnel of its ownership in your own city.

Note that the majority of men who drive a Hupmobile are the men who know good cars—whose private garage, perhaps, houses several fine cars of other types.

The Hupmobile was built to fill a particular need—to supply a special want—to furnish a type of car that was lacking.

Its creators could see no reason why a car carrying two passengers should not be just as good—just as sound and just as trustworthy as the best big car built.

Every part that contributes to power and speed and staunchness in the Hupmobile is just as good and fine as the same, these things (which are literally true) will explain to you why you have not understood before—why the Hupmobile.

Everybody, if you will stoop a little bit, has seen things about the Hupmobile. They have said that it is a kind of a moderate size, and they have just described.

A year ago there were 5,000 Hupmobiles in commission. Today 5,000 are being manufactured because the workmanship is of the highest quality and the materials are of the best, and the demand which sprang up once before the first hit completed.

Of course, you want to own a car which has been approved and recommended by the warmest approval ever accorded to a motor car.

If you own a car, you will want to own an American motor-bicycle because it is stronger and more reliable than any other.
Hupmobile

PARES WITH THE COSTLIEST CARS AS A PERFECT SMALL DIAMOND WITH A LARGE ONE

These things (which are literally true) will explain to you what perhaps you had not understood before—why you have encountered in the year past so many enthusiastic partisans of the Hupmobile.

Everybody, if you will stop to think backward a little bit, has seemed to say kind things about the Hupmobile. They have said these things about the Hupmobile because it is the newly good kind of a moderate sized car which we have just described.

A year ago there were less than 100 Hupmobiles in commission. Today 5,000 are being built, as rapidly as excellence of workmanship with the finest materials permits of hurry to satisfy a demand which sprang up in incredible volume before the first hundred cars were completed.

Of course, you want to know all about a car which has been favored with the warmest approval ever extended by the American motor-buying public to any motor car.

Even if you own a car to which you are strongly attached, you would like to have placed before you all the information which will shed light upon a condition so unprecedented as the Hupmobile has created.

And if you are wavering in your choice.
Hupmobile

A small diamond is relatively just as good and just as valuable as a large one.
In the same sense the Hupmobile is precisely as fine as the largest, the best and the most expensive cars made.

We make the comparison because we want you to learn to associate the Hupmobile in your mind with the finest cars you know.
The Hupmobile claims the right (and that right is conceded by discriminating owners) to travel side by side with the best products of motordom.

It confesses no delinquencies; admits no inferiorities; concedes no advantage size and carrying capacity, to cars costing twice and thrice its price.

Observe the personnel of its ownership in your own city.

Note that the majority of men who drive a Hupmobile are the men who know good cars—whose private garage, perhaps, houses several fine cars of other types.
The Hupmobile was built to fill a particular need—to supply a special want—to furnish a type of car that was lacking.

Its creators could see no reason why a car carrying two passengers should not be just the same as a big car; just as spark, just as truthworthy—as the best big car built.

Every part that contributes to power and speed and staunchness in the Hupmobile is precisely as good and fine as the same part in the best big car.

The two are mates in quality.
The Hupmobile will go anywhere that the big car will go; climb any hill the big car will climb; and do anything the big car will do except that it will carry the same number of passengers.

When you buy the ordinary car of moderate price, you say to yourself:

"I am getting just the sort of a car indicated by the price—a moderately good car.

When you buy a Hupmobile, on the contrary, you buy a quality and a degree of excellence with which the price has nothing to do.

If the Hupmobile were any bigger, it could not be made as good without increasing the price.

As an object lesson, three Hupmobiles were driven through the biting winter weather and deep snows, from Detroit to New York for the Grand Central Palace Show.

HUPP MOTOR CAR COMPANY
DEPT. Q.
DETROIT, MICH.

SPECIFICATIONS
ENGINE—4 cylinder 20 H. P., 3 1/2 inch bore, 3 1/2 inch stroke; L-head type; water cooled, offset crank shaft; fan bladed fly wheel in front; Parsons white bronze bearings; noiseless cam shaft.
TRANSMISSION—Selective sliding gears in extension bolted to crank case; shifting without noise.
CLUTCH—Multiple disc type; self-adjusting; enclosed in gear case; running in oil.
REAR AXLE—Shaft drive; Hyatt roller and New Departure bearings; shaft and universal joint enclosed and lubricated by oil from crank case through transmission.
BRAKES—Two foot and two emergency (integral expanding) lined with Thermod on rear hubs.
IGNITION—Bosch high tension magneto, doing away with spark coil, batteries and connecting wires.
TIRES—30 x 3 inches.
WHEEL BASE—86 inches.
TREAD—56 inches.
SPRINGS—Semi-elliptical front, patented cross spring rear.
EQUIPMENT—Two side and tail oil lamps, dragon horn, tools, repair kit, pump.
WEIGHT—1100 pounds regular equipment.

These things (which are literally true) will explain perhaps, you had not understood before—why you countered in the year past so many envious and partisan Hupmobiles

Everybody, if you will stop to think a little bit, has seemed to learn things about the Hupmobile.

They have said these things about the Hupmobile because it is the right kind of a moderate sized car that we have just described.

A year ago there were less than 100 Hupmobiles in commission.

Today 3,000 are being built, an excellence of workmanship which materials will permit of hurry—demand which sprang up in immense before the first hundred completed.

Of course, you want to know about a car which has been favored with warmest approval ever extended to any American motor-buying public.

Even if you own a car which is strongly attached, you would be placed before you all the facts which will shed light upon a car unprecedented as the Hupmobile created.

And if you are wavering in your desire to know stronger.

Sign and send the coupon.

It will bring you not only the literature, picturing and describing 1910 Hupmobile but every detail.

It will bring in addition, the name and address of the Hupmobile dealer in your home, or the city nearest you.

We will put you in direct touch with the car, so that you can ride in it and satisfy yourself as to the literal truth of every statement we have made.

Clip the coupon and send it now.
Hupmobile

These things (which are literally true) will explain to you what perhaps, you had not understood before—why you have encountered in the year past so many enthusiastic partisans of the Hupmobile.

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They have said these things about the Hupmobile because it is the newly good kind of a moderate sized car which we have just described.

A year ago there were less than 100 Hupmobiles in commission.

Today, 5,000 are being built, as rapidly as excellence of workmanship with the finest materials will permit of hurry to satisfy demand which sprang up in incredible volume before the first hundred cars were completed.

Of course, you want to know all about a car which has been favored with the warmest approval ever extended by the American motor-buying public to any motor car.

Even if you own a car to which you are strongly attached, you would like to have placed before you all the information which will shed light upon a condition so unprecedented as the Hupmobile has created.

And if you are wavering in your choice of a car, your desire to know is even stronger.

Sign and send the coupon.

It will bring you not only the Hupmobile, but also the 1910 Hupmobile in every detail.

We will put you in direct touch with the car, so that you can ride in it and satisfy yourself as to the literal truth of every statement we have made.

Clip the coupon and send it now.

HUPP MOTOR CAR COMPANY

DEtroIT, MICH.
Here is a Special Car for a few Select Buyers

Price, for either Standard Touring or Torpedo Bodies $2500

About three hundred prospective purchasers who have it in mind to pay from four to five thousand dollars can go on this made-to-order Springfield for 1910.

For the past three years a limited number of these cars (about 100 each year) have been made for special buyers, with the idea that certain features in their cars not to be found in any cars on the market regardless of price.

Hence the Springfield has come to be known as the "made-to-order" car.

Until this year no attempt has been made to manufacture more than the few cars, which were easily sold by private to the class of buyers to whom a car of this character appeals.

For this reason practically no advertising has ever appeared concerning the Springfield.

This year, however, we have increased our facilities, and hope to be able to supply in the neighborhood of three hundred cars.

The fact that we manufacture practically every part that enters into the Springfield makes it impossible (even if we were so inclined) to make them in the quantities possible with an assembled car.

No apology is made for the low price we have placed upon the car. This price enables us to supply the best made in every kind it is possible to buy, and in addition gives us a fair profit.

We are willing to let the specifications speak for the quality of material used and the general character of the car.

The automobile dealer, familiar with all makes, will recognize in these specifications an automobile of the strict de-luxe type—a car of the character that will always have a ready sale among those in a position to buy the best cars.

**SPECIFICATIONS:**

**MOTOR**—Two cylinder, vertical, water cooled, 1 inch bore 4 1/2 inch stroke.

**VALVES**—All on one side, horizontally opposed by double over head camshaft. Each cam is a single piece, cut from a single piece of special steel, and mounted on automatic slide bearings. Lift Over, Push and reverse, double over head cam shaft operated on precision mounted and balanced shaft bearings. All parts and parts of best quality. No worn parts.

**TRANSMISSION**—Six-speed gear, forward and reverse, standard on two-speed Type 4.4, standard on four-speed Type 2.4. Chain drive.

**ELECTRIC**—Direct current, 36-volt, single cylinder, 1.5 horse power, 2500 r.p.m., 60 degree, 45 inch belt, and 13 3/4 inch disc dynamo with battery. All parts of best quality. No worn parts.

**SPARK PLUGS**—Two spark plugs per cylinder, 0.020 inch gap, automatically operated, and 0.010 inch gap, automatically operated. No worn parts.

**LUBRICATION**—Automatic, lubricating oil system. Oil pressure, 60 pounds, 300 pounds. Oil quantity, 3 quarts. Oil level, automatically adjusted. No worn parts.

**FUEL SYSTEM**—Two carburetors, automatic fuel feed, automatic shut off, automatic fuel metering, automatic fuel adjustment. No worn parts.

**GEAR BOX**—3-speed, 1st, 2nd, reverse, 1st, 100 pounds, 2nd, 75 pounds, reverse, 50 pounds. All parts of best quality. No worn parts.

**GASOLINE CAPACITY**—Twenty gallons under seat, 5 gallons in tank. No worn parts.

**MOTOR**—Our own, three-cylinder, 75 horse power, 1750 r.p.m., with automatic high and low gear shift. No worn parts.

**RADIATORS**—Four main, centrally located, automatically adjustable, with automatic high and low gear shift. No worn parts.

**CAR SEATS**—Fiber cloth, 100 pounds, 250 pounds. No worn parts.

**CLUTCH**—Two speed, automatic, with automatic high and low gear shift. No worn parts.

**WHEELS**—13-inch, 30 pounds. No worn parts.

**TRANSMISSION**—Automatic, automatic, automatic, all parts of best quality. No worn parts.
Here is a Special Car for a few Select Buyers

Price, for either Standard Touring or Torpedo Bodies **$2500**

ABOUT three hundred prospective purchasers who have it in mind to pay from four to five thousand dollars can "get in" on this made-to-order Springfield for 1910.

For the past three years a limited number of these cars (about 100 each year) have been made for special buyers, who have desired certain features in their cars not to be found in any cars on the market regardless of price.

Hence the Springfield has come to be known as the "made-to-order" car.

Until this year no attempt has been made to manufacture more than the few cars, which were easily sold by private sale to the class of buyers to whom a car of this character appeals.

For this reason practically no advertising has ever appeared concerning the Springfield.

This year, however, we have increased our facilities, and hope to be able to supply in the neighborhood of three hundred cars.

The fact that we manufacture practically every part that enters into the Springfield makes it impossible (even if we were so inclined) to make them in the quantities possible with an assembled car.

No apology is made for the low price we have placed upon the car. This price enables us to supply the best material of every kind it is possible to buy, and in addition gives us a fair profit.

The automobile dealer, familiar with all makes, will immediately recognize in these specifications and the accompanying illustrations an automobile of the strict de-luxe type—a car of the character that will always have a ready sale among those who are in a position to buy the best cars.

**SPECIFICATIONS**:

**SPRINGS**—Vi-silicon steel, semi-single front, three-quarter elliptic rear.

**IGNITION**—6-up spark, 6-cyl. coil on deck, storage battery, double switch, etc., accuracy Type D-4 Bosch magneto, spark plugs in each cylinder.

**LUBRICATION**—Positive, automatic oil system enclosed in crank case of motor.

**TYRES**—Deer, with large hard parts of best grade Champion Vanadium Steel.

**BACK**—Two independent spaces, internal expansion type, Raybestos brake. Rear brake 14 inches in diameter, operated by central linkage.

**BODIES**—Right-hand side, six or seven passenger, 6-cyl. roadster and upholstered by famous house by famed Springfield body style.

**THREE**—Hot water tank, 2 1/2 gal. front; quiet Daimler oil.

**EQUIPMENT**—Two 12 and three oil lamps, generator, horn, carburetor, oil and water tanks, radiator, magneto, motor, steering gear, springs, shock absorbers, propeller shaft, make and model of every part.
Here is a Special Car for a few Select Buyers

Price, for either Standard Touring or Torpedo Bodies $2500

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No apology is made for the low price we have placed upon the car. This price enables us to supply the best material of every kind it is possible to buy, and in addition gives us a fair profit.

We are willing to let the specifications speak for the quality of material used and the general character of the car.

The automobile dealer, familiar with all makes, will immediately recognize in these specifications and the accompanying illustrations an automobile of the strict de-luxe type—a car of the character that will always have a ready sale among those who are in a position to buy the best cars.

SPECIFICATIONS:

MOTOR—Four cylinder, vertical, water cooled, 5 inch bore 4 1/2 inch stroke.

VALVES—All on one side, interchangeable; operated by single cam shaft with cam in gear with shake, and mounted on Amacker Ball Bearings. Lifter Gear, Pump and magneto shaft mounted on genuine imported Amacker Ball Bearings.

TRANSMISSION—Selective type, sliding gear, three speeds forward and reverse; mounted on genuine imported F. & S. Amacker Ball Bearings. All gears and shafts of heat treated Chrome Vanadium Steel.

REAR AXLE: Two piece seamless drawn Chrome Vanadium Steel housing of the clutch driven bearing type. Gears and shafts Chrome Vanadium Steel, heat treated, mounted on genuine imported Amacker Ball Bearings.

FRONT AXLE:—Single 5-beam drop forged in one piece, of heat treated Chrome Vanadium Steel, with ball bearing steering suspension.

FRAMES—Pressed steel, ribbed.

SPRINGS—Vanadium steel, semi-elliptic front, three-quarter elliptic rear.

IGNITION—Jump spark, 4-colt coil on deck, storage battery, double system with genuine Type D-4 Bosch Magneto; two spark plugs in each cylinder.

LUBRICATION—Positive, automatic oil system enclosed in crank case of motor.

DRIVE—Shaft, with large bevel gears of heat treated Chrome Vanadium Steel.

BREAKER—Two independent cones, internal expanding type.

BODY—Straight line, six or seven passengers, about metal and upholstered in genuine hand buffed leathers.

TIRES—34 x 5 inches rear; 34 x 4 inches front; Quick Detachable rims.

STEERING GEAR—Removable, 25 inch wheel; controlling rod-union on top of wheel.

GASOLINE CAPACITY—Twenty gallons under front seat.

MUFFLER—Over frame construction, free and silent, with no back pressure.

RADIATOR—Latest design, genuine honeycomb type; very large and efficient.

CARBURETOR—Single jet, fast feed type, auxiliary air valve and water jacketed.

CLUTCH—Lever type with ball thrust bearings. Simple means of spring adjustment.

WHEEL BASE—120 inches.

TRDAD—55½ inches.

GEAR RATIO—3.1.

CHAIN: V.C.E—12 inches.

COLOM—Green, gray, blue, maroon, yellow, etc.

WEIGHT—2,700 pounds.

EQUIPMENT—Two gas and three oil lamps, generator, horn, jack, tire and repair tools.

PRICE—$2,500.

Correspondence Solicited

The Springfield Motor Car Company

311 Monroe Street

SPRINGFIELD, ILL.
ADVERTISE ENT

New Automobile Prices
Revolutionizing Motor Car Standards

The United States Motor Company announces a new schedule of prices, effective now. This announcement has appeared in the newspapers of forty-nine cities. The automobile world—the entire reading public—will be amazed that this announcement, involving as it does lower prices for 1911 models, is made during the New York Show, which is the signal for heavy buying to begin.

We therefore earnestly request you to read every word on this page. It marks the beginning in motor car history—the establishment of mobile standards—the attainment of possible through the co-operation realized in the formation of this company.

We manufacture one-fourth of all the cars made in the United States and on the cars made in the world. We control the processes.

Cars Made by United States Motor Company Organ

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRUSH, formerly $485, now $450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roadster, Model E 26, formerly $500, now with equipment extra $495</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAXWELL, 16 H. P. runabout</td>
<td></td>
<td>$600</td>
</tr>
<tr>
<td>Model Q, 22 H. P., 4 cylinder, formerly $300, now $750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model I, 25 H. P., fore-door touring car, formerly $400, equal to any car in the $1250 class, now $450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model EA, 30 H. P., fore-door touring car, formerly $1000, equal to any car in the $1500 to $1800 class, now $1350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAMPSON 38, touring car, a recent addition to our line, is listed at a price to command immediate attention</td>
<td>$1250 to $1325</td>
<td></td>
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| GRAY Marine and Stationary Engines—Recognized as standard all over the world.

18 Plants—Capacity 52,000 Cars—52 Models—14,000 Employees—34 Branches—Do

This reduction of values is the logical result of the original plan—policy and ideal to which the United States Motor Company owes its birth. Patiently and persistently we have worked to this end—harmonizing, organizing, specializing—always seeking to increase the efficiency of our organization, to improve the quality of our product—always with the ultimate aim in view—the attainment of an unchangeable leadership, because deserved.

The United States Motor Company is composed of 11 constituent companies—each the leader of its class. It operates eighteen separate factories, with a combined floor space of 40 acres. It employs 14,000 skilled artisans and a corps of original investigators. The benefit of whose work is shared by all the companies alike. The individual genius—which built up each successful constituent company—sends direct to them, but cursed by friendly rivalry is greater exception. The broad plans and policies of the present company are outlined and executed in the fullness of the combined experience of these men.

The product of these companies includes 52 different models—cars designed for every need, utility and pleasure vehicles, for passenger and freight carriage. They range in price from $450 to $8000.

Our selling organization embraces 34 branches in the hands of owners that cannot be duplicated by any other company.

And this organization is owned by upward of a thousand stockholders scattered all over the country; it is operated on a co-operative basis, with all our employees working wholeheartedly for our success and sharing in our prosperity, while the executive management is based on military discipline. No one man, no clique, holds the majority of the stock. Our stock can be bought in the open market by any one, therefore, "control" depends only on efficiency.

In buying new material we are able, by masing our purchases, to secure lower prices and maintain higher quality. By interchange of experience is our engineering department, we avoid costly mistakes and produce better cars. Our original investigations which produce improvements cost little when distributed over our vast product. An improvement in method is introduced immediately in all our plants.

It is on this page that we are able to sell it in places where it would otherwise be possible to sell only at a prohibitive cost. Not only does it mark the beginning in motor car history—the establishment of mobile standards—the attainment of possible through the co-operation realized in the formation of this company.

We have conducted a persistent and thorough investigation of all the cars made in the United States and abroad, selling for prices several dollars less than the highest price that they are advertised to carry. Both Stoddard-Dayton and Columbia cannot compete for the limit of motor car excellence and luxury regardless of price. No better cars can be made until the world's engineering knowledge is enlarged and the skill of its craftsmen is heightened.

BRUSH DELIVERY, formerly $685, now $550. This is the 600-pound delivery wagon.

SAMPSON TRUCKS, 1000 pound delivery model: 1 ton, 2 ton, 3 ton, 4 ton, 5 ton trucks, and 20 to 25 ton road trains, $1150 to $2000

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New Automobile Prices

Imitation Motor Car Standards

United States Motor Company announces a schedule of prices, effective now. This statement has appeared in the newspapers of all cities. The automobile world—the entire public—will be amazed that this announcement—revealing as it does lower prices for 1911—is made during the New York Show, the signal for heavy buying to begin.

We manufacture one-fourth of all the motor cars made in the United States and one-sixth of all the cars made in the world. We control all our manufacturing processes.

Cars Made by United States Motor Company Organizations

Ranging in Price from $450 to $8000

- **BRUSH**, formerly $485, is now $450
- **READER**, Model E 26, formerly $600, now $485
- **MAXWELL**, 16 H. P., now $600
- **STODDARD-DAYTON** models, from $1175 to $4800
  - These models are all unchanged in price, but in every case show worth higher than the 1910 models. The 50 H. P. Stoddard-Dayton is distinguished by exceptional refinements.
- **COLUMBIA**, a new model, for $3500
  - Higher powered and more exquisite finish at a slightly higher price than formerly.
  - Both Stoddard-Dayton and Columbia are intended for the limit of motor car excellence and luxury regardless of price. No better cars can be made until the world's engineering knowledge is enlarged and the skill of its craftsmen is heightened.
- **BRUSH DELIVERY**, formerly $685, now $650
  - This is the 600-pound delivery wagon.
- **SAMPSON TRUCKS**, 1000 pound delivery motor, 1 ton, 2 ton, 3 ton, 4 ton, 5 ton trucks, and 20 to 40 ton road trains, $1150 to $8000

- Capacity 52,000 Cars—52 Models—14,000 Employees—34 Branches—Dealers Everywhere

Advertisement of values is the logical result of our plan, policy and idea to which the United States Motor Company owes its birth. Persistently we have worked to this end and, organizing, specializing—always seeking the efficiency of our organization, the quality of our product—always with the view—the attainment of an unquenchable desire, the establishment of new automobile standards—the attainment of which was only possible through the co-operation and organization realized in the formation of this company.

WE HAVE conducted this getting-ready process persistently and patiently, untroubled by temporary or local conditions in the industry. While others were cutting prices to expose of old stock or left-over cars, or to raise cash, we said nothing; we were not ready. We have now reached the point where the fruit of our effort can be given to the buyer without sacrificing the interests of our stockholders.

We make a profit at these new prices. Had we needed to unload we would have announced them four months ago. We have no left-over cars, no old stock to work up. As a matter of fact, our shipments for three months ending November 30 were 37 per cent. greater than for the same period in 1910.

The season for the heavy buying is now just about to open. Over nine or ten per cent. of our products are already contracted for with deposits. Every indication points to a shortage of our cars this Spring.

Nevertheless, by buying now prices on a cost which is lowered by legitimate saving, made possible through
We manufacture one-fourth of all the motor cars made in the United States and one-sixth of the cars made in the world. We control all our manufacturing processes.

**Cars Made by United States Motor Company Organization**

**Ranging in Price from $450 to $8000**

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<td><strong>BRUSH</strong>, formerly $485, is now</td>
<td>$450</td>
</tr>
<tr>
<td>This is the standard runabout, model E</td>
<td></td>
</tr>
<tr>
<td><strong>Roadster</strong>, Model E 26, formerly $600, now with equipment extra</td>
<td>$485</td>
</tr>
<tr>
<td><strong>MAXWELL</strong>, 1 1/2 H. P. runabout</td>
<td>$800</td>
</tr>
<tr>
<td>This Model AB Runabout now includes 370 equipment, consisting of top, gas lamp and generator, at the former $600 price.</td>
<td></td>
</tr>
<tr>
<td>Model Q, 22 H. P., 4 cylinder, formerly $900, now</td>
<td>$750</td>
</tr>
<tr>
<td>Model I, 25 H. P., fore-door touring car, formerly $1100, equal to any car in the $1250 class, now</td>
<td>$950</td>
</tr>
<tr>
<td>Model EA, 30 H. P., fore-door touring car, formerly $1600, equal to any car in the $1500 to $1800 class, now</td>
<td>$1350</td>
</tr>
<tr>
<td><strong>SAMPSON 35</strong>, touring car, a recent addition to our line, is listed at a price to command instant attention</td>
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**GRAY** Marine and Stationary Engines—Recognized as standard all over the world.

**18 Plants—Capacity 52,000 Cars—52 Models—14,000 Employees—34 Branches—Dealers Every**

**IN BUYING** raw material we are able, by massing the needed, to get better, cheaper material. We control the manufacture of our material, from the making of our products to the sale of them. We control the manufacture of our materials, from the making of our products to the sale of them. We control the manufacture of our materials, from the making of our products to the sale of them.

**WE HAVE** conducted this process, persistently and patient, untroubled by temporary or local conditions in the United States. While others were cutting prices to dispense stock or left-over cars, or to raise cash, we were not ready. We have now a point where the fruit of our effort can be enjoyed in the open market by anyone, therefore "control" depends only on efficiency.

**OUR selling organization embraces 34 branch houses and dealers everywhere.** This distribution not only enables us to dispose of our product at the lowest selling cost, but it permits us to provide a service organization to maintain these cars in the hands of owners that cannot be duplicated by any other company.

And this organization is owned by upward of a thousand stockholders scattered all over the country; is operated on a co-operative basis, with all our employees working whole-heartedly for our success and sharing in our prosperity; while the executive management is based on military discipline. No one man, no clique, holds the majority of the stock. Our stock can be bought in the open market by any one, therefore "control" depends only on efficiency.

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**The product of these companies includes 32 different models—cars designed for every need, utility and pleasure vehicles, for passenger and freight carriage. They range in price from $450 to $8000.**

In the preparation of this advertisement I have been keenly interested. I have gone over every item point by point from your point of view as well as from mine. I am satisfied with it. I vouch for its truth, for the sincerity of purpose and for every single statement of fact which it contains. I commend it to your attention. I ask for your order.

**United States Motor Company**

**All Our Cars Are Licensed Under Selden Patent**

Broadway and 61st Street
New York City
Vehicles, for passenger and freight.

es organisation to maintain these can only enables us to dispose of reality of our product always with constituent company still directs if, by friendly rivalry to greater persistence we have worked to this justment of values is the logical result fp, because deserved.

dealers everywhere. This distribu-

SAMPSON 35, touring car, a recent addition to our line, is listed at a price to command your point of view as well as from amine.

48
Mechanical Excellence of this 30-Horsepower Touring Car

If you become acquainted with the mechanical side of an automobile and you can quickly recognize a real value. This does not necessarily mean that you should know as much as a professional engineer does, but you should know enough of the finer points of an automobile and the more you know of this the more intelligent a car's value in dollars and cents.
Mechanical Excellence of this Overland 10-Horsepower Touring Car

With the mechanical side of an automobile and you can quickly value. This does not necessarily mean that you should know of a professional engineer does, but you should know enough to tell the difference and judge values accordingly. The automobile and the more you know of this the more intelligent value in dollars and cents.

...
FAMILIARIZE yourself with the mechanical side of an automobile and you will arrive at any car's real value. This does not necessarily mean that you have to know a car from A to Z as a professional engineer does, but you should know the fundamentals to be able to tell the difference and judge values accurately. The chassis is the backbone of an automobile and the more you know of this the more gently you can estimate a car's value in dollars and cents.

We have asked you to measure up the facts of this $900 car against the facts of any $1250 car on the market in order to show you the slight difference. Here we wish to acquaint you with the mechanical side of this car—to prove the thoroughness and fineness of its entire construction. And the mechanical excellence of this $900 thirty horsepower touring car is best explained by a brief synopsis of the facts covering its construction.

The motor is a four-cylinder, four-cycle type of Overland design and manufacture. Cylinders are cast singly and have large water jackets. Crank shafts, connecting rods and other motor forgings are made of high carbon manganese steel. The motor is suspended from three points on the main frame, and is constructed in its entirety with a view to accessibility of all parts. Valves are of the screw type, and countersunk and are made from 3% nickel steel heads, electrically welded to carbon steel column gear is placed in such a manner as to minimise stresses and vibrations.

The transmission is of the selective type—three speeds and reverse. The speed changing, final drive, and differential gears are contained in the rear axle unit. A smoother, more delicate, and at the same time more positive clutch than the Overland cone clutch does not exist. It is of such design and construction that in starting the car there is never a shock or jar. The facing is not lubricated. It is, therefore, unaffected by weather conditions. This is the only car in its class provided with a five-bearing crank shaft. This crank shaft is dropped forged from one piece of carbon manganese steel and rotates in five bearings of unusually liberal proportions, giving quietness and extremely long life.

Springs are of the semi-elliptic type, and the rear springs are mounted on eccentric bearing on the rear axle tube. The rear axle tube produces an easy riding car, as it permits of accurately cut and caned the usual differential and two live axles.

Final drive is effected from the rear wheels by means of accurately cut and caned the usual differential and two live axles. Special roller bearings are used, and the bevel gears are nickel steel, cut in accurate Overland heat treated. We have tried to make this as telling any of the essentials. It is therefore, we hope you exactly what a car is worth. We have...
The Willys-Overland Company, Toledo, Ohio

Model 59-T Five Passenger Fore-Door
Touring Car, $900

Wheel base 106 inches; motor 4x4½; horsepower 30; Splitdorf magneto; transmission selective, three speeds and reverse; F. & S. ball bearings, tires 32x3½ Q. D.; 3 oil lamps, 2 gas lamps and generator. Complete set tools.
Model 59-T Five Passenger Fore-Door Touring Car, $900

Wheel base 106 inches; motor 4x43/4; horsepower 30; Splindorf magneto; transmission selective, three speeds and reverse; F. & S. ball bearings, tires 32x3¾ Q. D.; 3 oil lamps, 2 gas lamps and generator. Complete set tools.
stems. Their design and large size enable the motor to develop 150% more horsepower than any other motor of the same bore and stroke.

The radiator is of the famous Kinwood flat tube type. The radiating surface is unusually large, with large diameter intakes and outlet openings.

The frame is constructed of cold rolled pressed steel, formed in channel sections of effective design, great strength and stability. Steering gears are of worm and worm-gear type. The steering connecting rod between the steering knuckles and steering stem is actuated by the cam shaft.

Wheels are of heavy artillery type of special construction and equal to those used on the most expensive cars.

Front axles are of the I-beam section type, drop-forged in one piece, heat-treated in the most approved manner in our own factories, and capable of withstanding the severest road shock.

Brakes are particularly large and have ample friction areas. There are two brakes on each rear wheel, the inside or foot-brake which is internal expanding; the outside or emergency brake which is external contracting.

The radiator is of the famous Kinwood flat tube type. The radiating surface is unusually large, with large diameter intakes and outlet openings.

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Better let us send you one of the most interesting and thorough work of its kind, which explains the ability of the greatest automobile manufacturer in the world to make a car of the 30-horsepower type to sell at from 30% to 40% less than any similar car on the market.

Write today and ask for book F.

The Willys-Overland Company, Toledo, Ohio

Model 59-T Five Passenger Fore-Door Touring Car, $900

Wheel base 106 inches; motor 4x34; horsepower 30; Splidtord magneto; transmission selective, three speeds and reverse; F. & S. ball bearings, tires 32x34 Q. D.; 3 oil lamps, 2 gas lamps and generator. Complete set tools.
Comparison sells more Chalmers cars than all our advertising

YOU will buy the car that has the most features designed for your convenience, your comfort, your safety, your economy and your pride of ownership.

Some cars seem to be built to please the builder. You want one that was built to please the buyer—for you are a buyer. You will use the car. You will find out from day to day whether it is thoroughly convenient to operate and use. You will find out whether it is perfectly comfortable under all conditions; perfectly safe; consistent; economical.

Therefore we refer you to the diagram above. Chalmers “Thirty-Six” is a car for the buyer. Look over the entire motor field and see if you can get these “Thirty-Six” features in any other car at $1,800. See if you can get all of them in any other car at any price.

Why They Bought “Thirty-Six”
We have delivered more than 2,000 of the “Thirty-Six.” During the last few weeks we have been asking many of the owners to tell us the principal reasons why they bought the “Thirty-Six.” Everybody seems to agree on three ten big reasons:

1. Chalmers Self-Starter
Built away with simplicity. Add to any gas to the value of an automobile. Simple, safe, efficient, and automatic. Nothing can possibly go wrong with it.

2. 30h.p. 6 x 6 Tread and Invariable Traction
Big tires Narrative area of traction and reduce the trouble to the platform. Doubles as the road, precision of the platform—design can be made in two or three inches.

3. Five-Speed Transmission—Four Speeds Forward and Reverse
Difficult measurements are essential. With it you can shift from four to four speeds without losing your momentum.

4. Beauty and Style
Chalmers monopoly is the kind of beauty that means anything. You cannot buy a car for less than $1,800 with greater beauty of lines. Finish is superb—35 cents in paint and varnish. Choice of three alternative colors available.

5. Price—$1,800
Because of the features listed above and a score of other advantages, because of perfect design, high-grade materials and workmanship of the Chalmers standard, the “Thirty-Six,” offers the greatest value for the money of any car on the market.

The Biggest Chalmers Year
From time to time in the past it has been our pleasure to quote from those in the automobile trade, and the public generally, a commonly heard expression, “This is another Chalmers year.”

At the time of writing this advertisement, with half of the 1913 season gone, we are pleased to be able to say this qualification and say, “This is the biggest Chalmers year of all.” We have shipped 165 more cars than during the same period last year and last year was a good year too.

We believe that this phenomenal business is due to the fact that the cars we have shipped in previous seasons have been holding up and giving good service and that we are now creating the results of building out the first, really good cars at medium prices.

Read What Owners Say
As stated above we have delivered more than 2,000 of the “Thirty-Six.” These cars have now been tested by owners’ hands in all parts of the country; in various altitudes; in diverse climates; on all sorts of roads. Everywhere they have made good. Read a few typical letters.


The new feature of the “Thirty-Six” are fine. The long steady power given me an assurance that I don’t see where anyone could do more. It is a very high speed transmission that makes it so ideal for the town, for you can cross any city block or road without losing your speed. The starter works perfectly.

George M. Pears, Pontiac, New York.

The car is built like a top, looks like a top, and runs like a top.

The Chalmers
"It runs."

Seven passenger touring car

54 horsepower; 4-door touring car; 5-speed transmission; 66 inches track; sea level service; ten inch tires; foot brake and hand brake; nickel steel front and rear suspension; nickel steel wheels; nickel steel seating units; and the mechanical excellence that makes a Chalmers car known and fast around the world.

We are quite certain you can find anything to do it better than we do it.

Here’s the way to answer to the next time you can do it because you haven’t and the "next time" will be when your car breaks down. It will be a Chalmers car, and the next time you can do it without losing your head.

The service you get from a Chalmers car is worth half the price of the car! Check your car for Chalmers parts and get it ready to go the next time you have to go out of town.

Get the advantages of the Chalmers car, and you won’t be sorry.
The Chalmers “SIX”

“It runs with ease.”

Seven passenger Touring
Four passenger Torpedo

$3250

54 horsepower; Chalmers self-starter, air pressure type; 130 inch wheel base; 24/24/24 tires; Continental demountable rims; five inch wide tires; steel fender bars; double axle; 475 to 500 pounds; nickel steel frame and axles; black or blue or grey with red buffer; extra large brake shoes; nickel steel frame side members; sheet aluminum body.

The Chalmers “SIX” is a high powered, mechanically perfect car, ready to run, costing less than the motor car that has been accustomed to pay for the qualities this car possesses.

We are the only car of its class ever produced. We believe that the Chalmers “SIX” is a better motor car than any with which we can compare it. We have made it because we believe in it and we are willing to do it.

Here’s Why

The Chalmers “SIX” is a car that you can buy with your eyes. A car that you can buy with your brains. A car that you can buy with your money. A car that you can buy with your conscience.

If you want a car that you can buy with your brains, buy the Chalmers “SIX.” If you want a car that you can buy with your money, buy the Chalmers “SIX.” If you want a car that you can buy with your conscience, buy the Chalmers “SIX.”
Comparison sells more Chalmers cars than all our advertising

You will buy the car that has the most features designed for your convenience, your comfort, your safety, your economy and your pride of ownership.

Some cars seem to be built to please the buyer—for you are a buyer. You will use a car. You will find out from day to day whether it is thoroughly convenient to operate. You will find out whether it is perfectly serviceable under all conditions; perfectly safe; immediate; economical.

Therefore we refer you to the diagram above. Chalmers Thirty-Six is a car for the buyer. Look over it for entire satisfaction and see if you can get these Thirty-Six reasons anywhere else at $1800. See if you can get all of them in one car at any price.

Why They Bought "Thirty-Sizes"

We have delivered more than 2000 of the "Thirty-Sizes." And in the last few weeks we have been telling some of the owners to tell us the principal reasons why they bought the "Thirty-Six." Everybody seems to agree on two big reasons:

1. Chalmers Self-Starters

In many ways with starting. Adds at least five to the value of an automobile, simple, neat, efficient, air pressure, self-completing—just press a button on the dash and away goes your key.

2. 52"-4" Tires and Demountable Rims

In many ways more of the car than the whole. Demountable rims, this is a feature which cannot be made in two of these qualities.

3. Free Speed Transmission—Four Speeds Forward and Reverse

Affords utmost flexibility of control. With it you can match grades of terrain without using less of time and without over-running.

4. Long Stroke Motor

Maximum power at low engine speed, splendid pulling, longer service, greater quickness, freedom from vibrations.

5. Dual Ignition

High grade ignition system never needed, nothing equals it.

6. Rear Wheel Traction

Good Traction for Carburators

You get the proper mixture for starting or to pull starting conditions without getting out of car or installing addition.

8. Gasoline Celuller Radiator

Built in the same line, highest priced cars. Many better than the regular radiator, longer life, cooler operation.

9. Front and Rear Suspension

Long wheel base, big wheels and tires, deep spongy tires, easy steering—helping to make an automobile that will appeal to you when you see the car.

10. Beauty and Style

Chalmers symmetry is the kind of beauty that means more. You cannot find a car at any price with greater beauty of lines. Finish in expert, all costs of materials and varnish. Choice of three attractive color schemes.

11. Price—$1800

A fact you overlooked above and a score of other advantages; because of perfect design, high-grade material and workmanship of the Chalmers Standard, the "Thirty-Six," offers the greatest value for money of any motor car built.

The Biggest Chalmers Year

From time to time the past has been our pleasure to quote from those in the automobile field, and the public generally, a commonly heard expression, "This is another Chalmers year.

At the time of writing this advertisement, with half the 1912 season gone, we are pleased to be able to say, "This is the Biggest Chalmers year of all.

Since July 1st we have shipped 226 more cars than during the same period last year and last year was a good year too.

We believe that this phenomenal business is due to the fact that we have done more than 5000 of the "Thirty-Sixes." These cars have now been tested in owners' hands in all parts of the country; in various altitudes; in diverse climates, on all sorts of roads. Everywhere they have made good. Read a few typical letters:

John J. Jones, Grocer, Newton, New York City.

The "Thirty-six" is the best made car in the market. The way it runs with eagerness.

George B. Poole, Boston, Mass.

The "Thirty-Six" is not only a fine looking car but everything about it is. It is a car that gives you comfort and satisfaction, and is one of the easiest riding cars I ever sat in.

W. C. Cushman, Sept. American Car and Peddley Co., Detroit.

The "Thirty-Six" is the best car for the money. I have passed through everything that is possible with the highest priced cars. The "Thirty-Six" is one of the finest cars on the road.

John D. Williams, Shreveport, La.

I have been using the "Thirty-Six" for a year. The only time I have not been able to get started was due to the weather conditions. It is a car for the money, and I have had the most satisfaction out of any car I have used.

The Chalmers "SIX"

"It runs with eagerness"

Seven passenger touring $325

Four passenger Torpedo $320

54 horsepower; Chalmers self-starter, air pressure type; 130 inch wheel base; 52" x 4" tires; Continental demountable rims; ten inch upholstering; nickel steel frame and rear axle housing; extra large brakes; nickel steel frame side members; sheet aluminum bodies.

The Chalmers "Six" is a high power mechanically perfected, luxurious car at a price lower than the motor ing picture has been accustomed to pay for qualities this car possesses.

We are quite certain our "Six" is one of the finest cars ever produced.

We sincerely believe that the "Six" is the car that you are looking for, and the Chalmers "Six" does have a price which sells for higher quality and performance than any manufacturer who makes this claim is to be asked two questions: First, why are they able to do it? Second, why are you willing to do it?

Chalmers Motor Company, Detroit, Mich.
My Farewell Car

By R. E. Olds, Designer

My 24th Model

This is the twenty-fourth model which I have created. My first was a steam car, built in 1867—25 years ago. My first gasoline car was built in 1895—17 years ago.

My whole life has been spent in building gasoline engines—the Olds Gas Engines, famous half the world over. My engine-building successes gave first prestige to my cars. For the motor, of course, is the very heart of a car.

So it came about that tens of thousands of motorists have used cars of my designing. They have run from one to six cylinders, from 6 to 60 horsepower. They have ranged from little to big, from the primitive to the modern luxurious cars. I have run the whole gamut of automobile experience.

In the process of sifting I have settled down to the 30 to 35 horsepower, 4-cylinder car. That is, and will doubtless remain, the standard type of car.

Greater power is unnecessary; its operation expensive. Weight, size and power not needed bring excessive cost of upkeep. Most men who know best, and who can own good cars, are coming to this standard type. So we make for the future just this one type of car.

And in this new car—called Reo the Fifth—I have embodied all I know which can add one iota to the real worth of a car.

My Thousand Helpers

But Reo the Fifth, despite all my inventions, belongs to other men more than to me. A thousand men have contributed to it. I have searched the whole world to secure for each part the very best that any man has discovered.

For that is the essence of motor car designing—to learn what is best and adopt it. No modern car owes more than a trifle to the genius of any one man.

So this car is not mine—it is merely my compilation. It shows my skill in selection—in picking the best—more than my skill in designing. It shows, above all, what my myriads of cars in actual use have taught me.

And I frankly confess that I owe a great deal to the many brilliant designers whom it has been my good fortune to associate with me.

Where This Car Excels

In Reo the Fifth you will find many good features found in no other car. You will find all the best features used in other up-to-date models. You will find them combined with style, finish and appearance which marks the very latest vogue.

But the vital advantages of this new car lie in excess of care and caution. In the utter exactness—in the big margins of safety.

One of the greatest lies in formulas for steel. I have learned by endless experiment—by countless mistakes—the best formula for each purpose.

All the steel that I use is new. And each lot is analyzed accord with the formula, I taught not to take any chance.

I used to test gears with a Timken Roller Bearing, Nickel Steel of unusual diameter and Timken Roller Bearings.

The carburetor is doubly insured by air and hot water—for the petrol gasoline.

The car is over-tired.

So with every part. From this car is built under laboratory control. The various parts pass a thousand tests.

It is one thing to build a car, and quite another to build one to meet expected conditions, thing to build one to meet actual use. The unusual and unexpected, the car's weakness.

The best thing I have left is the ability to arrive at any conclusion from the experiences of others.

I had one of these new cars three thousand miles—run at top speed, on rough roads. That is, to three years' average usage, the car apart, and I found an equal part in the whole car practice.

That's where this car excels of caution taught by 25 years—"n not abler than other dealers simply been learning longer.

Reo the Fifth

$1,055
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One of the greatest lies in formulas for steel. I have learned by endless experiment—by countless mistakes—the best alloy for each purpose.

All the steel that I use is now made to my order. And each lot is analyzed to prove its accord with the formula. Experience has taught me not to take any chances.

I used to test gears with a hammer. Now I use a crushing machine of 50 tons capacity. And I know to exactness what each gear will stand.

I took the maker's word on magnetos at one time. Now I require a radical test, and I have found but two makes which will stand it.

The axles are immensely important. I use Nilo Steel of unusual diameter, and fit them with Timken Roller Bearings.

The carburetor is doubly heated—by hot air and hot water—for the present grades of gasoline.

The car is over-tired.

So with every part. From start to finish this car is built under laboratory supervision. The various parts pass a thousand inspections.

It is one thing to build a theoretical car, to meet all expected conditions. It is another thing to build one to meet actual conditions. The unusual and unexpected bring out a car's weakness.

The best thing I have learned, in these decades of experience, is the folly of taking chances.

I had one of these new cars run for ten thousand miles—run at top speed, night and day, on rough roads. That is equal, I figure, to three years' average usage. Then I took the car apart, and I found every important part in the whole car practically as good as new.

That's where this car excels—in that excess of caution taught by 25 years of experience. I am not able than other designers. I have simply been learning longer.

Reo the Fifth

$1,055
I shall let it stand as my topmost achievement.

Embodied here are the final results of my 125 years of experience.

I have spent 18 months on the Reo the Fifth. For three months I stopped the whole Reo production to devote all of our efforts to this one car.

The future is bound to bring some minor changes—folderols and fashions. But in all the essentials this car strikes my limit. Better workmanship is impossible, better materials unthinkable. More of simplicity, silence, durability and economy can hardly be conceived.

I consider this car about as close to perfection as engineers ever will get.

My 24th Model

This is the twenty-fourth model which I have created. My first was a steam car, built in 1887—25 years ago. My first gasoline car was built in 1895—17 years ago.

My whole life has been spent in building gasoline engines—the Olds Gas Engines, famous half the world over. My engine-building successes gave first prestige to my cars. For the motor, of course, is the very heart of a car.

So it came about that tens of thousands of motorists have used cars of my designing. You will find all the best features used in other up-to-date models. You will find them combined with style, finish and appearance which marks the very latest vogue.

But the vital advantages of this new car lie in excess of care and caution. In the utter exactness—in the big margins of safety.

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The car is over-tired.

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The best thing I have learned, in decades of experience, is the folly of taking chances. I had one of these new cars run for 1,000 miles—run at top speed, night and day, on rough roads. That is equal to three years' average usage. Then I took the car apart, and I found every important part in the whole car practically as good as new.

That's where this car excels—in that exacting taught by 25 years of experience. I am not able to render better than other designers. I simply been learning longer.

Reo the Fifth

$1,055
MECHANICAL experts BUILD National cars—With fourteen years experience to guide them.

But women and men who do not claim to be authorities on machinery BUY National cars as safely as though they were experts. Motorists have faith in the company that builds and guarantees National cars, because the world-famed signature National is not only a name of a car but the mark of quality.

We welcome a detailed analysis of the National; we invite you to visit and inspect our factories. But what motorists demand today is service, confidence, comfort and uninterrupted enjoyment from their cars. If the cars are built right, if the right materials are put in the right place, if the design is correct and the workmanship good, you can then avoid the work of "going over a car with a fine tooth comb." That way of buying a quality car is obsolete.

You can't find a better built car than the National if you use a microscope. We give you all you can possibly demand in a high-grade motor car, and give it to you with complete abandon of worry about what is under the hood or beneath the seat.

"You don't have to raise the hood"

NATIONAL owners have learned that we build whole cars—the name National is their guarantee. Every National car is built as a unit—every mechanical part operates harmoniously to produce satisfactory results. You leave the responsibility for its mechanical construction to our experience—forget that there are gears and mechanical parts in the car. Just rest in comfort and enjoy your ride with absolute confidence in your car.

Lavish in comfort

THIS new National embodies all our internationally recognized principles of superiority. Beautiful, economical, efficient and lavish in comfort—this car is the climax of the National's success in car building since its.

You can buy over telephone

Brief Spec.

Machinist or Motorist?

You don't have to be a mechanical expert to safely buy a National Six—$2375

Four and five-passenger

CHANICAL experts BUILD National cars with fourteen years to guide them. Men and men who do not claim authorities on machinery BUY cars as safely as though they were mechanical experts BUILD national cars with fourteen years to guide them. Motorists have faith in expensive cars and guarantees on cars, because the world-famed National is not only a name of the mark of quality. Become a detailed analysis of the car; we invite you to visit our factory. But what motor-hand today is service, confidence, comfort and uninterrupted enjoyment from their cars. If the cars are built right, if the right materials are put in the right place, if the design is correct and the workmanship good, you can then avoid the work of "going over a car with a fine tooth comb." That way of buying a quality car is obsolete.

You can't find a better built car than the National if you use a microscope. We give you all you can possibly demand in a high-grade motor car, and give it to you with complete abandon of worry about what is under the hood or beneath the seat.

You don't have to raise the hood

ONAL owners have learned that we do not build cars—but the name National is famous. Every National car is built as every mechanical part operates harmoniously to produce satisfactory results. You are responsible for its mechanical care to our experience—forget that there are mechanical parts in the car. Just rest back and enjoy your ride with absolute confidence.

Brief Specifications—

National Six


Lavish in comfort

THIS new National embodies all our internationally recognized principles of superiority. Beautiful, economical, efficient and lavish in comfort—this car is the climax of the National's success in car building since its advent on the American market.
MECHANICAL experts BUILD National cars with fourteen years experience to guide them.

But women and men who do not claim to be authorities on machinery BUY National cars as safely as though they were experts. Motorists have faith in the company that builds and guarantees National cars, because the world-famed signature National is not only a name of a car but the mark of quality.

We welcome a detailed analysis of the National; we invite you to visit and inspect our factories. But what motorists demand today is service, confidence, comfort and uninterrupted enjoyment from their cars. If the cars built right, from the right materials are put in the right place, if the design is correct and the workmanship good, you can then avoid the work of "going over a car with a fine tooth comb." That way of buying a quality car is obsolete.

You can find a better built car than the National if you use a microscope. We give you all you can possibly demand in a high-grade motor car, and give it to you with complete abandon of worry about what is under the hood or beneath the seat.

"You don't have to raise the hood"

NATIONAL owners have learned that we build whole cars—the name National is their guarantee. Every National car is built as a unit—every mechanical part operates harmoniously to produce satisfactory results. You have the responsibility for its mechanical construction to our experience—forget that there are gears and mechanical parts in the car. Just rest in comfort and enjoy your ride with absolute confidence in your car.

You can buy over telephone

NATIONAL owners buy performance and not specifications—they can buy their new Nationals over the telephone. We sell our experience, ability, responsibility and our guarantee—not a mere job of wheels, axles, gears and parts. That's why you don't have to raise the hood to buy a National you know no better is made.

Lavish in comfort

This new National embodies all our internationally recognised principles of superiority. Beautiful, economical, efficient and lavish in comfort—this car is the climax of the National's success in car building since its pioneer beginning. It marks a most coveted improvement in motor car designing. It is the one car that harmonises from end to end—a symmetrical creation that is distinctive and essentially practical.

The National 40 with its marvelous history, needs no introduction. This is our staple car—the highest achievement in automobile building. Here is the best all-around motor car ever made. This is the third year for this successful car in all its essential features. This new series embodies all improvements and refinements.

Brief Specifications—National Six


Equipment—Top complete, with side curtains and boot, ventilating rain vision windshield, extra Firestone electric lighting and starting systems, 18-inch double bulb electric headlight, electric license bulb light, Warner speedometer, electric horn, tools and jack.

Send this Coupon today

Gentlemen: Without obligation on my part, please send me complete particulars of National cars.

Name ____________________________
Address __________________________

National Motor Vehicle Co.  
Indianapolis, Ind., U.S.A.
An interesting example of the “boat type” body.
The peculiar feature of the design lies in its run-like forecast lines and its truncated stern; it is styled a sub-torpedo and the body, though metal, is grained to represent wood. Lightness of construction primitively was sought, for running boards are missing and the mudguards are small.

Ingenious storage spaces that satisfy a real demand.
To provide for the safe carrying of goggles, gloves and the hundred and one other motoring necessities is not always easy, though the designer of this body has not found it particularly difficult. In the average American car, storage space of the kind is unknown.

Side view of lately developed runabout model.
Compactness is the predominating feature of this vehicle which somewhat resembles a great black beetle, what with its slanting front and rear and its low-hung chassis. The provision of ventilators on the rear luggage compartment is unusual.

American three-passenger car that is different.
The third seat at the rear closes up out of sight and when closed is waterproof; besides it there are commodious lockers. The position of the tool box is worthy of note, for although fairly large, it does not obstruct the running board.

Is closer resemblance to a real boat possible?
The identity with which the boat builder’s art has been instilled in this body is truly astounding; the “hull” is properly built up by a number of “sides,” decks are laid in true nautical fashion and even the cockpit has a coaming. Note the protected fuel tank.

Clever combination of.
When the top is folded back, ladders and purposes an open raised the occupants may be. What a contrast between the severity of American practice.
A good example of the "boat type" body. The example lies in its ram-like for-}

ward WPM. It is a sin-torpedo represent wood. was sought, for running ad and the mudguards are small.

A modified type of two-passenger coupé model. When closed, this body has much the appearance of a "com-

bining tower." It is a good example of the European practice of guiding the engine hood sharply to blend with the lines of the deep scuttle. Owing to the narrowness of the chassis, the body appears somewhat squat when the back is folded up.

In closer resemblance to a real boat possible? The fidelity with which the boat builder's art has been imi-

tated in this body is truly astonishing; the "hull" is prop-

erly built up of a number of "skins." Decks are laid in nautical fashion and even the cockpit has a coaming. Note the protected fuel tank.

Dodging the conventional in front elevations. The resemblance to an aeroplane with its widespread wings is unmistakable. The miniature "side" lamps, set into the dash, are in marked contrast to the powerful head lamps. The windshield, raised at the top, reflects a well-defined tendency in design. The body is styled a skip-torpedo.

Clever combination of sedan and limousine. When the top is folded back, as shown, the body is to all intents and purposes an open touring body; but when it is raised the occupants may be as snug as the proverbial bag. What a contrast between the curving fender line and the severity of American practice!

Another view showing lines of the "terra marina" body.
An interesting example of the "boat type" body.

The peculiar feature of the design lies in its ram-like forward lines and the body, though metal, is grained to represent wood. The provision of ventilators on the rear luggage compartment is unusual.

Ingenious storage spaces that satisfy a real demand.

To provide for the safe carrying of fragile, gloves and the hundred and one other motoring necessities is not always easy, though the designers of this body have not found it particularly difficult. In the average American car, storage space of the kind is unknown.

Side view of 1stely developed runabout model.

A representative type of fast foreign runabout. It is a clever way of giving all the passengers the sensation of flying the engine smoothly, blending with the lines of the deep scuttle. Owing to the lowness of the chassis, the body appears somewhat squat when the back is folded up.

The exaggerated mud type of two-passenger coupé model.

A clever solution of the outboard seat. In this body, the designer has placed the seat as far forward as possible. Diving, incidentally, provides a good solution of the problem; conversation is understood, and half the tonneau length is saved. The windshield, unbroken at the top, adds to the tendency in design. The body is styled to give the appearance of a real boat possible.

How foreign designers reduce wind resistance.

Type of racing body in which the stream-line principle is well exemplified, the theory being that the pressure at the rear nearly neutralizes the head resistance. The extreme to which this idea is carried is evidenced by the rudder-like projections on the rear frame members.

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Another view showing lines of the "ter-

The exaggerated coupé type of town v-ride.

The apparent great length of the chassis is accounted for by the fact that more than half the space is taken up by the enclosed part effects the elaborate attempt at lines blending at the front.

Dodenng the conventional in front.

The resemblance to a aeroplane with its lines must be admitted. The miniature "side" doors are in marked contrast to the powerhouse. The windshield, untrimmed at the top, is a feature in design. The body is styled to give the appearance of a real boat possible.

American three-passenger car that is different.

When the top is folded back, as shown, there is a great resemblance to the wreck of a sunken vessel. The illusion is made complete by the rudder-like projections on the rear frame members.

Clever combination of sedan and sports.

When the top is folded back, as shown, there is a great resemblance to the wrecks of sunken vessels. The illusion is made complete by the rudder-like projections on the rear frame members.

NEW IDEAS IN CAR BODIES DEVELOPED CHIEFLY ABROAD

55
NEW IDEAS IN CAR BODIES DEVELOPED CHIEFLY ABROAD

A clever variation of the existing principle.

The resemblance to an aeroplane with its widespread wings is unmistakable. The miniature "side" lamps, set into the dash, are in marked contrast to the powerful head lamps. The windshield, unbroken at the top, reflects a well-defined tendency in design. The body is styled a skiff-torpedo.

A type of fast runabout.

From the side, the resemblance to a boat is even more pronounced; the lines are those of the typical, fast runabout launch. The driver's seat is high up near the cockpit. This body caused a genuine sensation at the recent French salon.

Another view showing lines of the "terra marine" body.

The windshield, unbroken at the top, reflects a well-defined tendency in design. The body is styled a skiff-torpedo.

A clever variation of the existing principle.

In this body, the flower seats are staggered for the laudable purpose of providing both occupants plenty of elbow room. The design has been placed by means of a card so as to obscure the engine hood. This body caused a genuine sensation at the recent French salon.

More views of this beautiful "terra marine" body.

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A clever variation of the existing principle.

In this body, the flower seats are staggered for the laudable purpose of providing both occupants plenty of elbow room. The design has been placed by means of a card so as to obscure the engine hood. This body caused a genuine sensation at the recent French salon.

Another view showing lines of the "terra marine" body.

The windshield, unbroken at the top, reflects a well-defined tendency in design. The body is styled a skiff-torpedo.
The Oldest, and yet the newest car in this Automobile Show is the Maxwell "25."

No name dates farther back in this industry—and yet if you look where the crowd blocks the aisle, you'll agree that visitors consider the latest Maxwell—the "25-4"—the newest of them all.

To say this $750 car is the "sensation" of the 1914 Show, would be trite—thoroughly true. It is more than that.

It is Revolutionary.

Revolutionary, because never before has it been possible to obtain a car of such size, such capacity, such power, such performance and of such quality throughout, as you will see in this Maxwell "25" at the price—$750 fully equipped.

We call it an engineering triumph, you'll agree we are justified in saying. Recall that for years, hundreds of thousands of dollars have been looking, hoping, waiting for such a car at the price.

We say this car is the Oldest, because more years of more combined engineering skill and know-how have gone into it than into any other automobile at this price.

And, backing up that engineering skill; that know-how; is as much combined experience as ever backed an automobile.

Add to this, honesty of purpose, a desire to make good and to do the best at the hands of every one you have, the elements that make Maxwell unique.
Maxwell $750

The Pioneer of the Past—and of the Future

Oldest, and yet the newest car in this automobile Show is the Maxwell “25.”

It dates farther back in this industry—and yet if you look where the crowd blocks the aisle, you’ll agree that visitors consider the latest Maxwell—the 5-4”—the newest of them all.

It is more than that. Revolutionary.

Revolutionary, because never before has been possible to obtain a car of such style, such capacity, such power, such performance and of such quality throughout, you will see in this Maxwell “25” at the price—$750 fully equipped.

Revolutionary, too, because maintenance has been reduced to the minimum in this car; the best steels

We call it an engineering triumph. And you’ll agree we are justified when you recall that for years, hundreds of thousands have been looking, hoping, waiting, for such a car at the price.

We say this car is the Oldest car in the Show—because more years of experience; more combined engineering skill; more know-how have gone into it than ever went into any other automobile at the price.

And, backing up that experience; that skill; that know-how; is as much money as ever backed an automobile concern.

Add to this, honesty of purpose, pride, and a desire to make good and to deserve well at the hands of every owner—and you have the elements that combined have produced this car that is the wonder of the Show—that blocks the aisle in front of the exhibit, and thereby is pronounced...
The Oldest, and yet the newest car in this Automobile Show is the Maxwell "25."

No name dates farther back in this industry—and yet if you look where the crowd blocks the aisle, you'll agree that visitors consider the latest Maxwell—the "25-4"—the newest of them all.

To say this $750 car is the "sensation" of the 1914 Show, would be trite—though true. It is more than that.

It is Revolutionary.

Revolutionary, because never before has it been possible to obtain a car of such size, such capacity, such power, such performance and of such quality throughout, as you will see in this Maxwell "25" at the price—$750 fully equipped.

Revolutionary, too, because maintenance cost has been reduced to the minimum, by putting in this car the best steel's known to science—thus making it light, yet practically indestructible. So you can now not only afford to buy, but to keep, an automobile.

We call it an engineering triumph. And you'll agree we are justified when you recall that for years, hundreds of thousands have been looking, hoping, waiting, for such a car at the price.

We say this car is the Oldest car in the Show—because more years of experience went into it than ever went into any other automobile at the price.

And, backing up that experience; the skill; that know-how; is as much money as ever backed an automobile concern.

Add to this, honesty of purpose, pride, and a desire to make good and to deserve well at the hands of every owner—and you have the elements that combined have produced this car that is the wonder of the Show—that blocks the aisle in front of the exhibit and thereby is proclaimed the Newest as well as the Oldest car in the Show. The Pioneer of the past—and of the future—the Maxwell "25."

MAXWELL MOTOR COMPANY

INCORPORATED DETROIT MICHIGAN
Oldest, and yet the newest car in this automobile Show is the Maxwell "25."

Some dates farther back in this industry—and yet if you look where the pond blocks the aisle, you'll agree that buyers consider the latest Maxwell—the 25-4”—the newest of them all.

Say this $750 car is the “sensation” of the 1914 Show, would be trite—true. It is more than that.

Revolutionary.

Revolutionary, because never before has been possible to obtain a car of such size, such capacity, such power, such performance and of such quality throughout, as you will see in this Maxwell “25” at the price—$750 fully equipped.

Revolutionary, too, because maintenance cost has been reduced to the minimum, by putting in this car the best steels known to science—thus making it light, yet practically indestructible. So you in now not only afford to buy, but to keep, an automobile.

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CARS

A TYPICAL AMERICAN TOURING CAR.

The annexed sectional cut shows in considerable detail the mechanism of a gasoline touring car of distinctively American type. From the manufacture of a single-cylinder runabout and light tonneau, the makers of the Cadillac machines have risen to the construction of the huge car seen below. In doing this, however, they have wisely retained features which contributed largely to the success of the smaller models, and at the same time added several novel improvements. Thus we see on the touring car engine copper water jackets, variable-lift mechanically-operated inlet valves, and the same flatest atomiser or mixer that have been used heretofore; while a distinct novelty for a car of this kind is the employment of a planetary transmission gear which, in connection with a clutch in the flywheel, gives three speeds forward with a direct drive on the third, or high speed. The special form of three-speed planetary gear for the large touring car was developed from the two-speed gear of the smaller machines by the addition of only one moving part. As is well known, this transmission is well adapted for continuous heavy pulling, because it has no high-speed parts and its gears are subjected to lower tooth strains, size for size, than those of any other common form of transmission. With this type of transmission it is possible to pass instantly from one speed to another by simply pushing a lever. The gears are always in mesh, and there is no chance of stripping them from bad manipulation.

The engine is governed by varying the lift of the inlet valves. This is accomplished by sliding the cam-screw are, as a rule, intercepted at given intervals, so as to form luminous flashes, succeeding one another more or less rapidly. In the Rehmer telegraph system, on the contrary, the so-called speaking areas are widened;

Scientific American

A Novel System of Wireless Telegraphy.

BY DR. ALFRED SANGER.

Our readers will doubtless remember the beautiful experiments in wireless telephony which were made by Herr F. Ruhmer on the Wannsee Lake, near Berlin, last year and continued with increasing success in the course of last summer. Now the inventor has applied his process to optical telephony.

In optical telegraphy the rays issuing from a vapor cell at the receiving station have to be heard at the transmitting station. The satisfactory results made, go to show that this like the analogous system be used to special advantages over other systems.

A Prize for .

Prizes to the value of 11 conjointly by the Prussian Royal Society of Portland (says on the proceedings when.

LONGITUDINAL SECTIONAL VIEW OF A FOUR-CYLINDER GASOLINE TOURING CAR OF DISTINCTIVELY AMERICAN DESIGN

1. Throttle lever; 2. steering wheel; 3. steering column; 4. choke and brake pedal; 5. spark coil; 6. vibration; 7. gasoline pressure tank for supplying carburetor; by gravity; 8. copper water jacket; 9. morse and oil groove; 10. compression chamber; 11. tube valve; 12. spark plug; 13. relief cock; 14. exhaust valve; 15. carburetor; 16. inlet pipe; 17. exhaust pipe; 18. horn driving oil pump; 19. radiator cap; 20. water tank; 21. radiator; 22. radiator fan; 23. valve for driving fan; 24. starting switch; 25. centrifugal water pump; 26. spring brake; 27. oil pan; 28. oil pump for governing device; 29. tube or sub-frame supporting engine; 30. plate of oil governor; 31. reverse oil chamber of governor; 32. rod connecting reverse lever; 33. oil switch; 34. brake lever; 35. brake valve for adjustable cam shaft; 36. 41. connecting rod and crank; 37. crank shaft; 38. connecting rod; 39. fly wheel; 40. ball bearings of transmission shaft; 41. planetary transmission giving these speeds ahead and one reverse; 42. double-acting transmission brakes; 43. universal joint of differential gear; 44. differential gear casing; 45. 50-gallon gasoline tank; 46. transmission rear spring support; 47. pressed steel side frame; 48. revolving diller for gasoline tank; 49. wood frame of body; 50. side entrance door.
As is well known, this transmission was developed from the two-speed transmission type, the use of which has been increased by several novel improvements. In the transmission, the engine is designed to be able to pass directly from one speed to another by simply pushing a lever. The three-speed forward gears are obtained by sliding the camshaft and its gears are subjected to mesh, and there is no chance of bad manipulation.

When the engine is at rest, the three gears are held together by the teeth of the ratchet wheels in line with the ratchet teeth. As soon as the engine is started, the ratchet wheels with their teeth are moved out of line with the ratchet teeth, the camshaft is released, and the engine is permitted to run. The camshaft is then moved back into line with the ratchet teeth, the transmission is in the reverse gear, and the engine is again at rest.

In doing this, the transmission is provided with a pro-speed planetary transmission, which is arranged to give a continuous heavy pulling, because of parts and its gears are subjected to a lot of wear during the running of the engine. The engine is provided with an automatic clutch, which is arranged to give a smooth and quiet start.

A Novel System of Wireless Telegraphy.

BY DR. ALFRED GLADDEN.

Our readers will doubtless remember the beautiful experiments in wireless telegraphy which were made by Herr F. Ruhmer on the Wannsee Lake, near Berlin, last year and continued with increasing success in the course of last summer. Now the inventor has applied his process to optical telegraphy.

In optical telegraphy the rays issuing from the transmission station are intercepted at given intervals, producing intermittent humming sounds which vary with intervals corresponding to those of Morse signal. The pitch of this sound will depend on the frequency of the interrupter. Whereas in transmitting language, uncertainties are possible on account of the different acoustical intensities of the different vowels, the same sounds have to be heard here for more or less prolonged intervals. It has the above been possible to insure perfectly clear transmissions of signals in atmospheric conditions which would have rendered difficult the transmission of language. The beginning of a communication is indicated by a bell, operated by the selenium cell without the agency of any wire connecting it with the transmitting station.

The satisfactory results of the experiments so far made, go to show that this system of optical telegraphy, like the analogous system of optical telephony, will be used to special advantage in the case of transmissions over short distances.

A Prize for Cement Essays.

Prizes to the value of 15,000 marks are being offered conjointly by the Prussian government and the German Society of Portland Cement Manufacturers for essays on the processes which take place during the hardening of hydraulic cements. The following questions are those offered for investigation, any or all of which may be taken by the competitors:

1. Electrical conductivity of ordinary Portland cement, and of the hardening product. This involves an examination of the electrical conduction under different conditions of moisture, temperature, and pressure, and a study of the changes in the electrical properties of the cement with time.

2. Determination of the electrical conductivity of the hardening product, and of its relation to the degree of hydration. This involves an examination of the electrical conduction under different conditions of moisture, temperature, and pressure, and a study of the changes in the electrical properties of the cement with time.

3. Electrical conduction in the hardened cement, and of its relation to the degree of hydration. This involves an examination of the electrical conduction under different conditions of moisture, temperature, and pressure, and a study of the changes in the electrical properties of the cement with time.

4. Electrical conduction in the hardened cement, and of its relation to the degree of hydration. This involves an examination of the electrical conduction under different conditions of moisture, temperature, and pressure, and a study of the changes in the electrical properties of the cement with time.

5. Electrical conduction in the hardened cement, and of its relation to the degree of hydration. This involves an examination of the electrical conduction under different conditions of moisture, temperature, and pressure, and a study of the changes in the electrical properties of the cement with time.

6. Electrical conduction in the hardened cement, and of its relation to the degree of hydration. This involves an examination of the electrical conduction under different conditions of moisture, temperature, and pressure, and a study of the changes in the electrical properties of the cement with time.

Scientific American

DECEMBER 16, 1905.
ears are always in mesh, and there is no chance of stripping them from bad manipulation.

The engine is governed by varying the lift of the inlet valves. This is accomplished by sliding the camshaft (the inlet-valve case of which are tapered) bodily lengthwise and thus bringing the lower part of the inlet cam, 13, beneath the roller of the inlet-valve stem. 14. The result is the valve does not open so much and the engine is throttled. The camshaft is slid by means of a piston, 12, which is moved in a cylinder by oil pumped by a rotary gear pump, 35. The camshaft is set for maximum lift normally, and held in this position by a spring. When a by-pass controlled by the throttle lever, 1, is opened, oil is drawn from the reservoir, 36, and pumped against the oil piston, thus forcing it, its rod, and the camshaft as well lengthwise against the spring. This is a simple device, which has been found to work well in practice. The lubrication of the engine is entirely by splash, only one sight-feed, supplied by a mechanical oiler, being used. A series of inclined troughs on the inside walls of the crankcase carry the oil from one end of the motor to the other and back, while curved oil pipes on each crank case lead up oil and conduct it to the bearings. The camshaft is placed in a hole at the base of the cylinder. The single-rod, centrifugal pump circulates the water. Ball bearings are used throughout, and a special form of

A Novel System of Wireless Telegraphy.
BY DR. ALFRED GRAFHAM.

Our readers will doubtless remember the beautiful experiments in wireless telephony which were made by Herr F. Ruhmer on the Wannseek Lake, near Berlin, last year and continued with increasing success in the course of last summer. Now the inventor has applied his process to optical telegraphy. In optical telegraphy the rays issuing from a point source, as from the polished surface of a mirror, are intercepted at the proper time by a mirror placed at a distance and thus converted into a visual image.

GOVERNING THE INLET CAM.

The jumpark system with coils having vibrations and with batteries as a current source, is used. A generating coil, 32, and pumped against the oil piston, thus forcing it, its rod, and the camshaft as well lengthwise against the spring. The camshaft is slid by means of a piston, 12, ...
A Novel System of Wireless Telegraphy.

Our readers will doubtless remember the beautiful experiments in wireless telephony which were made by Herr F. Ruhmer on the Wannsee Lake, near Berlin, last year and continued with increasing success in the course of last summer. Now the inventor has applied his process to optical telegraphy.

In optical telegraphy the rays issuing from a projecting lamp are first reflected from a mirror which is moved horizontally on the principle of the sieve, and by means of a second mirror reflected to a second mirror, which is mounted on a horizontal rotating axis. The lamp is placed in the focus of the parabolic mirror, which is fixed in a vertical position, and the horizontal rotating mirror in the focus of the second parabolic mirror, which is fixed in a horizontal position. The rotating mirror revolves about an axis, which is perpendicular to the axis of the horizontal revolving mirror. The revolving mirror revolves about an axis, which is perpendicular to the axis of the horizontal revolving mirror. The revolving mirror revolves about an axis, which is perpendicular to the axis of the horizontal revolving mirror.

The receiving station is arranged in a

The papers must be written in German and submitted under a nom de plume to the Ministry of Public Works, Berlin, and submitted under a nom de plume to the Ministry of Public Works, Berlin, and submitted under a nom de plume to the Ministry of Public Works, Berlin, on or before December 31, 1904. The papers will be adjudicated by a committee comprising Prof. Van Vilet, Schlote, and Freiheit, Drs. Michaelis and H. Passow, and Messrs. E. Crammer and F. Schott, and officials of the Royal Testing Station, Berlin.
CARS

The New 12-Horse-Power Franklin Light Runabout.


The Oldsmobile 55-Horse-Power Runabout With


Mrs. F. D. Castle—86 Years of Age—in a 40-Horse-Power American Mercedes.


The New 34-38-Horse-Power Model of the America


The 40-horsePower, 7-Passenger Pierce Touring Car.


The Pope-Toledo 40-Horse-Power, 7-Passenger Pullman

The New 12-Horse-Power Franklin Light Runabout.


The Oldsmobile 35-Horse-Power Runabout With Rumble Seat.


The Peugeot 48-Horse-Power, 7-Passenger Pullman Touring Car.

Engine: 4-cyl., air-cooled, with two separate high-speed ignition systems by battery. Transmission: 3-speed progressive type. Clutch: Multiple-disc type operated by lever on steering column. Weight: 2,800 pounds. Wheel base: 110 inches. Tires: Front, 83 x 6; rear, 83 x 6.
The 19-Horse-Power Franklin Light Runabout.


Mrs. F. D. Cottle—38 Years of Age—in a 60-Horse-Power American Bordeaux.


The Oldsmobile 85-Horse-Power Runabout With Rumble Seat.


The New 24-32-Horse-Power Model of the American Marmon Torpedo.


The Thomas 40-Horse-Power Two- or Three-Passenger Runabout.


The Pepo-Toledo 60-Horse-Power, 7-Passenger Pullman Touring.


Electric Touring Runabout Capable of Making 70 Miles.

Battery: 56 x 48, 4-gallons with 314 pounds. Motor: 10 x 10, 4 x 10, 10, and 20. Weight: 2,800 lb. Time: Front, 80 x 91 rear, 80 x 91.

SOME LEADING TYPES OF 1907 AUTOMOBILES.

58
The New 12-Horse-Power Franklin Light Runabout.


The Gleneagle 35 Horse-Power Runabout With Rumble Seat.


The Oldsmobile 15 Horse-Power Runabout With Rumble Seat.


The New 84-88-Horse-Power Model of the American Mors Touring Car.


The Pope-Toledo 40-Horse-Power, 7-Passenger Pullman Touring Car.


Thomas 40-Horse-Power Two- or Three-Passenger Runabout.


Electric Touring Runabout Capable of Making 75 Miles on a Charge.


Some Leading Types of 1907 Automobiles.

58
Mitchell Sixes
Products of Long Experience

This company has been building popular priced sixes longer than any other concern in this country. Hence the sixes we offer are the product of many years of experience in no sense experiments.

The Mitchell Little Six, which was known as the "Baby Six" is, in our opinion, the most logical investment in the automobile market. It is not only the sensible choice between big and little power and passenger capacity, but it has everything that any high-priced car can.

It has quality that insures long life. It has the style of beauty the exacting mind demands. It has as much speed and power as any person can desire. It will hold its value in any company and look classy and work perfectly for several years to come. Its equipment is sterling in character. The price, $1,895, brings this smart car to you ready for operation. There is nothing left for you to buy—no extras—no appurtenances.

The Mitchell Big Six is the largest and best car at the price ever been produced. It is built along the same lines as the Little Six, save that it has 144-inch tires, greater passenger capacity. Yet the quality of the two are identical. The outward beauty is precisely the same—the outward beauty similar. For a big family car the Big Six has no equal in America. There is nothing as good for less than $3,500 or $4,000. The price of the Mitchell Big Six is only $2,995.

The Mitchell Four is intended for those who feel that they afford either of the Sixes. It is the only four-cylinder car we make. We build it to meet the demands of persons who still like a four-cylinder car of class at a popular price. It has the same equipment as the cars and sells for $1,595. We want you to look this car over minutely and then ask yourself if the cylinder car at any price near the price that can compare with this one in any detail.

Here is the Equipment for all the Mitchell Models Which is Included in the List Prices, as Given:

- Electric self-starter and generator
- Electric headlight
- Electric window
- Electric magnet for starting
- Windshield wiper and dust visor
- Traction valves
- Two-speed action
- Side curtains
- Dual horn
- Side air vents
- Door limiters
- Front mudguards
- Rear view mirror
- Flying wheel trays
- Bumper and fender
- Anti-theft lock securing both keys
- Rear seats with arm rests
This company has been building popular priced sixes longer than the other concern in this country. Hence the sixes we offer are the product of many years of experience and sense experiments.

The Mitchell Little Six, which was known as the “Baby Six” in 1912, in our opinion, the most logical investment in the automobile market. It is not only the sensible compromise between big and little power and passenger capacity, but it has everything that any high-priced car can offer you. It has quality that insures long life. It has the style of beauty that exacting mind demands. It has as much speed and power as any person can desire. It has quality that insures long life. It has the style of beauty that exacting mind demands. It has as much speed and power as any person can desire. It has the style of beauty that exacting mind demands. It has as much speed and power as any person can desire. It has quality that insures long life. It has the style of beauty that exacting mind demands. It has as much speed and power as any person can desire. It has quality that insures long life. It has the style of beauty that exacting mind demands. It has as much speed and power as any person can desire.

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The Mitchell Four is intended for those who feel that they cannot afford either of the Sixes. It is the only four-cylinder car we make. We build it to meet the demand of those who still like a four-cylinder car of class at a popular price. It has the same equipment as the other two and sells for $1,595. We want you to look this car over minutely and then ask yourself if there is a four-cylinder car at anywhere near the price that can compare with this one in any detail.

Here is the Equipment for all the Mitchell Models Which is Included in the List Prices, as Given:

- Self-starter and generator
- Electric lights
- Electric horn
- Electric magnetic controlling lamp
- Medium top and dust cover
- Rear view mirror
- Windshield wipers and sun shade
- Electric battery
- Two-piece rear window
- Electric fan
- Tinted glass
- Removable windshield
Mitchell Sixes
Products of Long Experience

This company has been building popular priced sixes longer than any other concern in this country. Hence the sixes we offer are the product of many years of experience and in no sense experiments.

The Mitchell Little Six, which was known as the “Baby Six” in 1912, is, in our opinion, the most logical investment in the automobile market. It is not only the sensible compromise between big and little power and passenger capacity, but it has everything that any high-priced car can offer you.

It has quality that insures long life. It has the style of beauty that the exacting mind demands. It has as much speed and power as any person can desire. It will hold its place in any company and look classy and work perfectly for several years to come. Its equipment is complete, and details thereof sterling in character. The price, $1,895, brings this smart car to you ready for instant use. There is nothing left for you to buy—no extras—no appurtenances.

The Mitchell Big Six is the largest and best car at the price that has ever been produced. It is built along the same lines as the Little Six, save that it has 144-inch wheel base, somewhat larger tires, greater passenger capacity. Yet the quality of the two are identical. The equipment is precisely the same—the outward beauty similar. For a big family car the Big Six has no equal in America and there is nothing as good for less than $3,500 or $4,000. The price of the Mitchell Big Six is only $2,350.

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Here is the Equipment for all the Mitchell Models Which is Included in the List Prices, as Given:

Electric self-starter and generator—electric lights—electric horn—electric magnetic exploring lamp—safety top and dome cover—

Tempest valves—fifty quick-action side curtains—quick-action two-piece rain vision wind shield—removable trim with one extra

—speedometer—double extra tire carrier—fair bow holders—license plate bracket—pump—jack—and complete set of first-class tools

Specifications of the Three Great Mitchell Models:

MITCHELL LITTLE SIX—Fifty horse-power—132-inch wheel base—36x4½-in. tires—two or five passenger capacity $1,895

MITCHELL BIG SIX—Sixty horse-power—144-inch wheel base—37x5-in. tires—seven passenger capacity $2,350

MITCHELL FOUR—Forty horse-power—120-inch wheel base—4 cylinders—36x4½ in. tires—2 or 5 passenger capacity $1,595

ALL PRICES F. O. B. RACINE, WIS.
The Four-Wheel Drive

Five-ton Gasoline Truck. Does not slip or skid
Write for description and price

FOUR-WHEEL DRIVE WAGON CO., MILWAUKEE, WIS., U.S.A.

The REO is thoroughly

Designed on right principles by a man who has principles in every kind of motor engineering for a life
Correctly applied as he has applied them for to
spacious success.

Of enduring and practical construction, which
details and manifests itself brilliantly in the e
efficiency of actual use.

Luxurious in finish and appointments, in 
exacting demands of the present season.

Economical beyond any car of the day both t
Economical because correctly design
Economical because built by a man sure of his car
built on a large scale and built right from the first.

Reo Runabout
8 H. P., 850 lbs., 25 miles per hour,

The REO Motor Car
R. M. Owens, Sales M
Factory: LANSING, MICH. Sales Office: 158 West
Agents Throughout the United S

THE VALUE OF PURE M

A dead tire is fit only for a corpse.
A real live man wants a real live tire plenty of elasticity— that grips the ground an exhilarating and nerve-bracing.
The resiliency of a tire depends greatly of which it is made.
Now, we don't make Morgan & Wright of scrap.
The Four-Wheel Drive

Five-ton Gasoline Truck. Does not slip or skid
Write for description and price

WHEEL DRIVE WAGON CO., MILWAUKEE, WIS., U.S.A.

The REO Car is thoroughly right

Designed on right principles by a man who has studied those principles in every kind of motor engineering for a lifetime.
Correctly applied as he has applied them for twenty years with conspicuous success.
Of enduring and practical construction, which extends to the smallest details and manifests itself brilliantly in the continuous speed and efficiency of actual use.
Luxurious in finish and appointments, in keeping with the most exacting demands of the present season.
Economical beyond any car of the day both in first cost and maintenance. Economical because correctly designed, simple and strong. Economical because built by a man sure of his car and his market, who built on a large scale and built right from the first.

R. M. Owens, Sales Manager
Factory: LANSING, MICH. Sales Office: 138 West 38th St., NEW YORK

Agents Throughout the United States

THE VALUE OF PURE MATERIALS

A dead tire is fit only for a corpse.
A real live man wants a real live tire—one that has plenty of elasticity—that grips the ground and makes a ride exhilarating and nerve-bracing.
The resiliency of a tire depends greatly on the material of which it is made.
Now, we don't make Morgan & Wright Clincher Tires of scrap.
The Four-Wheel Drive

Five-ton Gasoline Truck. Does not slip or skid
Write for description and price

THE VALUE OF PURE MATERIALS

A dead tire is fit only for a corpse.
A real live man wants a real live tire—one that has plenty of elasticity—that grips the ground and makes a ride exhilarating and nerve-bracing.

The resiliency of a tire depends greatly on the material of which it is made.
Now, we don't make Morgan & Wright Clincher Tires of scrap.
Worn-out boots and shoes forsooth.
Lifeless, used-up materials that are (shopped) up and washed—not wholly cleaned.

A tire made from this "weary-worn" material will have its weak spots—will be constantly sick and ailing—will give you a melancholy, miserable ride! You will early reduce your unsteady dweller!

The Morgan & Wright Clincher Tire FOR AUTOMOBILES

is full of life, resiliency, grip and vim!
We make it from pure, crude Para rubber—rubber that possesses the most resiliency of any rubber in the world.

A finely textured, close-grained rubber that will wear like truffle.
All the fabric in this tire is "frictionized" with this pure rubber. The whole tire is full of bounce and life and strength.

Then, to insure added wear, each Morgan & Wright Clincher Tire is given an additional thickness of rubber on the thread (see diagram), which will not soften, split, crack, or squeal.

MORGAN & WRIGHT, Chicago
The Hudson Touring Car

Strength—Room

Think what this car is—110 inch wheel base; four cylinder motor; 32 inch wheels; 3 1/2 inch tires all around; five passenger capacity—and the price $1150.

Never before has there been offered such a car at such a price. This is not just a hasty statement of our own. Can you think of any other four-cylinder, 110 inch wheel base, five passenger car at $1150 or less?

You will find these features in other cars, but those cars sell for at least $100 or $200 more. You will find still other cars selling for less than $1150, but they do not have our high grade features. The Hudson Touring car is the best value, the best buy yet offered by any automobile manufacturer. There is no way you can get relatively more for you any other car.

There are certain proved features, construction which any car must have before it be considered an up-to-date, high-grade car. The Hudson has those features, who show you the same features, price; it is lower than theirs. To the below $1150, we point to our high-grade cars do not have them.

From one class we are set off from another by our quality.

Beauty—Refinement

The Hudson is strong, because the careful plans of a great engineer have been expressed by the best material that money can buy.

It has plenty of room—many cars are big and heavy without being roomy. The Hudson is big and roomy without being too heavy.

The Hudson has beauty—not merely the beauty of paint—but the beauty of balance, of perfect proportion. Many touring cars look "bunched." In the Hudson over-all length, hood, body, wheels, harmonize to make a whole effect that pleases the eye.

No other touring car at or near the price has so many features and refinements in common with the most expensive cars.

High Grade Hudson Features

Its motor is the Renault Type, patterned after the famous Renault motors of France. It is the same type of motor as used in the Hudson Roadster; four cylinders "en bloc," vertical, water cooled, long stroke, 20 to 25 H. P. Due to its long stroke this motor pulls quietly and evenly at low engine speeds.

Transmission is selective, sliding gear; three nothing untried. No low-priced touring car is so near mechanically perfect.

Hudson Refinements

When we say the Hudson has refinement, we mean that many little things, of small importance, one by one, but meaning in their total, comfort and satisfaction to the owner, have been put into this car.

See how the rear fenders are inset against the wheel, how the fenders throughout are absolutely mud-proof. Inset fenders are a feature of very high-priced cars.

The unusual leg room and big 18 inch steering wheel mean comfort. No standard touring car at any prices provides as much leg room as the Hudson.

Doors are big, hung on heavy curved hinges, allowing maximum entrance and exit space.

The Toe boards, spring step and running boards are beautiful aluminum castings. No bolts show through the foot board, nothing to catch a dress or coat or look unsightly. The floor board is covered with pyramided white rubber of best quality, except where driver's heel rests and this part is reinforced.
The Hudson Touring Car

Strength—Room

What this car is—110 inch wheel base; four door; 32 inch wheels; 3½ inch tires all around; passenger capacity—and the price $1150. Before there has been offered such a car price. This is not a hasty statement of what we think, for the Hudson offers these same features in other cars, but will find these features in other cars, but sell for at least $100 or $200 more. You still other cars selling for less than $1150, do not have our high grade features. The buying car is the best value, the best buy yet offered by any automobile manufacturer. By this, we mean you get relatively more for your money than in any other car.

There are certain proved features of motor car construction which any car must have before it can be considered an up-to-date, high-grade car.

The Hudson has these features. To those makers who show you the same features, we point to our price; it is lower than theirs. To those who offer cars below $1150, we point to our high-grade features; they do not have them.

From one class we are set off by our price; from another by our quality.

Beauty—Refinement

When we say the Hudson has refinement, we mean that many little things, of small importance, one by one, but meaning in their total, comfort and satisfaction to the owner, have been put into this car. The Hudson car at or near the price has such refinements in common with the cars.

Made Hudson Features

As the Renault Type, patterned after best motors of France. It is the same as used in the Hudson Roadster, and is an exacter, water cooled, long stroke engine set in the car.

Inset fenders are a feature of very high-priced cars.

The unusual leg room and big 18 inch steering wheel mean comfort. No standard touring car at any prices provides so much leg room as the Hudson.

Doors are big, hung on heavy curved hinges, allowing maximum entrance and exit space.

The toe boards, spring steps and running boards are beautiful castings. No bolts show through the foot board, nothing untied. No low-priced touring car is so near mechanically perfect.

Hudson Refinements

When we say the Hudson has refinement, we mean that many little things, of small importance, one by one, but meaning in their total, comfort and satisfaction to the owner, have been put into this car.

See how the rear fenders are inset against the body; how the fenders throughout are absolutely mud-proof. Inset fenders are a feature of very high-priced cars.

The unusual leg room and big 18 inch steering wheel mean comfort. No standard touring car at any prices provides as much leg room as the Hudson.

Doors are big, hung on heavy curved hinges, allowing maximum entrance and exit space.

The toe boards, spring steps and running boards are beautiful castings. No bolts show through the foot board, nothing untied. No low-priced touring car is so near mechanically perfect.

This holds true of Special Equipment. Think of a Bosch Magneto, Special Brookfield Top, and Trunk Rack, all fitted on the car for $25 Extra.
**Strength—Room**

Think what this car is—110 inch wheel base; four cylinder motor; 32 inch wheels; 3½ inch tires all around; five passenger capacity—and the price $1150.

Never before has there been offered such a car at such a price. This is not just a hasty statement of our own. Can you think yourself, of any other four-cylinder, 110 inch wheel base, five passenger car at $1150 or less?

You will find these features in other cars, but those cars sell for at least $100 or $200 more. You will find still other cars selling for less than $1150, but they do not have our high grade features. The Hudson Touring car is the best value, the best buy yet offered by any automobile manufacturer. By this, mean you get relatively more for your money the any other car.

There are certain proved features of motor construction which any car must have before it can be called an up-to-date, high-grade car.

The Hudson has those features. To those who show you the same features, we point to price; it is lower than their's. To those who offer below $1150, we point to our high-grade features; do not have them.

From one class we are set off by our price from another by our quality.

The Hudson is strong, because the careful plans of a great engineer have been expressed by the best material that money can buy.

It has plenty of room—many cars are big and heavy without being roomy. The Hudson is big and roomy without being too heavy. The Hudson has beauty—not merely the beauty of style, but the beauty of balance, of perfect proportion. Many touring cars look "bunched." In the Hudson over-all length, hood, body, wheels, harmonize to make a whole effect that pleases the eye. No other touring car at or near the price has so many features and refinements in common with the best expensive cars.

**High Grade Hudson Features**

The motor is the Renault Type; patterned after the famous Renault motors of France. It is the same type of motor as used in the Hudson Roadster; four cylinders "en bloc," vertical, water cooled, long stroke, 20 to 25 H. P. Due to its long stroke this motor pulls quietly and evenly at all engine speeds.

Transmission is selective, sliding gear; three speeds forward and one reverse. The same transmission is found on the highest priced cars. The spring suspension is the same as used on car-coasting up to 60. Semi-elliptic front and 4½ elliptic rear, unusually long, mounted with heavy, straining fittings. Clutch is fully-faced cone type, heavy safety, semi-floating, shaft-driven. Front axle "I" beam section, drop forged, of carefully selected, high-grade steel.

There is nothing experimental about this car—nothing untried. No low-priced touring car is so near mechanically perfect.

**Hudson Refinements**

When we say the Hudson has refinements, we mean that many little things, of small importance, one by one, but in their total, comfort and satisfaction to the owner, have been put into this car. See how the rear fenders are inset against the body, how the fenders throughout are absolutely motor-proof. Inset fenders are a feature of very high-priced cars.

The unusual leg room and big 18 inch steering wheel mean comfort. No standard touring car at any prices provides as much leg room as the Hudson.

Doors are big, hung on heavy curved hinges, allowing maximum entrance and exit space. The Toe boards, spring stops and running boards are beautiful aluminum castings. No bolts show through the floor board, nothing to catch a dress or coat or look unsightly. The floor board is covered with pyramided white rubber of best quality, except where driver's feet rest and this part is reinforced by an aluminum plate.

The foot accelerator is something entirely new in design and does not tire the foot.

The body is built with wheel-housing, that is, the body curves out over the rear wheels, allowing a big, comfortable, roomy tonneau. Car is finished and upholstered like the best.

Be this car—ride in it—compare it with others and you will find that no matter just how we do it fact remains that we do give the most at the price.

The Hudson Roadster is America's biggest and best built low-priced car. Several thousand of them in the hands of owners and giving complete satisfaction.

The Hudson is completely stocked with the very latest, the very finest, the very best; the best built low-priced car. Several thousand of them in the hands of owners and giving complete satisfaction.

**Why you get more value in a Hudson**

We have been asked how we can give so much for the money and our answer is: Because we have an engineer who can build a railroad for the same money that the other railroads would. In the Hudson tourer they have put the entire, and not just part of it, to build a better car than they can build a better car than another. It is simply a question of ability.

The world is a better place because the Hudson Touring car is in it. It has brought comfort to many homes, comfort that is available to every man, woman and child in America. It is the real "Mass Touring car." It is "Leak for the Masses."

Mailing this coupon to-day will bring you our catalogue and complete information about both the Hudson Touring Car and Hudson Roadster.

**Hudson Motor Car Company, Detroit, Mich.**

**Member A. L. A. M.**

Licensed under Selden Patent

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**$1150**

"Look for the Triangle on the Radiator"

This price includes three oil lamps, two gas lamps, generator, horn, tire repair outfit, tools and jack.

**Strengthen—Beauty—Refinement**

The Hudson Motor Car Company, Detroit, Mich.


**Hudson Motor Car Company, Detroit, Michigan**

*Member A. L. A. M. Licensed under Selden Patent*

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**Length—Room**

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The Hudson has those features. To those makers

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From one class we are set off by our price;

from another by our quality.

---

**Beauty—Refinement**

-Look for the Triangle on the Radiator-

This price includes three oil lamps, two gas lamps, generator, horn, tire repair outfit, tools and jack.

**Hudson Refinements**

When we say the Hudson has refinement, we mean

that many little things, of small importance,

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tion to the owner, have been put into this car.

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The floor is covered with wheel-housing, that is, the body curves out over the rear wheels, allowing a big, comfortable, roomy tonneau. Car is finished and upholstered like the best.

---

**Reason why you get more value in a Hudson**

We have been asked how we can give so much more for money and so much less for space. We know how. Two engineers could undertake once to build a railroad from New York to Chicago—

-rooms to be of equal length; one man would build a better road for the same money than the other.

It is perfectly absurd that a huge set of men will build a better car at less money than another. It is simply a question of ability.

The Hudson will exhibit at the Madison Square Garden and Chicago Show.

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**January 1st the price of the Hudson Roadster was increased to $1200. This includes 3 oil lamps; 2 gas lamps; generator; tire repair kit; tools and jack.**

The Hudson Roadster is America's biggest, best looking and best built low-priced car. Several thousand of them are in the hands of owners and giving complete satisfaction.

The Hudson won a 24-hour race in Seattle in September, defeating many high-priced cars. This was its first race.

Mr. E. H. Nelson, a prominent business man of Detroit, drove his Hudson car from Detroit to New Haven, Conn., at an expense of less than one cent per mile for oil and gasoline and without making a repair.

Mr. Geo. D. Smith drove a Hudson Roadster from Long Island, N. Y., to Pleasant City, Fla., without touching a bolt, nut, spark plug or making a mechanical adjustment.

Three important facts are brought out in hundreds of testimonial letters received from Hudson owners: "Low gasoline and oil consumption."—"Wonderful mechanical efficiency."—"It rides as easy as the most expensive cars."

Remember the Hudson Roadster is not an imitation of a big car—it is a big car. It is big in design; in material, in central all-around value. Look at our price on extra equipment. Bosch magneto, Artbs top, Prato-lite tank & rumble seat for $125 Extra.
Advantages of Low Tension Magneto and Make-and-Break Spark as Employed on the Model H STUDEBAKER

"The Automobile with a reputation behind it."

WE have amply demonstrated, during the past season, that the ignition system as employed on our new Model H Car is absolutely reliable and effective.

The Simms Bosch low tension magneto, which we use to furnish the current for our make-and-break spark, gives an extremely large and hot spark in each cylinder.

This is the identical type of magneto employed on the winning cars in the recent Vanderbilt inter-national road races, and when gear driven, as in the Studebaker car, we have found its service to be practically perfect.

In furnishing the current for the make-and-break spark with our low tension magneto, less than two feet of wiring is required, short circuiting troubles are avoided and spark-plug annoyances are eliminated.

All the controlling mechanism of our ignition system is located on the top of cylinders and is readily accessible.

Every part of the Studebaker Car is the result of low and painstaking experience. Our improvements have all been for better service, not for exploitation.

See our exhibit at the New York and Chicago shows.

STUDEBAKER AUTOMOBILE CO., South Bend, Ind.

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The Car De Luxe

Complete information for the asking.

THE DE LUXE MOTOR CAR CO.

Detroit, Michigan

DYNAMO AND MOTOR COMBINED—WIRELESS TELEGRAPHY—ITS PRO-
BROADLY COUPLED—COURAGEOUS—EXQUISITE—PERFECT—STUN-
NING—SUBLIME—UNPARELLED—ORIGINAL—ALLURING TO THE
FOOTSORE, INTELLECTUAL—AND LUXURIOUS. INTERIOR 
HAUTE COUTURE.

Moline

"MECHANICAL PERFECTION"

Dealers endorse the car they represent.

We stand behind the cars we make—a most scathing investigation of intending purchasers.

LEADING MOLINE FEATURES

2. Weight and Proportion.
3. Absolute Efficiency and Economy.
4. Perfect Control.
5. Twin Axle—Speed, Efficiency, Comfort.
6. Twin Chain Drive—Efficiency, Smoothness, Silence.
7. Twin Axle—Perfect Control.
8. Twin Chain Drive—Silence, Smoothness, Efficiency.
10. Twin Chain Drive—Silence, Smoothness, Efficiency.

The Car De Luxe

Power 50-60 H. P. Carries Seven. Price $4750

It would only be dealing with abode facts to pronounce The Car De Luxe a rare combination of those features which usage and successful operation have made standard in automobile design, with which have been incorporated many of the more modern methods and devices as applied to mechanics, in addition to such appointments and accessories as find place only in a car of this exclusive class.

And doubtless one of the best examples of this high order of excellence is that patented rear axle system. Here is provided all the strength of the Solid I-Beam Rear Axle such as used on high powered cars with double chain drive, and the advantage of shaft drive as well. It is, in fact, a unique combination of the best features of both systems—silence, stability, classification, or softness and positive drive. Hence the noise and numerous disadvantages of the Chain drive are entirely overcome, and the replacing of rear axles (a comparatively common occurrence with shaft-driven cars) will not be experienced by users of The Car De Luxe.

There can be no question as to the absolute superiority of this system. It stands out pre-eminent as one of the greatest improvements in motor car design. It has solved the problem of direct system of final drive. It is to be had easily on

$2,000 Accident Policy Absolutely Free
The Simms-Bosch low tension magneto, from which we are able to furnish the current for our make-and-break spark, gives an extremely large and hot spark in each cylinder. This is the identical type of magneto employed on the winning cars in the recent Vanderbilt international road races, and when gear driven, as in the Studebaker car, we have found its service to be practically perfect.

The Simms-Bosch low tension magneto, with its long, two feet of wiring is required, short circuiting troubles are avoided and spark-plug annoyances are eliminated.

Every part of the Studebaker Car is the result of long and pains-taking experience. Our improvements have all been for better service, not for exploitation.

See our exhibit at the New York and Chicago shows.

STUDEBAKER: AUTOMOBILE CO., South Bend, Ind.

Members Association of Licensed Automobile Manufacturers.

SOLDING AGENCIES:


PHILADELPHIA: D. A. — Thomas, Louis & Co.

CINCINNATI: J. E. — Auto Supply & Storage Co.


COLUMBUS, O. — Central Automobile Co.

Cleveland, OHIO — Egerman Automobile Co.

LOS ANGELES, CAL. — Egerman Automobile Co.

PORTLAND, Ore. — Egerman Automobile Co.

BURLINGTON, O. — Egerman Automobile Co.

DALLAS, TE. — Egerman Automobile Co.

FOOT STUDEBAKER MODEL "TT" — 40-50 H. P. PRICE 450.00-500.00, ACCORDING TO BODY

Moline "MECHANICAL PERFECTION"

Dealers endorse the car they represent.

We stand by the car we sell — and solicit the most exacting investigation of intending purchasers.

No other car has as yet shown all the good features of the MOLINE at the same price — or near it.

LEADING MOLINE FEATURES

Quickness and Power of Motor.

Ease and convenience of controls.

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Dr. John T. Dailey, Director
Education Research Project
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