

R E P O R T R E S U M E S

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VT 004 465

TRANSPORTATION LONGS AGO.

GEORGE WASHINGTON UNIV., WASHINGTON, D.C.

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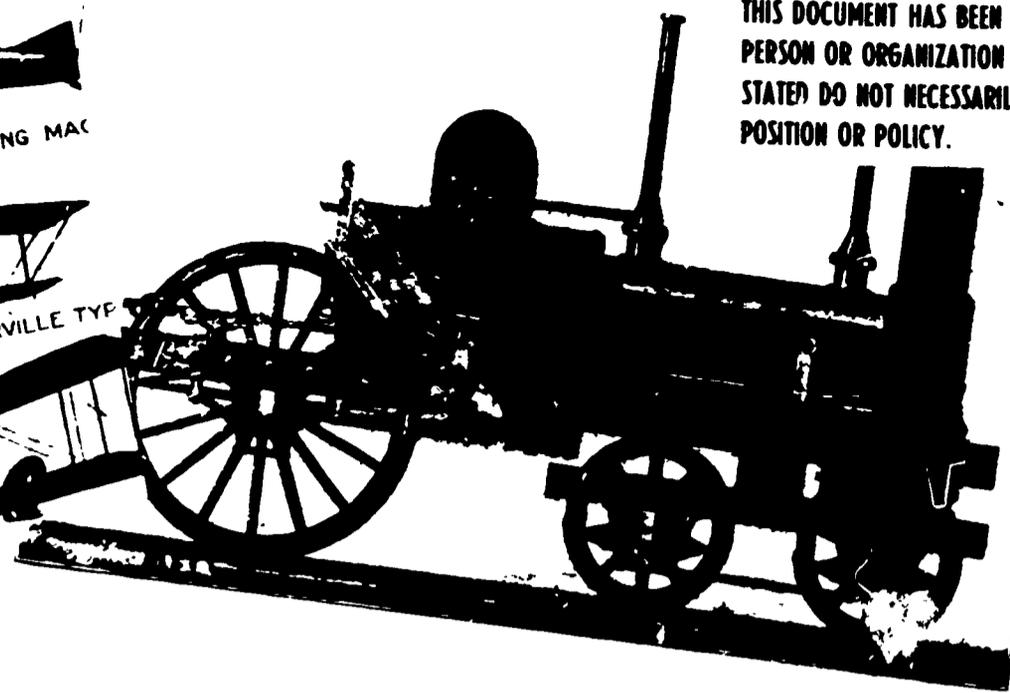
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DESCRIPTORS- *HIGH INTEREST LOW VOCABULARY BOOKS, *READING, *TRANSPORTATION, PHOTOGRAPHS, ILLUSTRATIONS, *PREVOCATIONAL EDUCATION,

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 1918 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 004 454 THROUGH VT 004 471. (EM)

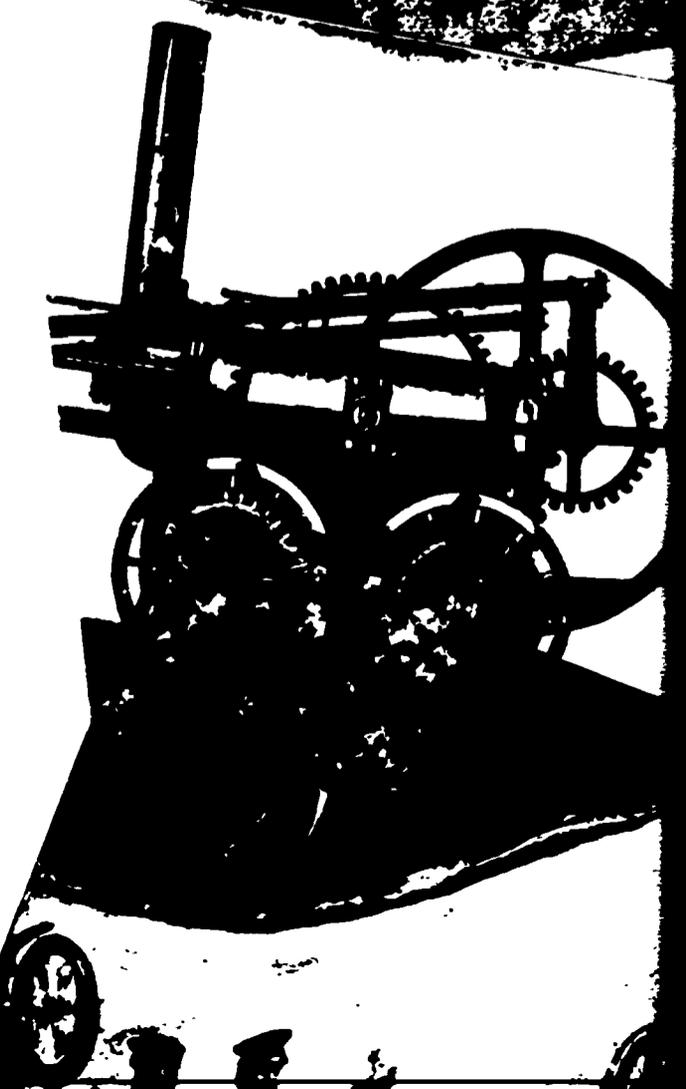
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TRANSPORTATION LONG AGO

- AIRPLANES
- TRAINS
- AUTOMOBILES
- SHIPS
- BALLOONS



ED0177

TRANSPORTATION LONG AGO

- AIRPLANES
- TRAINS
- AUTOMOBILES
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**THE GEORGE WASHINGTON UNIVERSITY
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1965**

AIRPLANE



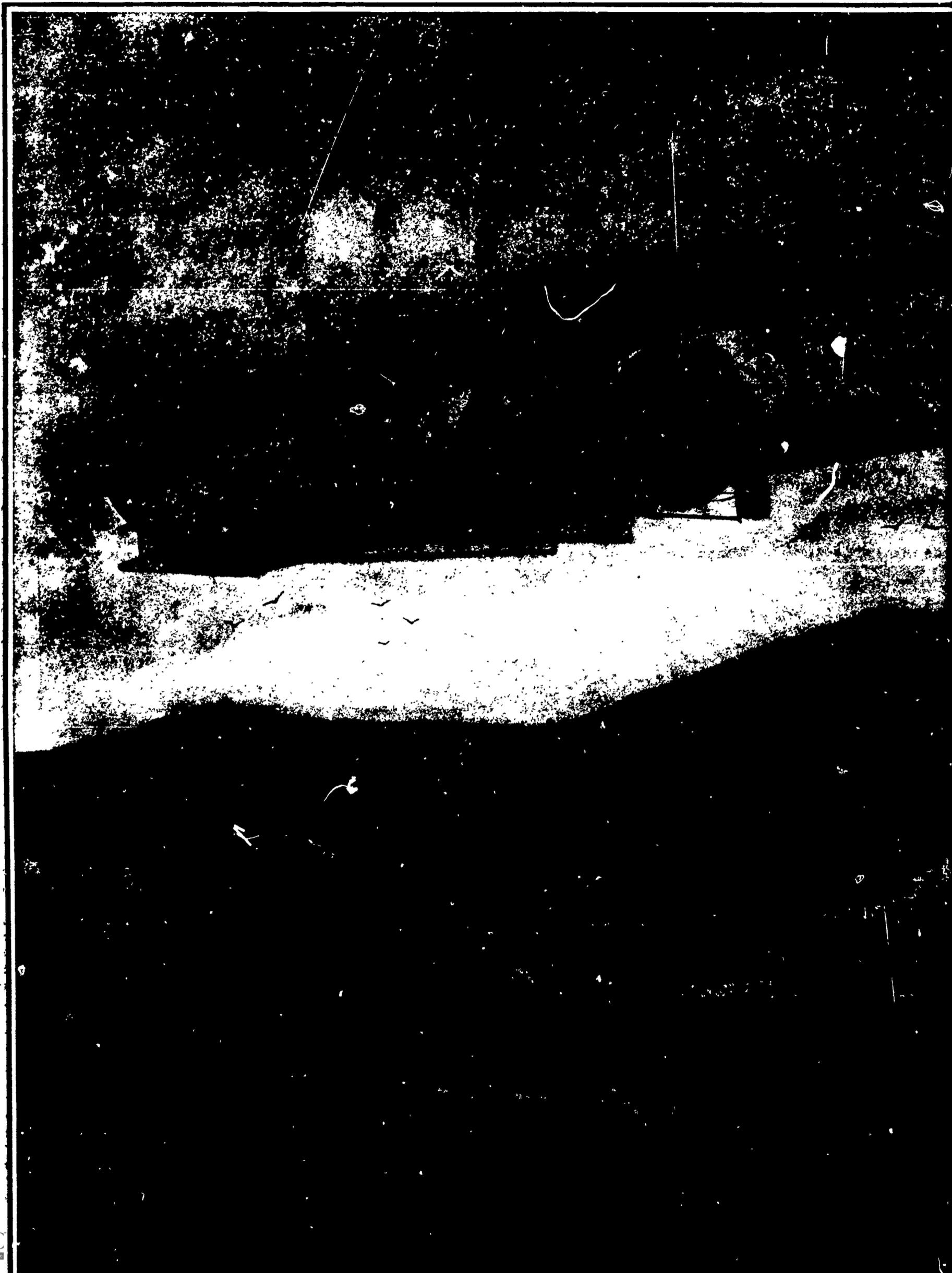


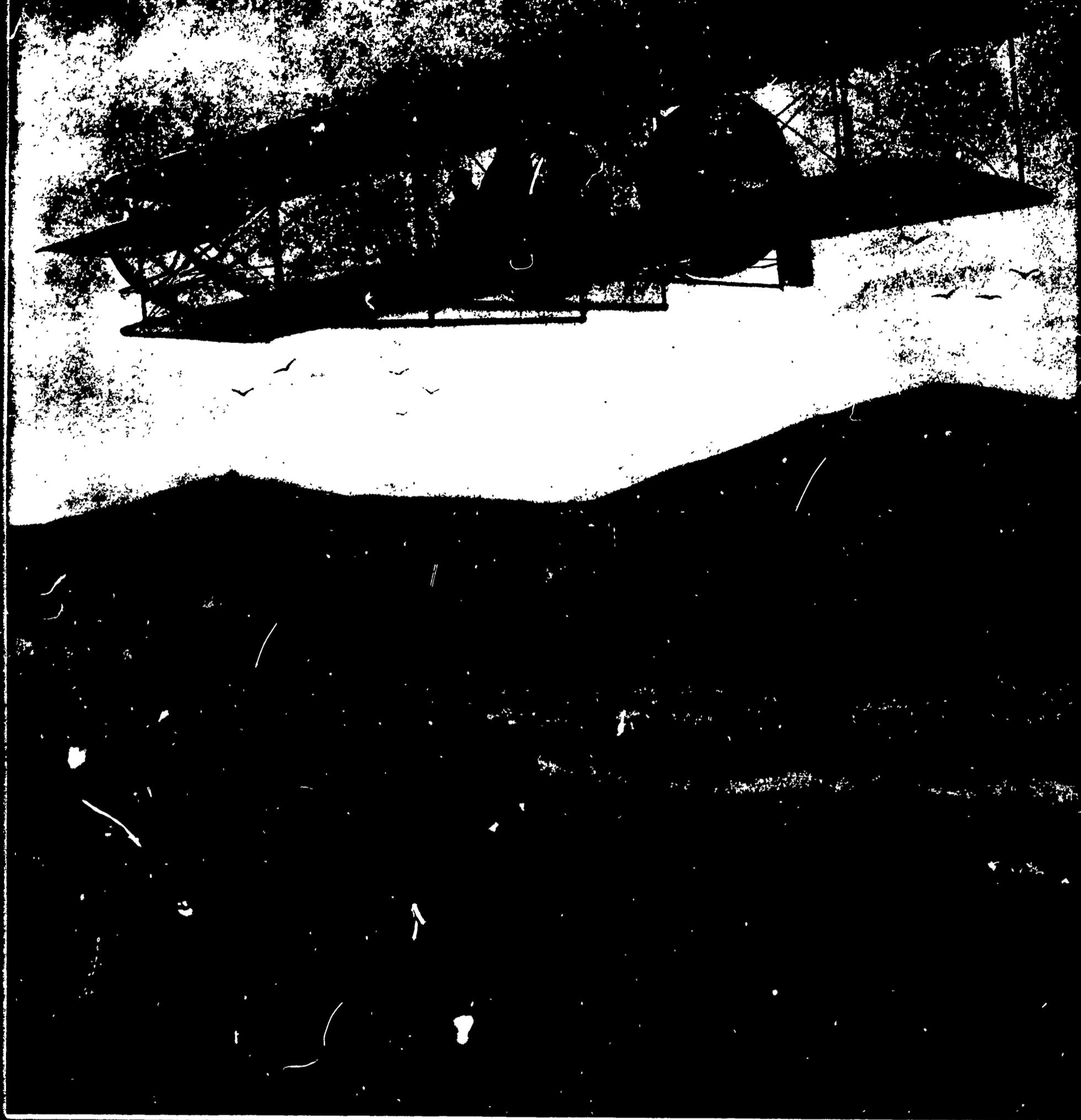
The first airplanes looked like this.

This is a picture taken 60 years ago.

It shows one of the flights by the Wright brothers.

AIRPLANE



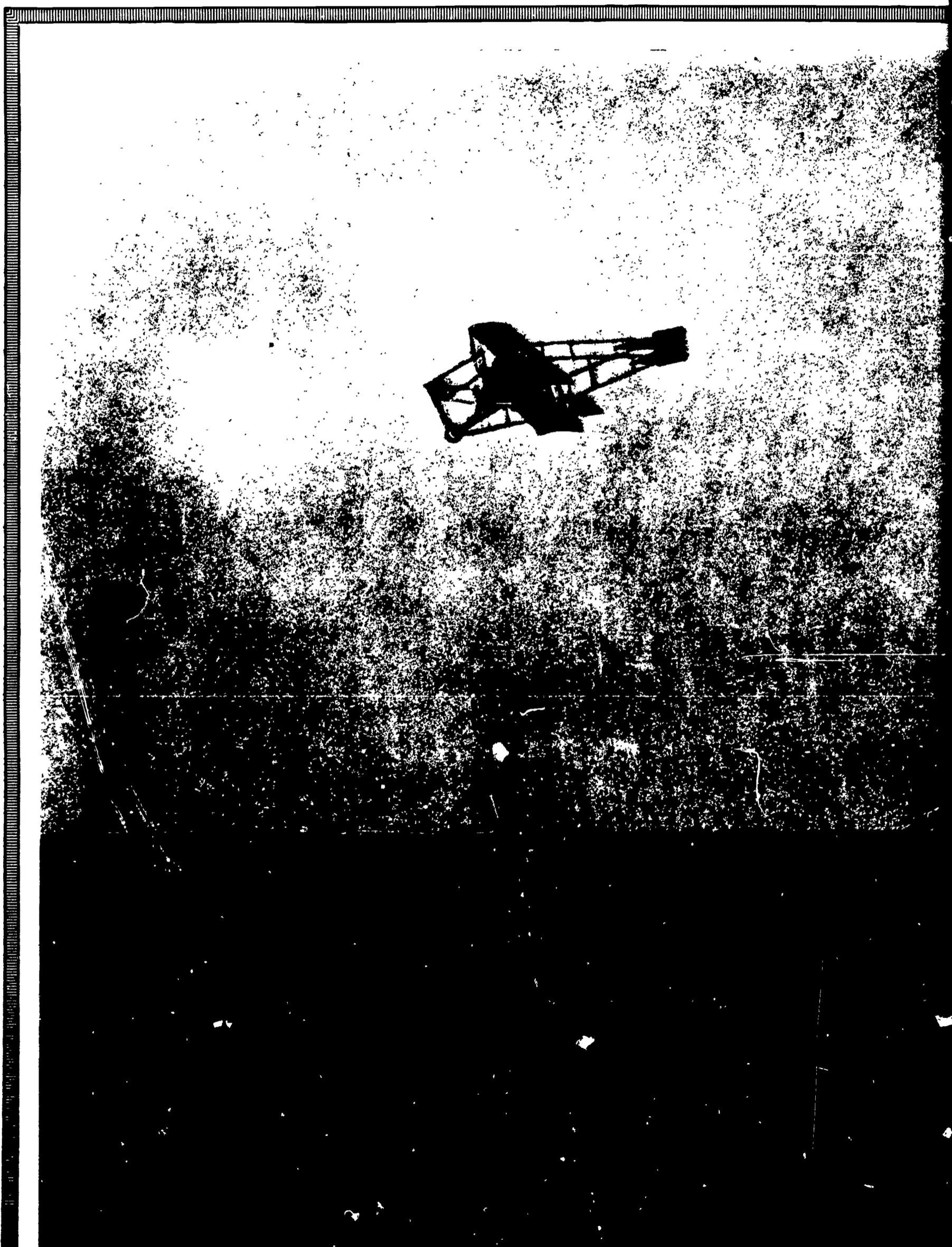


This plane flew at a speed of 45 miles per hour.

It was one of the first to carry two men.

It had a 30 horsepower motor.

AIRPLANE



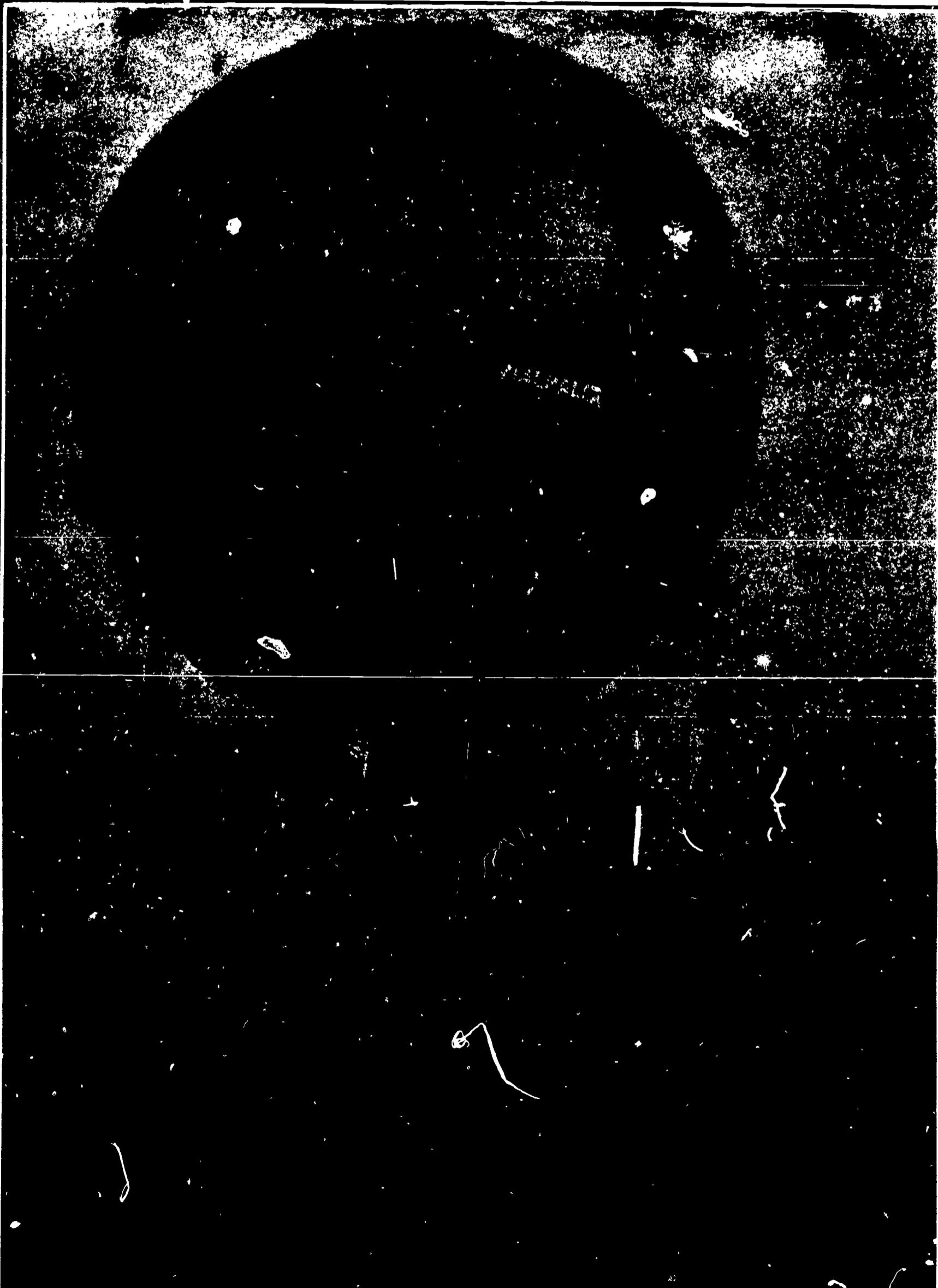


In 1912 an automobile raced an airplane.

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.

DIRIGIBLES



RUSSIA 10 DIRIGIBLES

ITALY 7 DIRIGIBLES

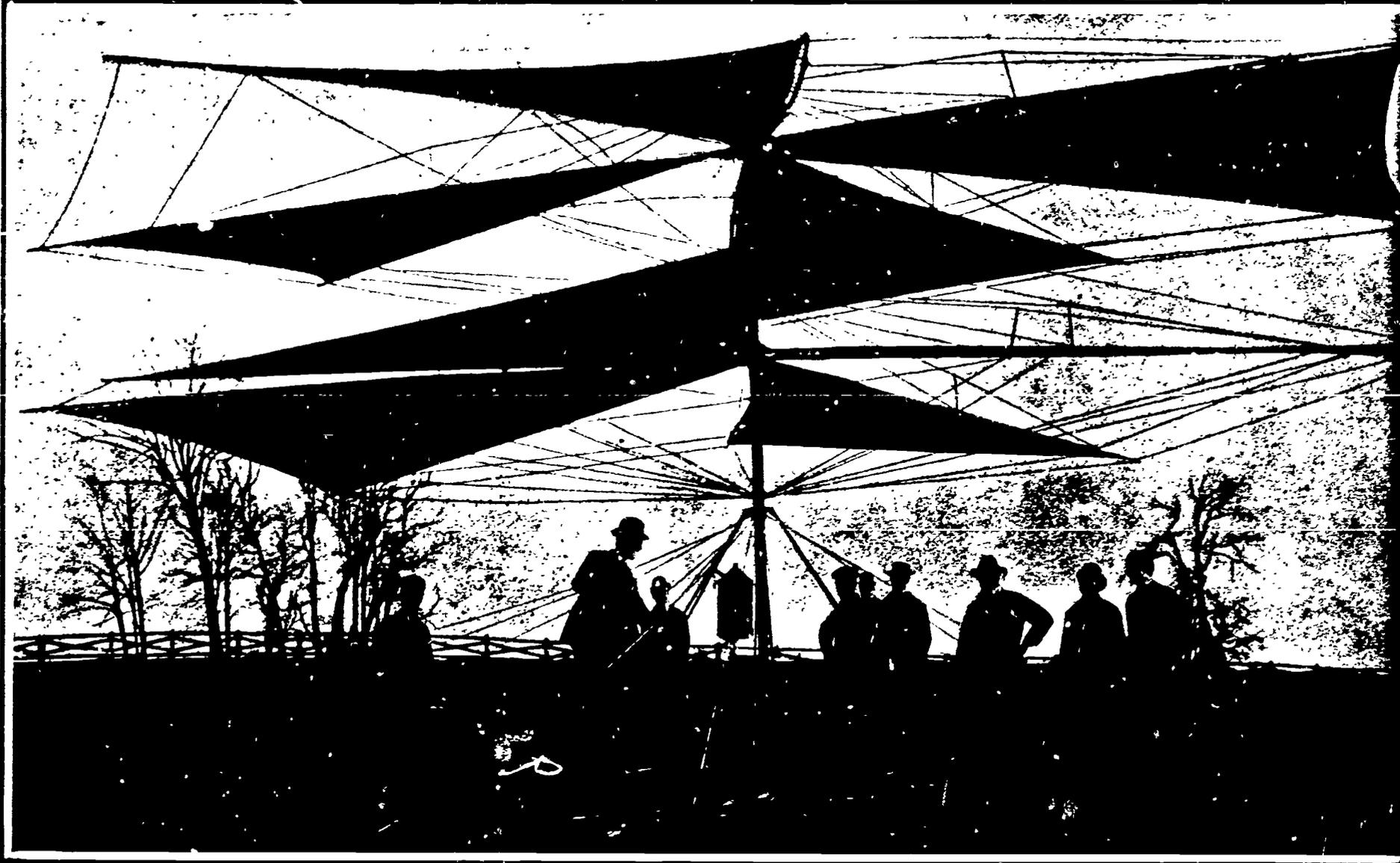


Airships were filled with gas like balloons.

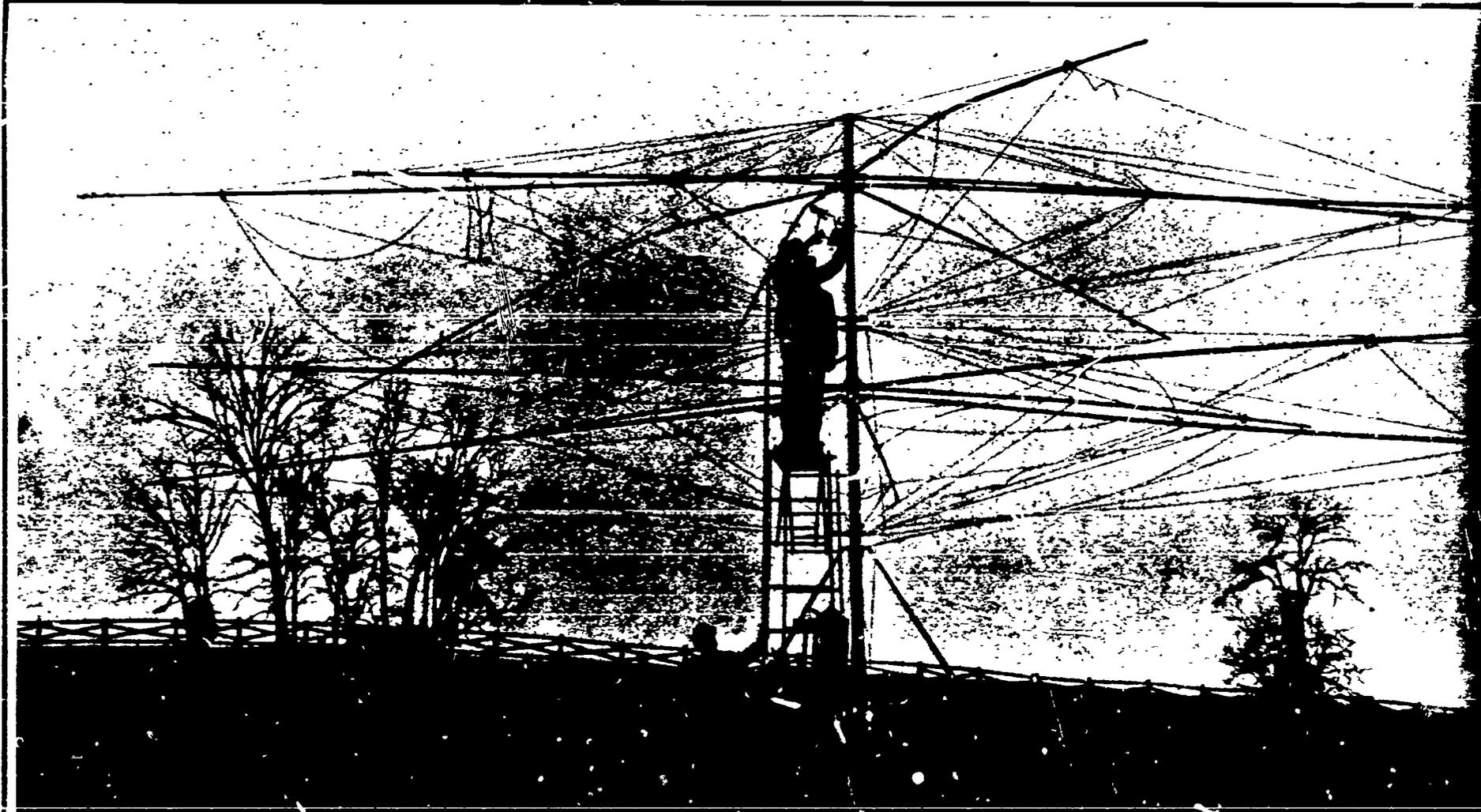
They also had motors.

These airships were used in World War I.

HELICOPTER

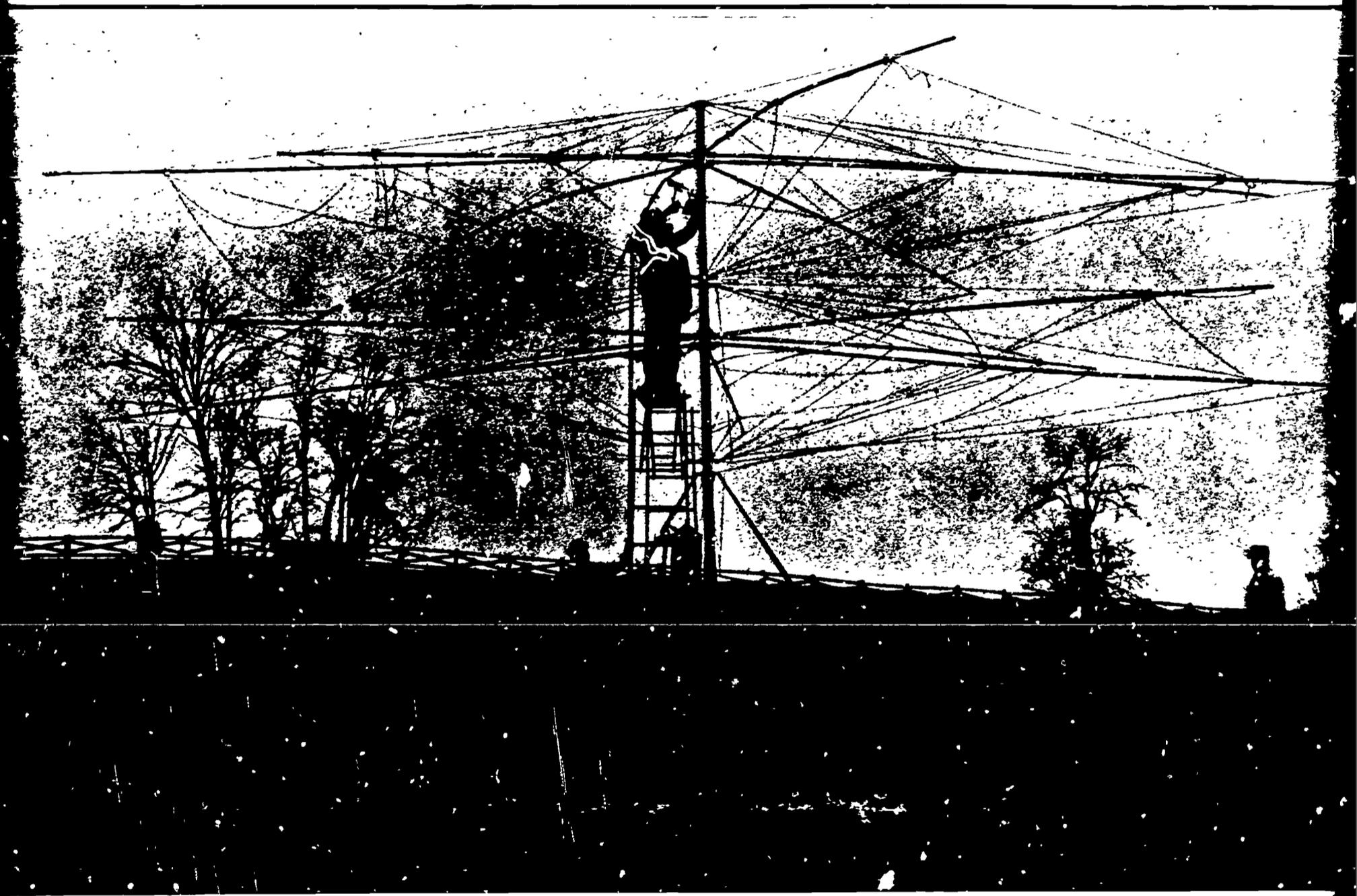


Full-sized Model of a Helicopter Built for Experimental Purposes.





Full-sized Model of a Helicopter Built for Experimental Purposes.



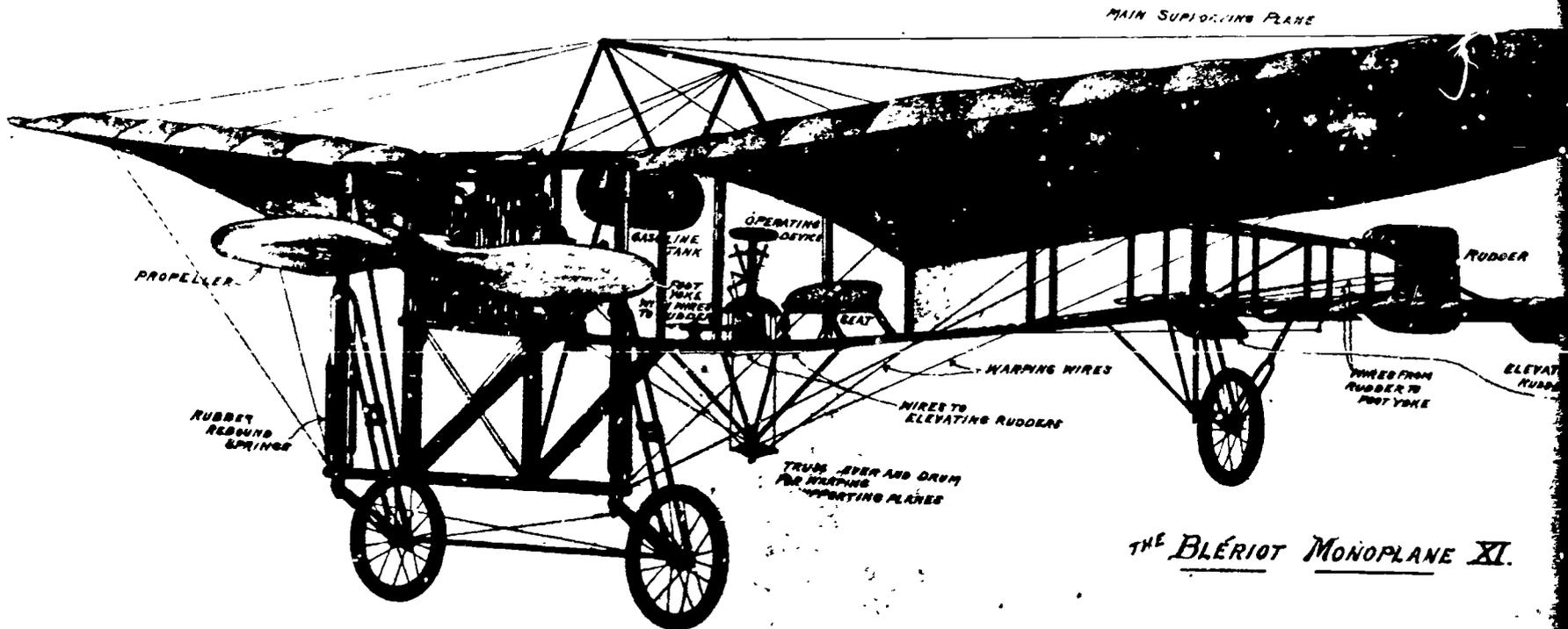
Diameter of propellers, 85 feet. Area, 850 square feet. Revolutions of fans, 51 per minute. Revolutions of engine, 1,350. Brake horse-power, 90. Lift on measuring springs, 700 pounds. Lift per horse-power, 85 pounds.

This shows an old helicopter.

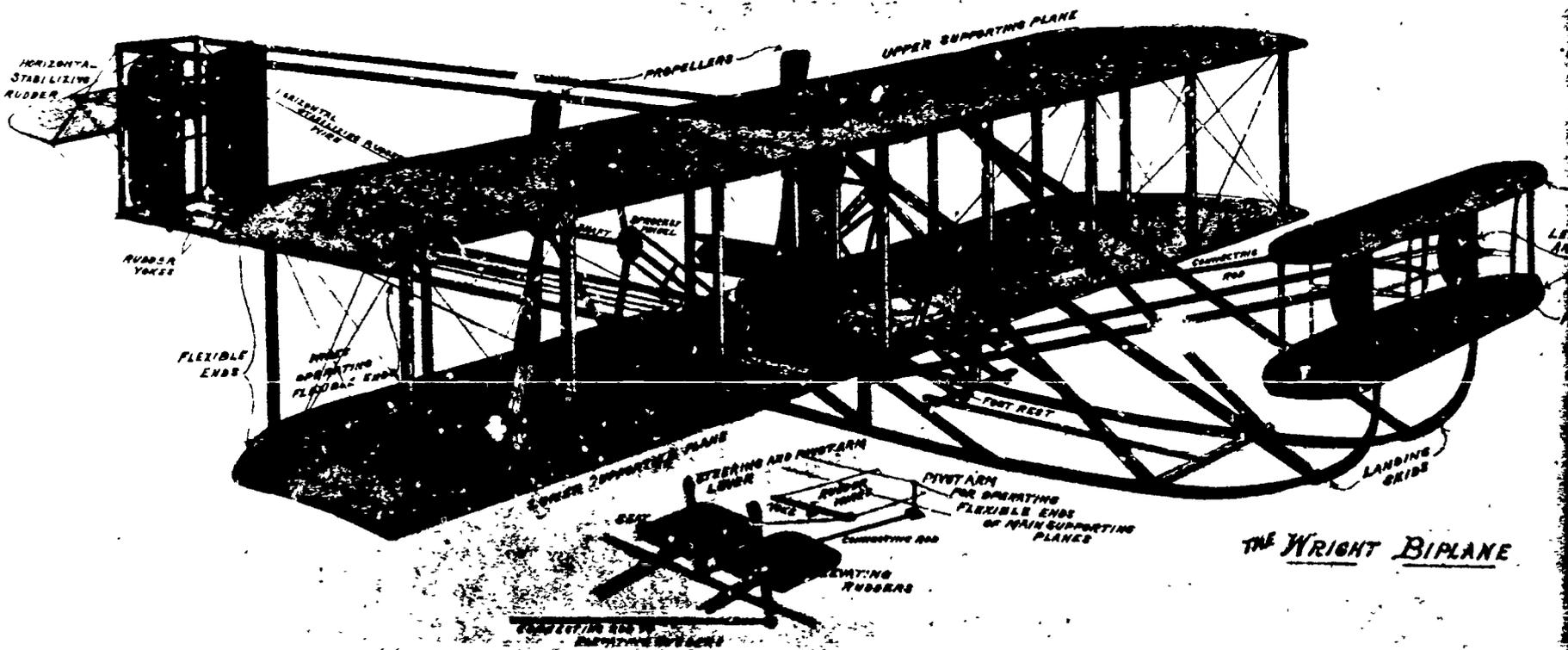
The blades turned in opposite directions.

Helicopters fly straight up.

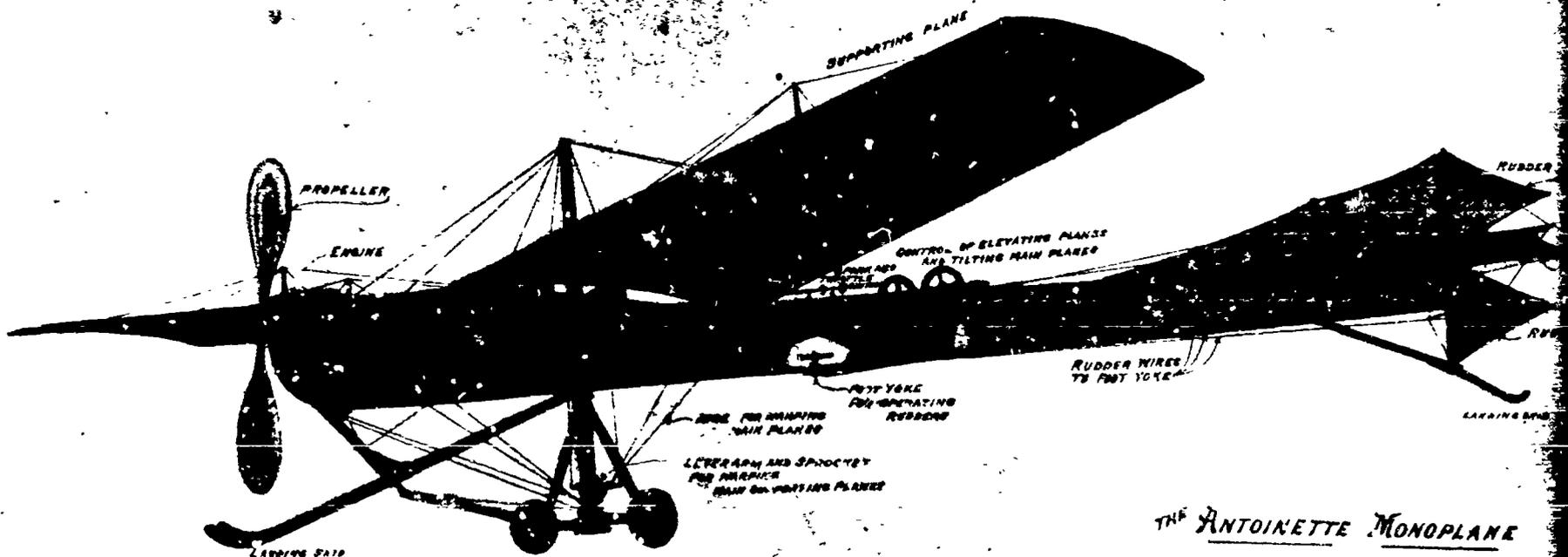
AIRPLANES



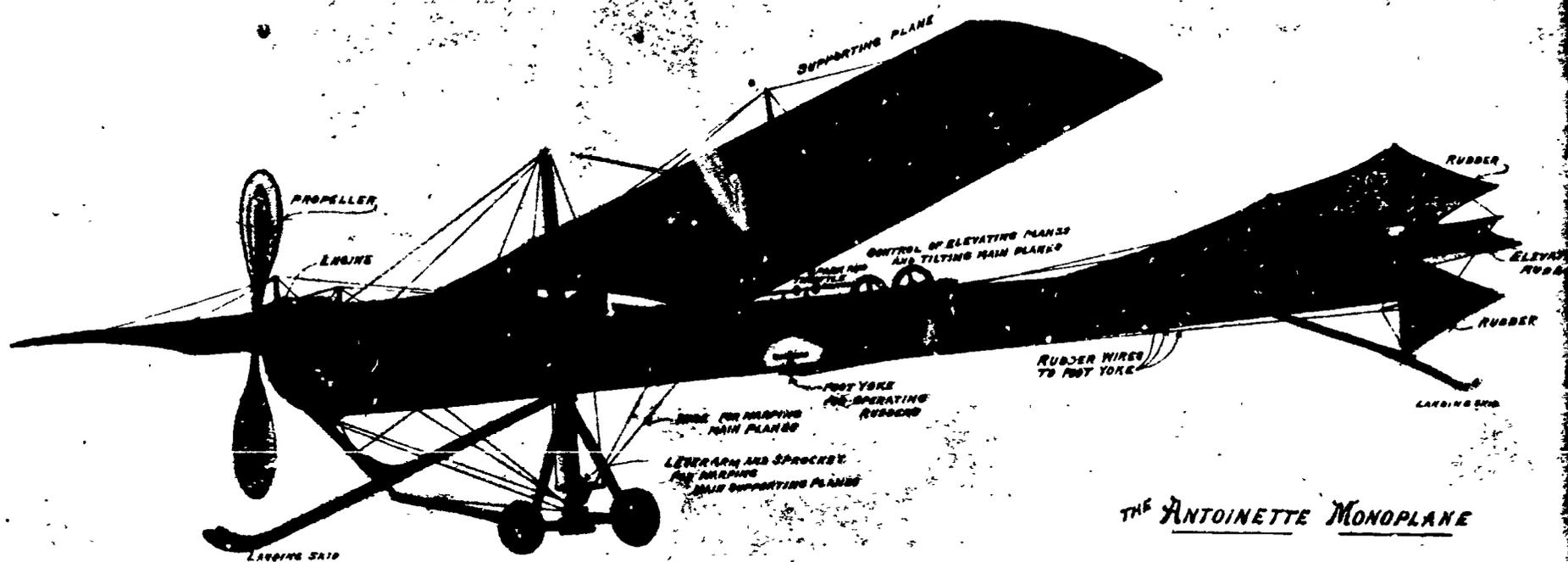
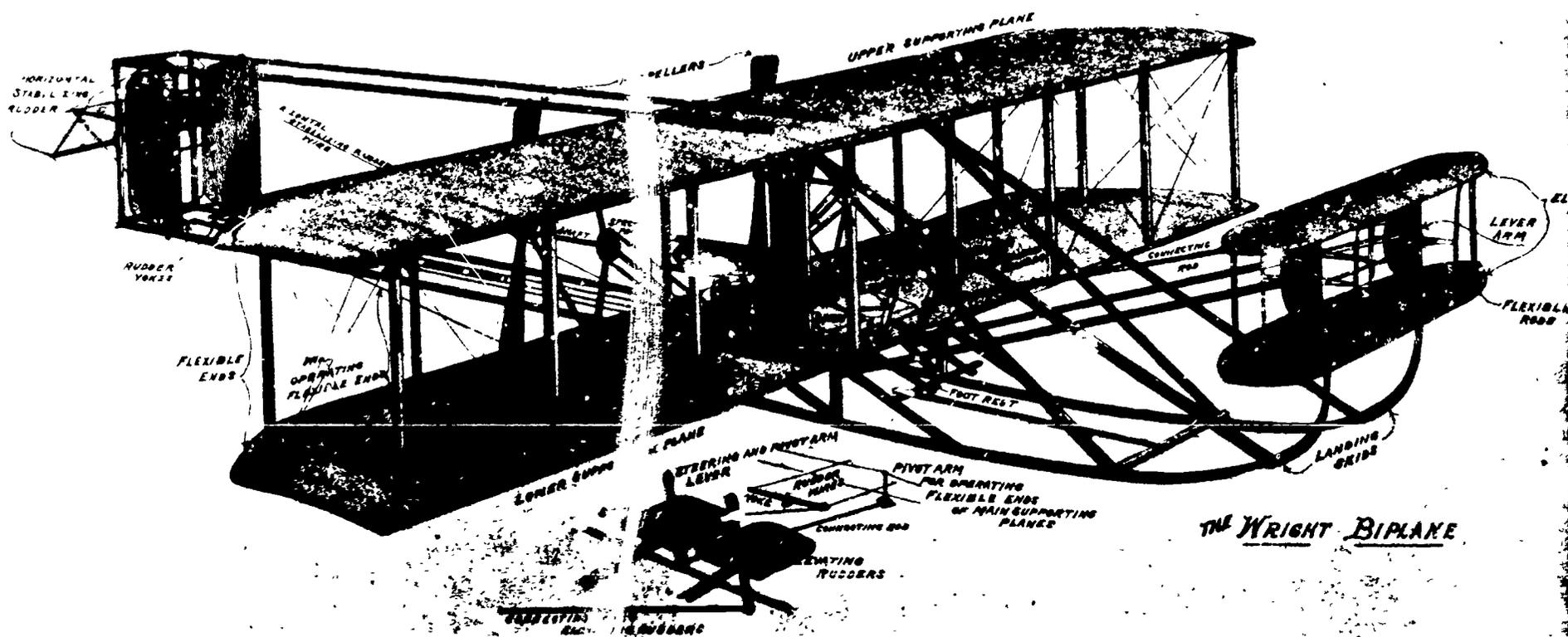
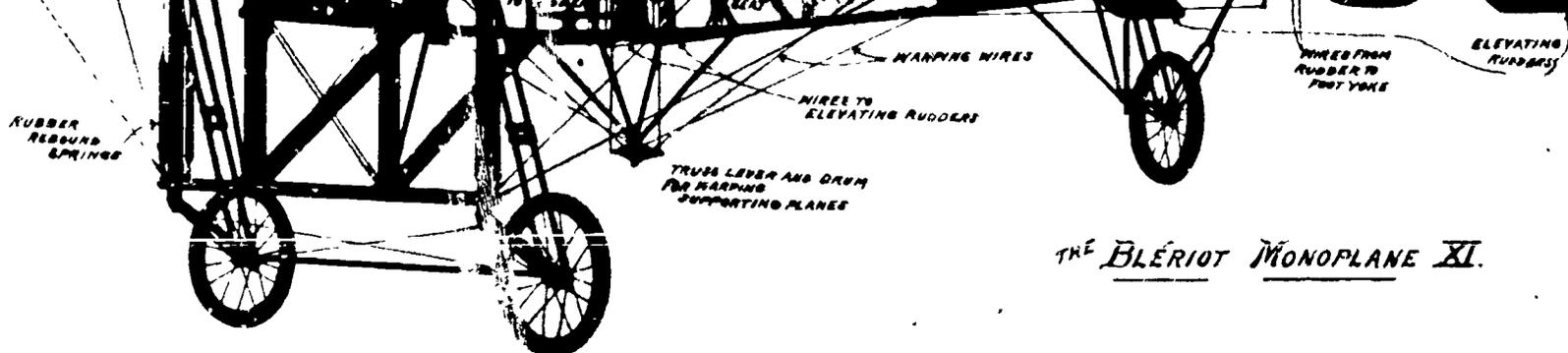
THE BLÉRIOT MONOPLANE XI.



THE WRIGHT BIPLANE

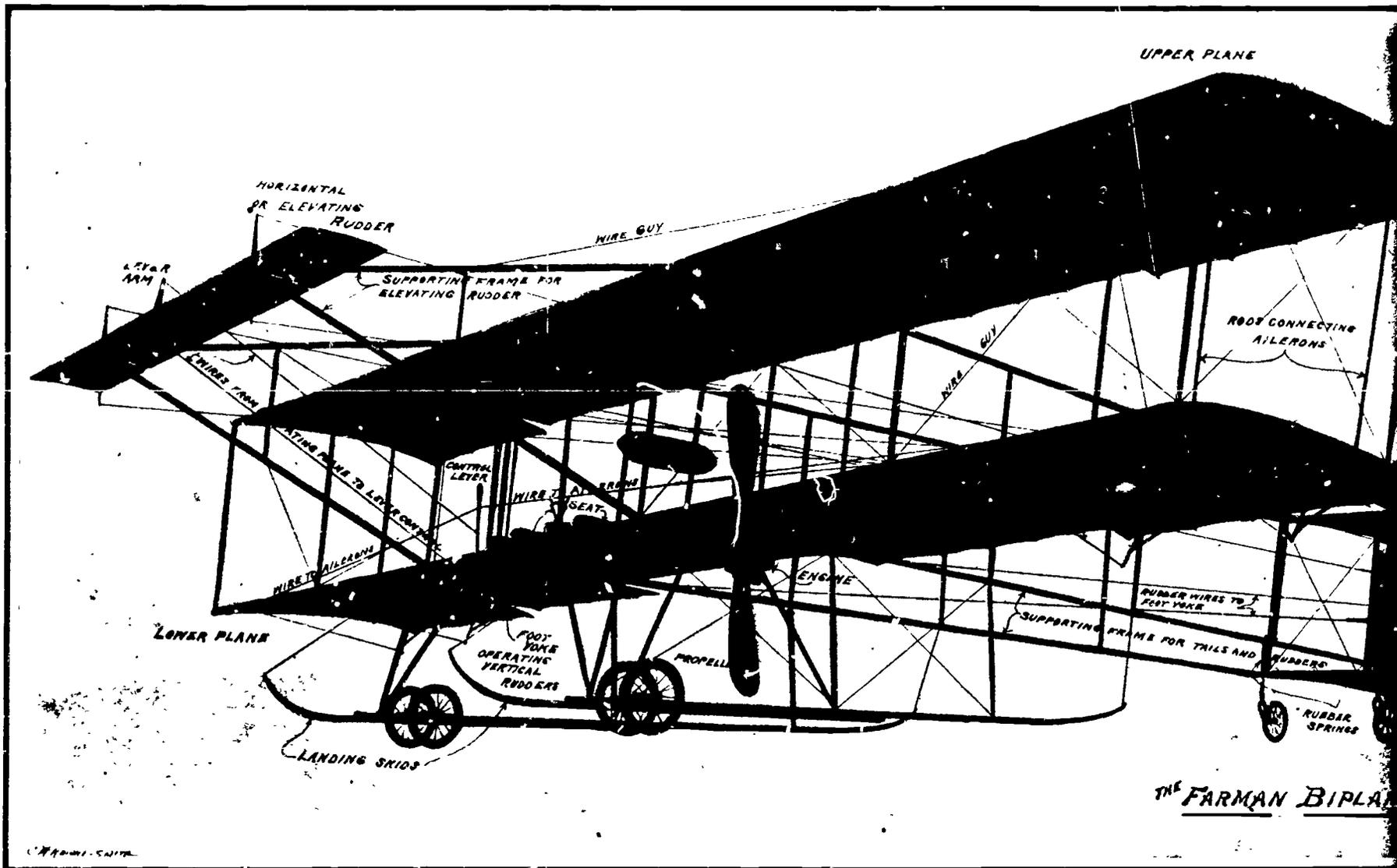


THE ANTOINETTE MONOPLANE

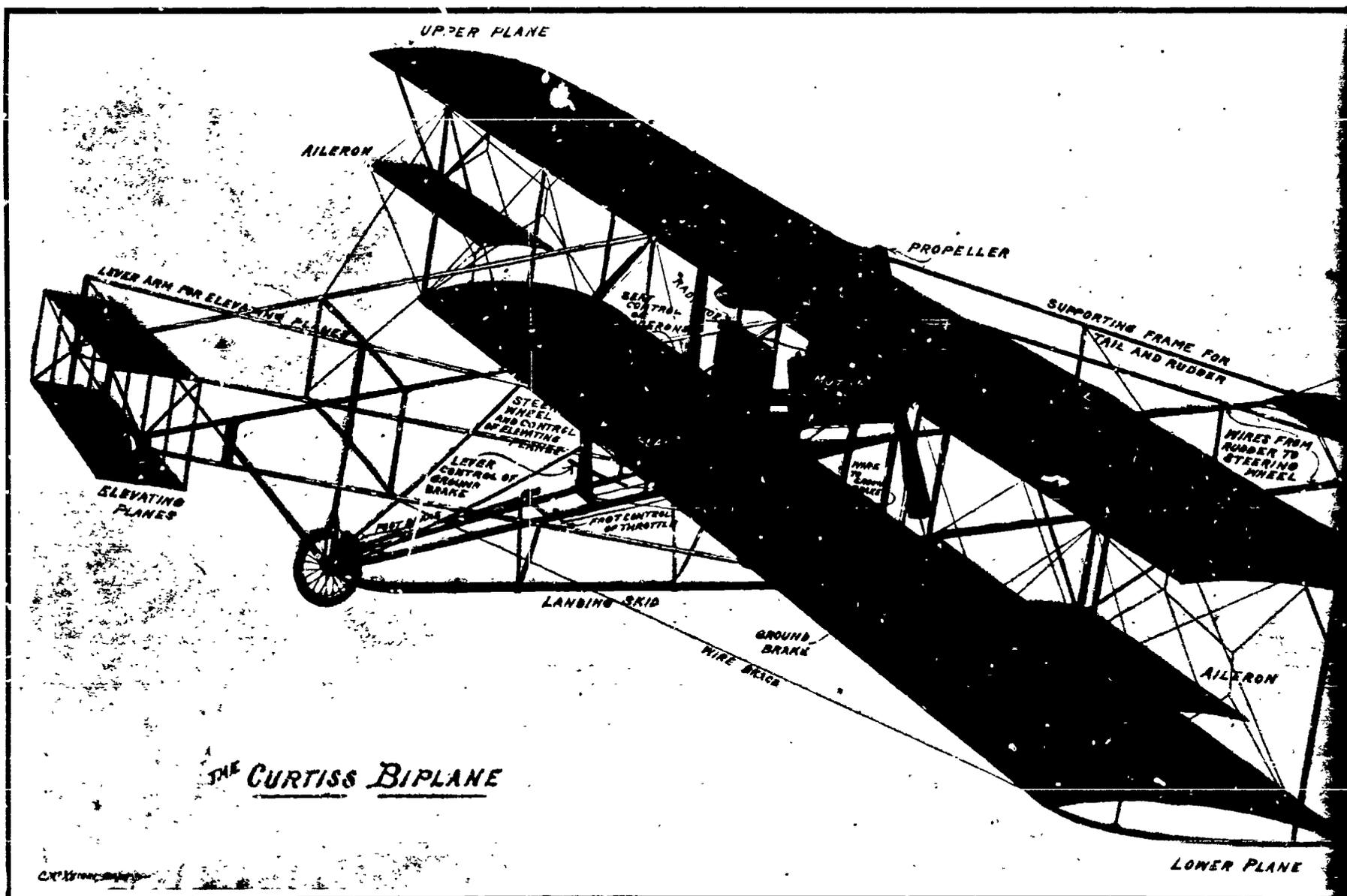


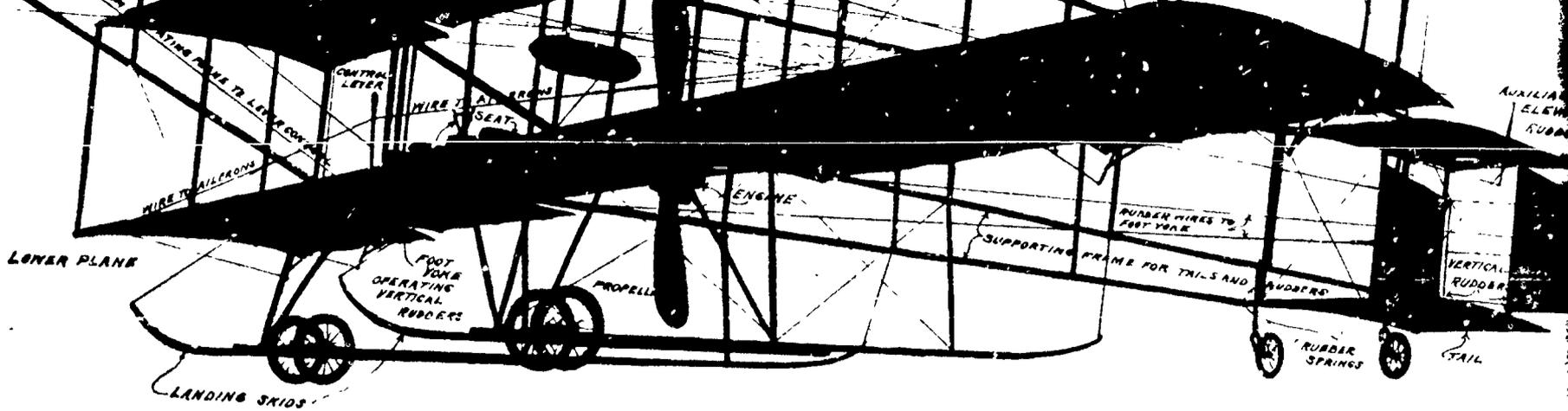
The drawing in the center is the Wright Biplane in 1910. A biplane has two wings. The other planes are monoplanes. A monoplane has one wing.

BIPLANE



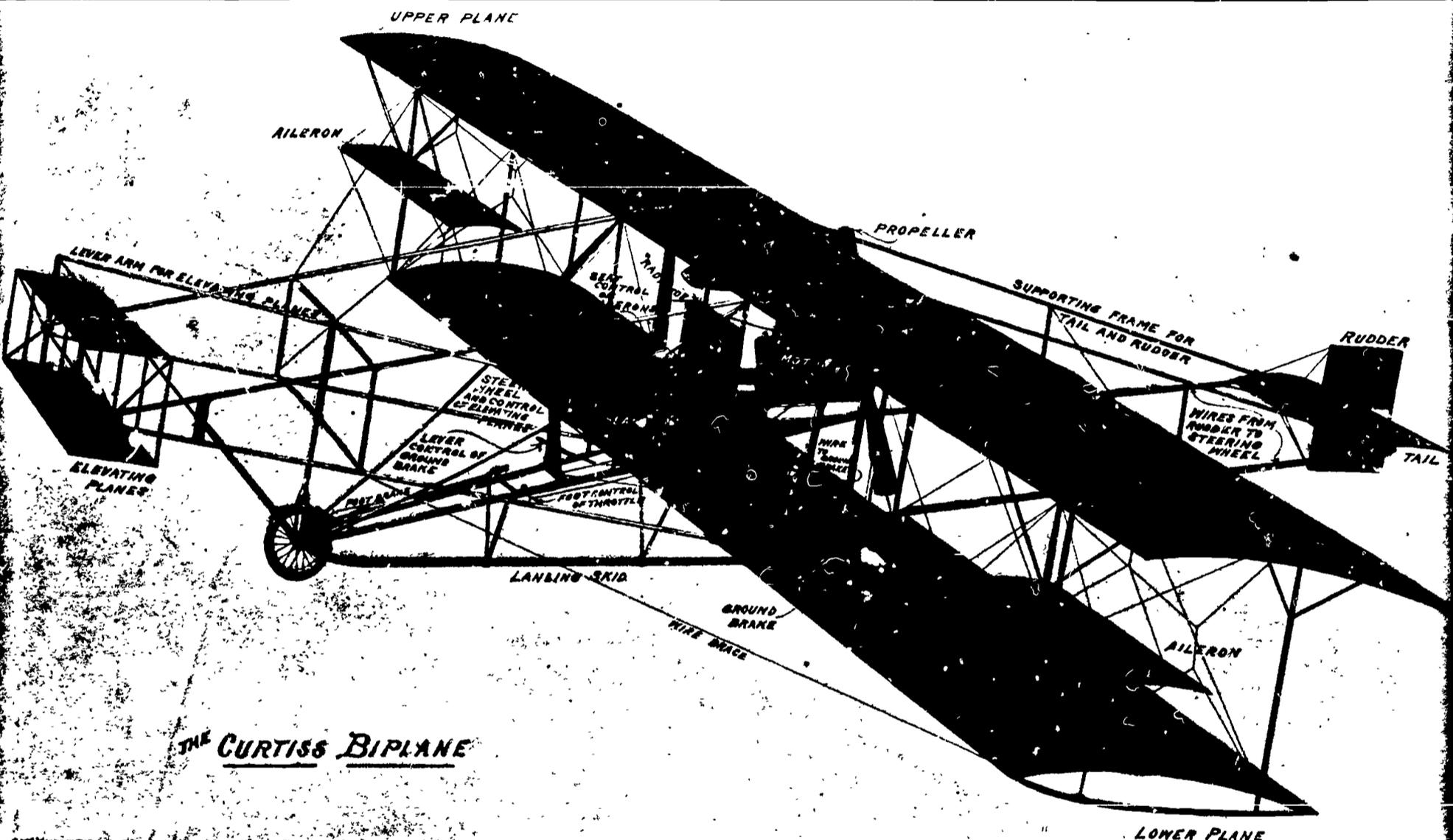
The Farman 50 horse-power biplane.





THE FARMAN BIPLANE

The Farman 50 horse-power biplane.



THE CURTISS BIPLANE

The Curtiss biplane with intermediate adjusting planes.

The Curtiss Biplane - 1910.

The motor for this plane had 8 cylinders.

It also had 50 horsepower.

Compare it with the other biplanes.

AIRPLANES

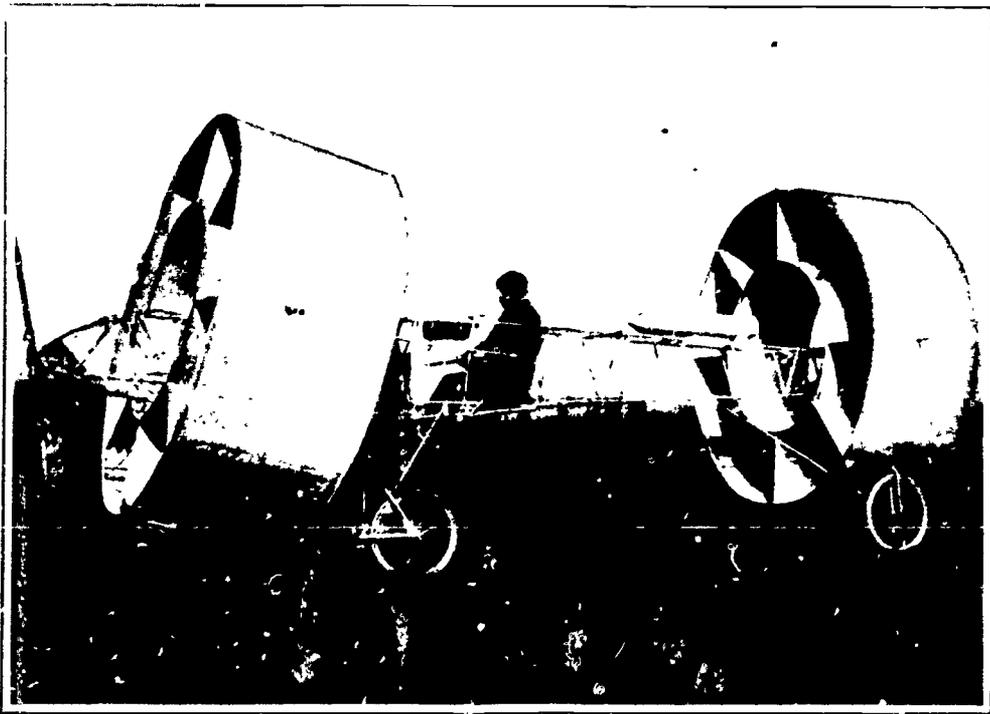


Fig. 1.—This designer was haunted by the fear of edgewise tumbling. He did not know that drums are inefficient lifting surfaces.

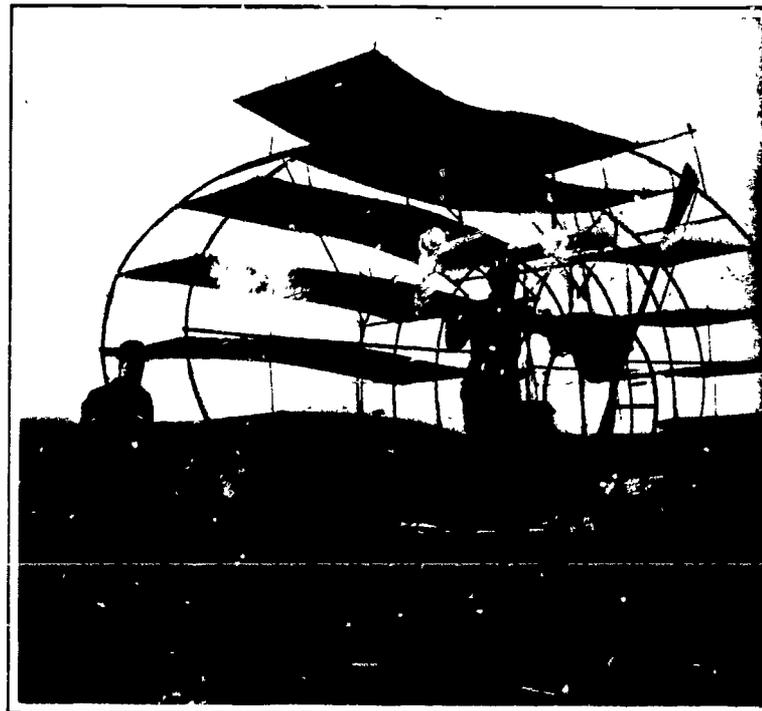


Fig. 2.—A. marquis's idea of applying the principle of center of gravity. Too much head resistance here.

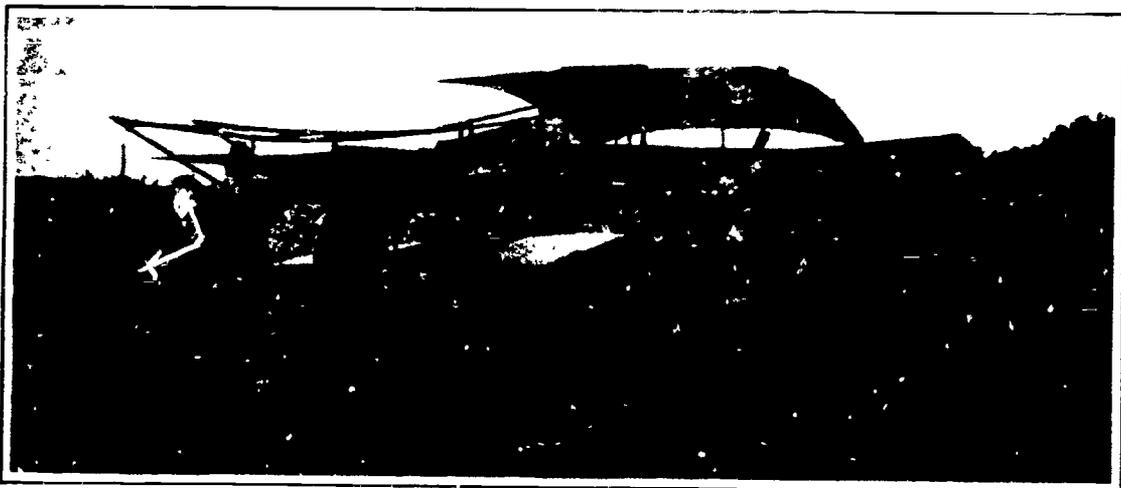
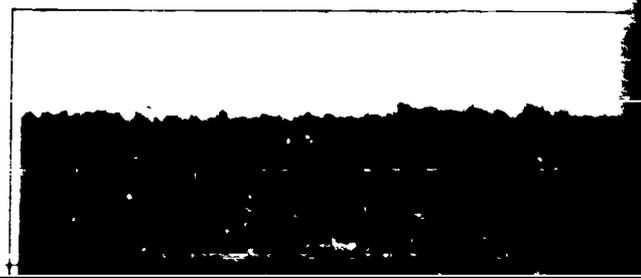


Fig. 3.—If two planes are better than one, three must be better than two, argued this designer, taking no account of the head resistance.





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

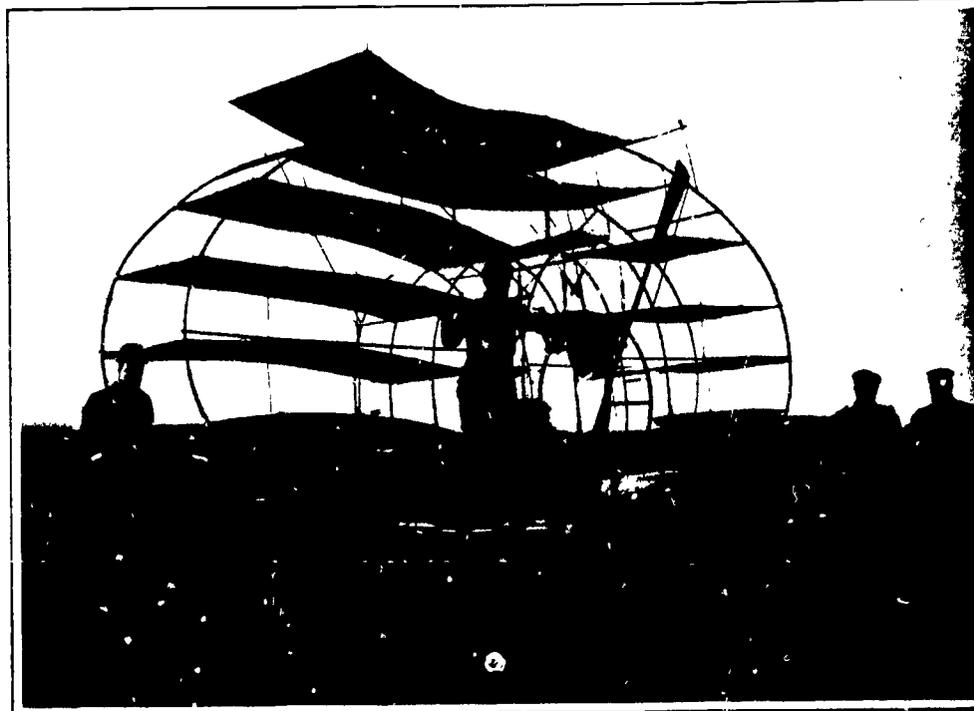
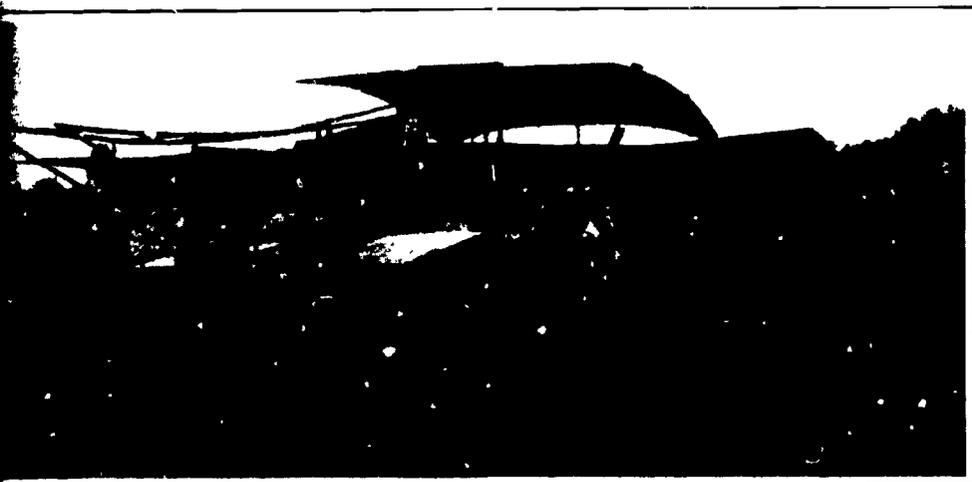


Fig. 2.—A marquis's idea of applying the principle of centripetal stresses. Too much head resistance here.



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



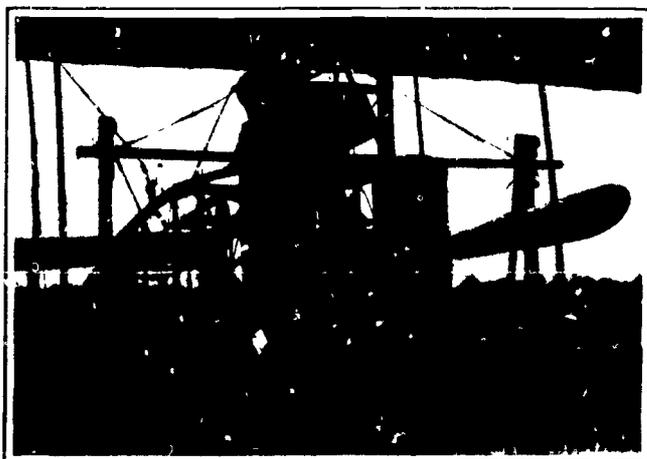
Fig. 4.—Here the eye rests in peace, for compared with standard designs the variations are more conspicuous than radical.

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

PROPELLERS



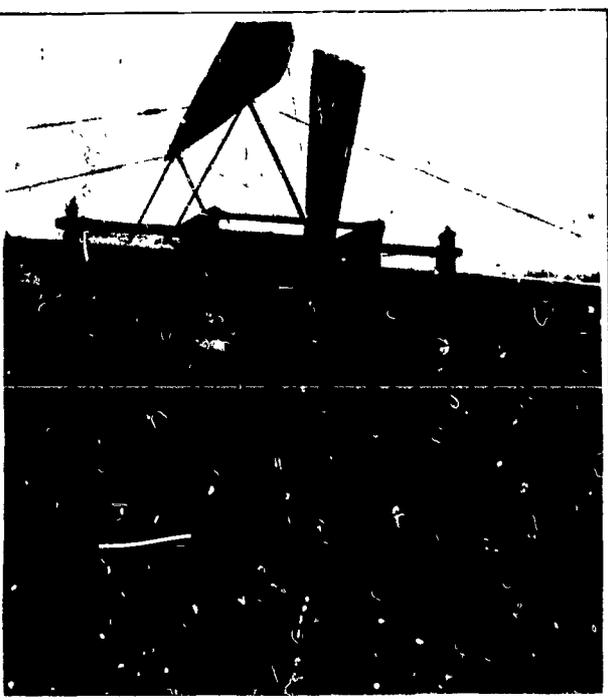
Experimental propellers



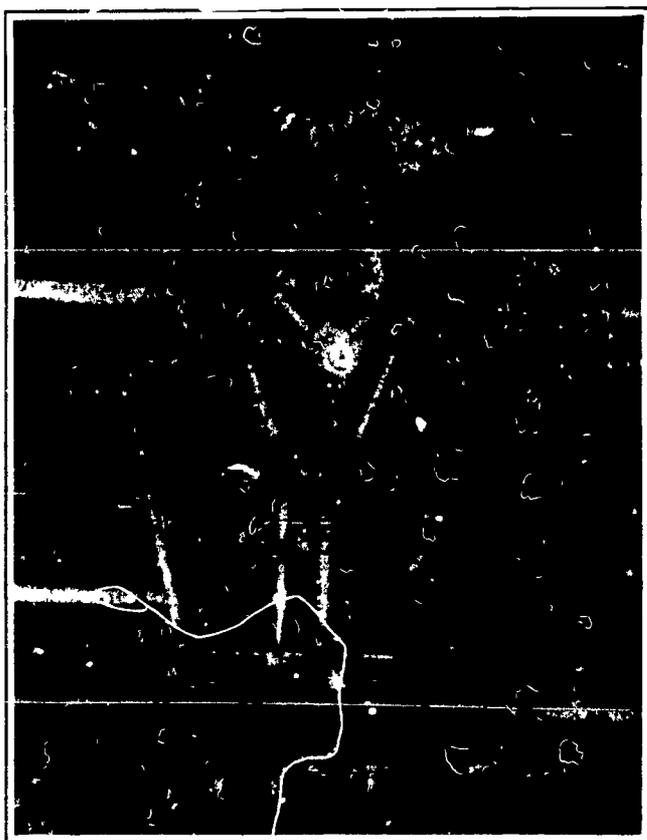
This propeller had steel arms and wooden blades.



Abandoned



A 4 bladed propeller



This propeller turned at 1400 r.p.m.

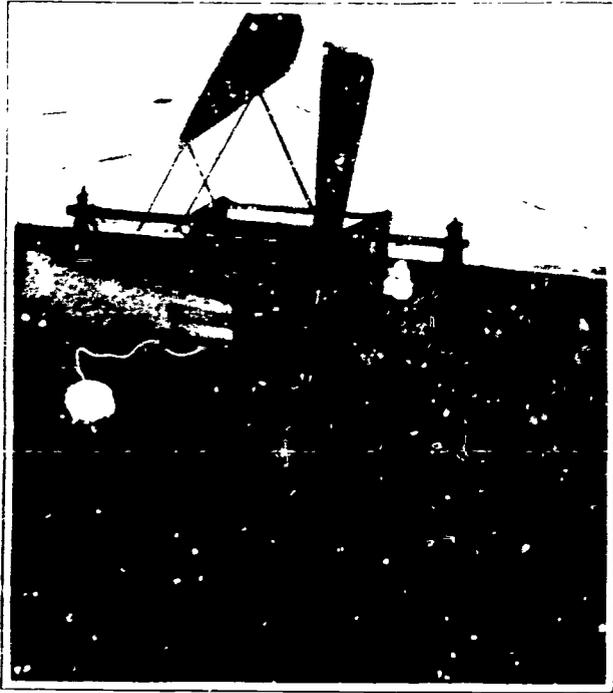


Another propeller





This propeller had steel arms and wooden blades.



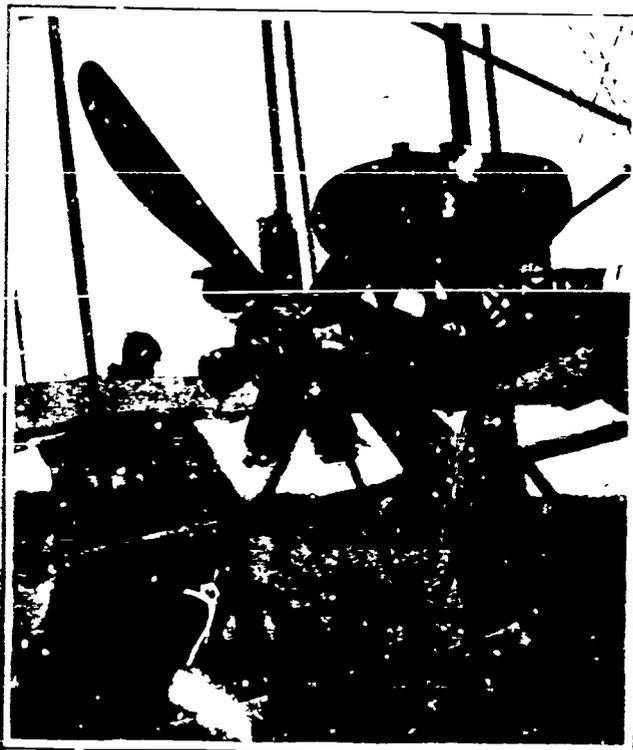
A 4 bladed propeller



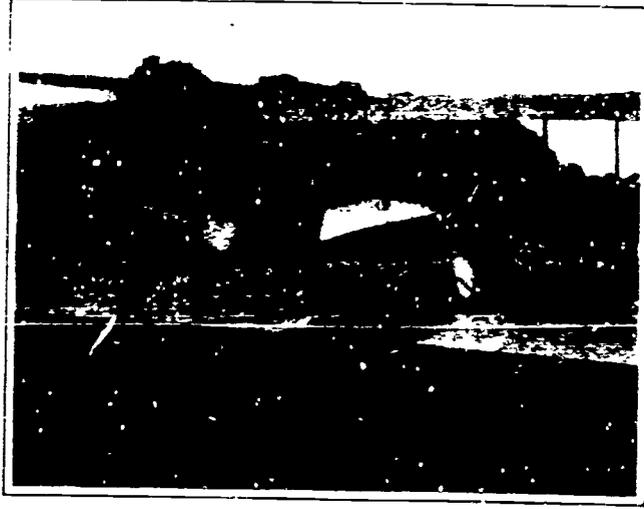
This propeller turned at 1400 r.p.m.



Another propell



A radial motor



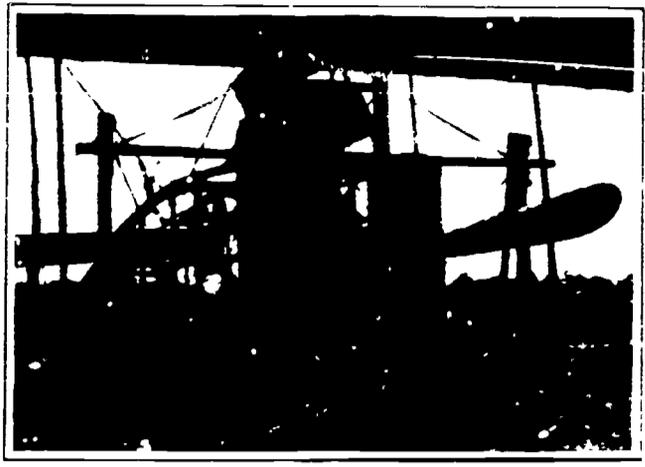
The double propellers of the Wright Biplane



A 3 bladed



1 propellers



This propeller had steel arms and wooden blades.



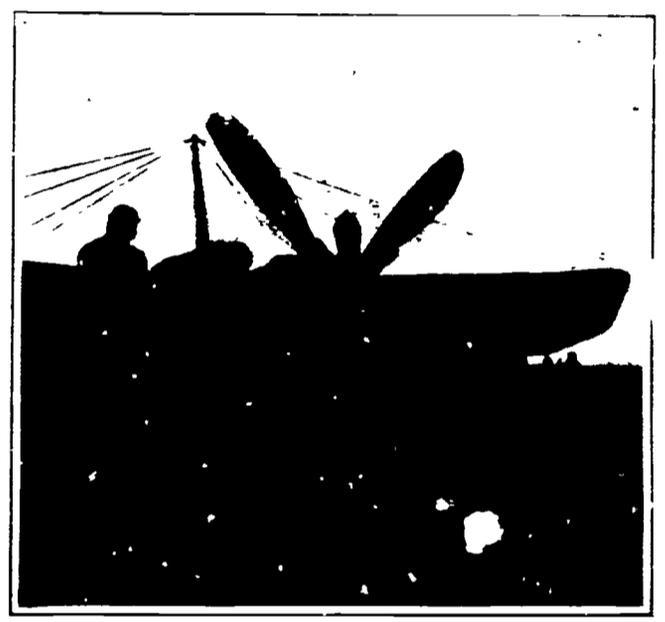
Abandoned propellers



propeller



This propeller turned at 1400 r.p.m.



Another 4 bladed propeller



PILOTS

Some Famous American Aviators and Designers

Men Who Are Making Flying Machine History



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



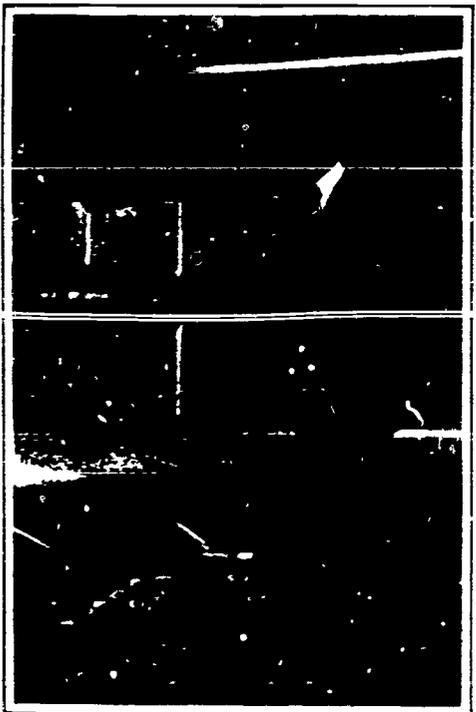
Thomas Scott Baldwin, an old airship captain now an aviator.



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



"Bud" Mars, the C has made many cr



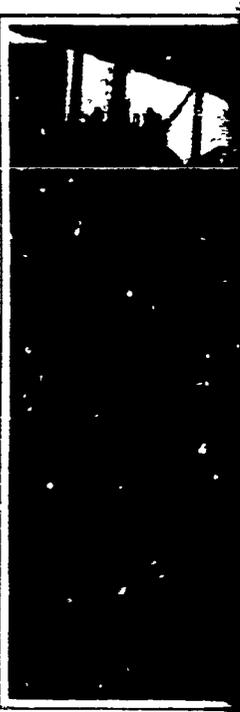
Wilbur Wright, the elder of the two brothers who built the first practical aeroplane.



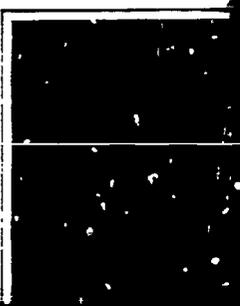
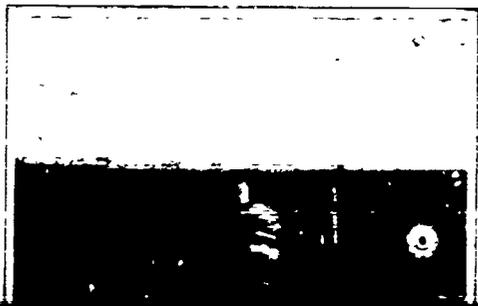
J. Armstrong Drexel, American millionaire-Bleriot pilot, noted for his altitude flights.



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



Walter Brookings Wright. He spir





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



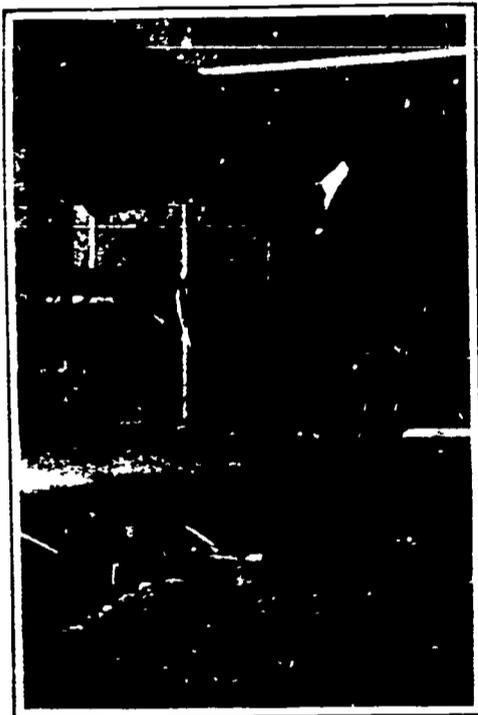
Thomas Scott Baldwin, an old airship captain now an aviator.



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



"Bud" Mars, the Curtiss has made many cross-count



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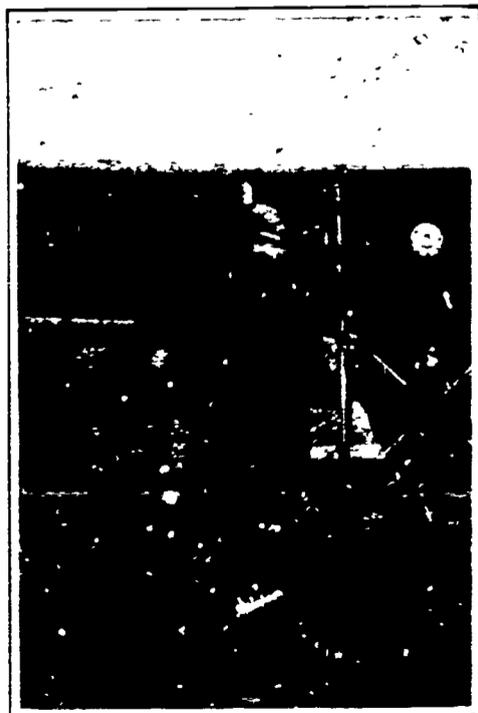
J. A. D. McCurdy, the Canadian Curtiss pilot, who flew from Key West almost to Havana.



Walter Brookings and his brother Orville 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 Blériot monoplane.



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



Clifford B. Harmon, our first aviator, who flew from Island Sound

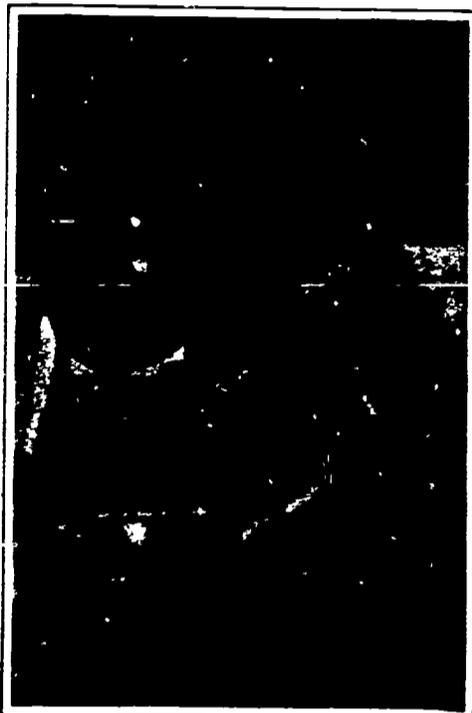
PILOTS

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.



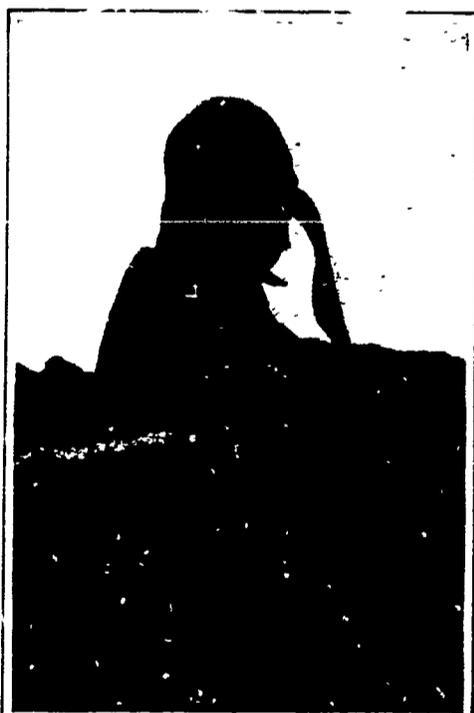
Legagneux, the all-round French aviator, who has made records with both monoplanes and biplanes.



Vedrine, the Frenchman who won a \$4,000 prize for his flight from Paris to New York.



Weyman, 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 efficiently flown the fastest airplane.





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.



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



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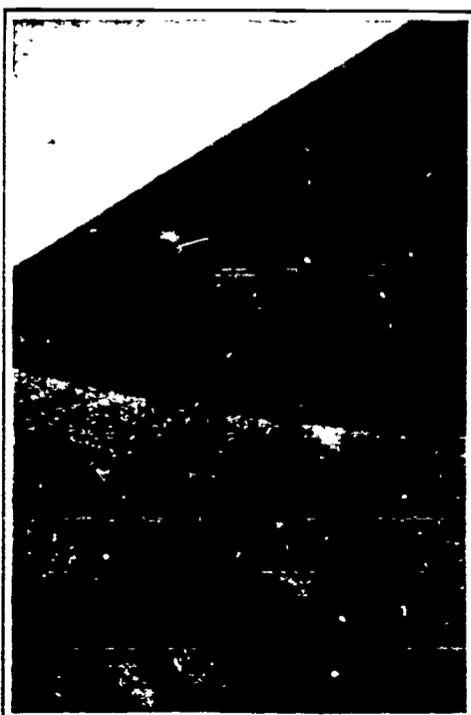
Louis Blériot, France's premier monoplane inventor; first to cross the English Channel, July 25th, 1909.



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



Morane, the former Blériot pilot who has invented an exceedingly fast and efficient monoplane.



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).

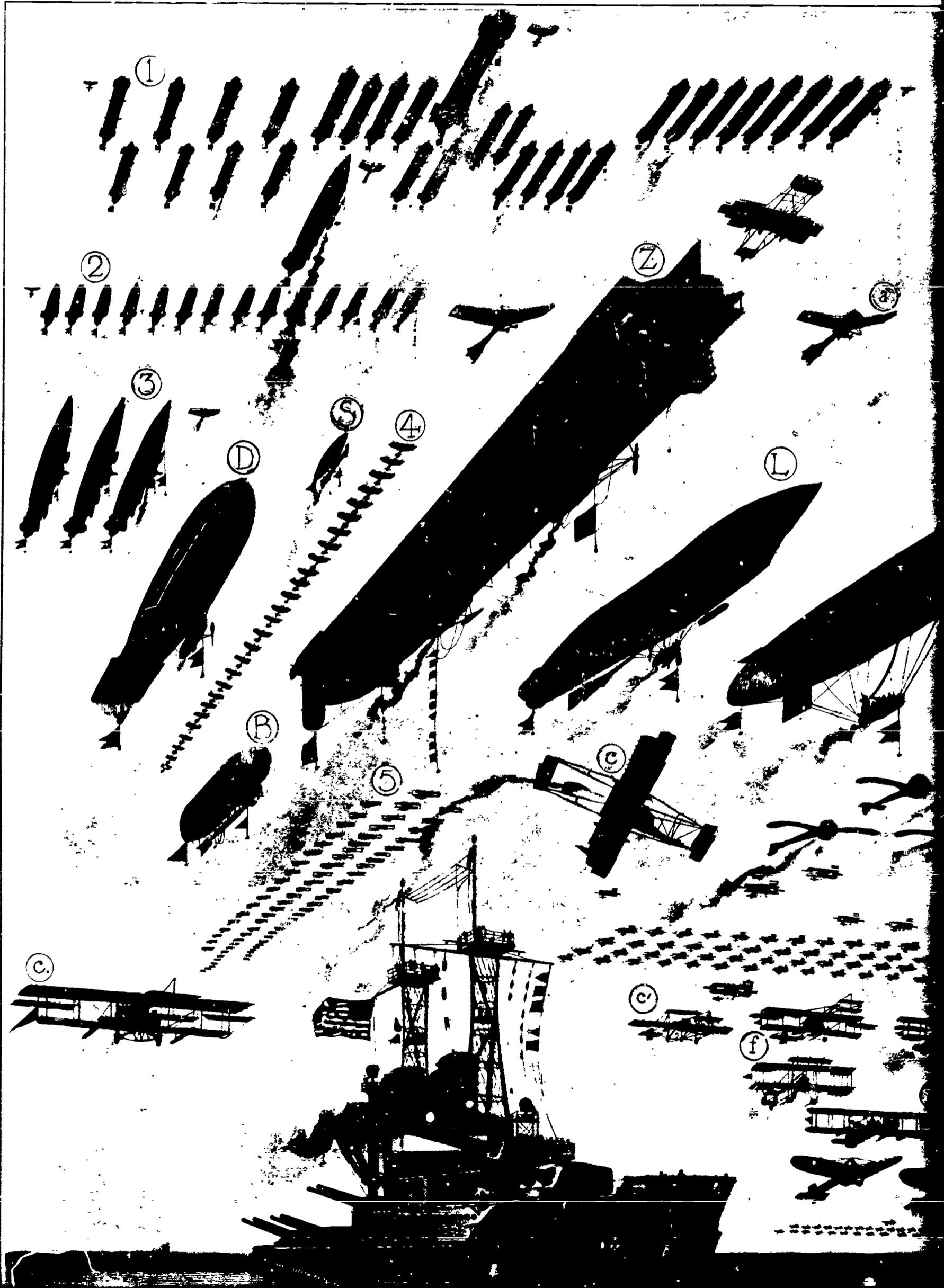


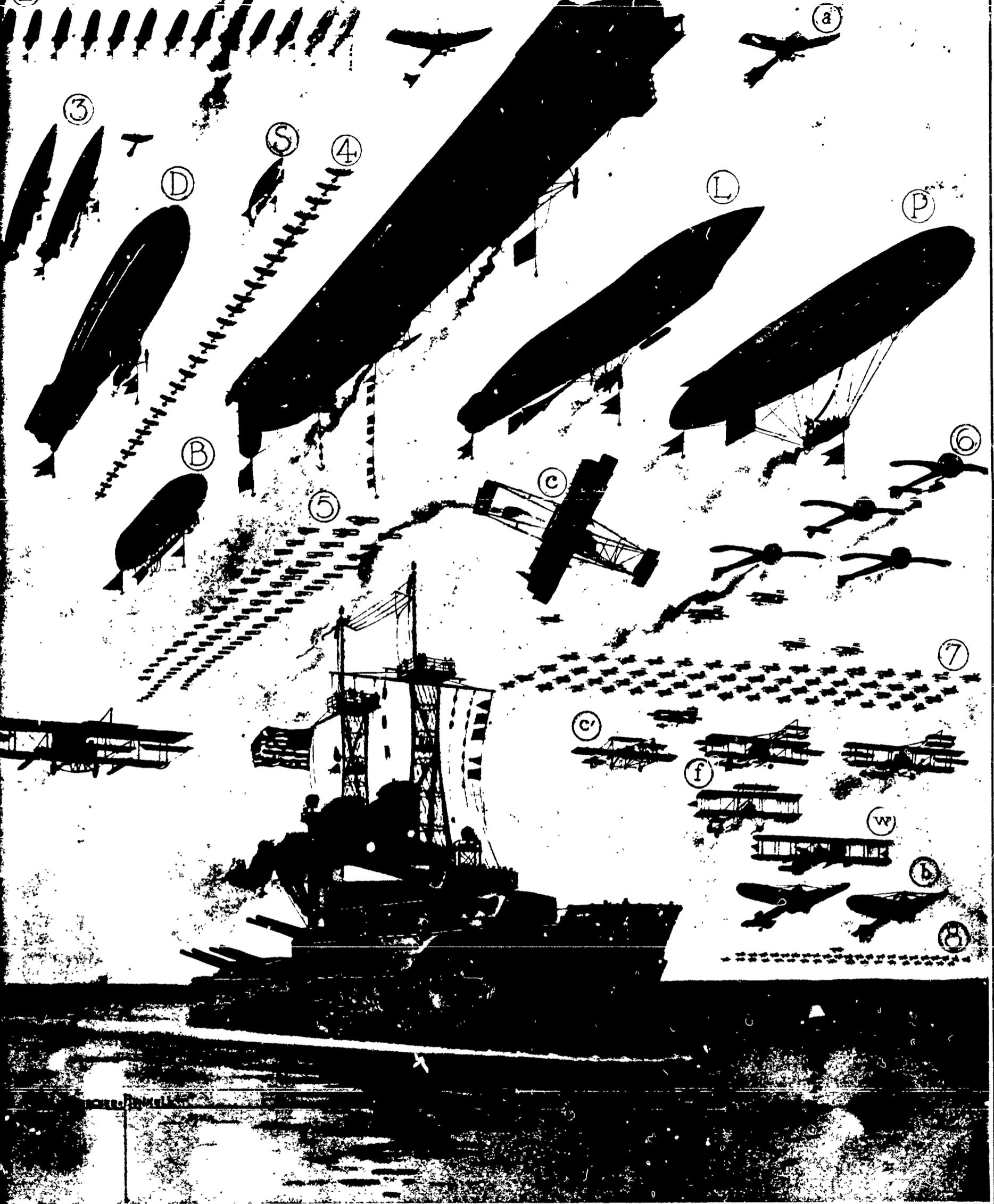
Robert Esnault-Pelterie, inventor and designer of R. E. P. monoplane. He is one of the best aviation engineers of the day.



Pierre Marie Bournique, French monoplane pilot, who made excellent long-distance records last year.

AIR SHIPS





of the above reference figures, etc.: 1. Squadron of 29 Zeppelins (Dreadnoughts). 2. Squadron of 13 Parsevals in command of 1 Lebaudy (cruiser). 3. Squadron of 3 Lebaudys (cruisers). 4. Squadron of 4 vanadium racers, Scientific American type. 5. Squadron of 74 Wright biplanes. 6. Squadron of 4 vanadium racers, Scientific American type. 7. Squadron of 69 "big Curtiss biplanes." 8. Squadron of 46 Curtiss hydro-aeroplanes. 9. In dirigible (Dreadnought class). D. Deutsch dirigible (cruiser class). L. Lebaudy dirigible (cruiser class). P. Parseval (cruiser). B. Baldwin (scout). S. Santos Dumont (scout). c. Commander of scouts. c. Curtiss monoplane. e. Scout aero. f. Farman biplane scout. w. Big Wright (scout). b. (2 types) Blériot. a. Antoinette (1 to each flagship and 2 to the commanding officer's ship).

War-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.

An aerial fleet in 1911

BOMBER





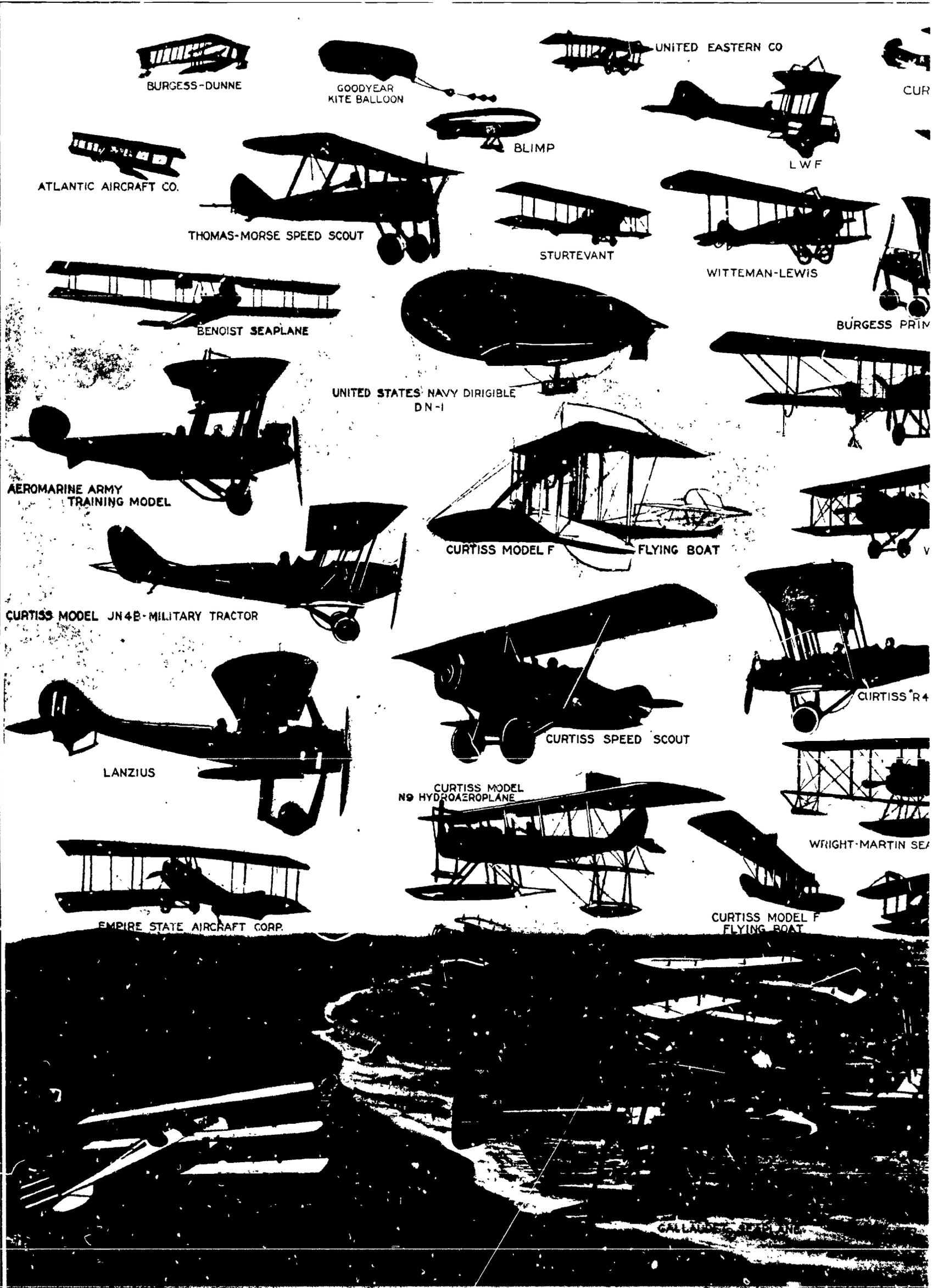
How bombs were dropped in 1911

See how small the bombs were.

The bombs were aimed by a bomb sight.

The bomb sight had a telescope.

AIRPLANES





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





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.

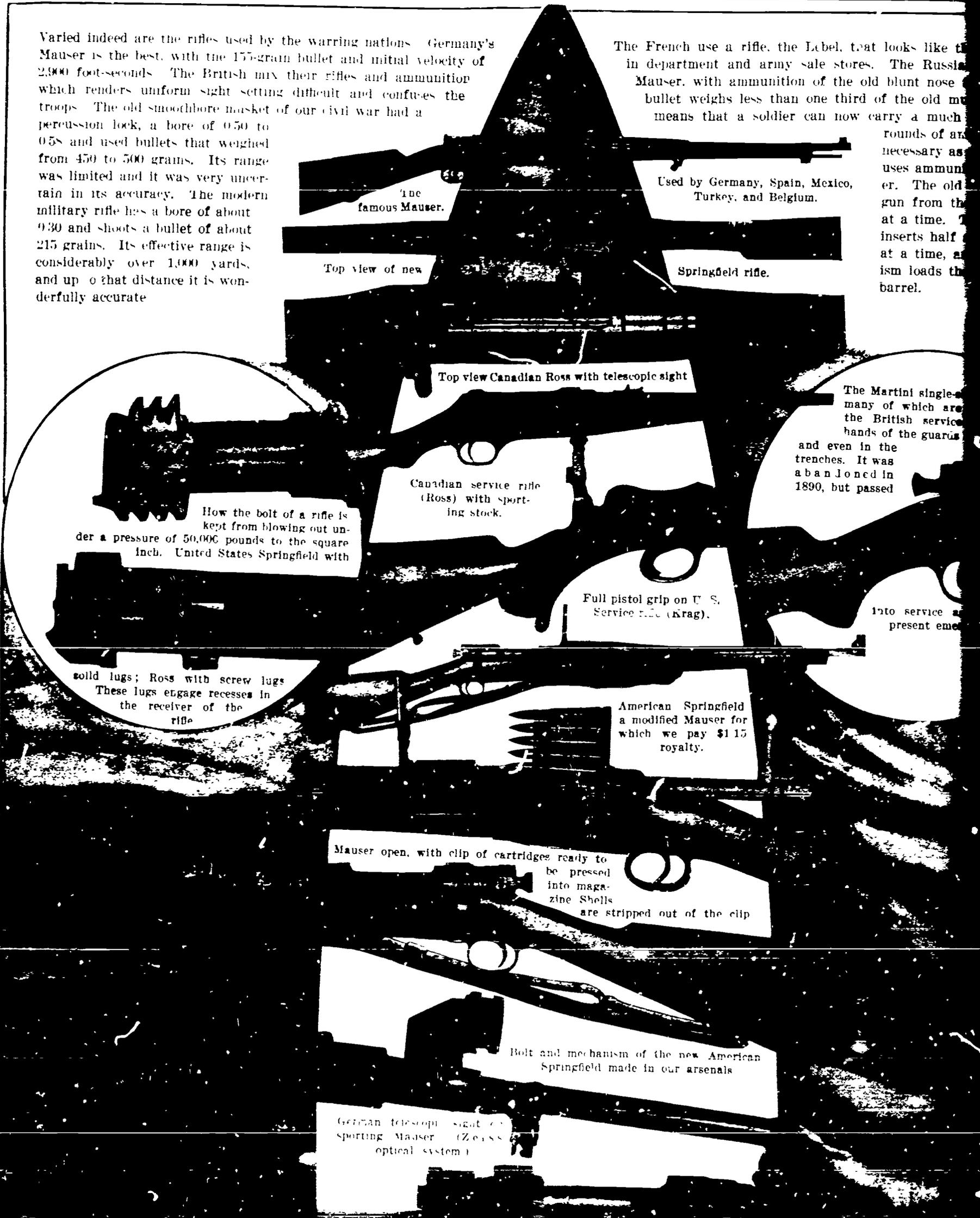
RIFLES

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 155-grain bullet and initial velocity of 2,900 foot-seconds. The British mix their rifles and ammunition which renders uniform sight setting difficult and confuses 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 this 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 means that a soldier can now carry a much larger number of rounds of ammunition necessary as the war uses ammunition. The old gun from the time of the Civil War inserts half a round at a time, and the modernism loads the barrel.



The famous Mauser.

Used by Germany, Spain, Mexico, Turkey, and Belgium.

Top view of new

Springfield rifle.

Top view Canadian Ross with telescopic sight

Canadian service rifle (Ross) with sporting stock.

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 into service at present emergency.

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.

Full pistol grip on U. S. Service rifle (Krag).

American Springfield a modified Mauser for which we pay \$1.15 royalty.

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 arsenals.

German telescopic sight on sporting Mauser (Zeiss optical system).

... The old smoothbore musket of our civil war had a percussion lock, a bore of 0.7 to 0.75 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 217 grains. Its effective range is considerably over 1000 yards and up to that distance it is wonderfully accurate.

... 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 more rapidly. The old soldier loaded a gun from the muzzle one round at a time. The modern soldier inserts half a dozen cartridges at a time, and simple mechanism loads the charges into the barrel.



The famous Mauser

Used by Germany, Spain, Mexico, Turkey and Belgium



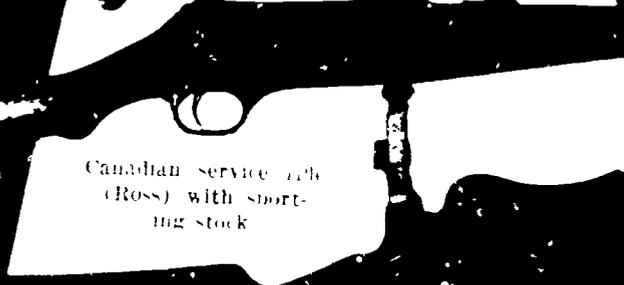
Springfield rifle.



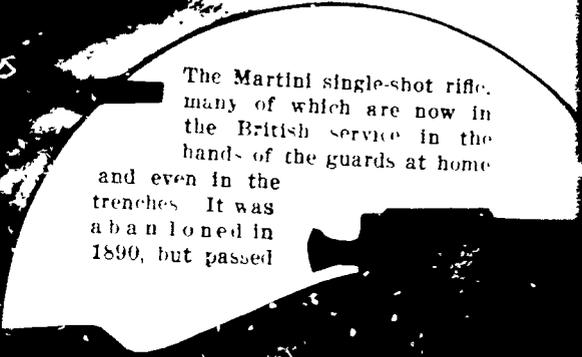
Top view Canadian Ross with telescopic sight



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.



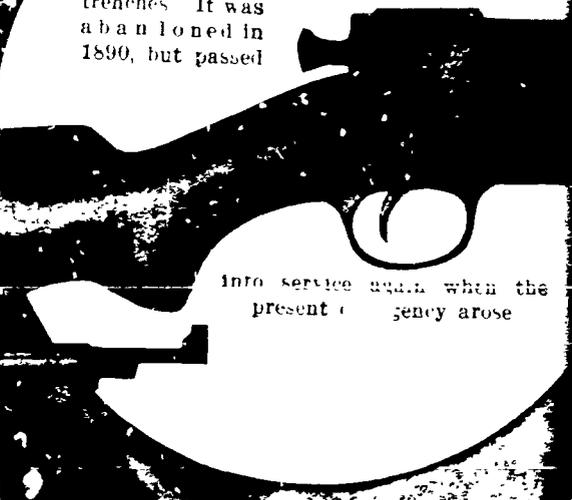
Canadian service rifle (Ross) with sporting stock



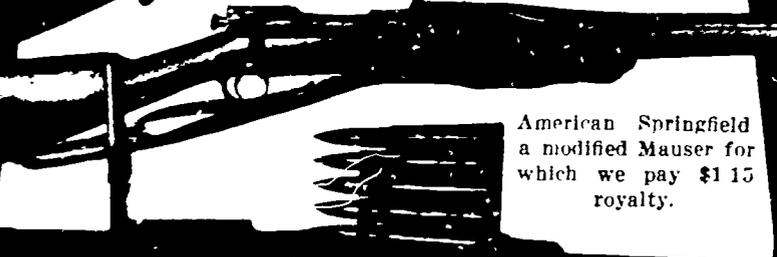
The Martini single-shot rifle, many of which are now in the British service in the hands of the guards at home and even in the trenches. It was abandoned in 1890, but passed



Full pistol grip on U.S. Service rifle (Krag).



into service again when the present emergency arose



American Springfield a modified Mauser for which we pay \$115 royalty.



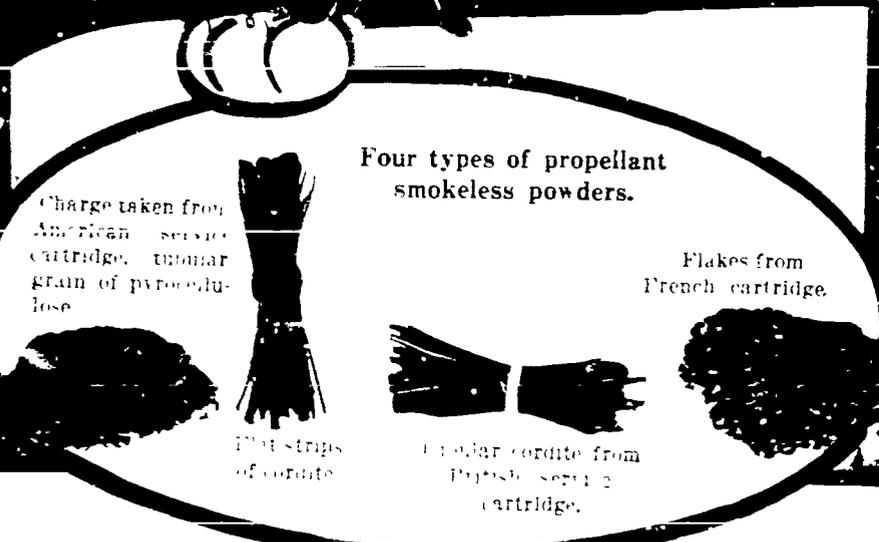
Mauser open, with clip of cartridges ready to be pressed into magazine. Shells are stripped out of the clip



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



German telescopic sight on sporting Mauser. (Zeiss optical system)



Four types of propellant smokeless powders.

Charge taken from American service cartridge, triangular grain of pyrocellulose

Flakes from French cartridge

Flat strips of cordite

Regular cordite from British service cartridge

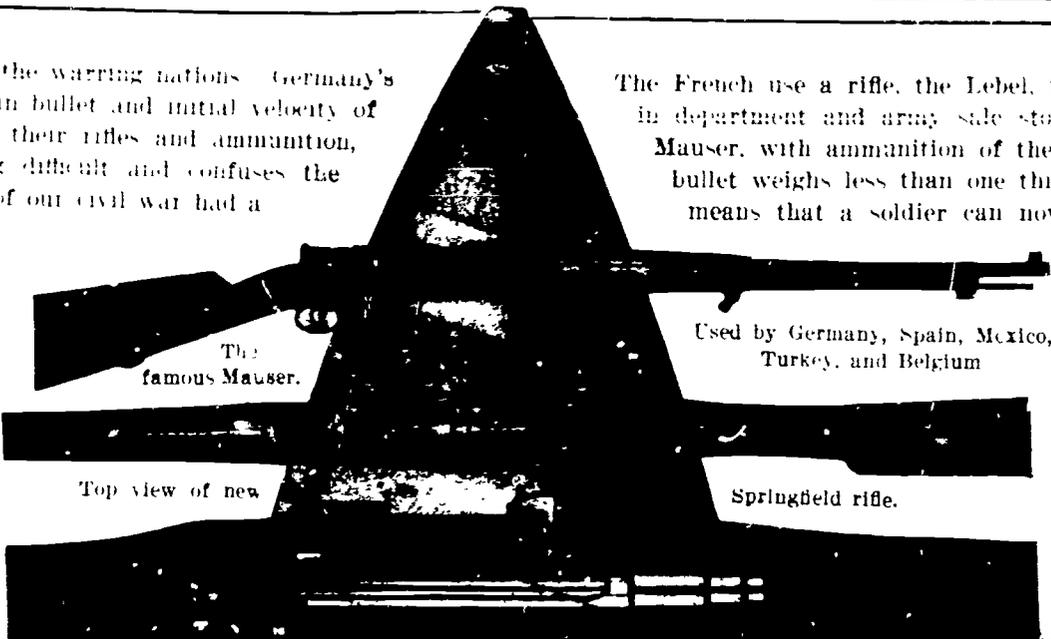


The Rifles of European Fighters

...a Range of 4,200 to 5,200 Yards, But That Is Not Their Chief Virtue. They Shoot Flat. Thanks
 ...Sharp-Pointed Bullets, and Flatness of Trajectory Counts for More Than Range in Shooting

...are the rifles used by the warring nations. Germany's
 ...best with the 175 grain bullet and initial velocity of
 ...onds. The British mix their rifles and ammunition,
 ...uniform sight setting difficult and confuses the
 ...old smoothbore musket of our civil war had a
 ...ck, a bore of 0.70 to
 ...d bullets that weighed
 ...500 grams. Its range
 ...and it was very inaccu-
 ...accuracy. The modern
 ...has a bore of about
 ...ets a bullet of about
 ...its effective range is
 ...over 1,000 yards,
 ...at distance it is won-
 ...rate

The French use a rifle, the Lebel, that looks like the old wrecks sold
 in department and army sale stores. The Russians use 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 fast-
 er. 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 mechan-
 ism loads the charges into the
 barrel.

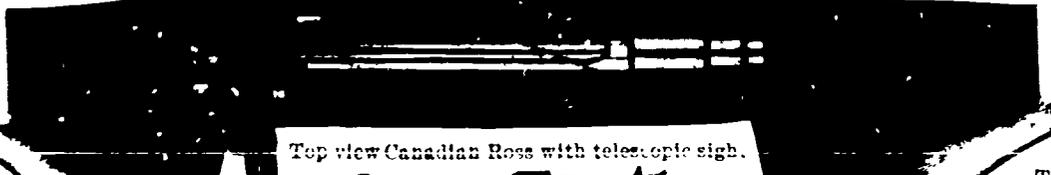


The famous Mauser.

Used by Germany, Spain, Mexico, Turkey, and Belgium

Top view of new

Springfield rifle.



Top view Canadian Ross with telescopic sight.

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

Canadian service rifle (Ross) with sporting stock

into service again when the present emergency arose.

How the bolt of a rifle is kept from blowing out un-
 der pressure of 50,000 pounds to the square
 inch. United States Springfield with

Full pistol grip on U. S. Service rifle (Krag).

Ross with screw lugs
 the lugs engage recesses in
 the receiver of the
 rifle

American Springfield
 a modified Mauser for
 which we pay \$115
 royalty.

Mauser open, with clip of cartridges ready to
 be pressed
 into maga-
 zine Shells
 are stripped out of the clip

Bolt and mechanism of the new American
 Springfield made in our arsenals

German telescopic sight on
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Four types of propellant
 smokeless powders.

Charge taken from

bullets that weighed 600 grains. Its range and it was very in- accurate. The modern has a bore of about its a bullet of about its effective range is over 1,000 yards, distance it is won- rate.



The famous Mauser

Used by Germany, Spain, Mexico, Turkey and Belgium



Top view of new

Springfield rifle.

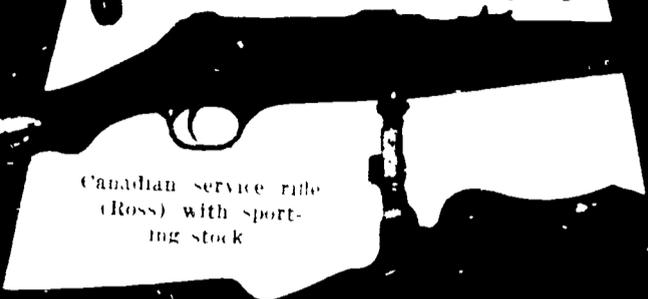
This is rounds of ammunition. This is necessary as the repeating rifle uses ammunition so much faster. The old soldier loaded his gun from the muzzle one shot at a time. The modern soldier inserts half a dozen cartridges at a time, and simple mechanism loads the charges into the barrel.



Top view Canadian Ross with telescope sight



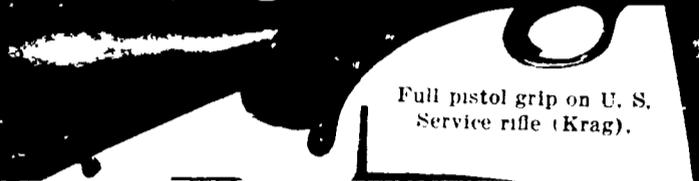
How the bolt of a rifle is kept from blowing out under pressure of 50,000 pounds to the square inch. United States Springfield with screw lugs.



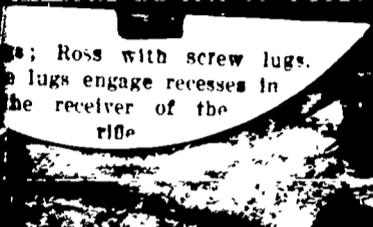
Canadian service rifle (Ross) with sporting stock



The Martini single-shot rifle many of which are now in the British service in the hands of the guards at home and even in the trenches. It was abandoned in 1890, but passed into service again when the present emergency arose.



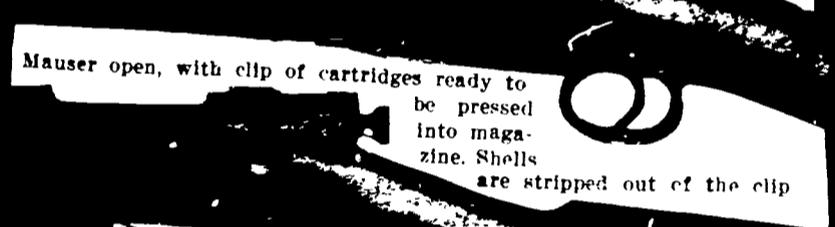
Full pistol grip on U. S. Service rifle (Krag).



Ross with screw lugs. The lugs engage recesses in the receiver of the rifle.



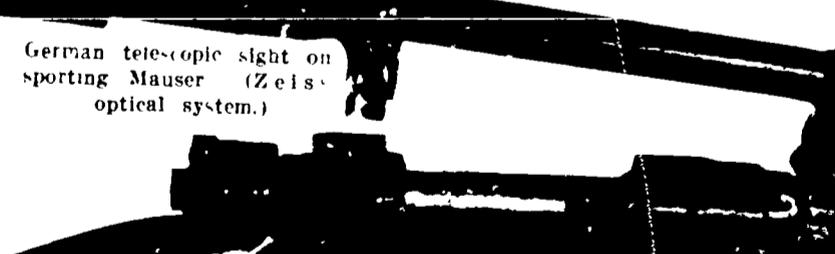
American Springfield a modified Mauser for which we pay \$1.15 royalty.



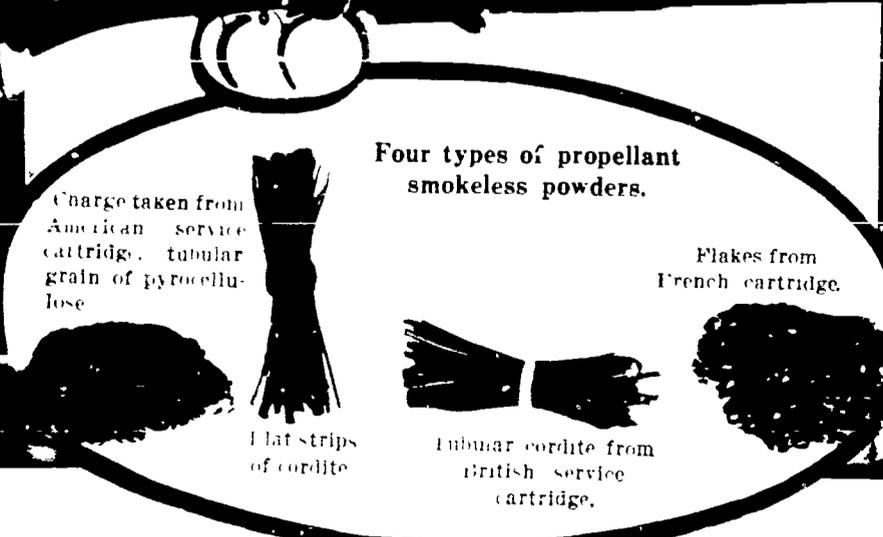
Mauser open, with clip of cartridges ready to be pressed into magazine. Shells are stripped out of the clip.



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



German tele-copic sight on sporting Mauser (Zeiss optical system.)



Four types of propellant smokeless powders.

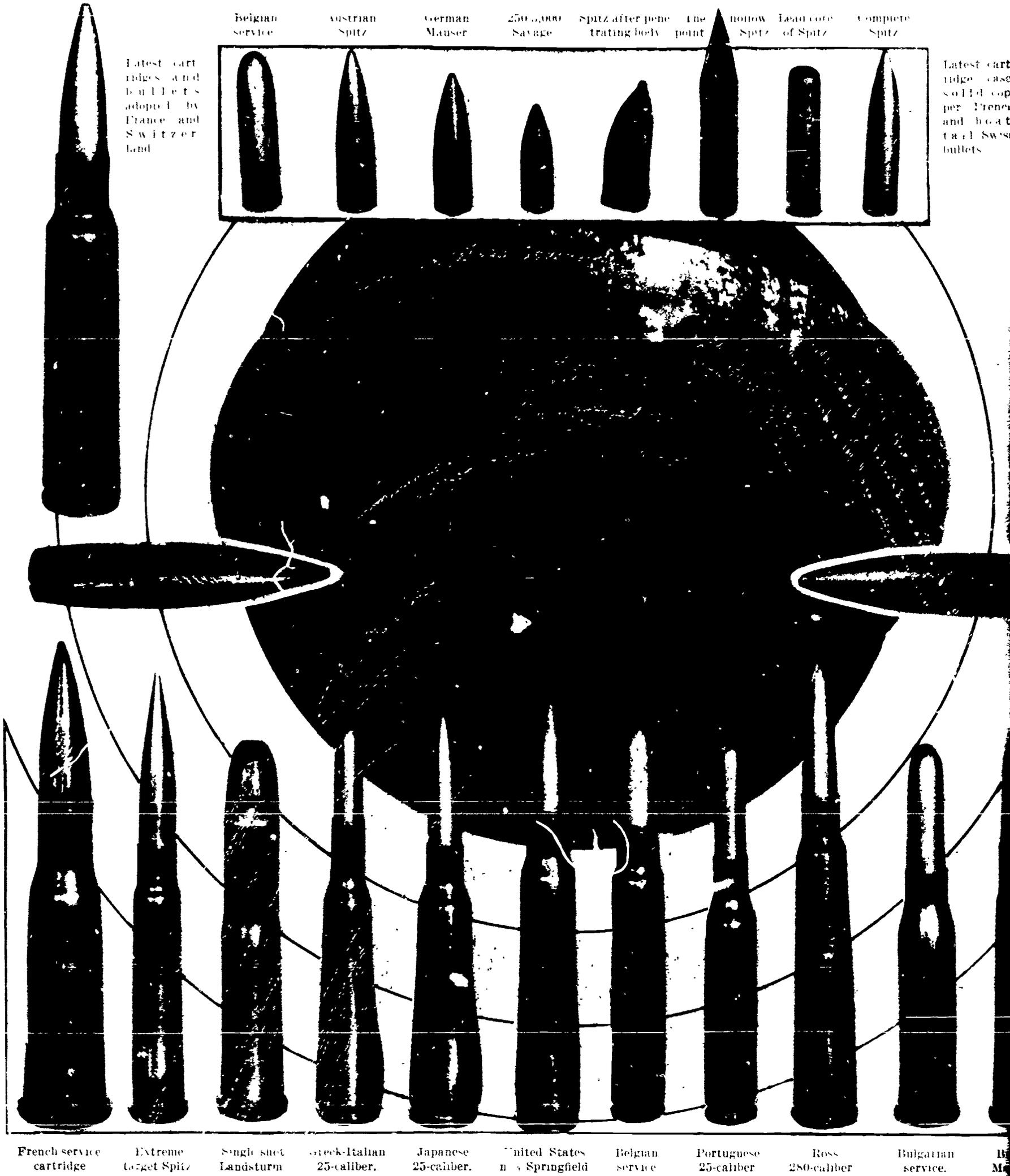
Charge taken from American service cartridge, tubular grain of pyrocellulose

Flat strips of cordite

Tubular cordite from British service cartridge.

Flakes from French cartridge.

BULLETS



Belgian service

Austrian Spitz

German Mauser

250,000 Savage

Spitz after penetrating body

The point

narrow Spitz

Lead core of Spitz

Complete Spitz

Latest cartridges and bullets adopted by France and Switzerland

Latest cartridge case, solid copper French and Belgian bullets

French service cartridge

Extreme target Spitz

Single shot Landsturm

Greek-Italian 25-caliber.

Japanese 25-caliber.

United States n. Springfield

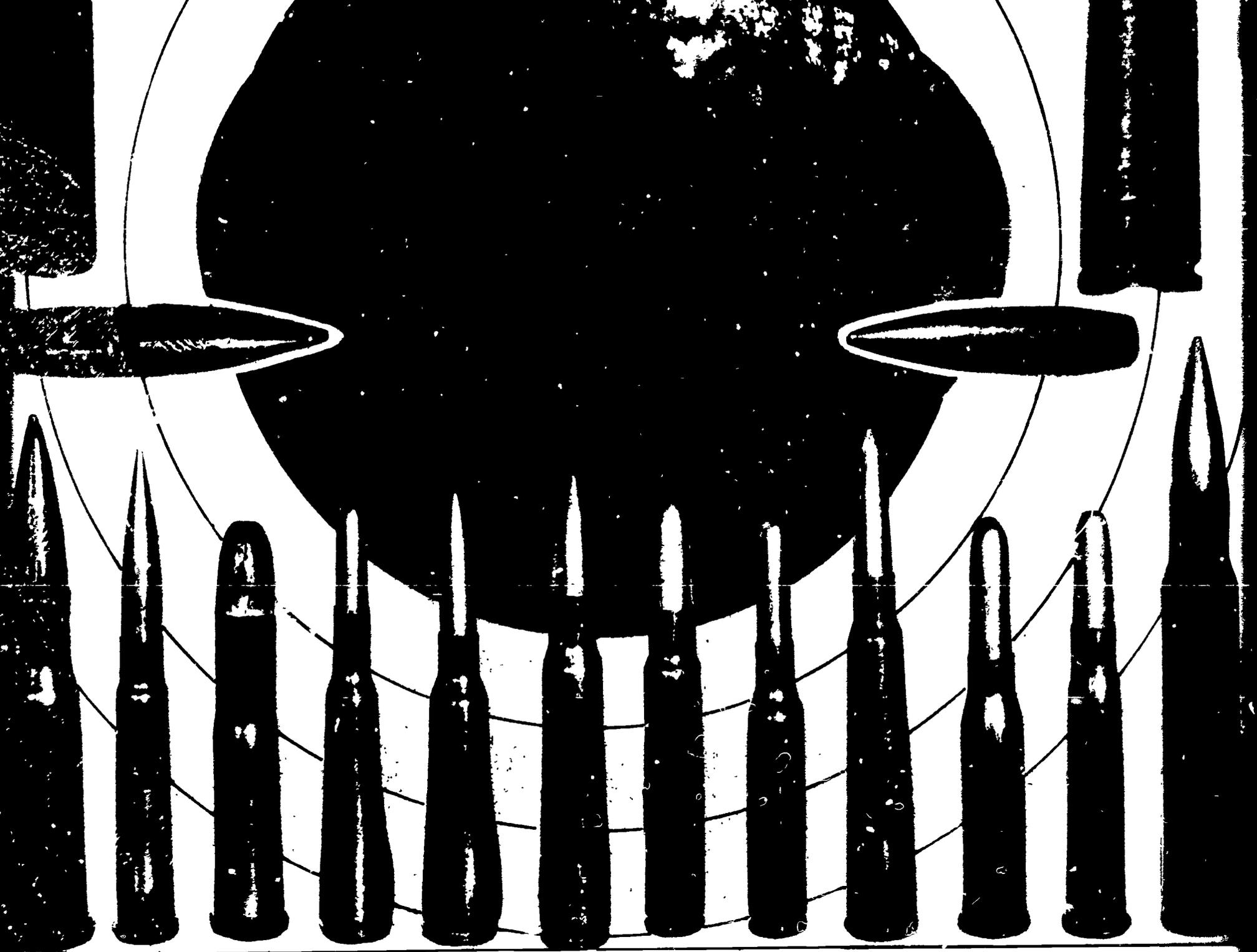
Belgian service

Portuguese 25-caliber

Ross 280-caliber

Bulgarian service.

It Me



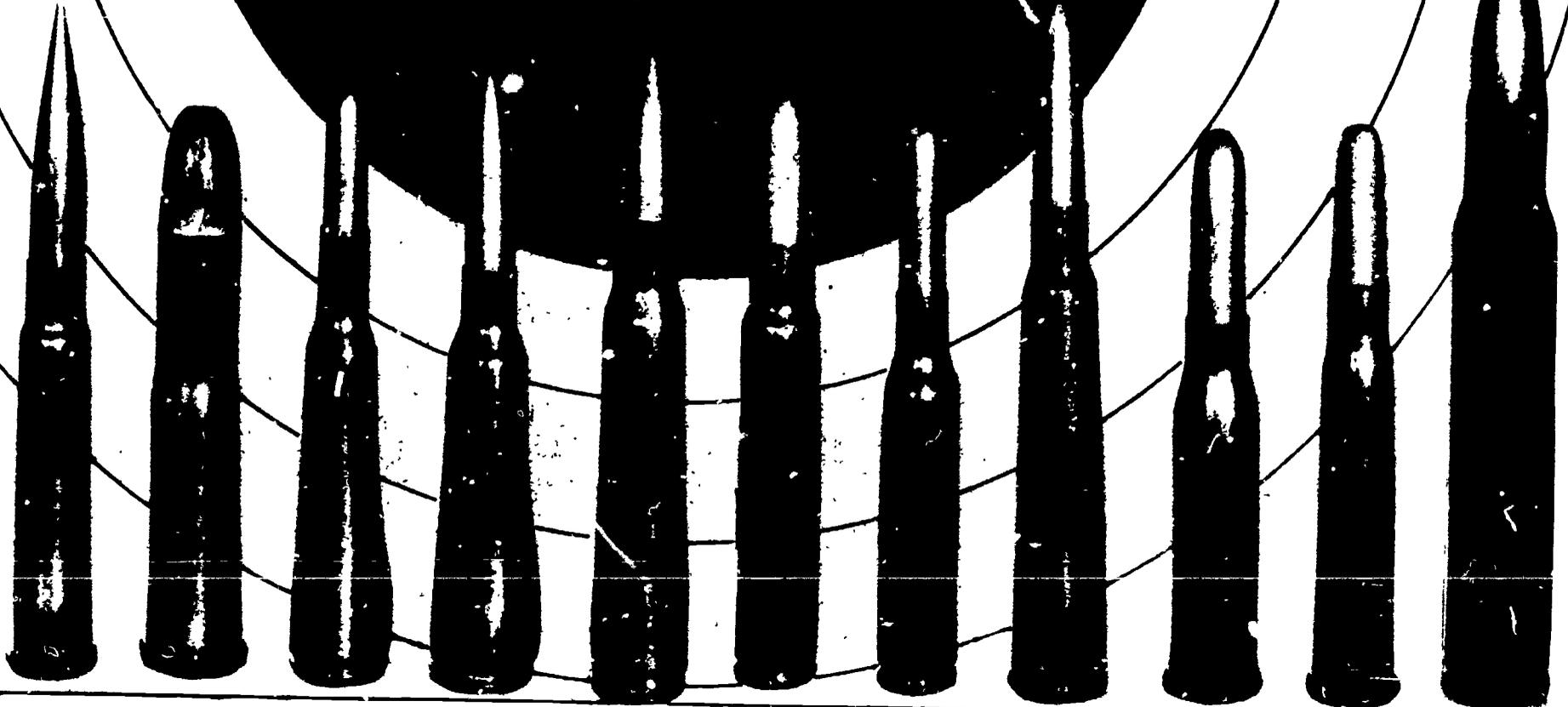
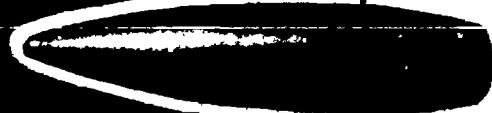
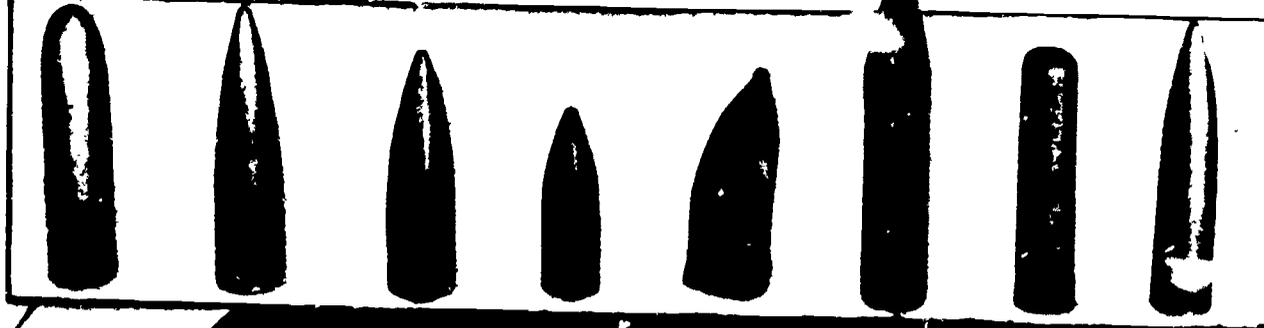
French service partridge.	Extreme target Spitz.	Single shot Landsturm.	Greek-Italian 25-caliber.	Japanese 25-caliber.	United States new Springfield	Belgian service.	Portuguese 25-caliber.	Ross 280-caliber	Bulgarian service.	British Mark IV.	U. S. Spitz used by White
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Bullets of World War I - 1915

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

Late 19th century
bullet design
adopted by
France and
Switzerland

Latest cartridge
case, solid cop-
per, French
and bolt
type Swiss
bullets



Extreme target Spitz. Single shot Landsturm. Greek-Italian 25-caliber. Japanese 25-caliber. United States new Springfield. Belgian service. Portuguese 25-caliber. Ross 280-caliber. Bulgarian service. British Mark IV. U.S. Spitz used by White

Bullets of World War I - 1915

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LOCOMOTIVES

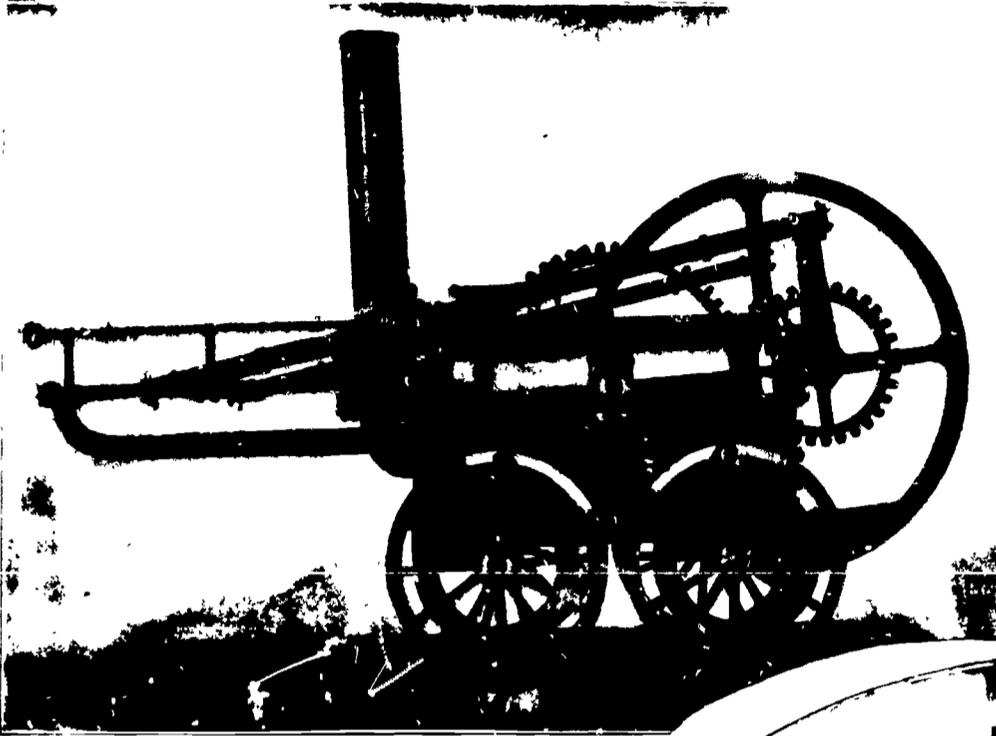


Fig. 1.—Trevithick's Engine. 1803. First Locomotive to Run on Rails.

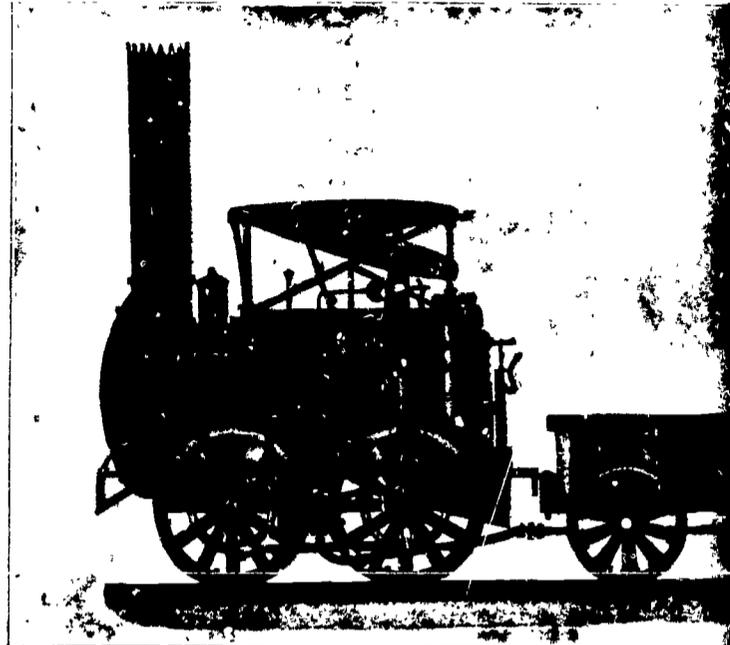


Fig. 2.—"Stourbridge Lion." 1828. First to Turn a Wheel in the U. S.

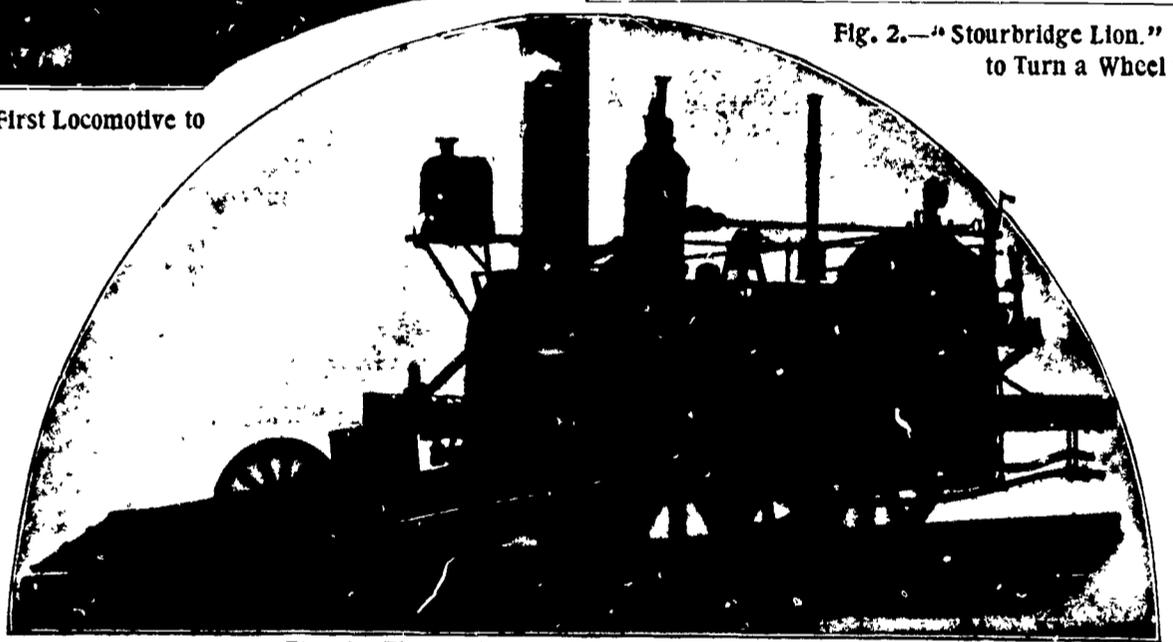


Fig. 5.—The "John Bull." 1831. Camden & Amboy R.R.

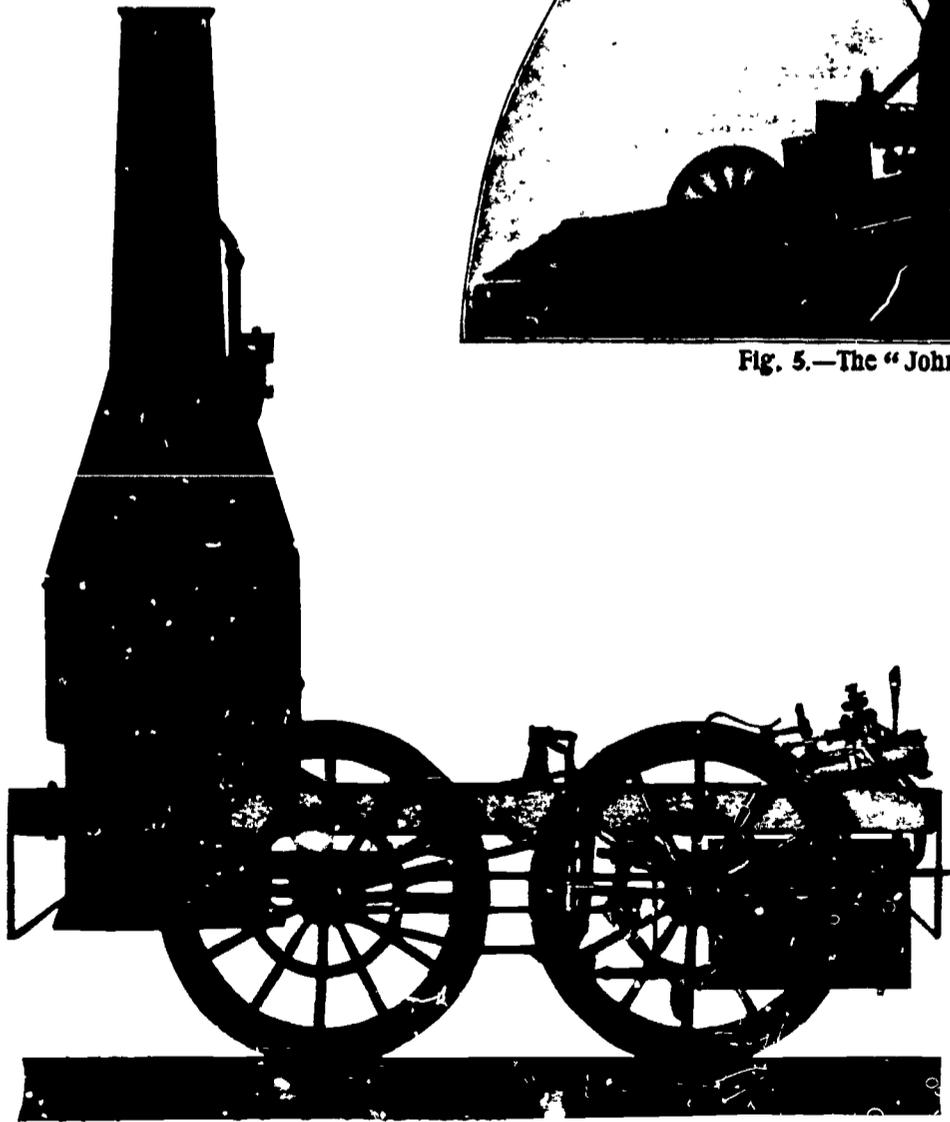


Fig. 4.—"The Best Friend" First Locomotive in Actual Service in U. S. 1830

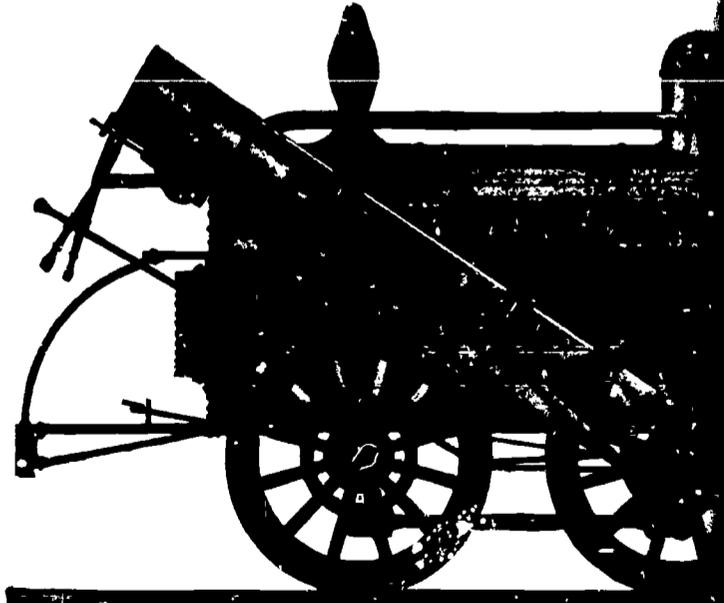


Fig. 3.—Stephenson's Engine. 1825. First Locomotive

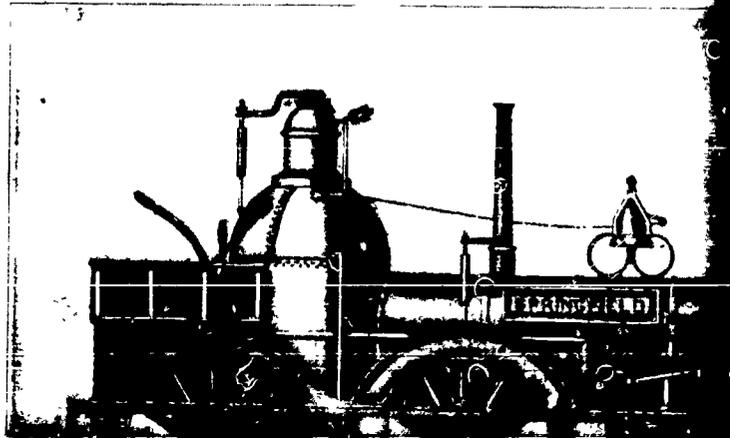


Fig. 1.—Fevithick's Engine 1803. First Locomotive to Run on Rails.

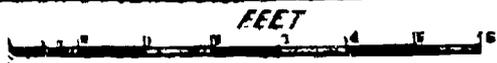
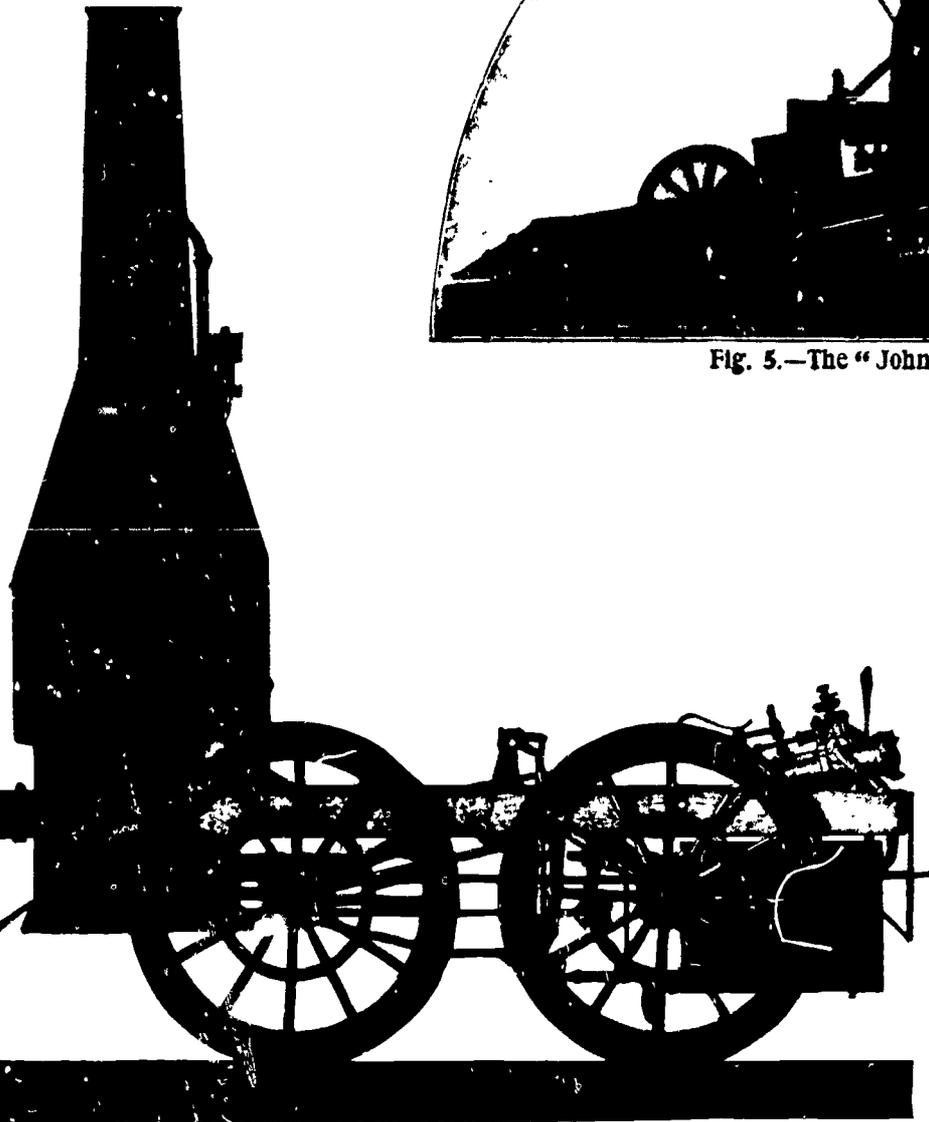


Fig. 4.—"The Best Friend" First Locomotive in Actual Service in U.S. 1830

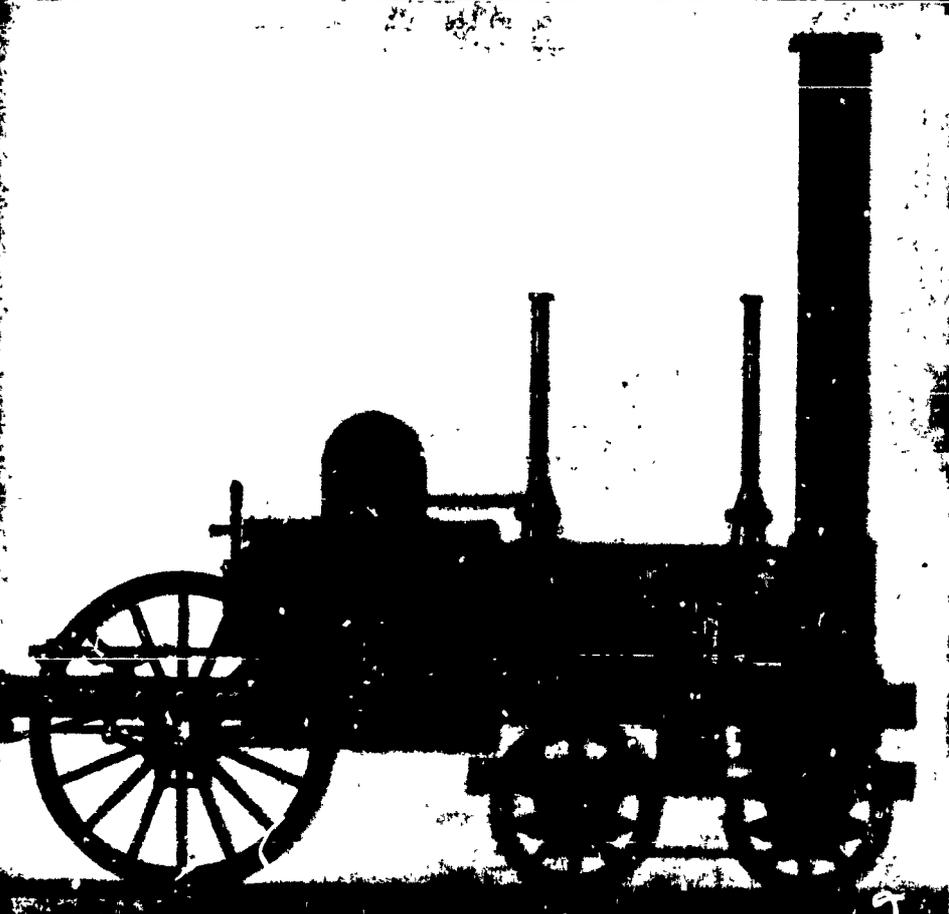


Fig. 6.—The "Experiment." 1822. First Engine With a Leading Truck.

SOME TYPES ILLUSTRATING THE DEVELOPMENT OF THE LOCOMOTIVE.

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

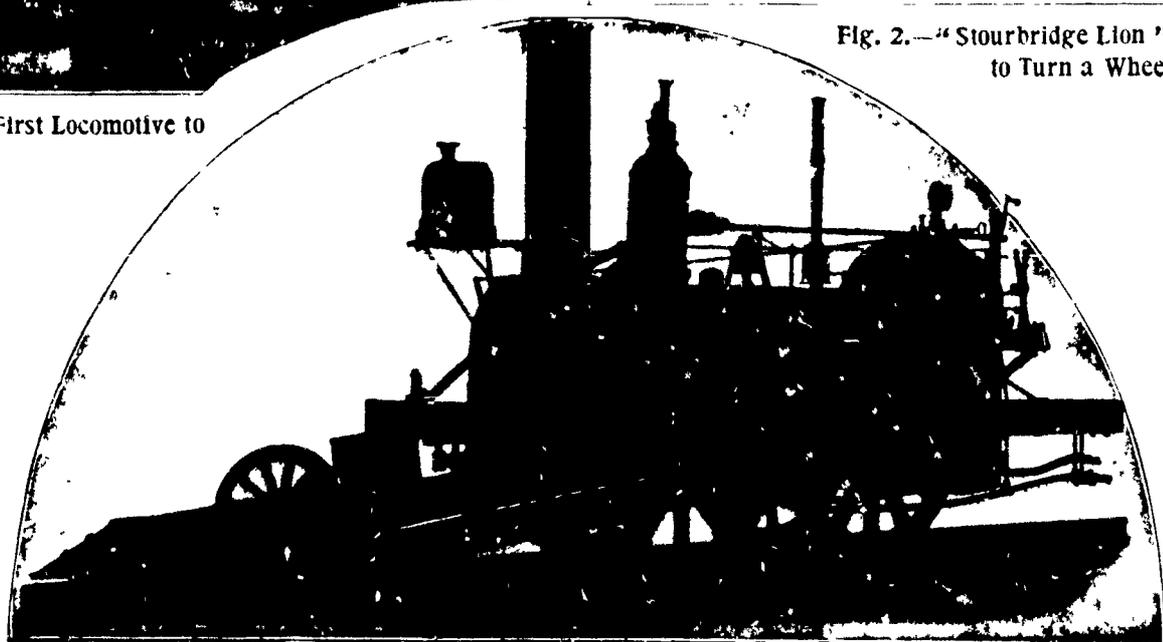


Fig. 5.—The "John Bull." 1831. Camden & Amboy R R.

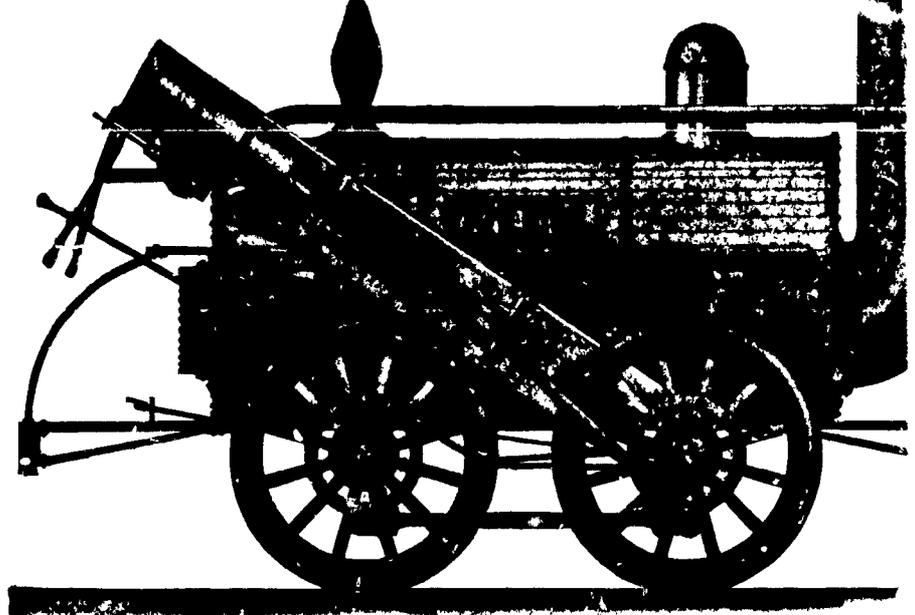


Fig. 3.—Stephenson's Engine. 1828. First Locomotive Seen in America.

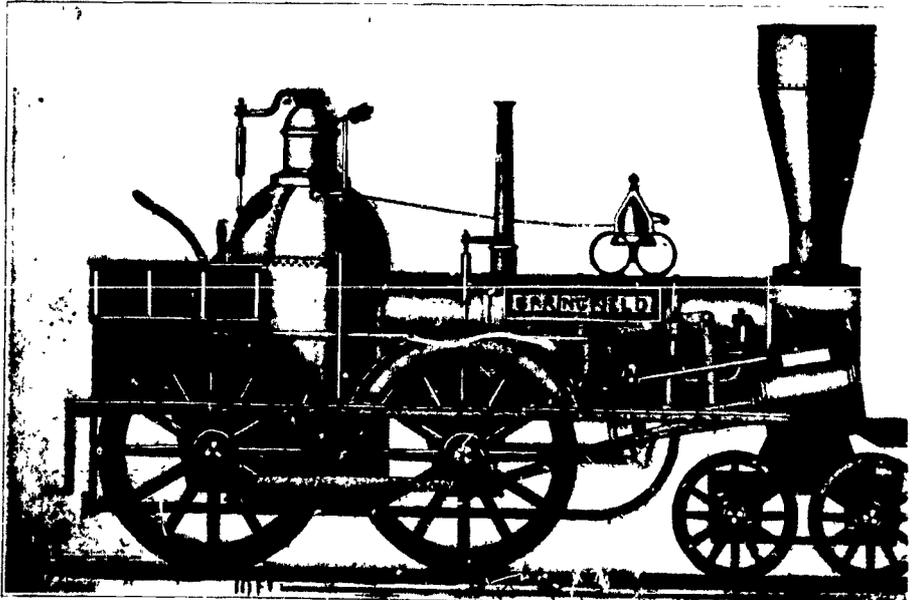


Fig. 7.—Rogers' Passenger Engine. 1845. Hartford & New Haven R.R.

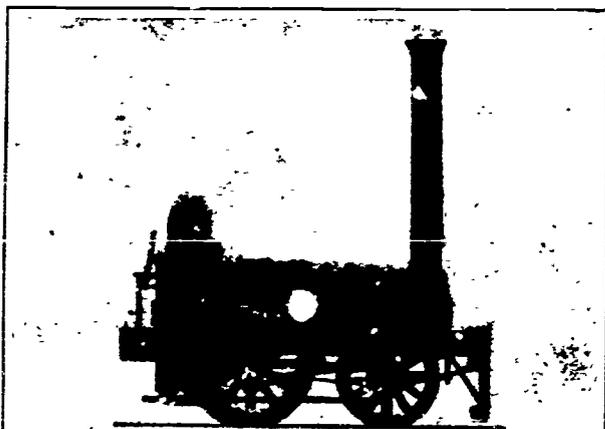


Fig. 8.—"Mogul" Engine 1863 New Jersey R.R. & Transportation

LOCOMOTIVES

The Growth of American Locomotives and Railroads

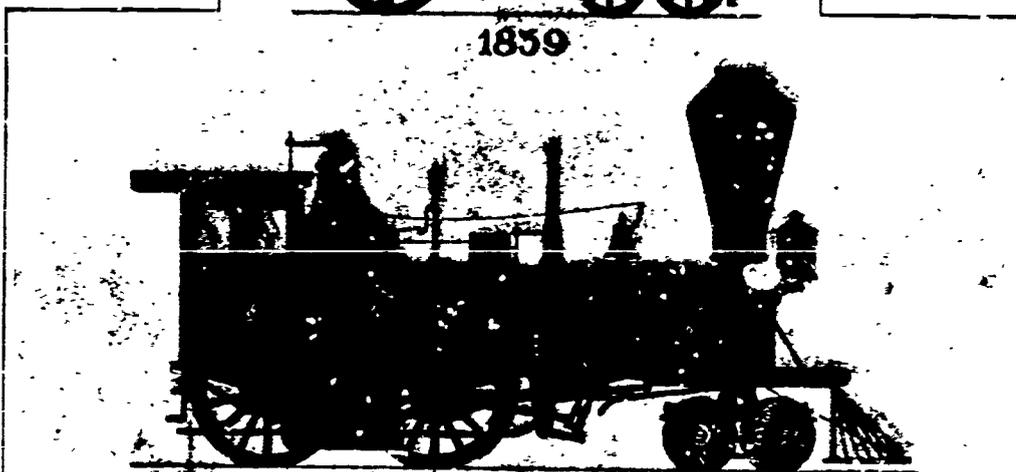
From the Baby 5-Ton Engine of 1832 to the 188-Ton Giant



1832



1839



1851



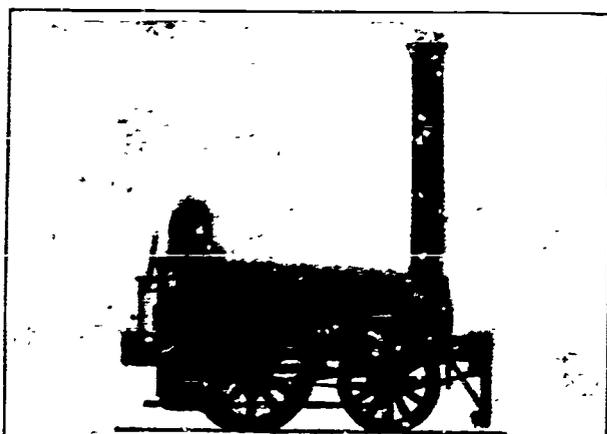
1862



LOCOMOTIVES

The Growth of American Locomotives and Railroads

From the Baby 5-Ton Engine of 1832 to the 188-Ton Giant



1832



1839



1851



1872

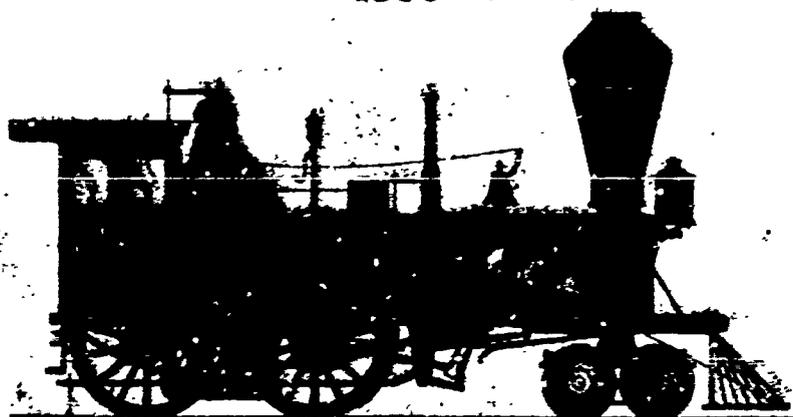




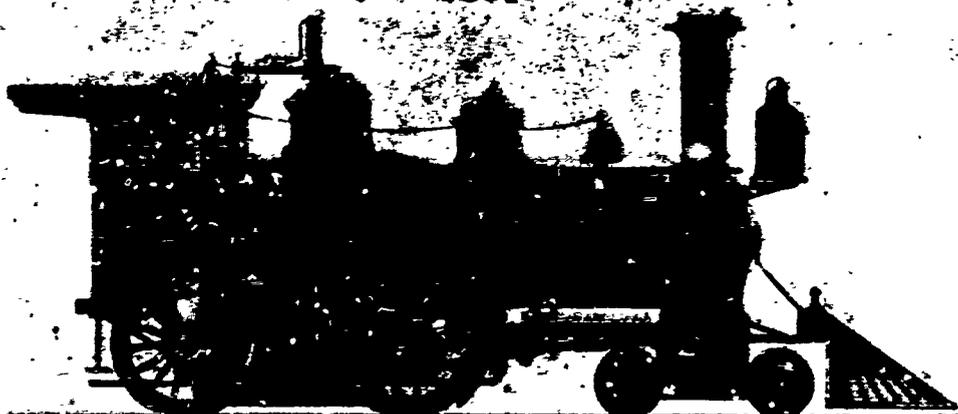
1832



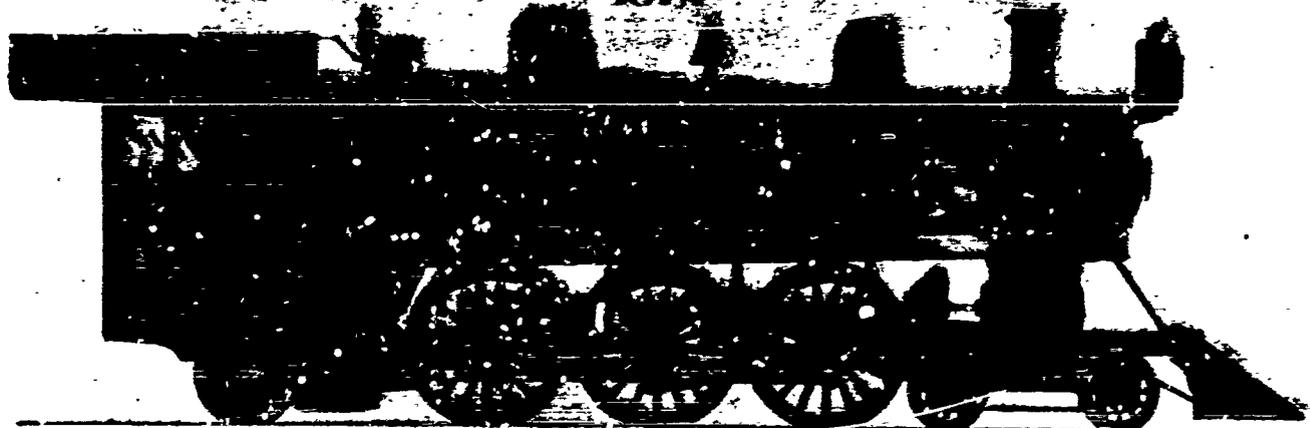
1839



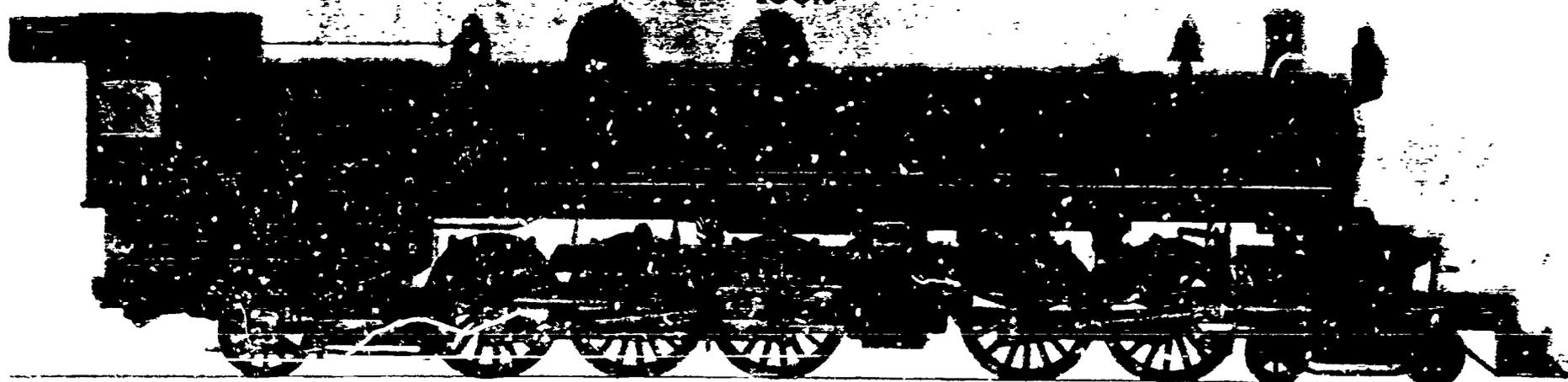
1851



1872



1902



1910

This engraving, drawn to a uniform scale, shows the growth of the American passenger locomotive from the "Old Ironsides," 5 tons in weight, of 1832 to the powerful Atchison & Santa Fe locomotive of 1910, weighing 188 tons.

SHIP





Sailing ship - 1906

Draft, loaded - 26 feet, 9 in

Length on Deck - 441 feet

Carrying capacity - 8,000 tons

Beam - 53 feet, 8 inches

Displacement - 11,360 tons

Sailsread - 50,000 square feet



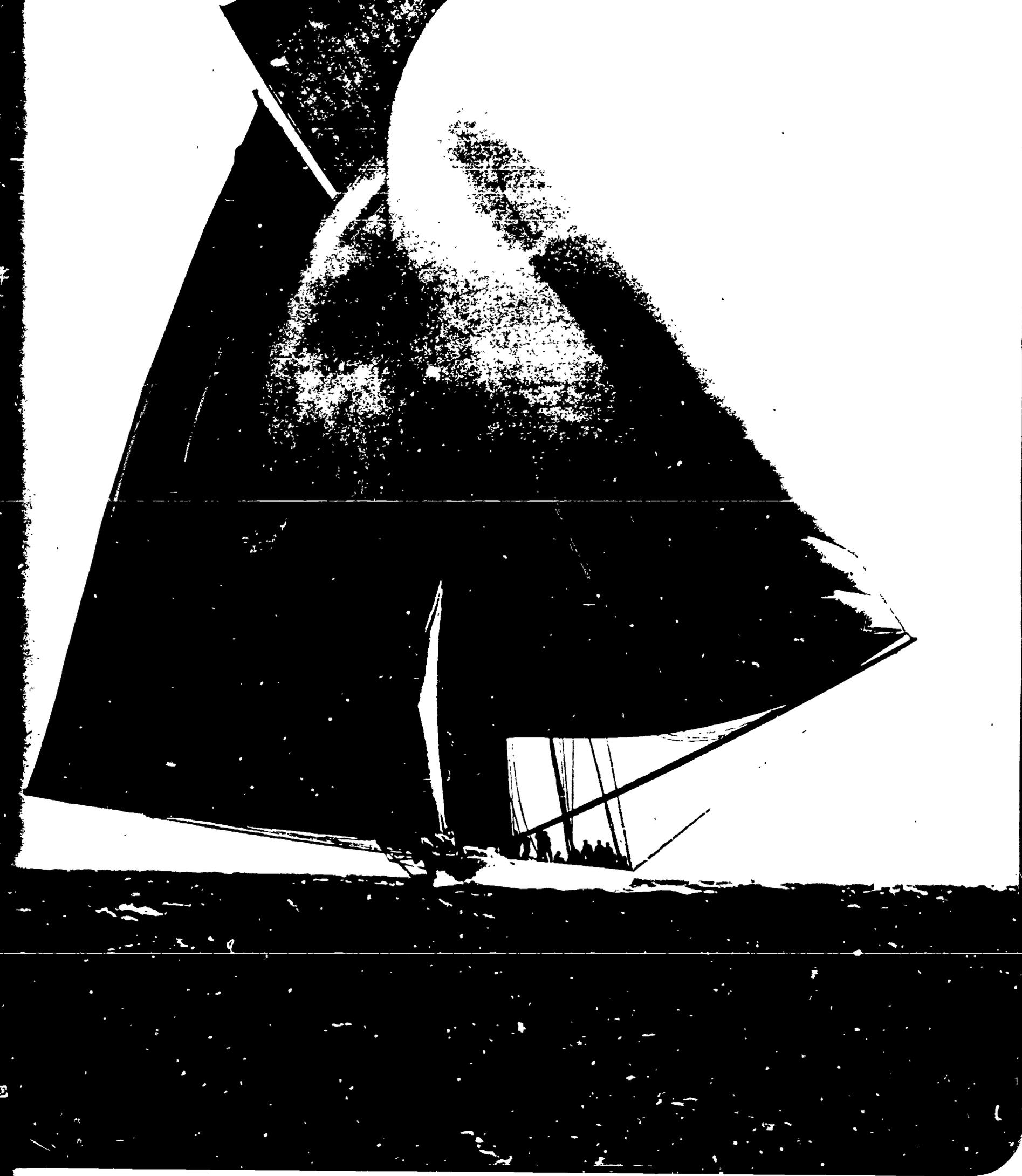
ing ship - 1906 Draft, loaded - 26 feet, 9 inches
th on Deck - 441 feet Carrying capacity - 8,000 tons
- 53 feet, 8 inches Displacement - 11,360 tons
Sailspread - 50,000 square feet

YACHT



CHT





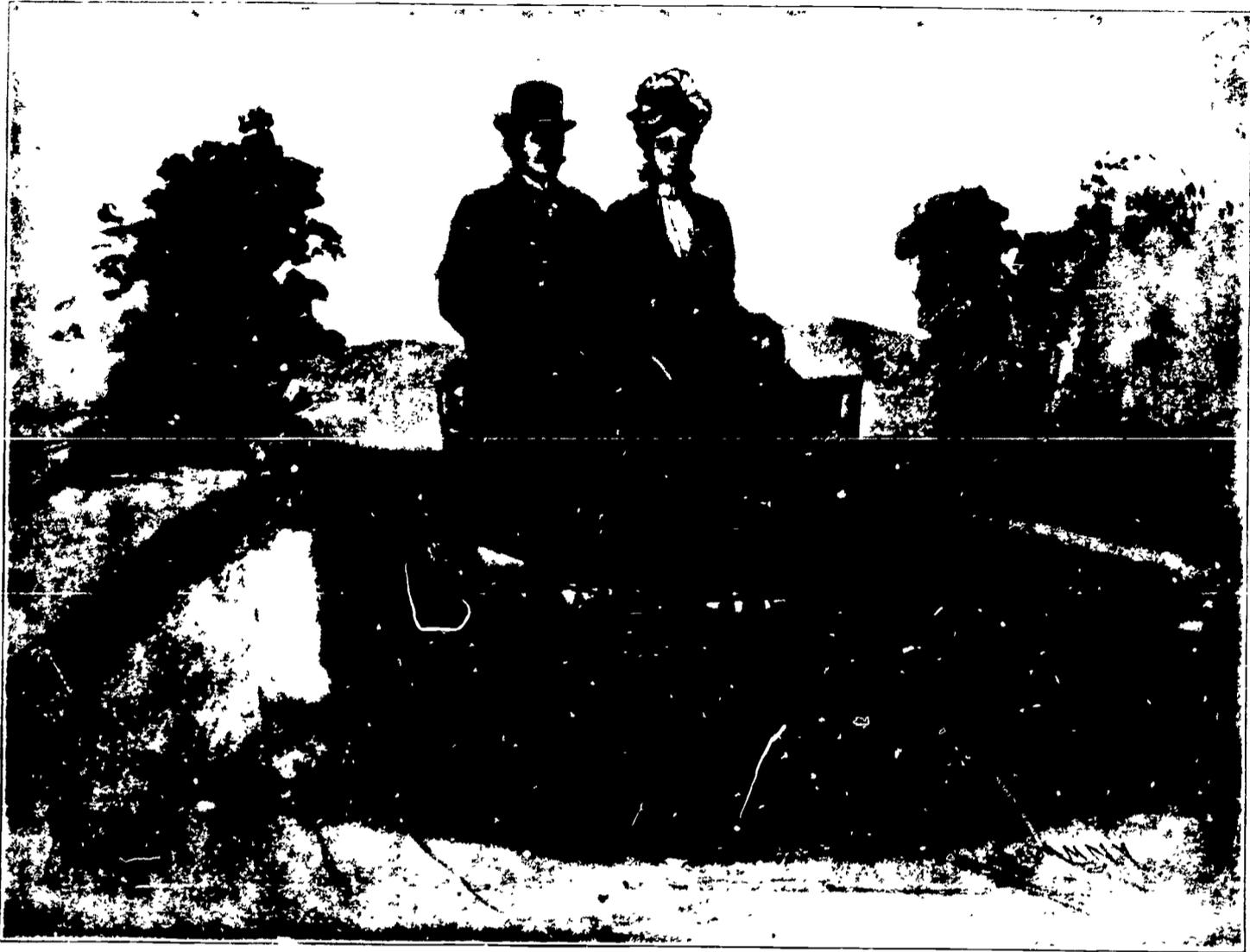
A racing yacht - 1903

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

From water to highest point of sail - 190 feet

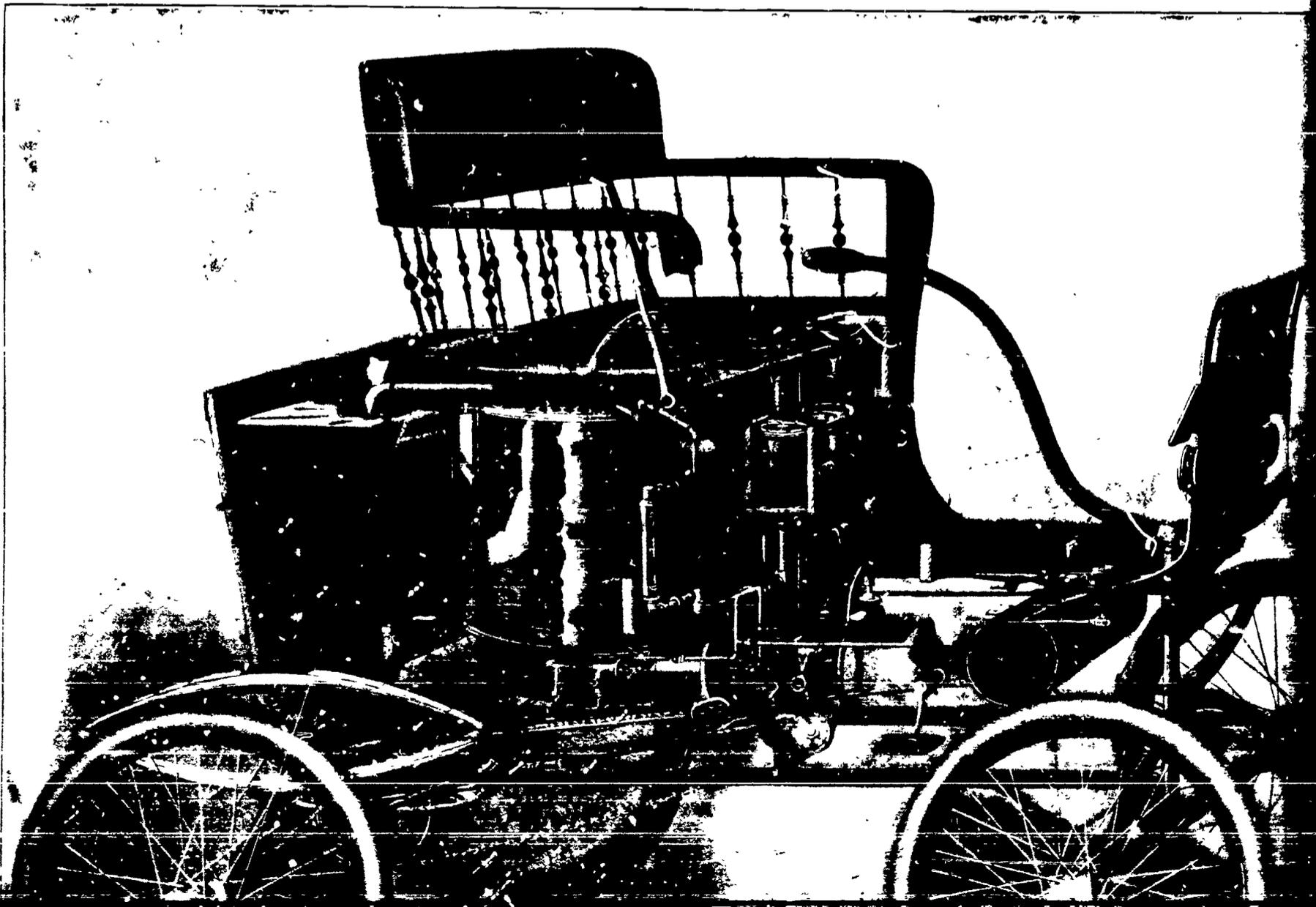
Total area of sail - 16,169 square feet.

CARS



ON THE ROAD.

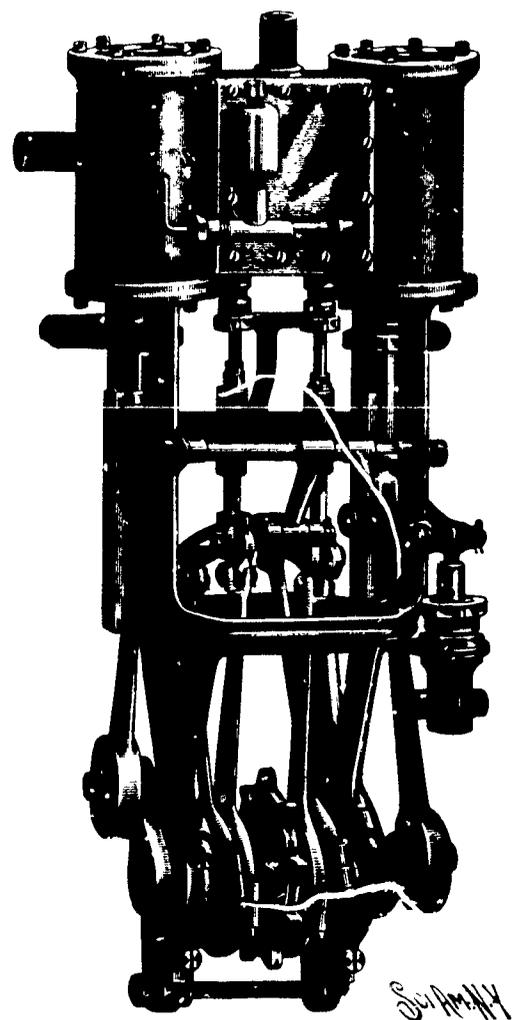
THE 4-HORSE



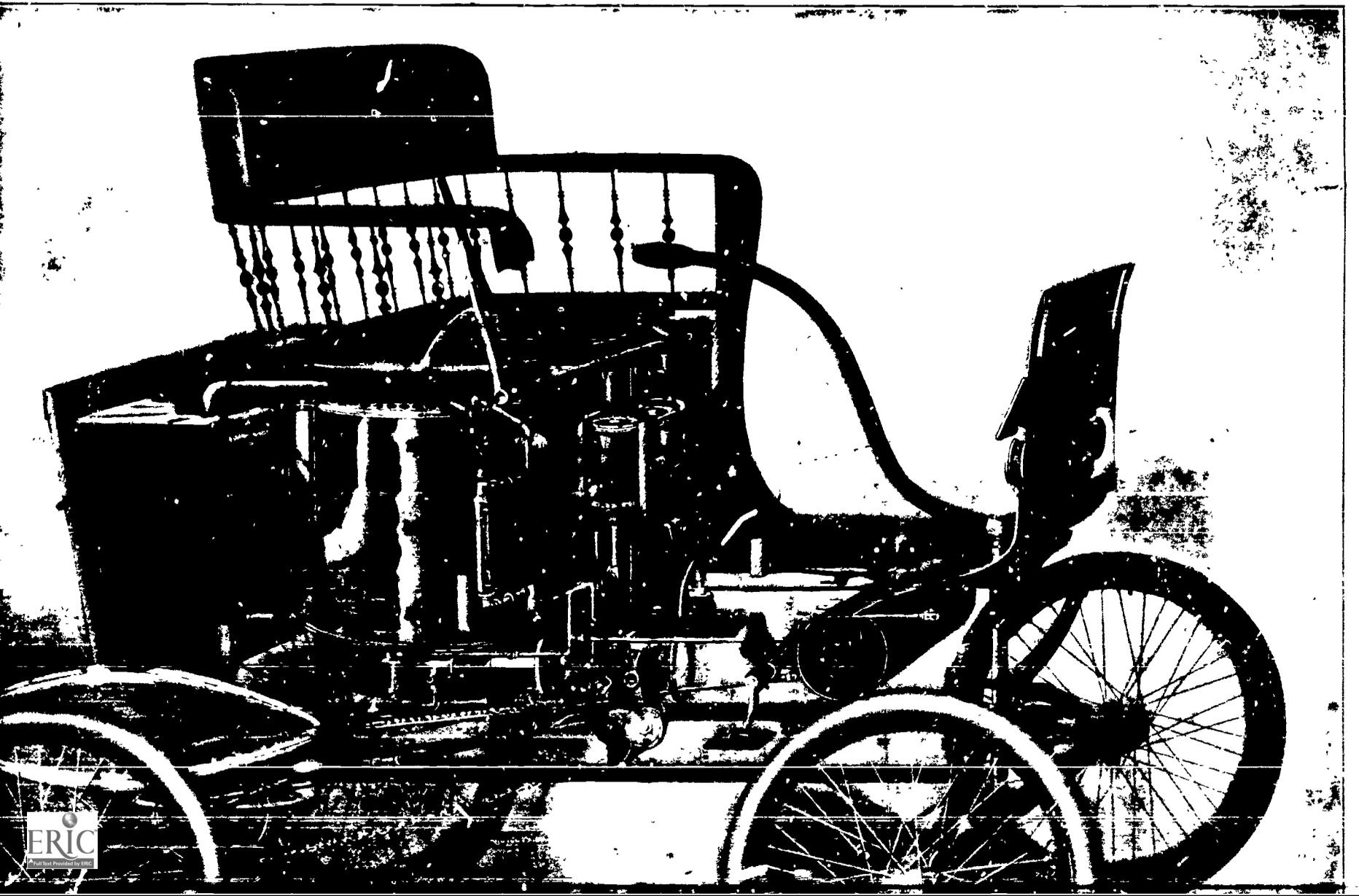
RS



ON THE ROAD.

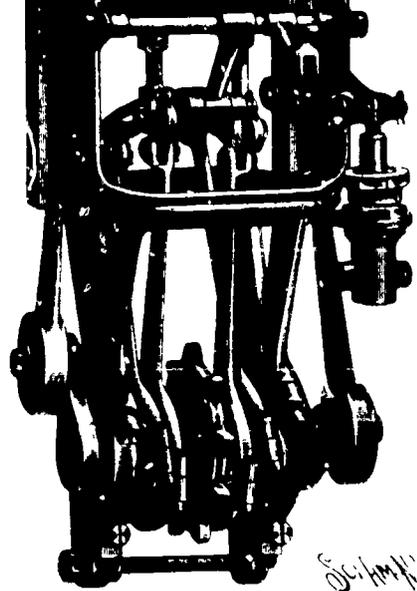


THE 4-HORSE POWER ENGINE.

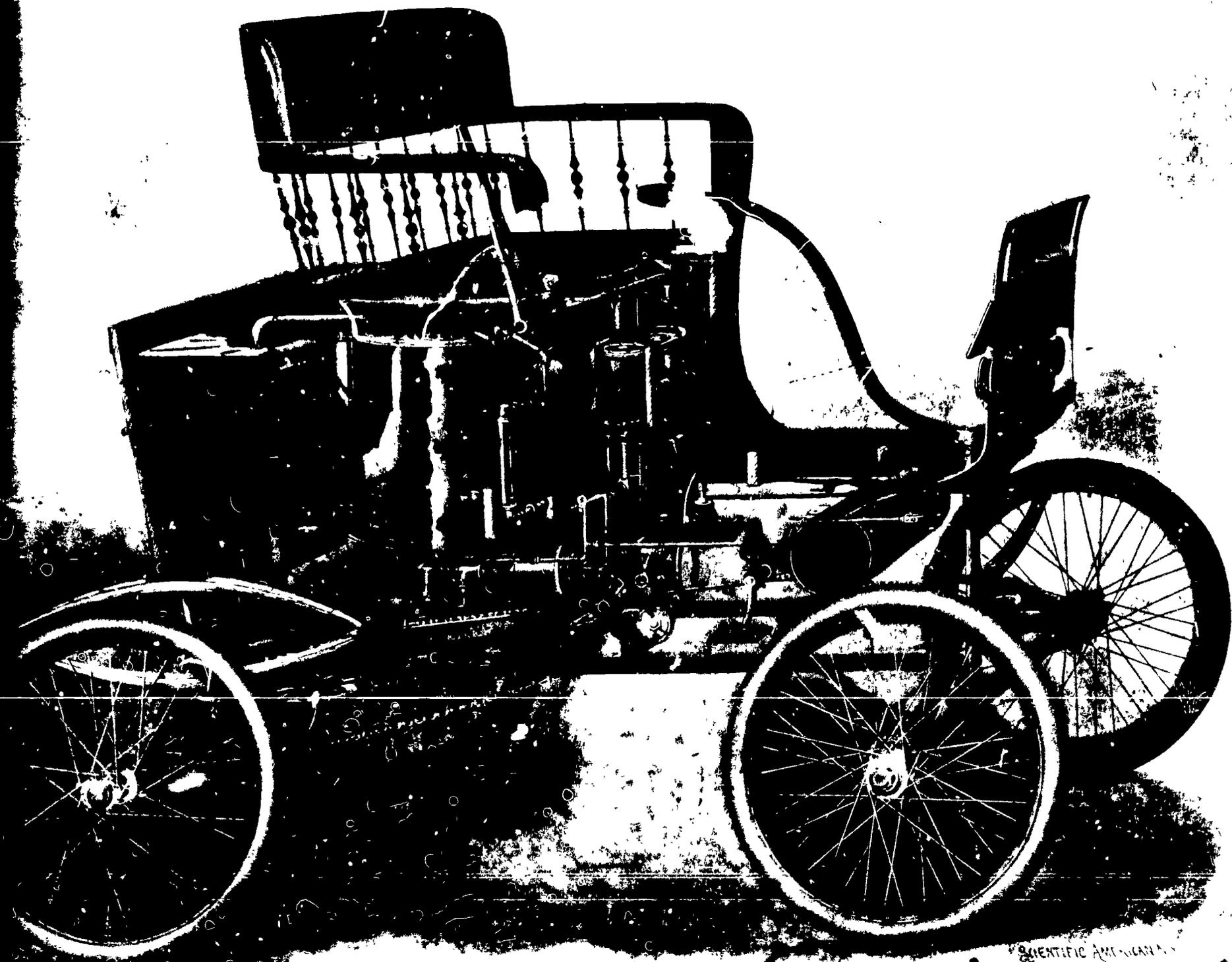




ON THE ROAD.



THE 4-HORSE POWER ENGINE.

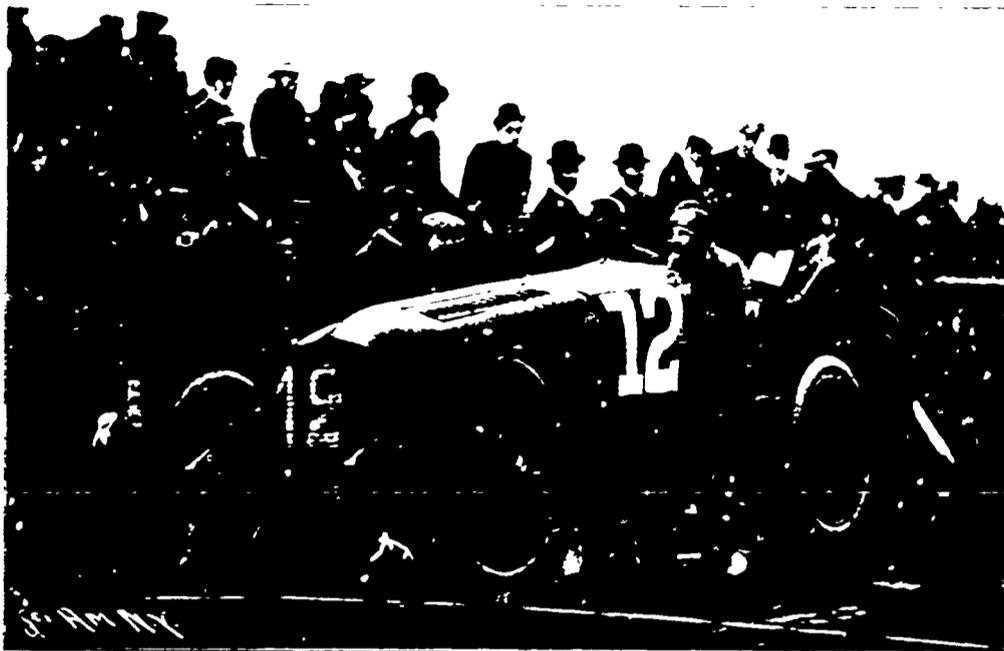


SCIENTIFIC AMERICAN

The "Locomobile" - 1900

This automobile used a steam engine.

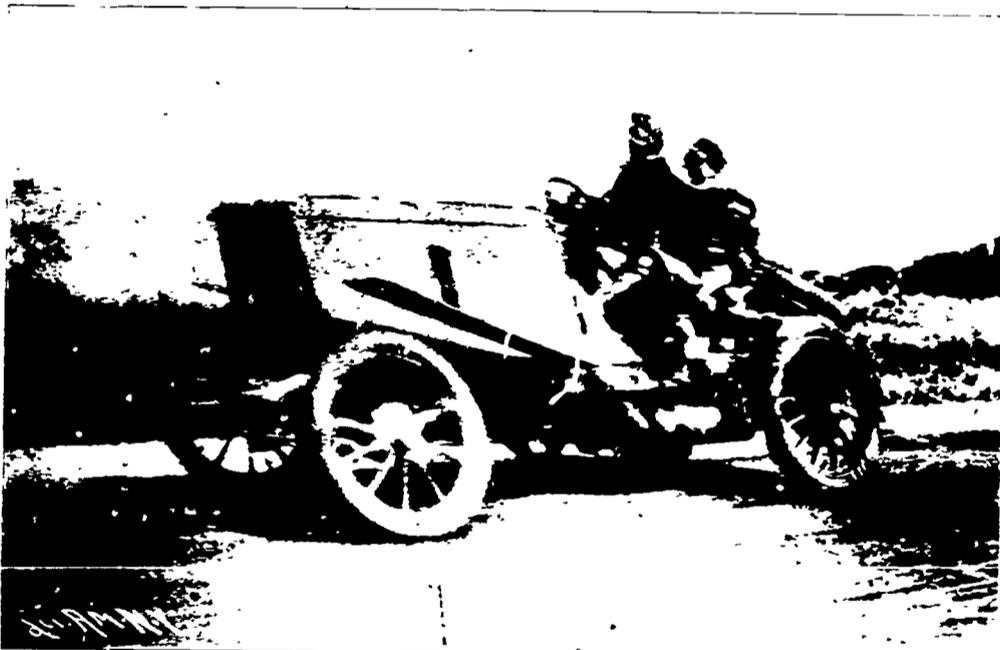
RACERS



Finished second.
Clement, Jr. Starting in 90-Horse-Power Clement Bayard.



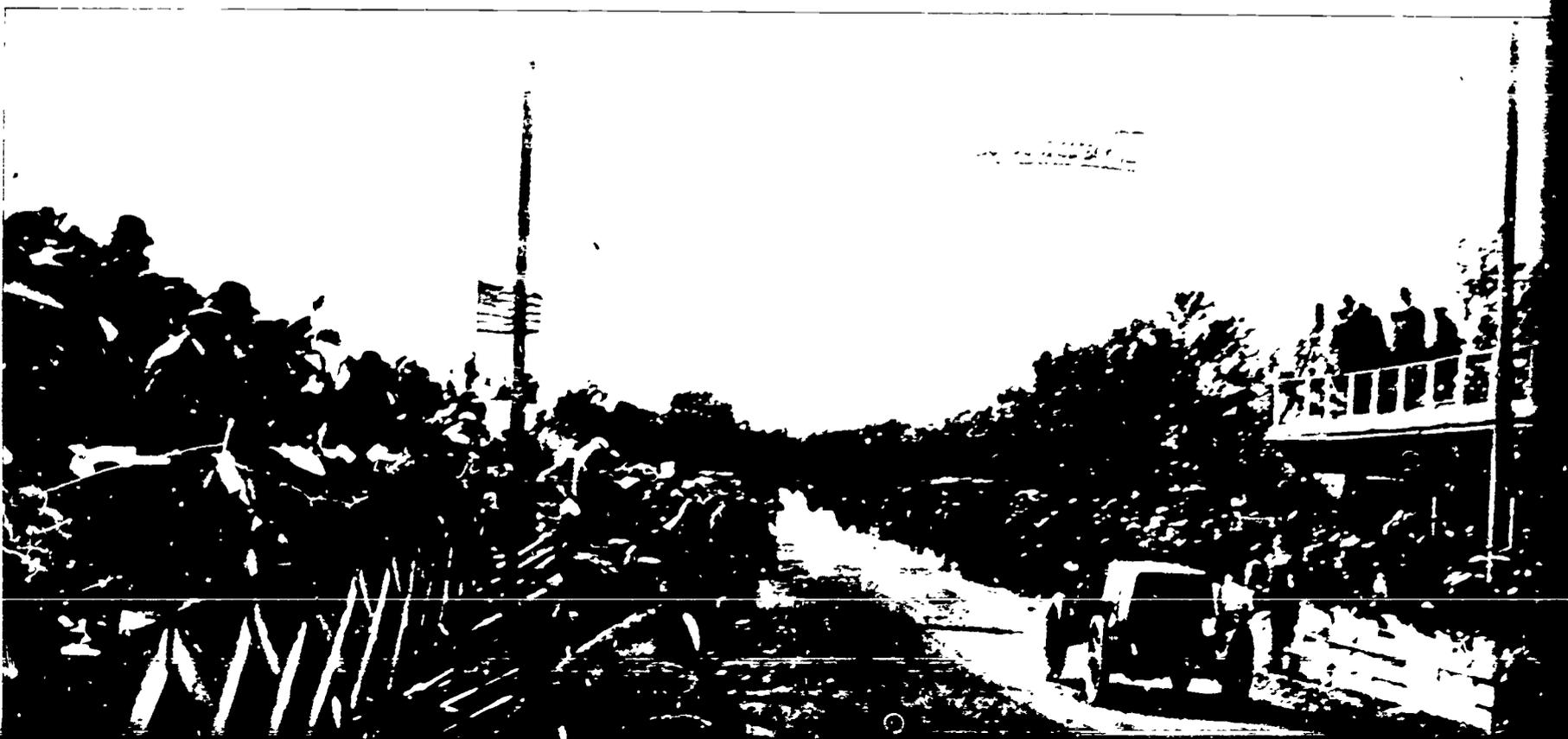
The low-powered car that took third place.
Lyttle in 24-Horse-Power Pope Tolman.



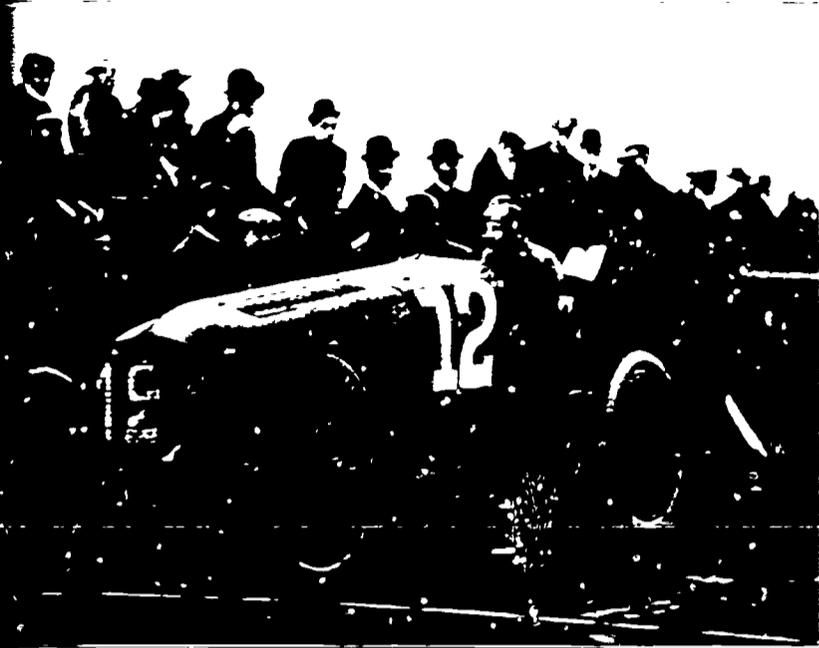
Strapped out at 50 miles an hour.
Heath in 90 Horse-Power Panhard.



Broke clutch in first round.
Wallace in 90-Horse-Power Fiat W. K. Vanderbilt, Jr.



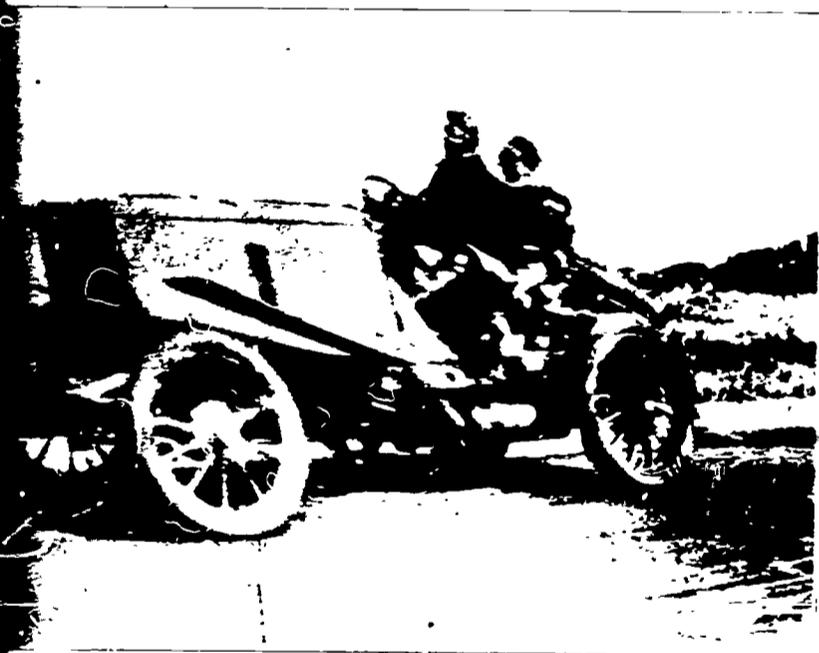
CERS



Finished second.
Clement, Jr. Starting in 90-Horse-Power Clement Bayard.



The low powered car that took third place.
Lytle in 24-Horse-Power Pope Toledo.



Snapshot at 50 miles an hour.
Heath in 90 Horse-Power Pannard.



Broke clutch in first round.
Wallace in 90-Horse-Power Flat. W. K. Vanderbilt, Jr., the Donor of Cup.

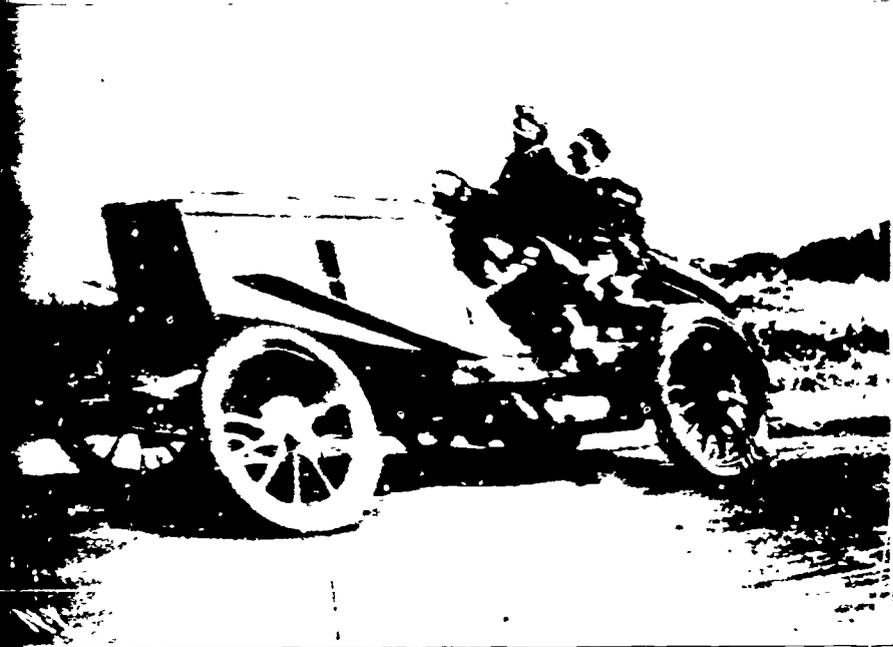




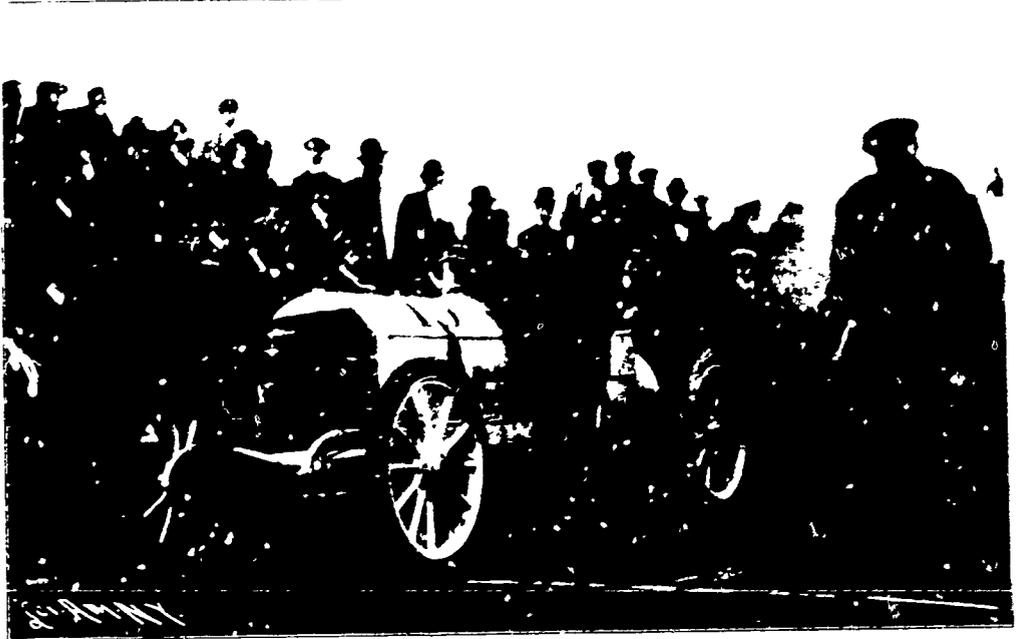
Finished second,
Clement, Jr. Starting in 90-Horse-Power Clement Bayard.



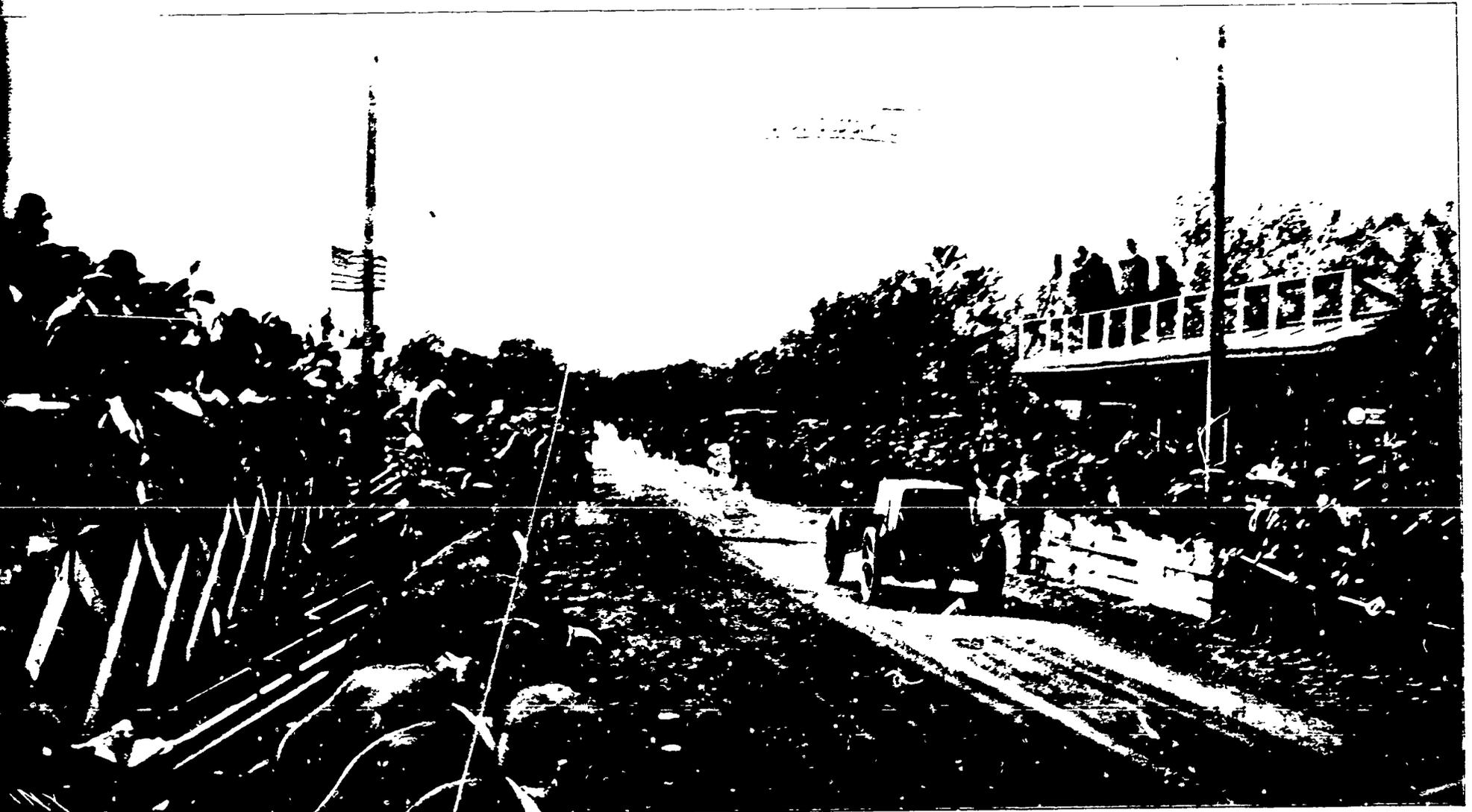
The low speed at that track took third place.
Lytle in 34-Horse-Power Pope Toledo.



Snapshot at 80 miles an hour
Heath in 90 Horse-Power Panhard.



Broke clutch in first round.
Wallace in 96-Horse-Power Fiat. W. K. Vanderbilt, Jr., the Donor of Cup.



Auto racing in 1904

RACERS



Broke bevel 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 Croker in 75-Horse-Power Simplex



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

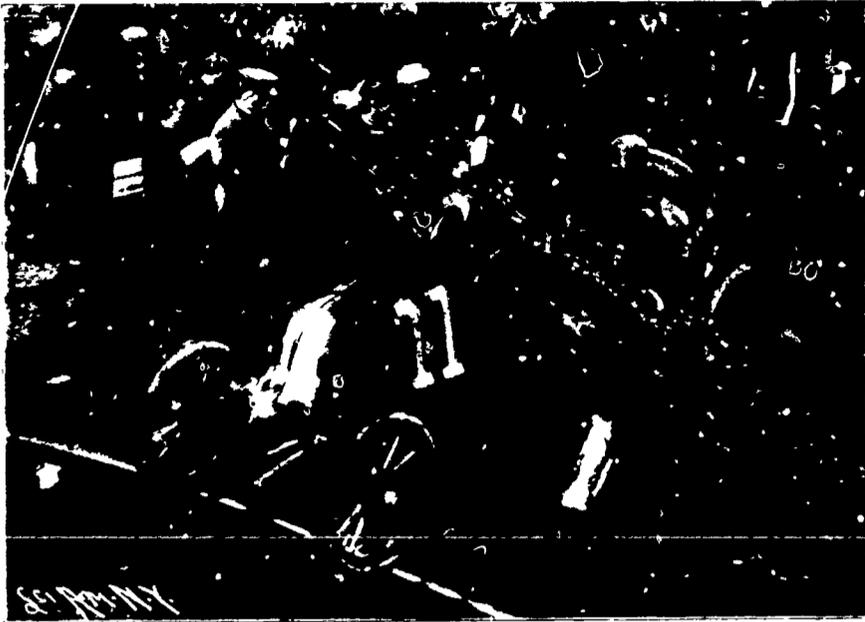


In fourth place at finish
24-Horse-Power Packard, Driven by C. Schmidt.

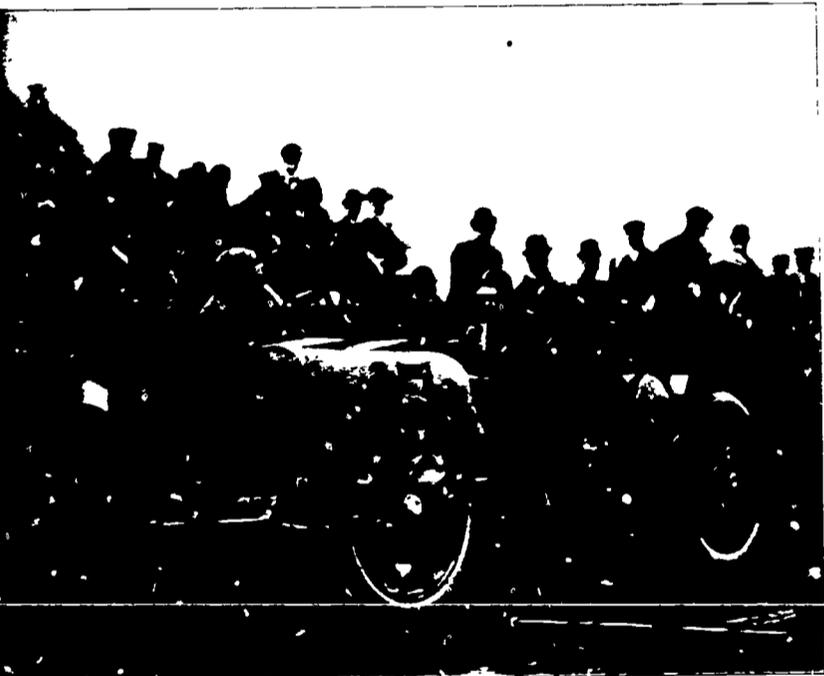


Some of these turns were over 90 degrees.
Clement Taking One of the Sharp Turns.

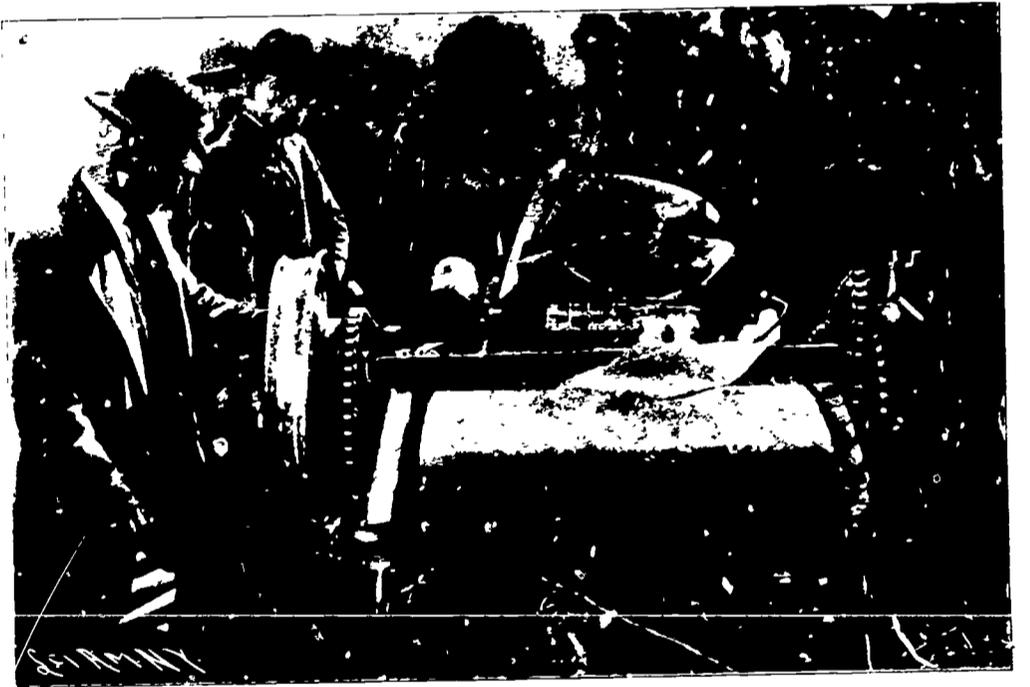
CERS



Broke bevel 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 Croker in 75-Horse-Power Simplex



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



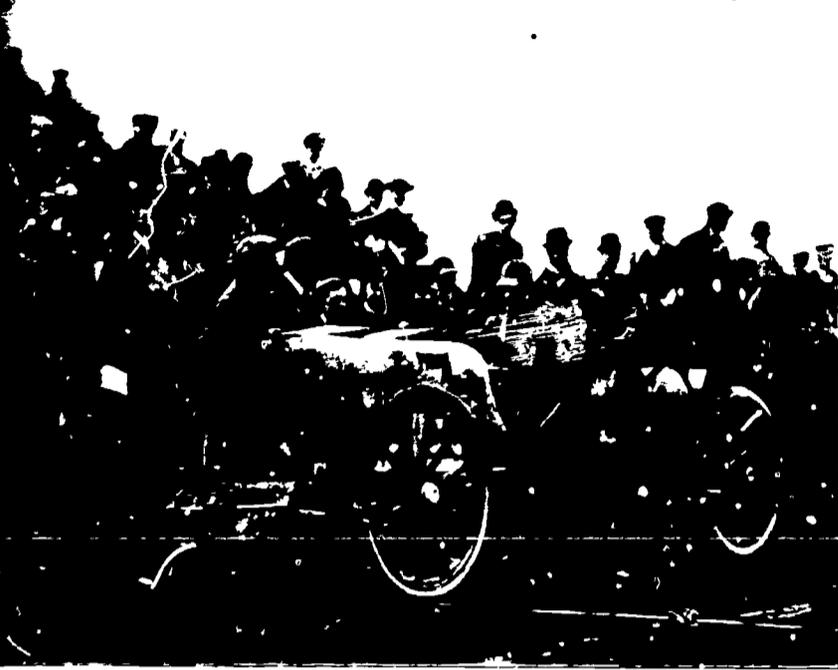
In fourth place at finish.
4-Horse-Power Packard, Driven by C. Schmidt



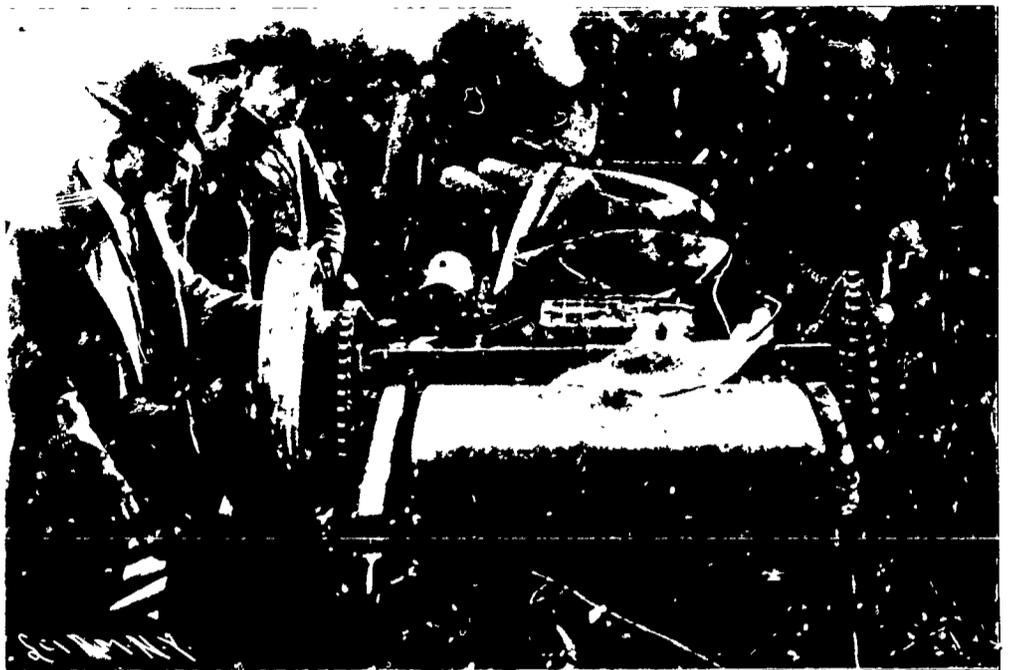
Some of these turns were over 90 degrees.
Clement Taking One of the Sharp Turns.



Broke 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 Croker in 75-Horse-Power Simplex



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



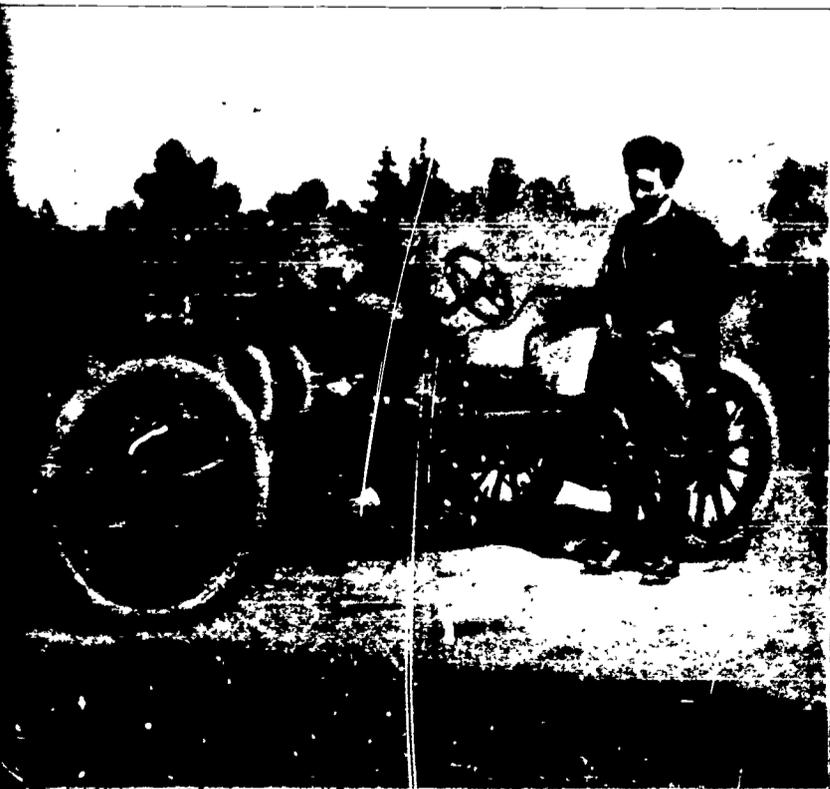
In fourth place at finish.

24-Horse-Power Packard, Driven by C. Schmidt.



Some of these turns were over 90 degrees.

Clement Taking One of the Sharp Turns.



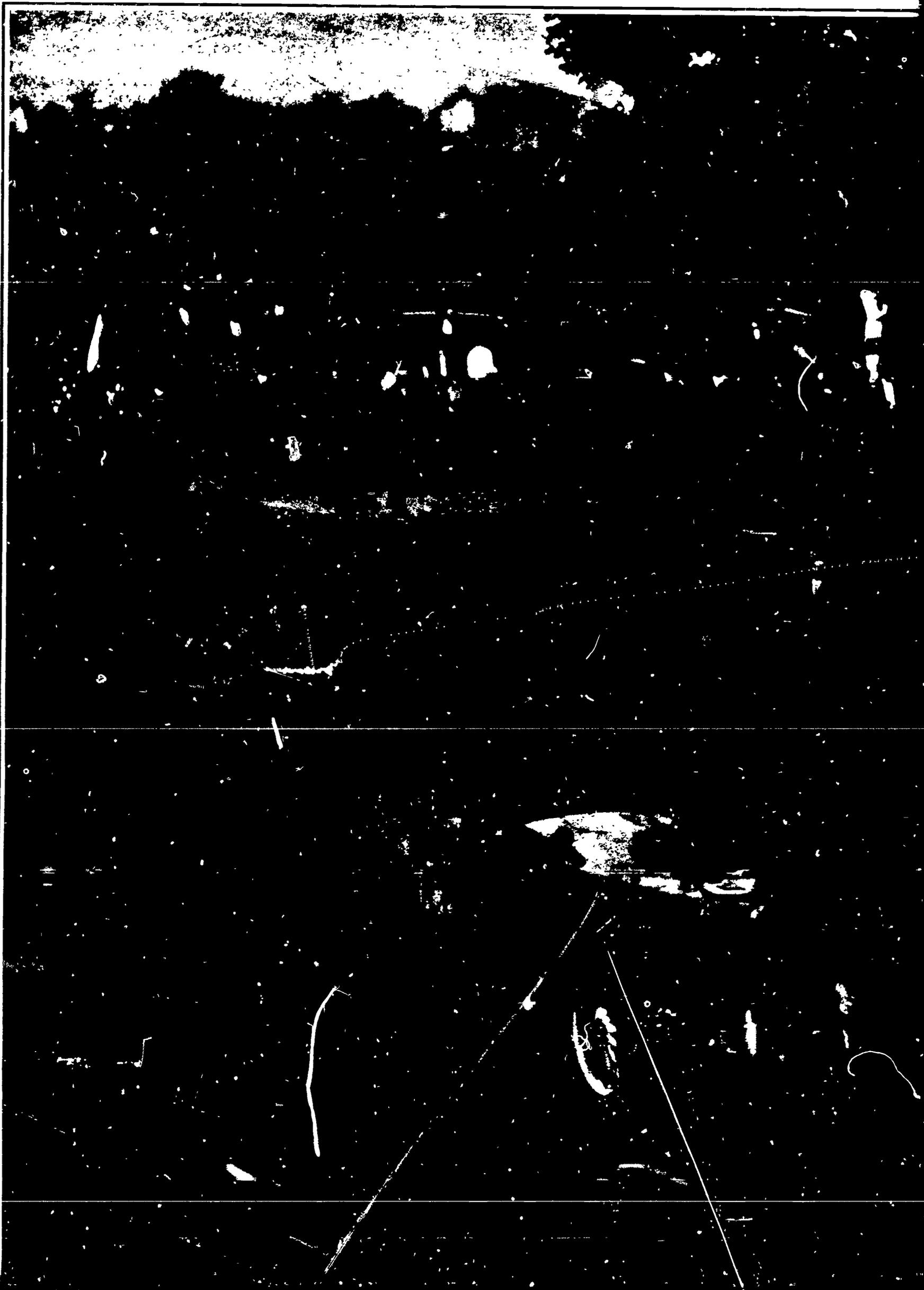
The youngest of the contestants, 21 years old.



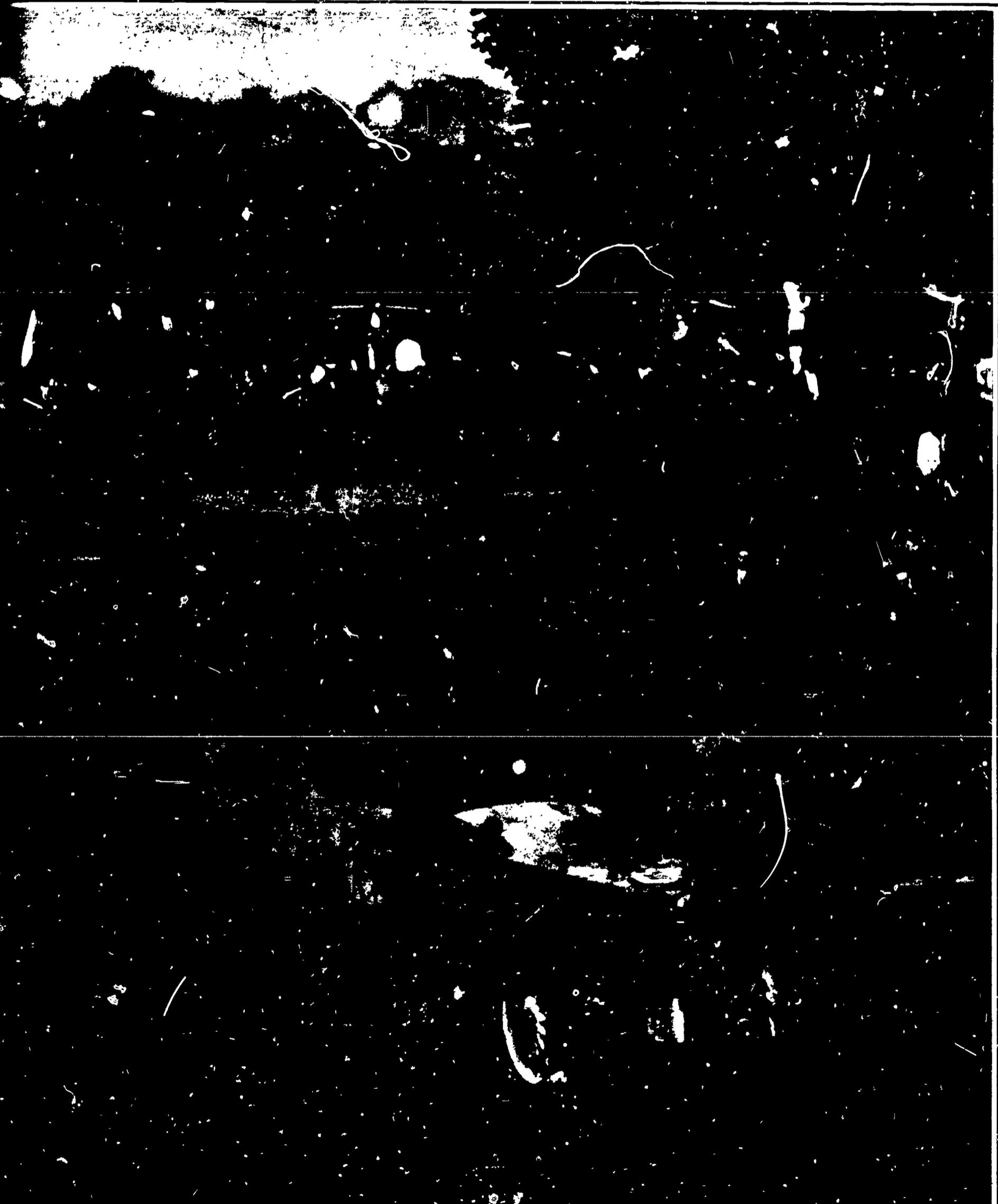
Before the start.

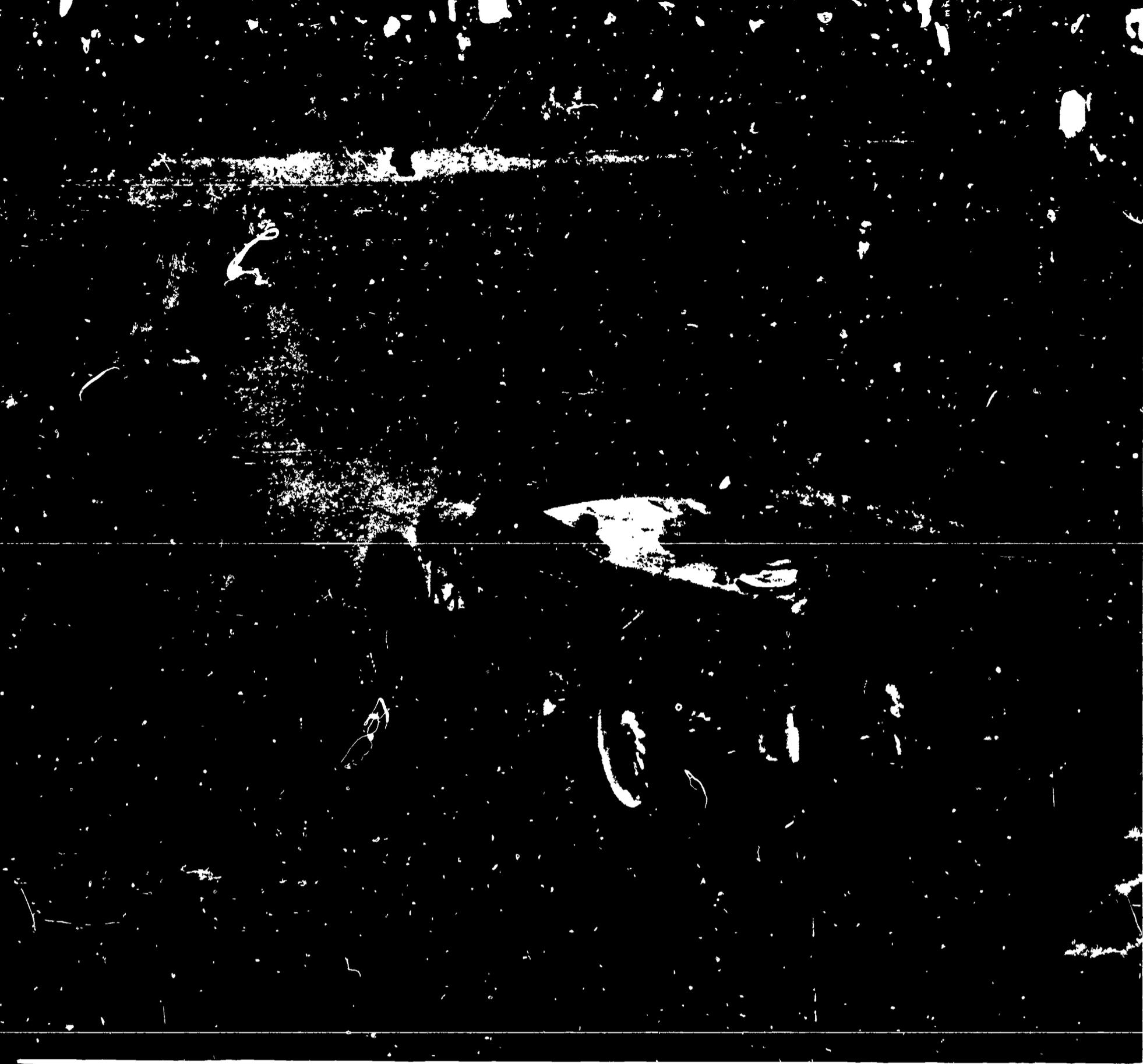
The Vanderbilt International Cup Contest - 1904

RACER



CER





A racing car on a curve

It was run by steam.

It had 40 horsepower.

See it skid.

RACERS



The Finale of the Race for the Renault Memorial Plate.



TERS



The Finale of the Race for the Renault Memorial Plate.





The Finale of the Race for the Renault Memorial Plate.

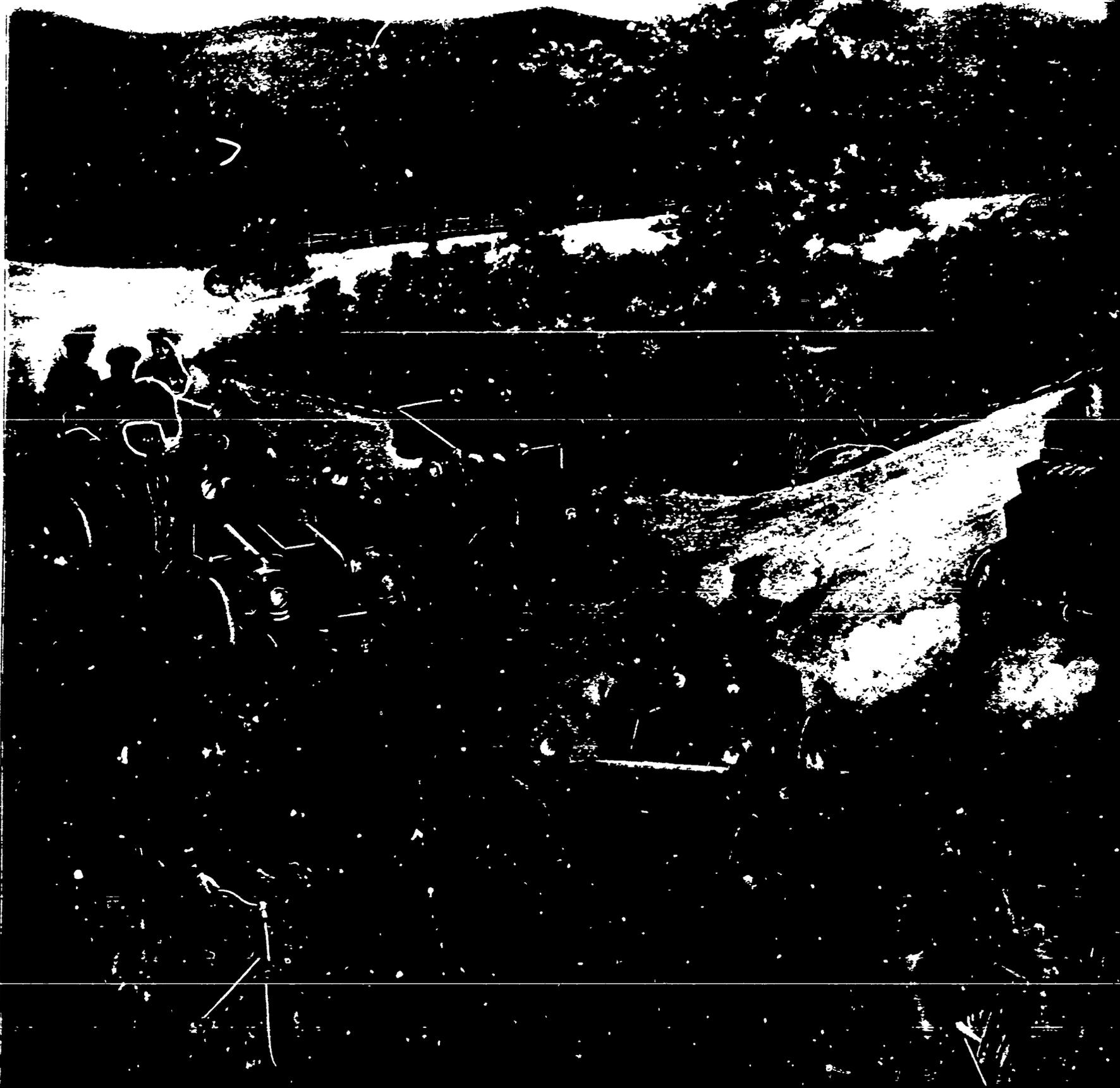


Procession of Cars Around the Track

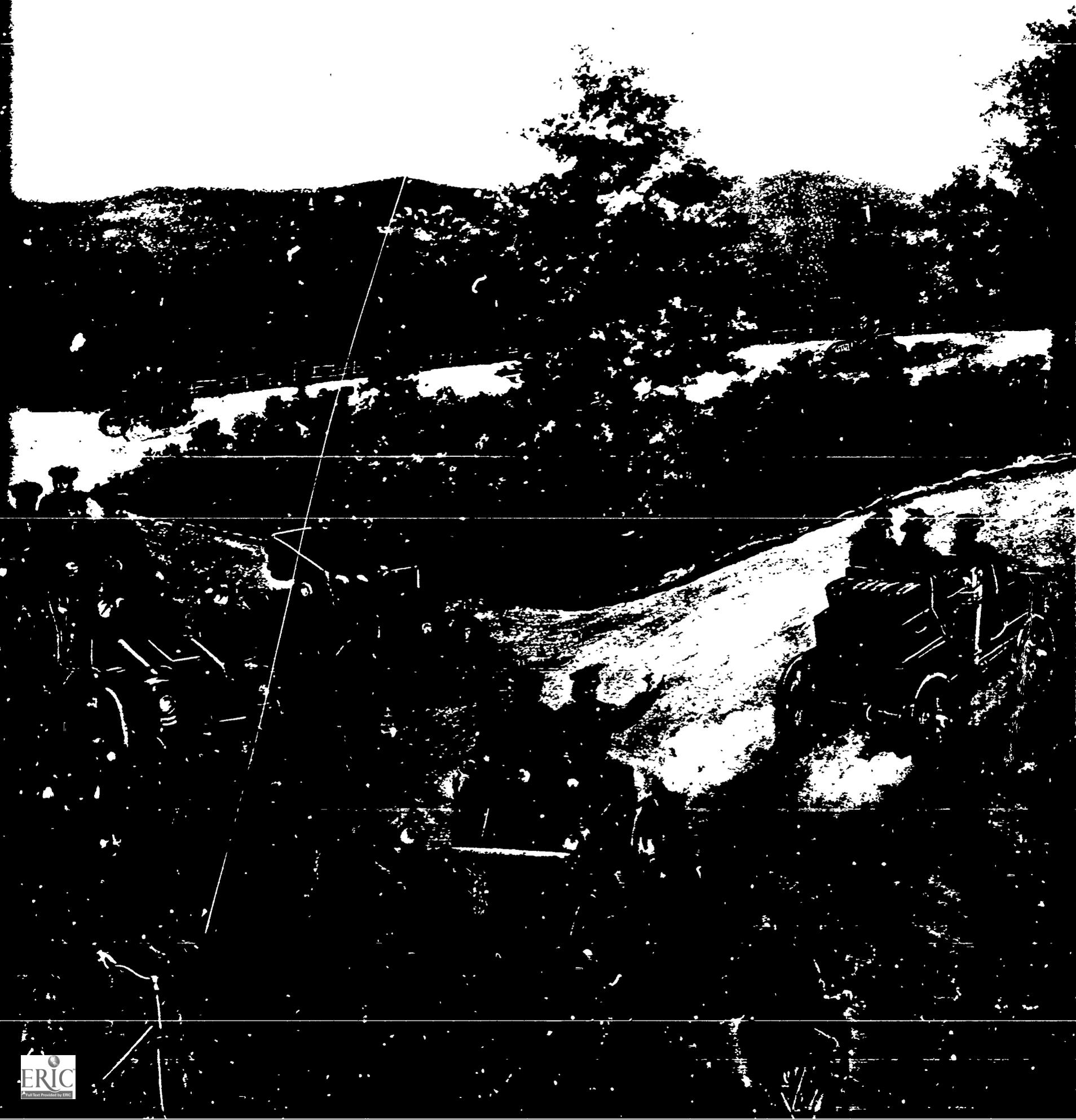
Banked turns made speeds of 100 m.p.h. possible.

This racer even had a windshield.

CARS



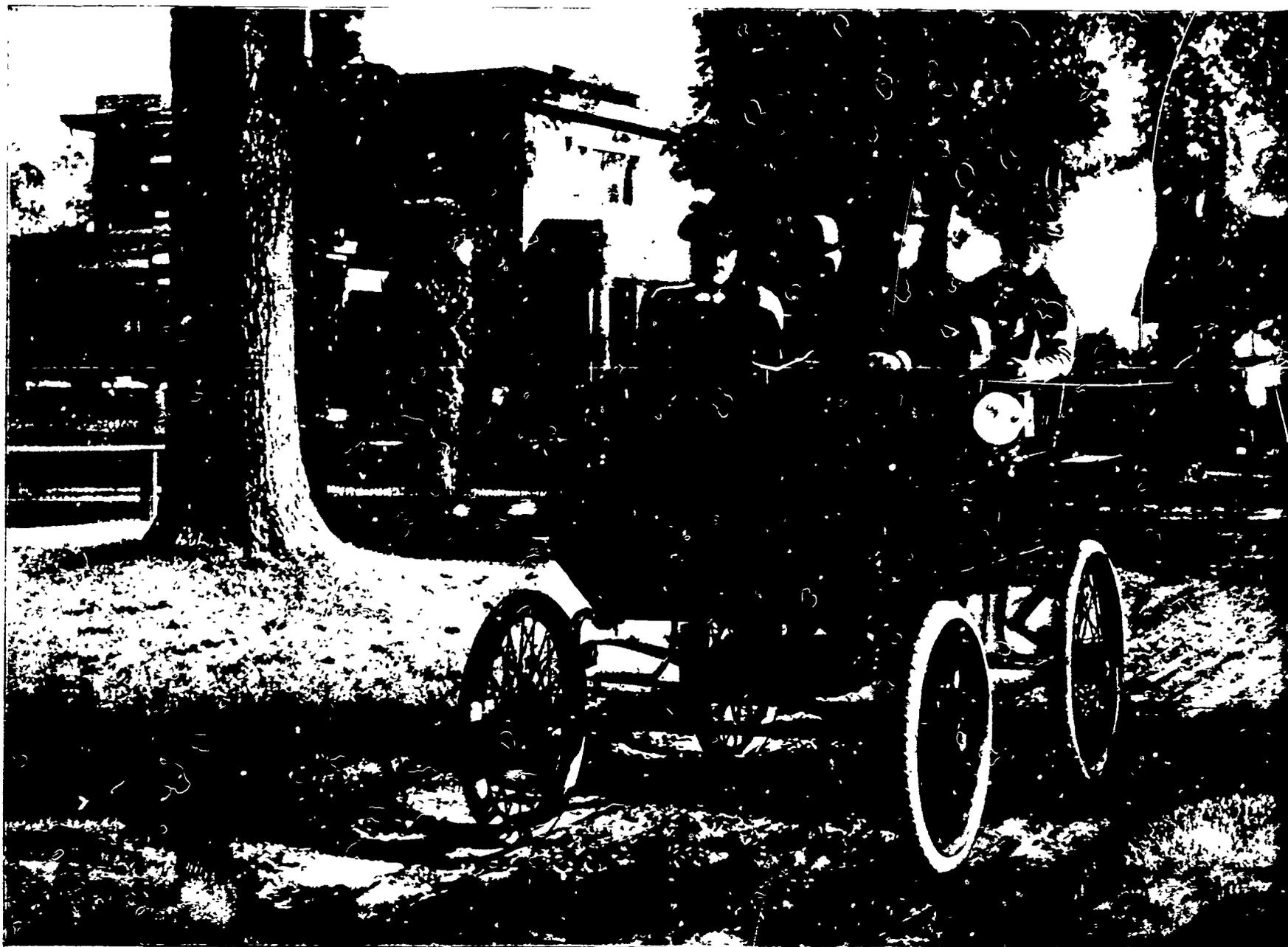
RS



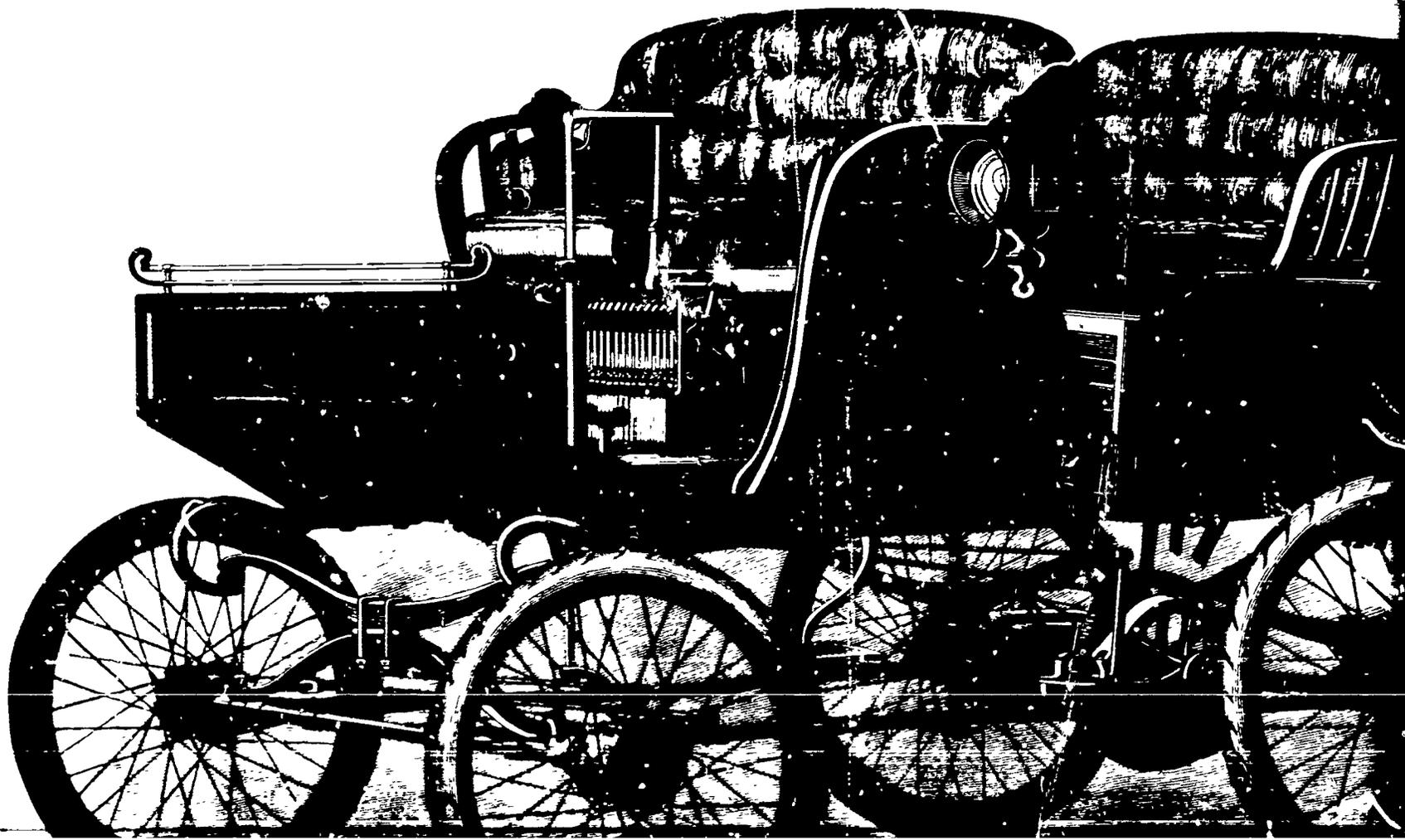


Some automobiles and motor bicycles in 1901

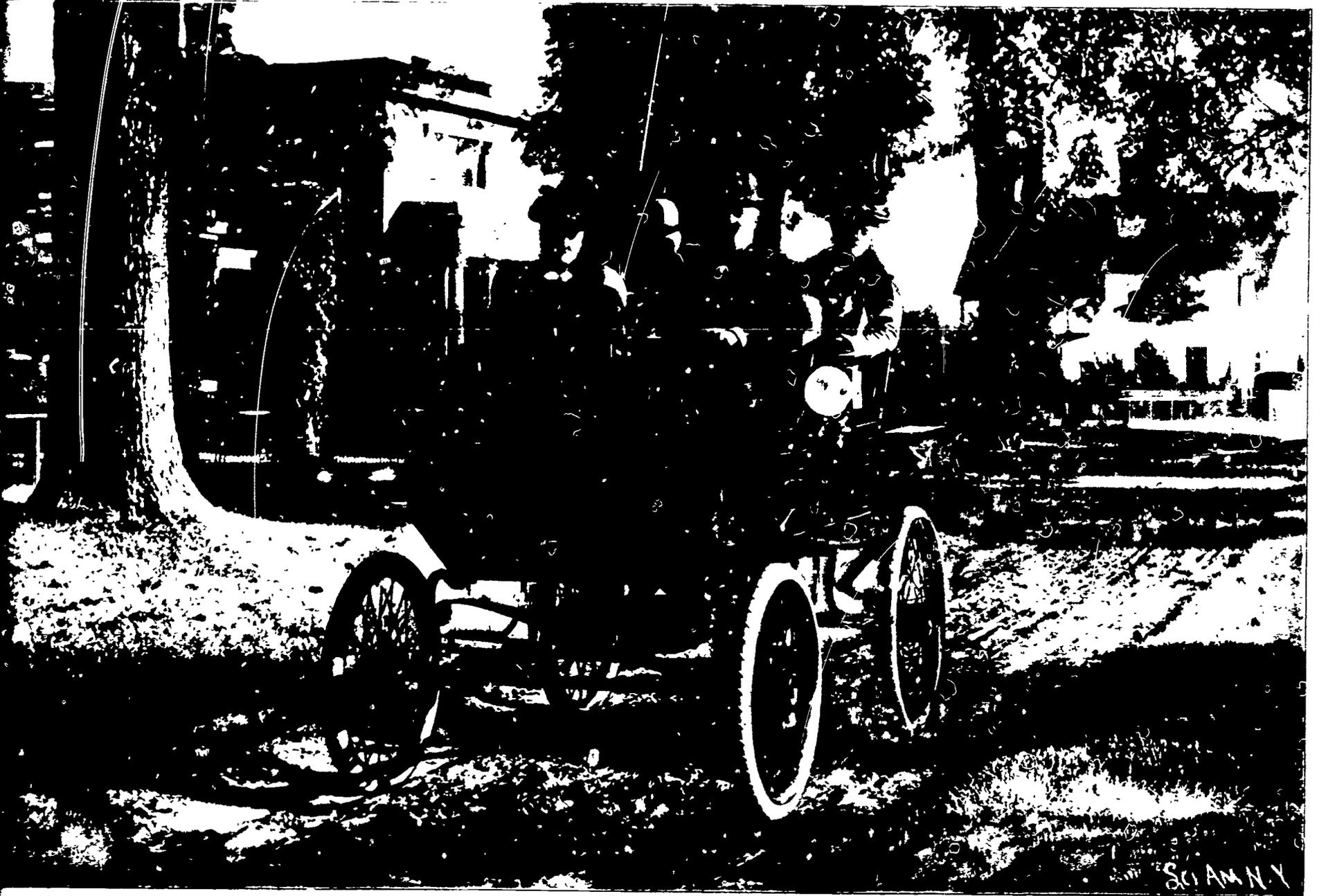
CARS



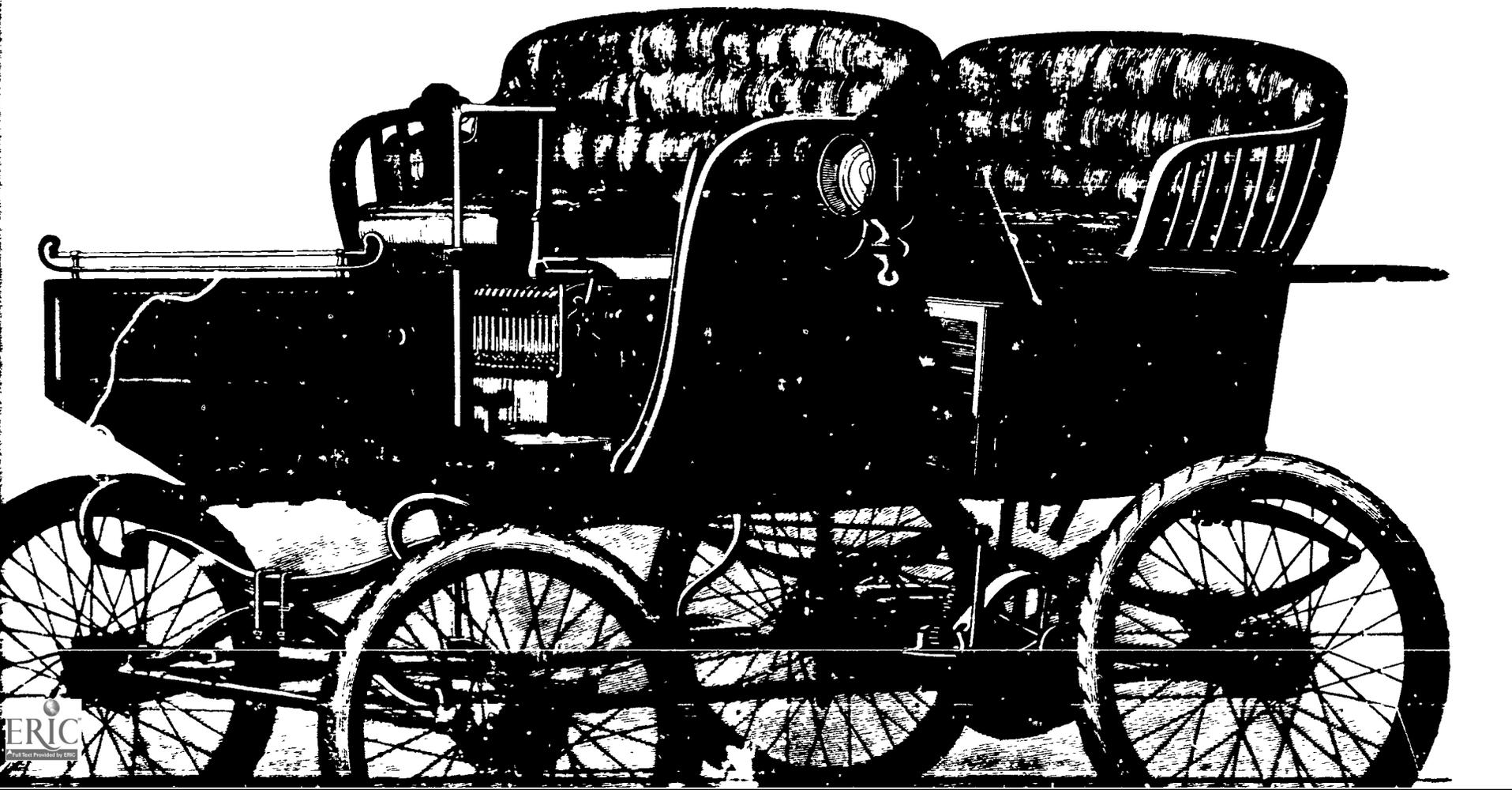
ELECTRIC SURREY IN OPERATION.

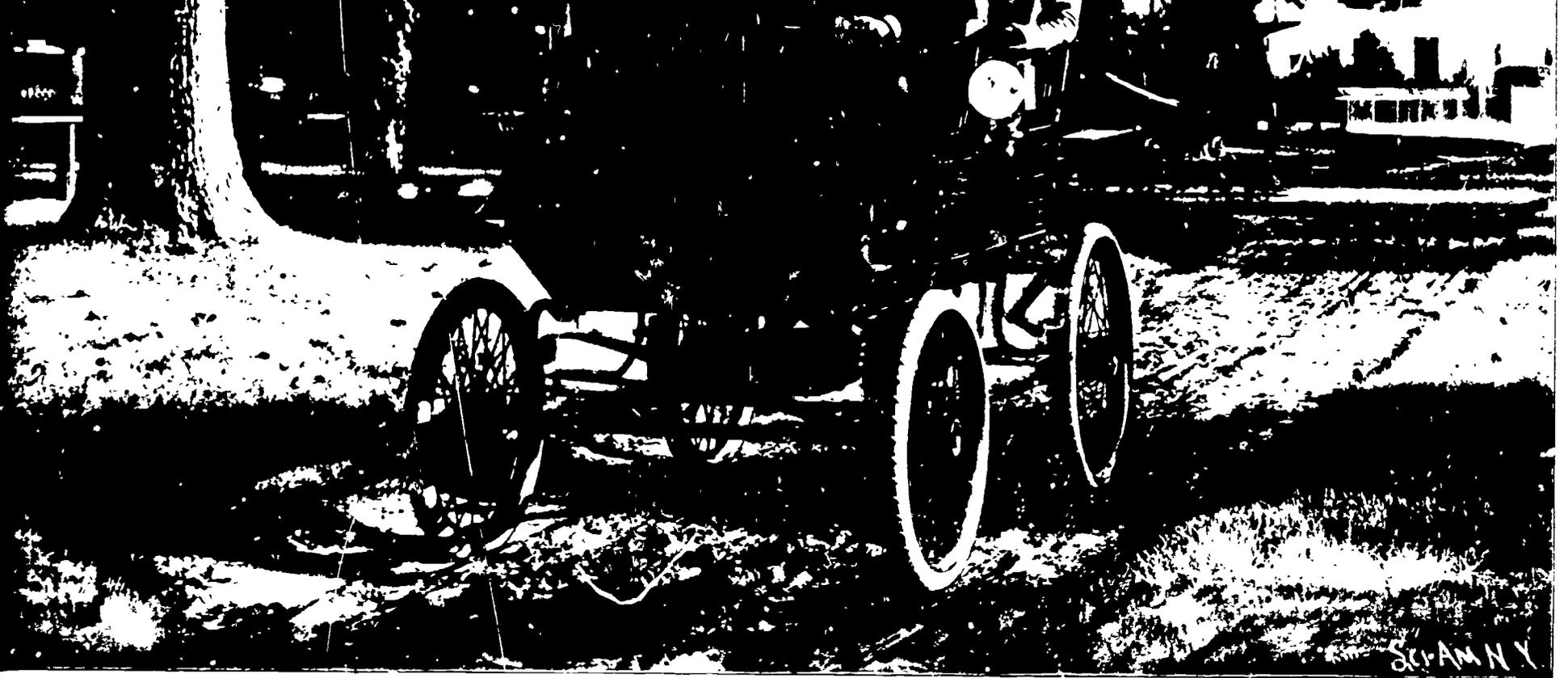


R.S

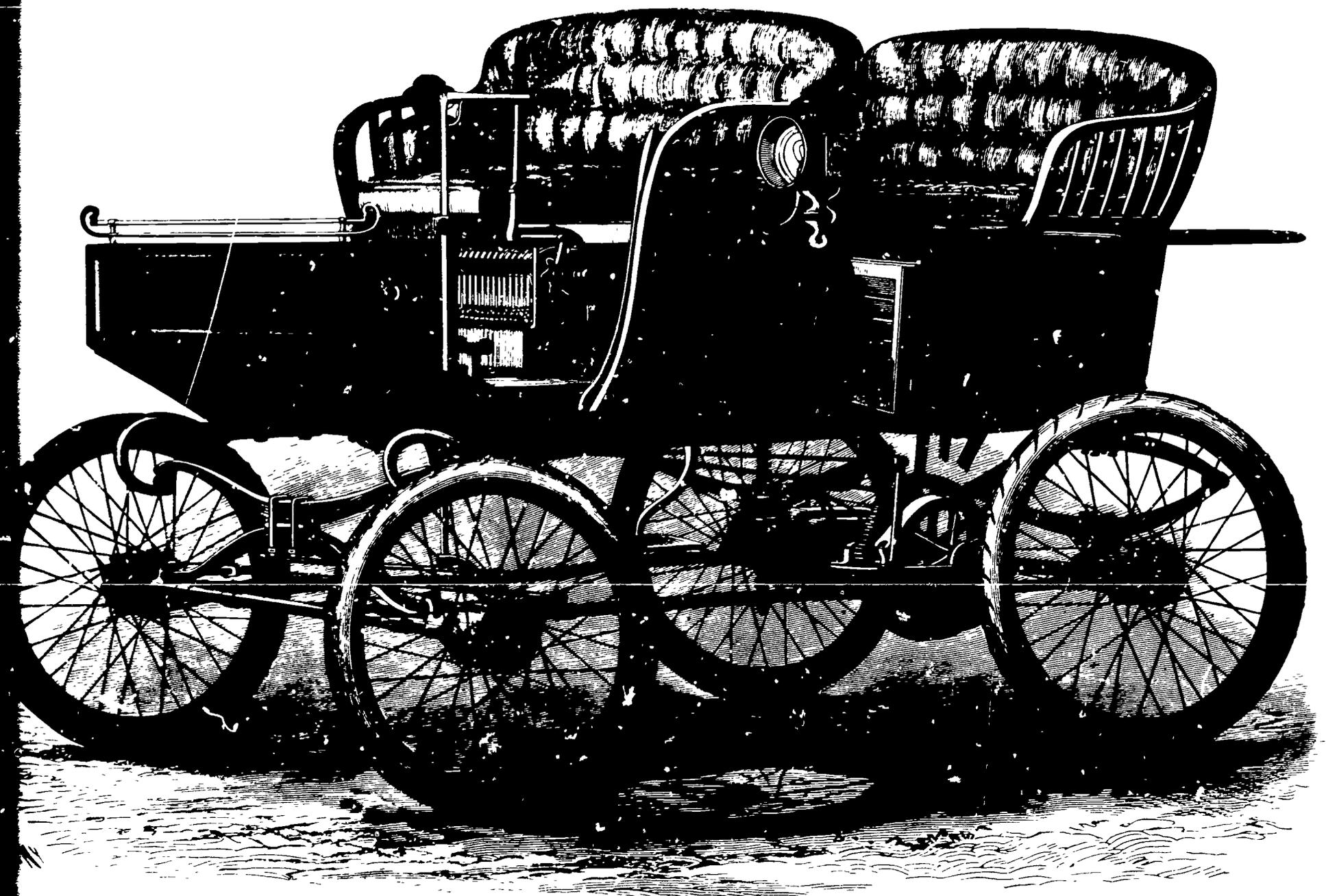


ELECTRIC SURREY IN OPERATION.





ELECTRIC SURREY IN OPERATION.



Some cars were electric in 1899.
They ran by batteries.

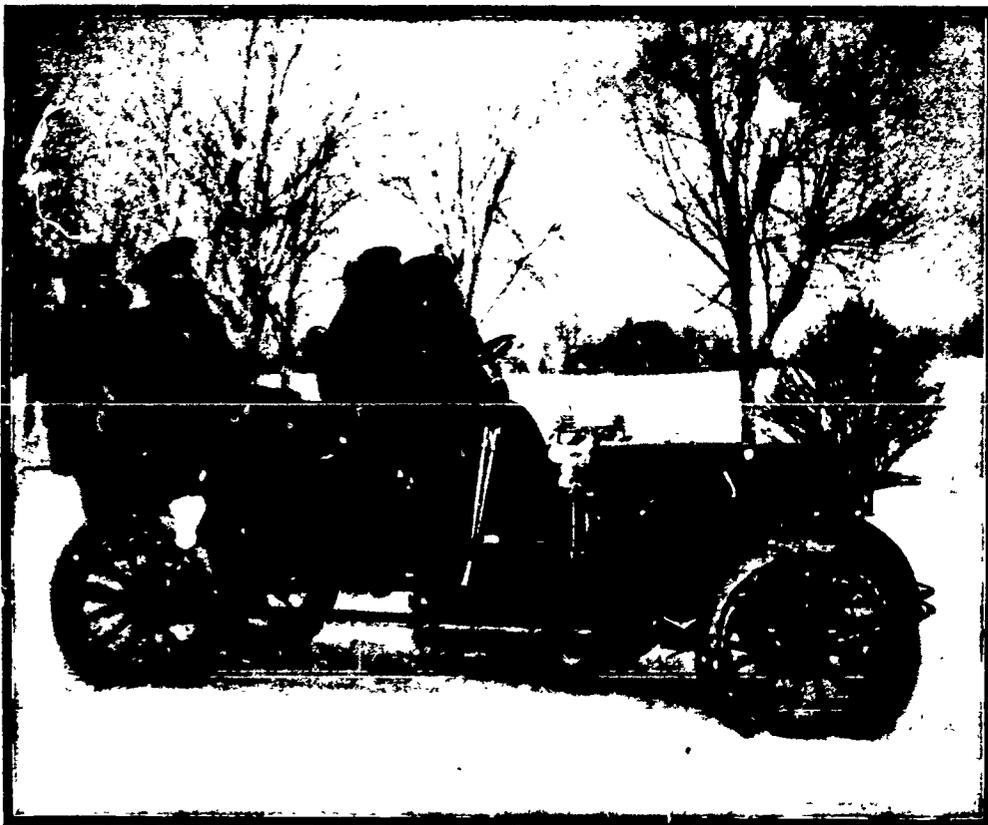
CARS



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



The Rambler 20-Horse-Power Tonneau with Canopy.



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



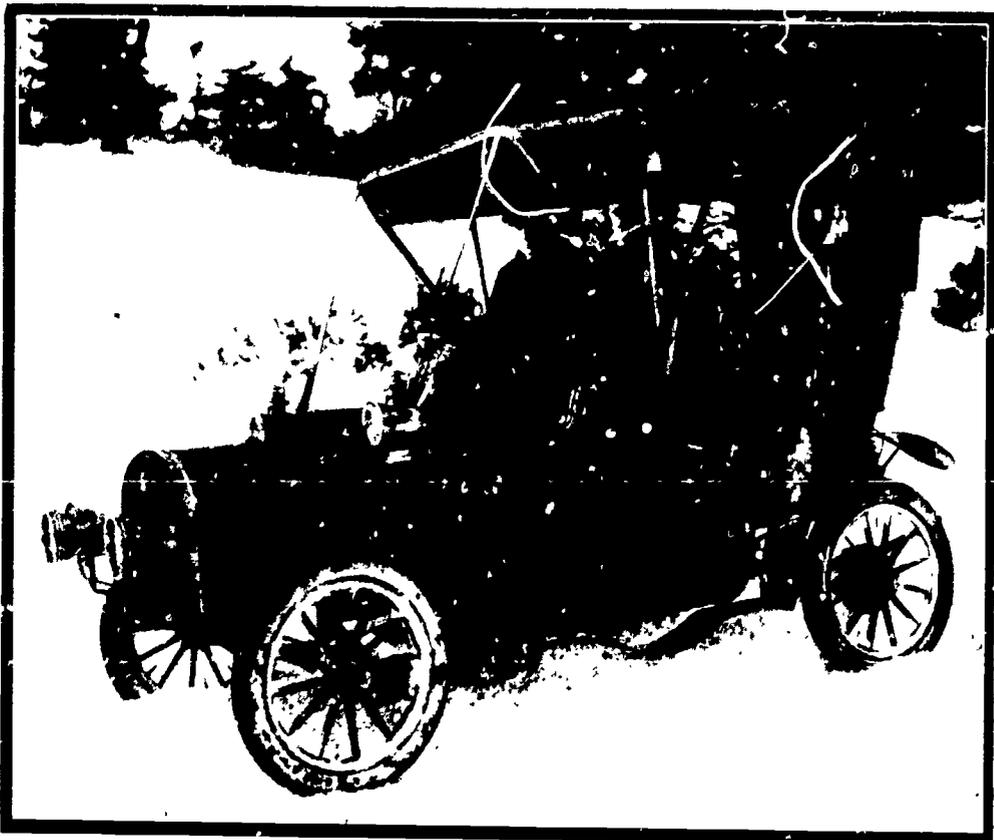
The 15-Horse-Power White Steam Touring Car.



RS



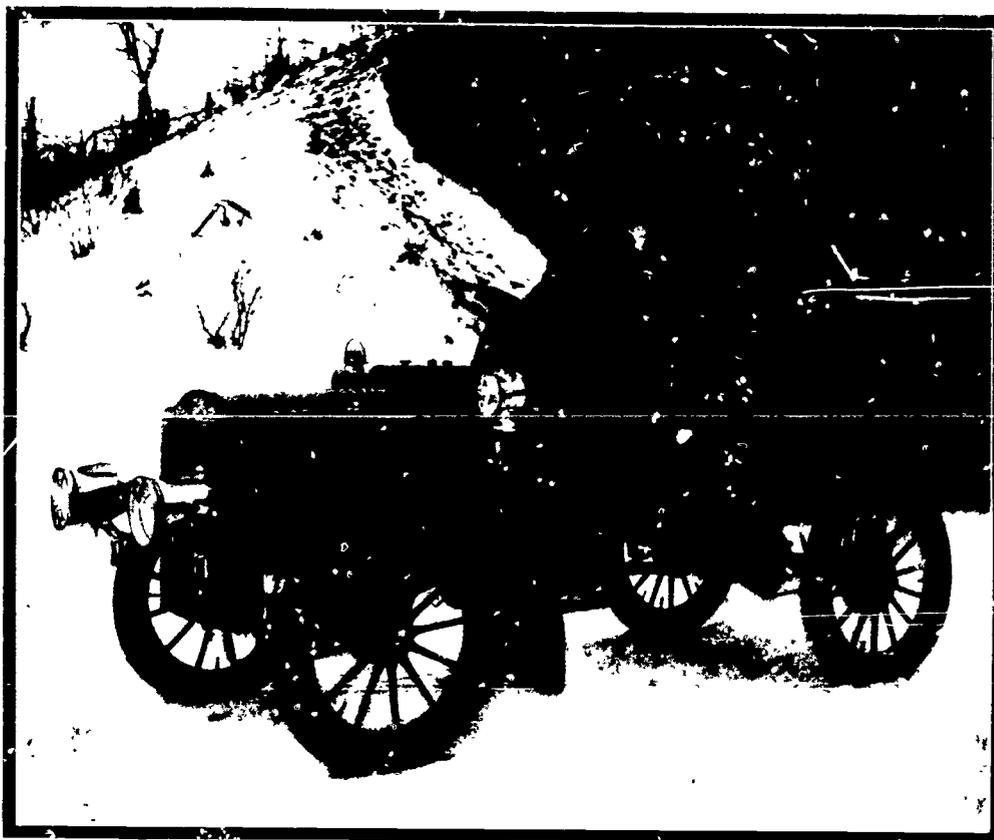
New Reo 16-Horse-Power Side Entrance Tonneau.



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



10-Horse-Power Franklin Four-Cylinder Air-Cooled Car.

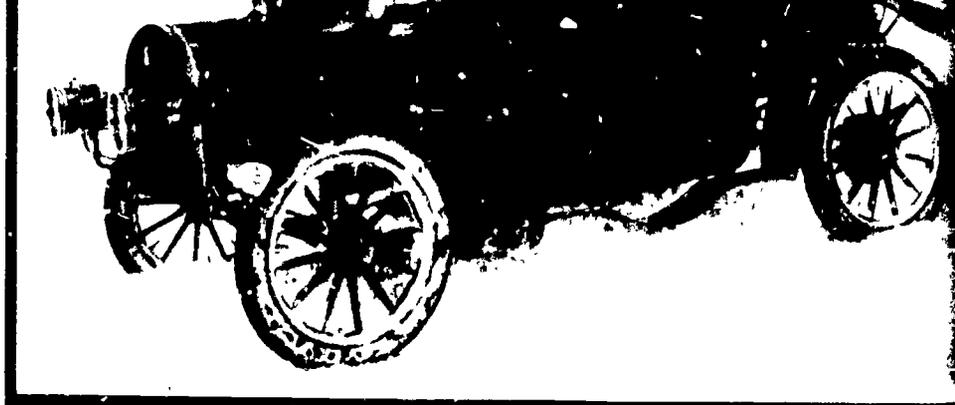


The 15-Horse-Power White Steam Touring Car.

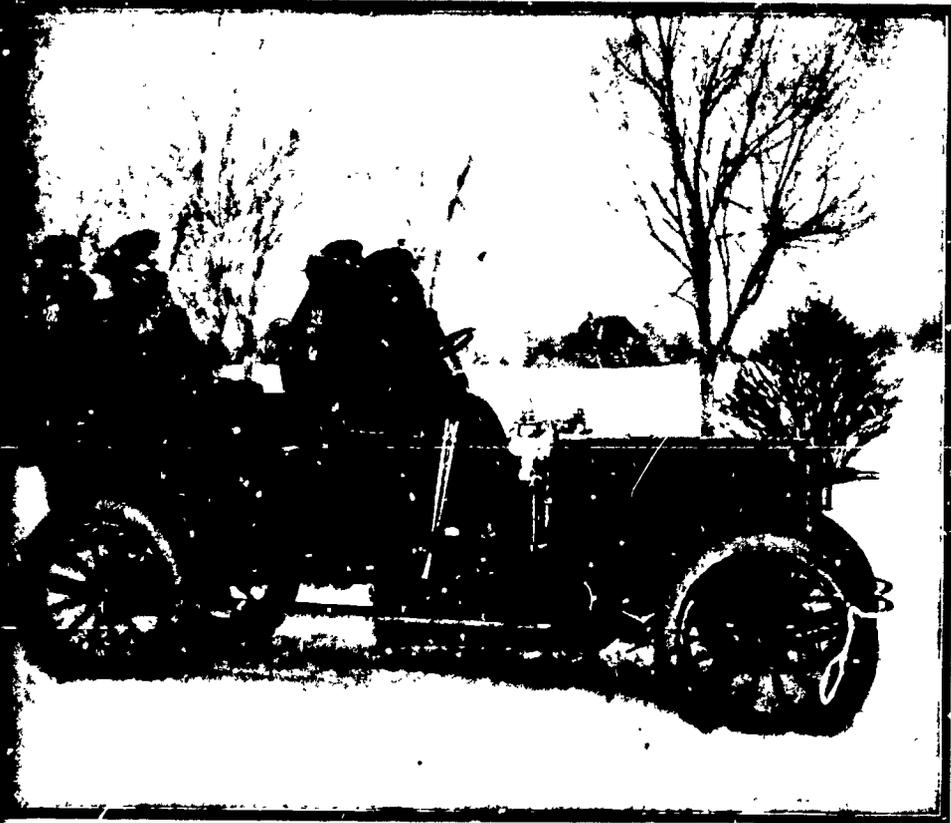




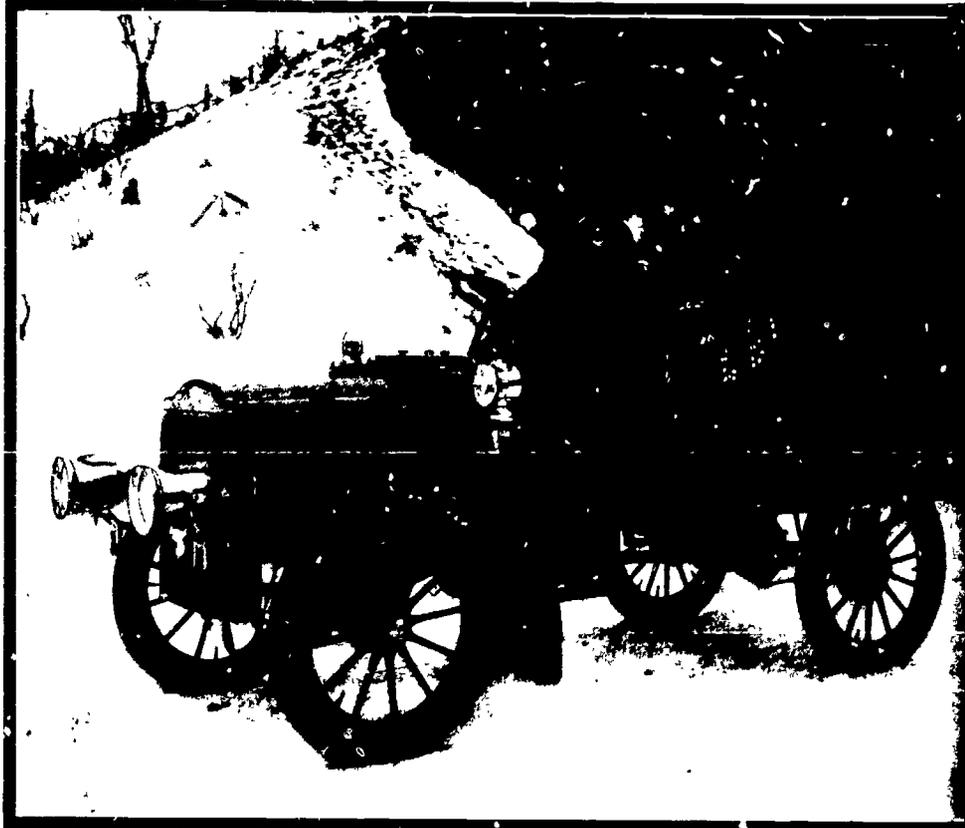
The New Reo 16-Horse-Power Side Entrance Tonneau.



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



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



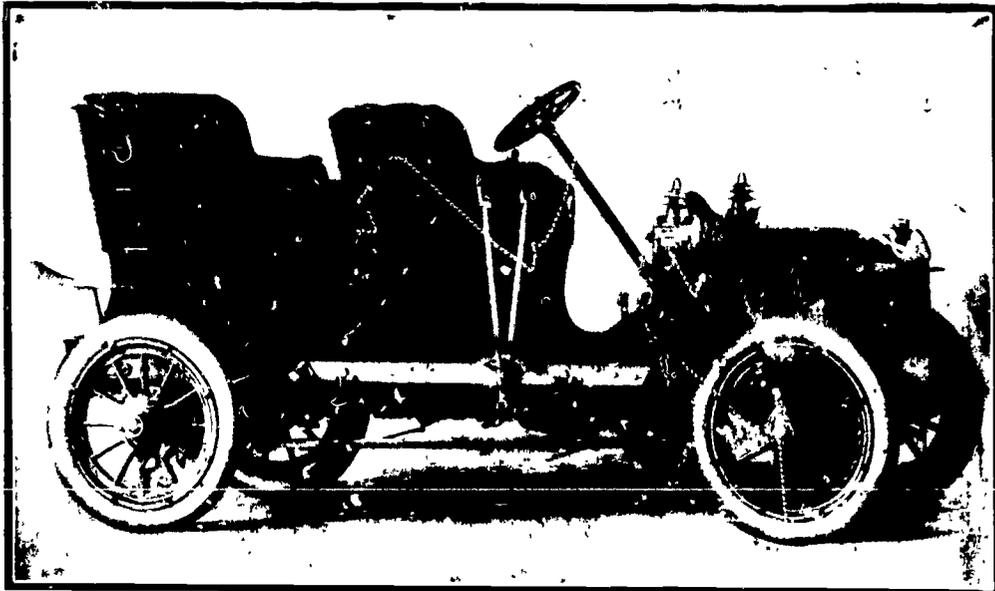
The 15-Horse-Power White Steam Touring Car.



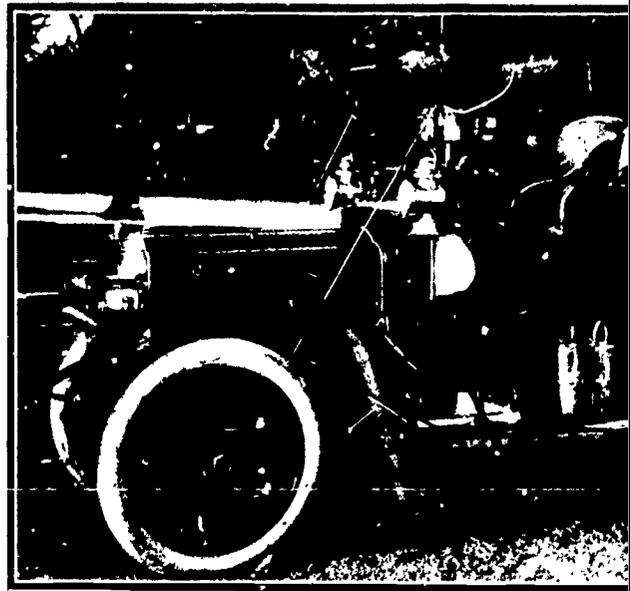
A Maxwell 16-Horse-Power Double Opposed-Cylinder Touring Car Disputing the Right of Way with a Runabout of the Same Type in Central Park.

SOME LEADING 1905 CARS AS THEY APPEAR IN MID-WINTER.

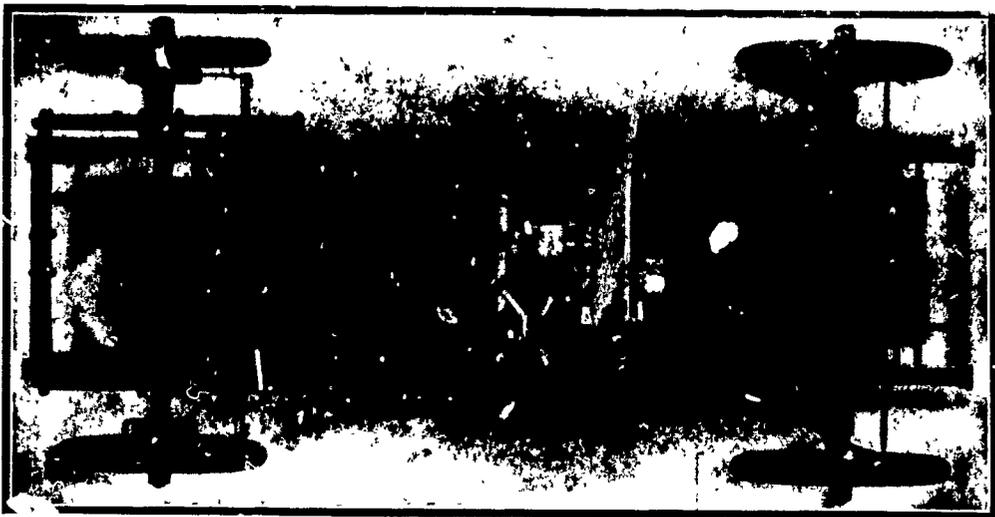
CARS



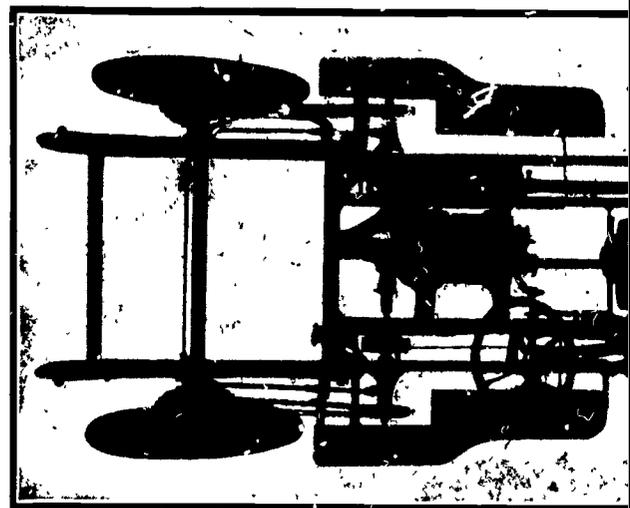
New 20-Horse-Power Autocar Tonneau Fitted with 4-Cylinder Vertical Engine and Bevel Gear Drive.



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



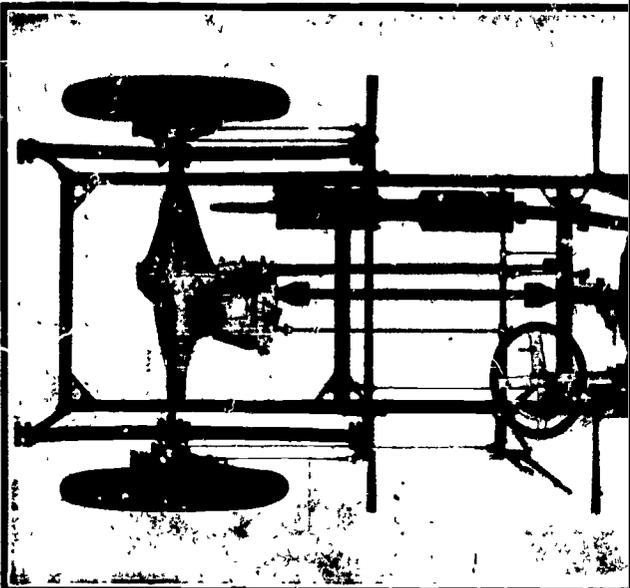
Chassis of Autocar, Showing Bevel Gear Drive.



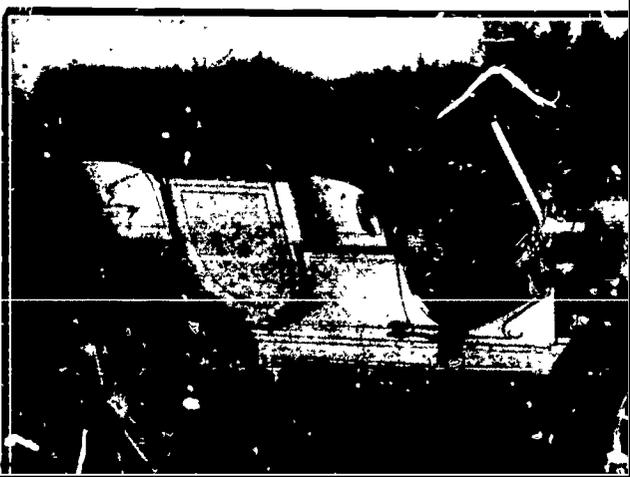
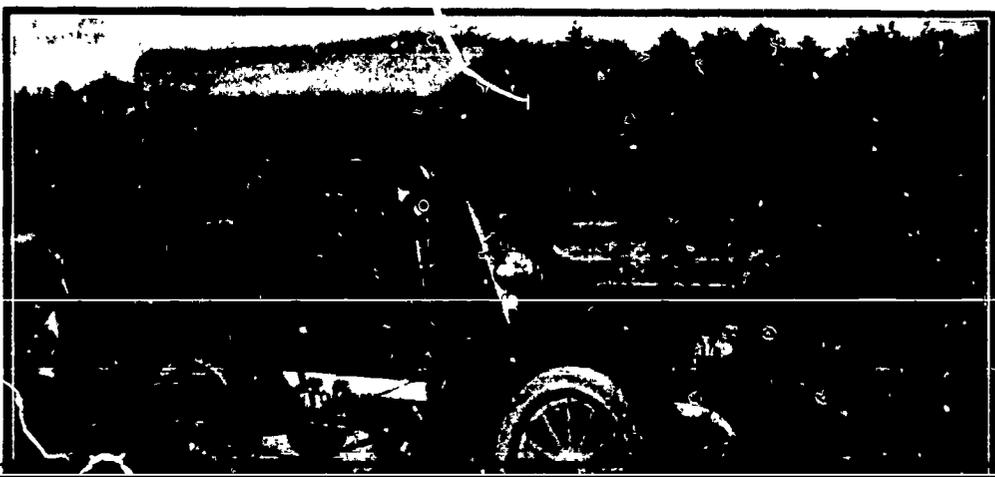
Chassis of Thomas Car, Showing Chain Drive.

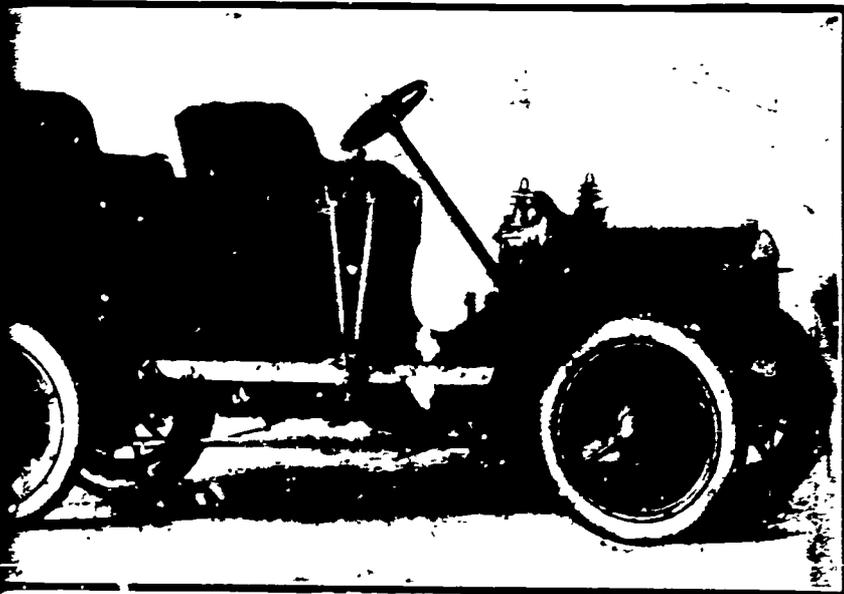


The Packard 28-Horse-Power Side Entrance Tonneau.

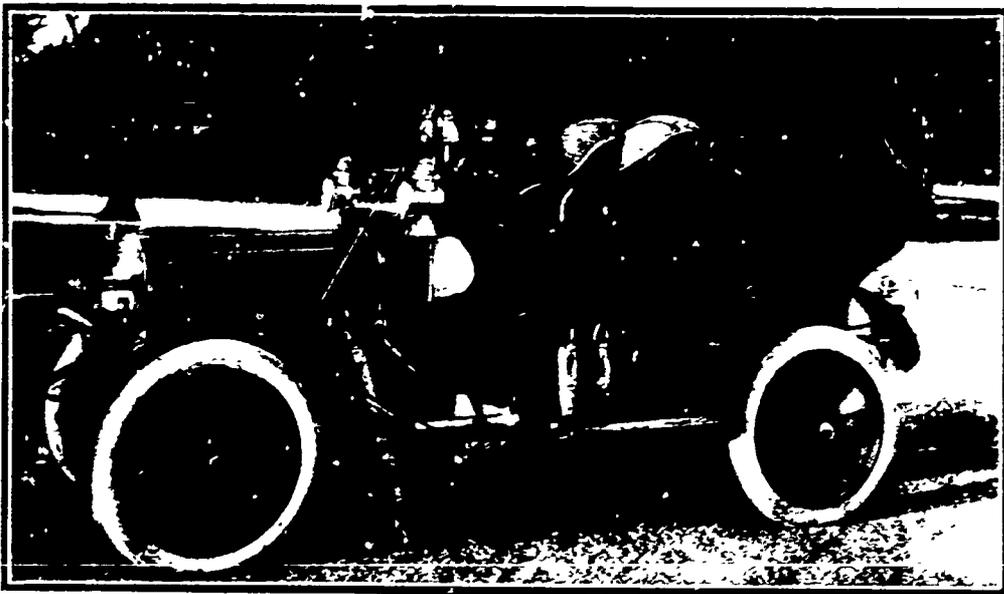


Chassis of Packard Car, Showing Transmission.

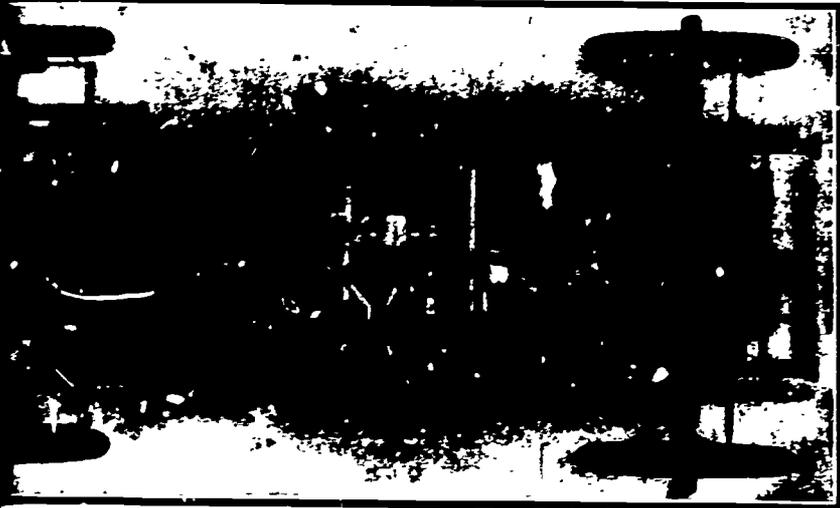




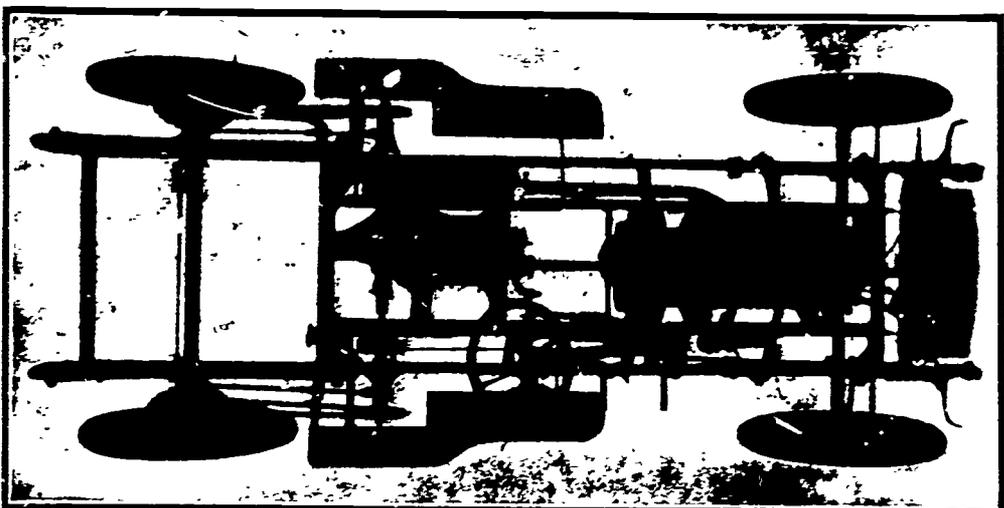
4-Horse-Power Autocar Tonneau Fitted with 4-Cylinder Vertical Engine and Bevel Gear Drive.



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



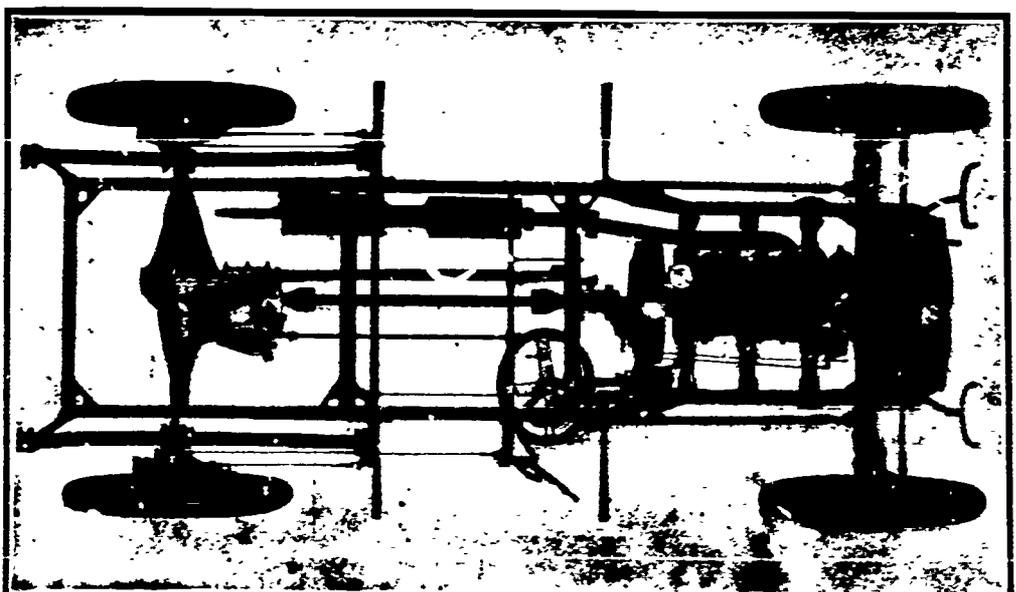
Chassis of Autocar. Showing Bevel Gear Drive.



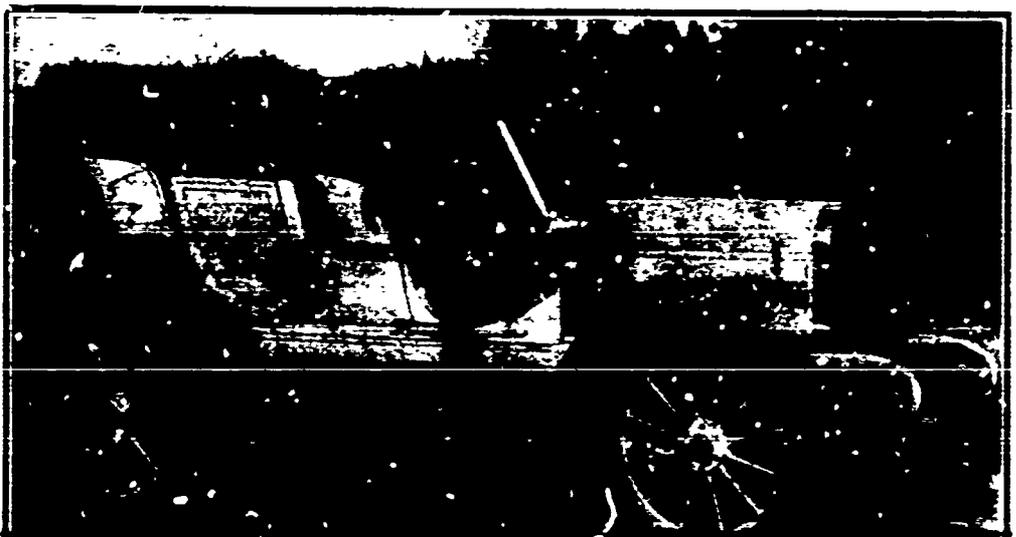
Chassis of Thomas Car. Showing Chain Drive from Countershaft.



The Packard 28-Horse-Power Side Entrance Tonneau.



Chassis of Packard Car. Showing Transmission at the Rear Axle.

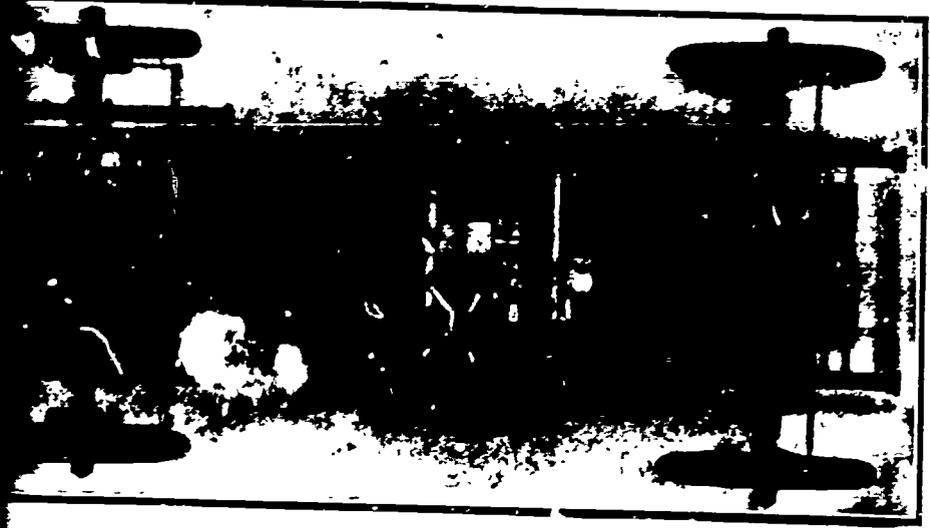




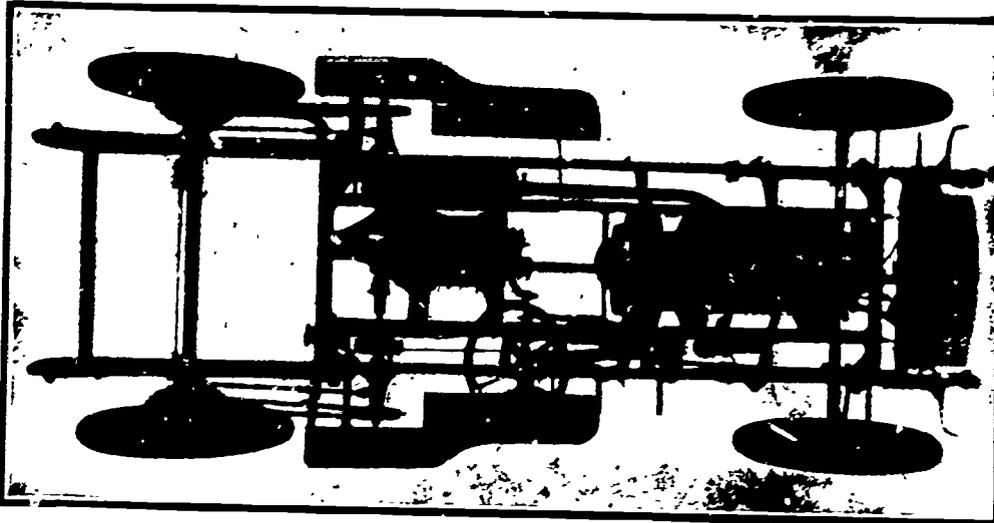
10-Horse Power Autocar Tonneau Fitted with 4-Cylinder Vertical Engine and Bevel Gear Drive.



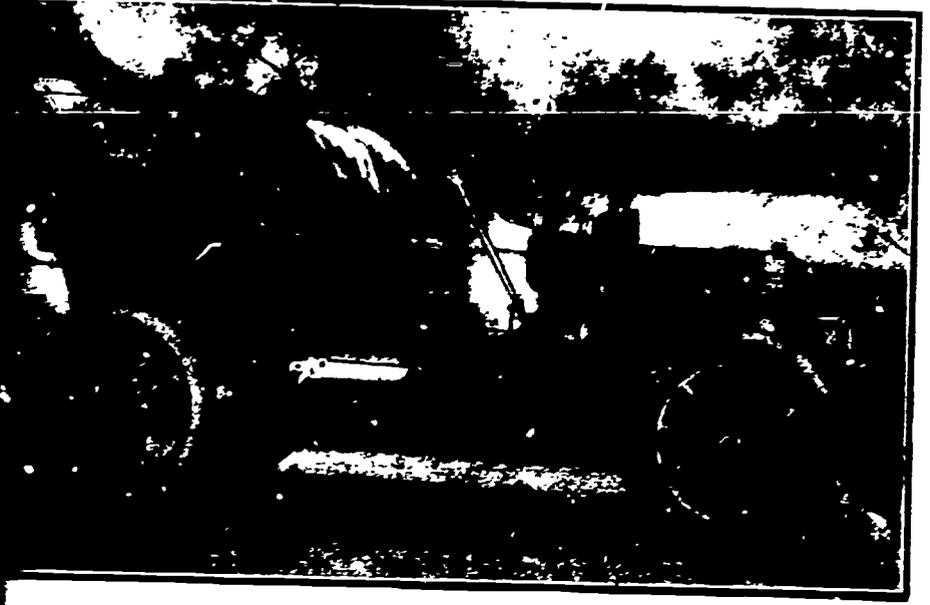
Thomas 4-Cylinder 40-Horse-Power Side Entrance Tonneau Fitted with Chain Drive.



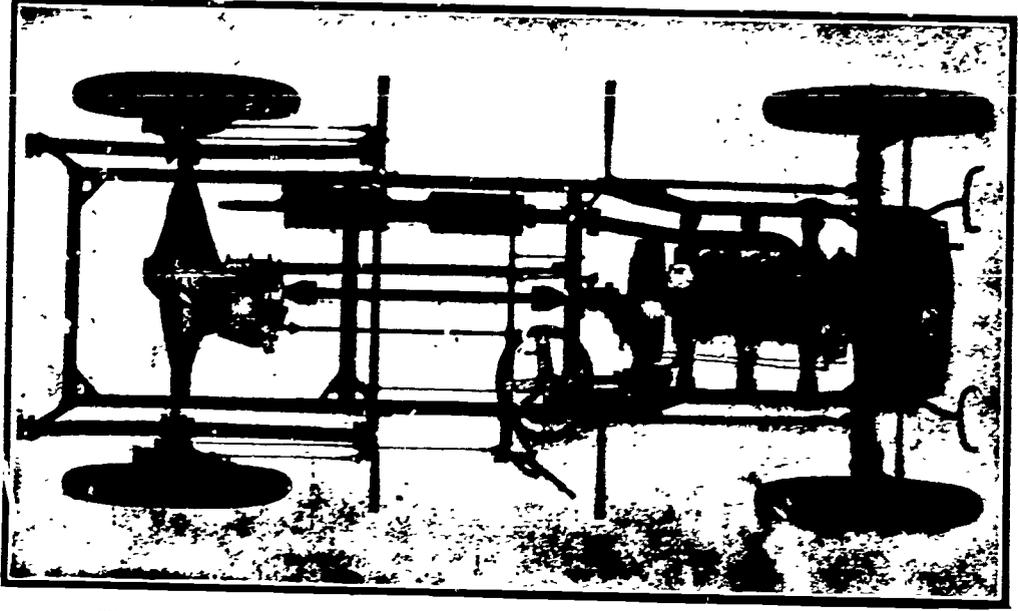
Chassis of Autocar, Showing Bevel Gear Drive.



Chassis of Thomas Car. Showing Chain Drive from Countershaft.



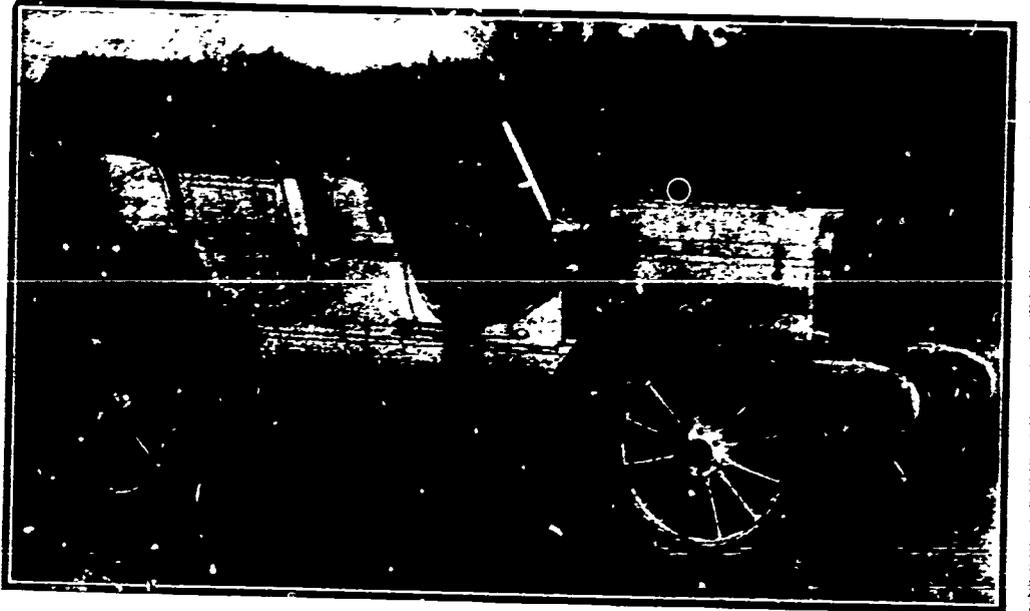
The Packard 28-Horse-Power Side Entrance Tonneau.



Chassis of Packard Car, Showing Transmission at the Rear Axle.



Stevens-Duryea 20-Horse-Power Side Entrance Tonneau Fitted with 4-Cylinder Vertical Engine.



The Winton 24-Horse-Power Side Entrance Tonneau with 4-Cylinder Vertical Engine.

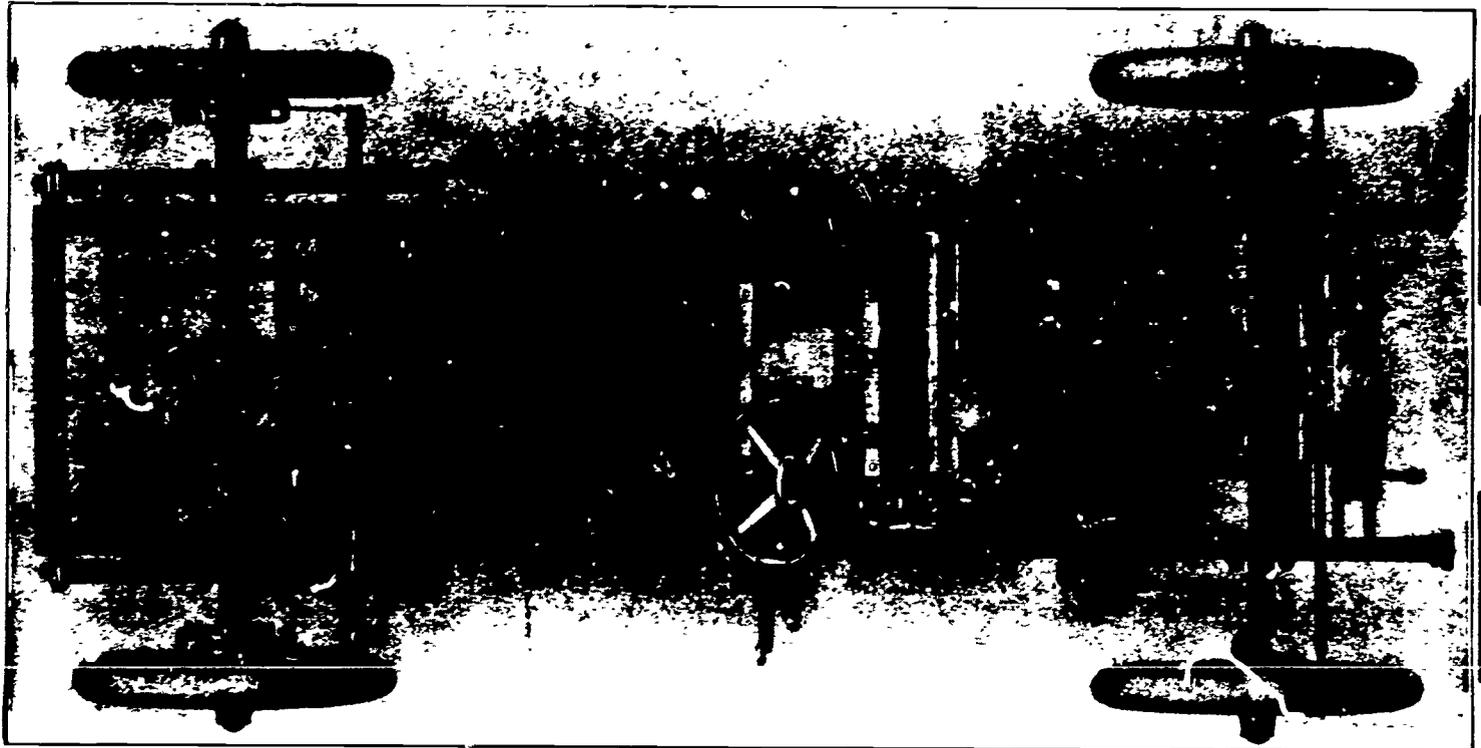
American Touring Cars - 1905

ADVERTISEMENT

The Autocar

THE CAR OF SIMPLICITY

CHASSIS OF TYPE XI



Type
XI
Four
Cylinder
16-20 H. P.



Do
S
Ent
Ton
\$2

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 its chassis, shows a number of very valuable improvements, accomplishing increased ease of control, and simplicity.

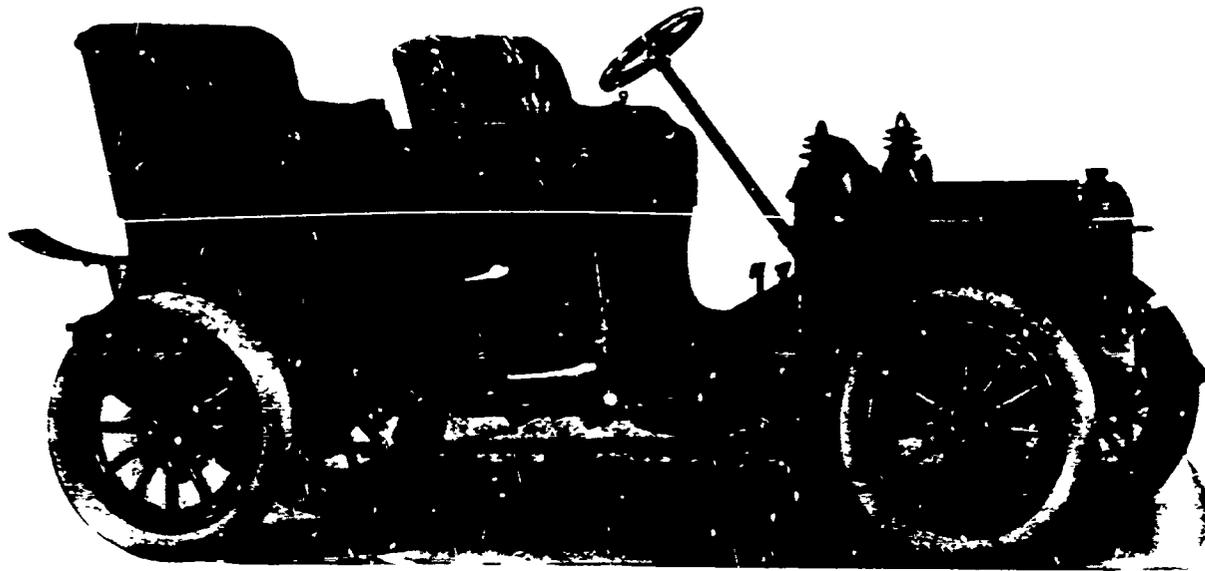
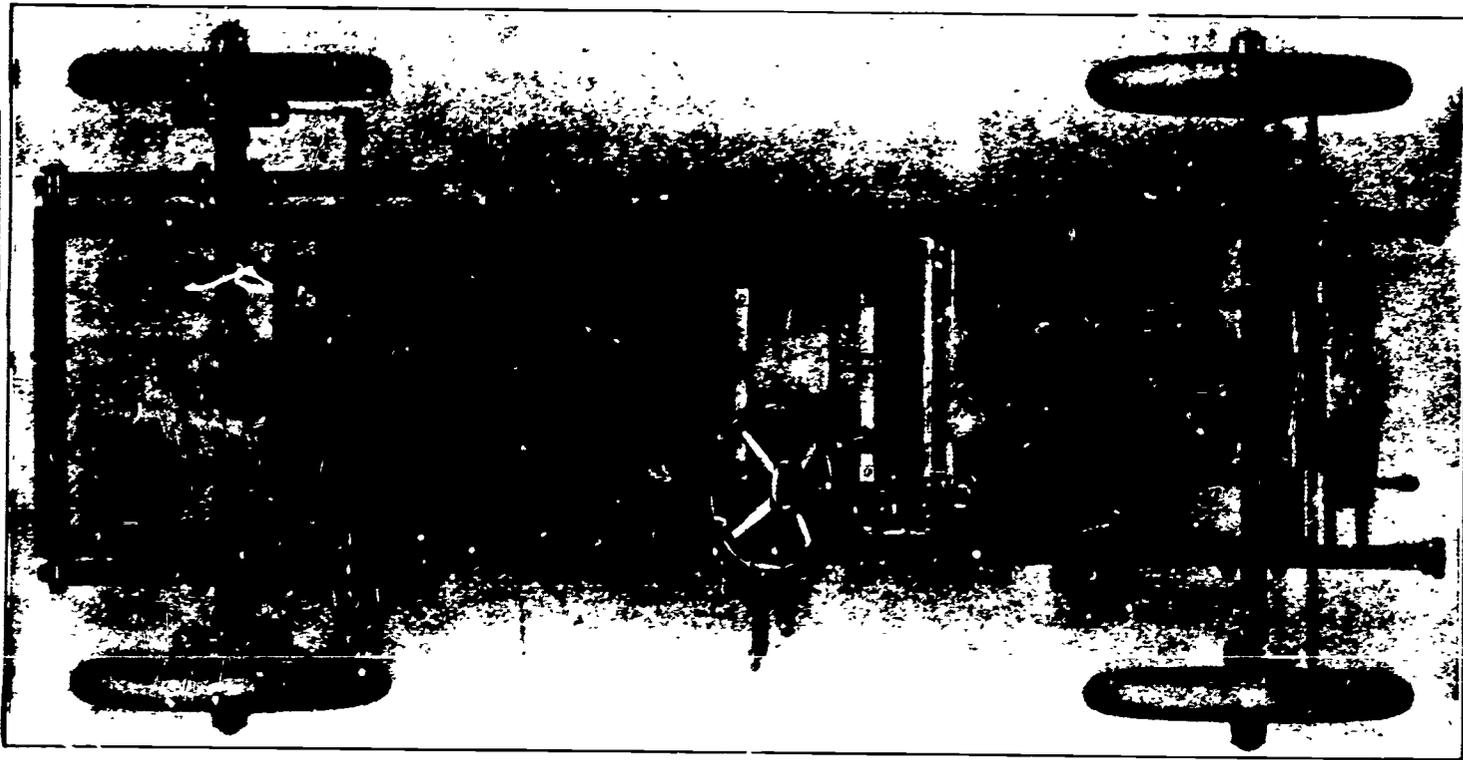
Type VIII, Four-passenger car, and Type X, about, are the cars which have made the present reputation of the Autocar, to which the new Type XI

ADVERTISEMENT

The Autocar

THE CAR OF SIMPLICITY

CHASSIS OF TYPE XI



Type
XI
Four
cylinder
20 H. P.

Double
Side
Entrance
Tonneau
\$2,000

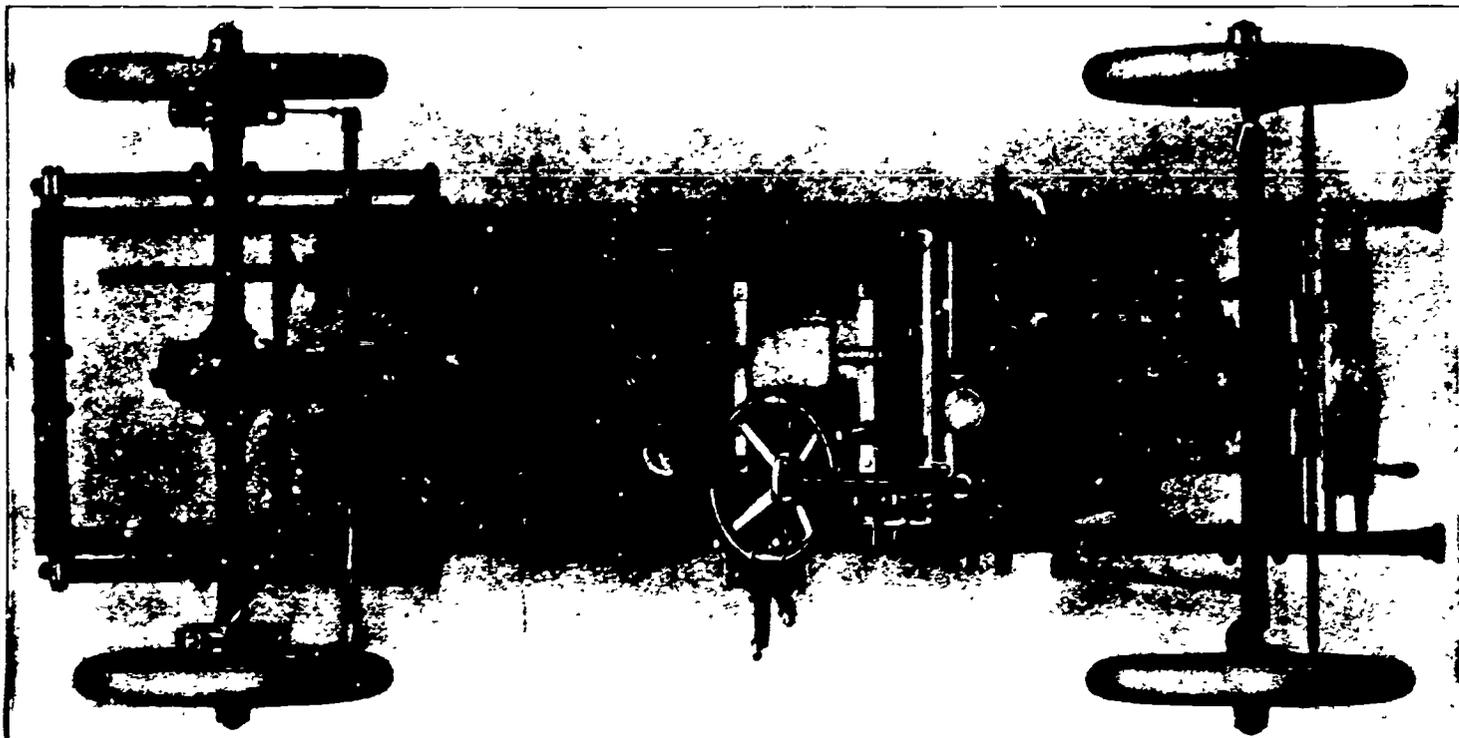
The Autocar stands as a triumph in automobile building. Its construction combines with greatest efficiency and durability a simplicity that is the wonder of all who see it. This is a feature that commends itself alike to the novice and the expert. It means minimum liability of derangement, greatest ease and safety of operation and lowest running expense. Each type of Autocar presents the nearest to perfection in its class. Every Autocar is built upon lines proven correct by

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

CHASSIS OF TYPE XI



**Type XI
Four
Cylinder
6-20 H. P.**



**Double
Side
Entrance
Tonneau
\$2,000**

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.

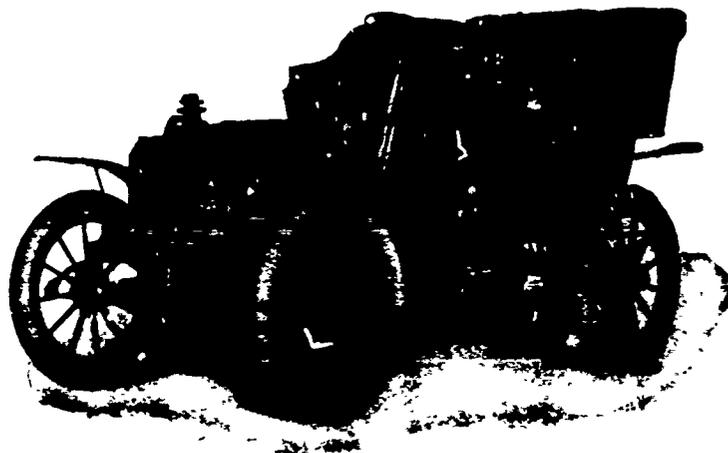
THE AUTOCAR COMPANY, Ardmore, Pa.

Member A. L. A. M.



**Type X
10 H. P.
Runabout
\$900**

**Type VIII
Rear Entrance
Tonneau
\$1,400**

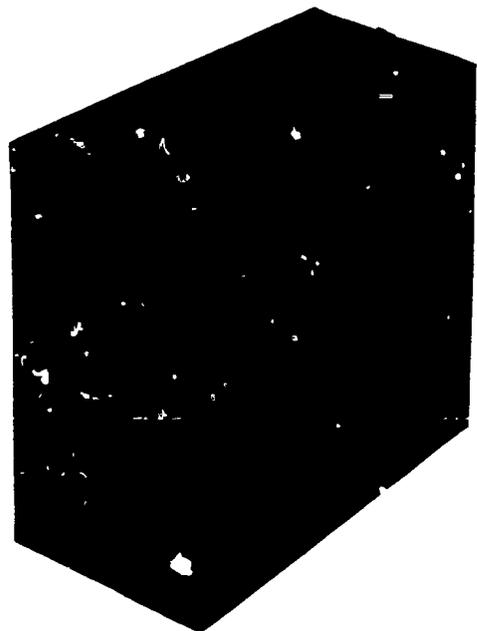


These ads were used in 1905.

ADVERTISEMENT

A Guarantee That Means Something

1905



Vesta

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 3¾ wide,	inches,	price,	\$15.00
60 " " 6 " 9 " x 8½ " x 5¼ " " " " " " " "						22.50
60 " " 8 " 9 " x 8½ " x 7 " " " " " " " "						30.00

Shipped anywhere fully charged ready for use.

Send for catalogue.

VESTA ACCUMULATOR CO.,
1336 Michigan Avenue, - - - - CHICAGO.



Peerless
Direct
Touring

For
24 H. P.
30 H. P.

Prices from \$3,000

Motor constructed that in the far Green Dragon run by Barney Oldfield side door bodies speeds. Power applied directly to

Simplicity of Construction—Perfection Absolutely Dependable

Catalogue now ready.

Peerless Motor Car Co., 38 Lisbon St. C.

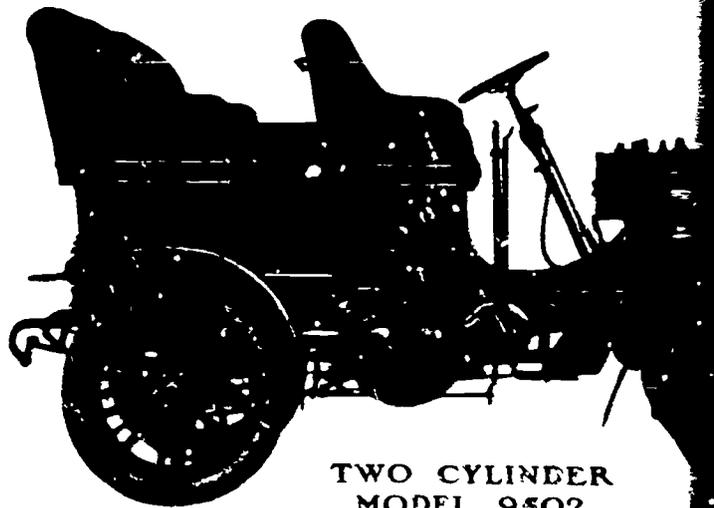
Member Association Licensed Automobile Manufacturer

THE MARMON CAR



1905 STUDEBAKER

"The Automobile with a Reputation behind it"



TWO CYLINDER
MODEL 9502

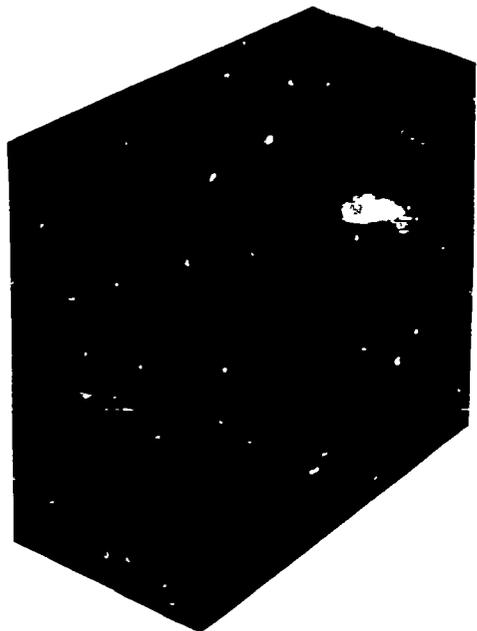
Price \$1,350 side entrance. \$1,250 rear entrance, including and horn.

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

Size. Capacious seats and ample leg room for five occupants.

ADVERTISEMENT

Guarantee That Means Something



Vesta

Vesta Storage Battery

Operating the gas engine in an automobile is guaranteed every purchaser.

It will be refunded if not satisfactory.

60 AMPERE HOUR CAPACITY 60

Neatly packed in hard wood.

STANDARD SIZES

6	9	8 1/2	5 1/4	\$15.00
6	9	8 1/2	5 1/4	22.50
8	9	8 1/2	7	30.00

Available anywhere fully charged ready for use. See catalogue.

VESTA 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.

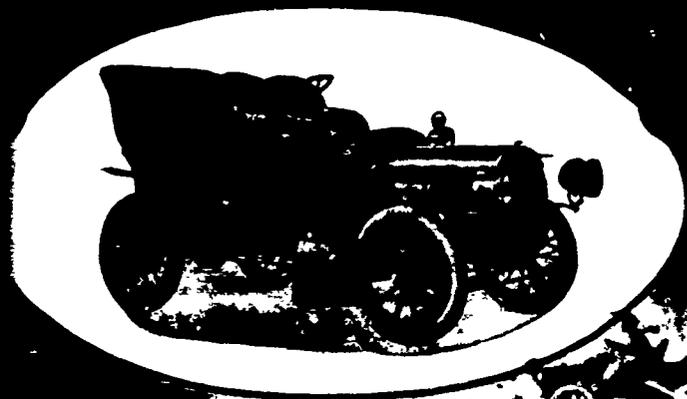
Simplicity of Construction—Perfection of Control—Absolutely Dependable

Catalogue now ready.

Peerless Motor Car Co., 38 Lisbon St. Cleveland, O.

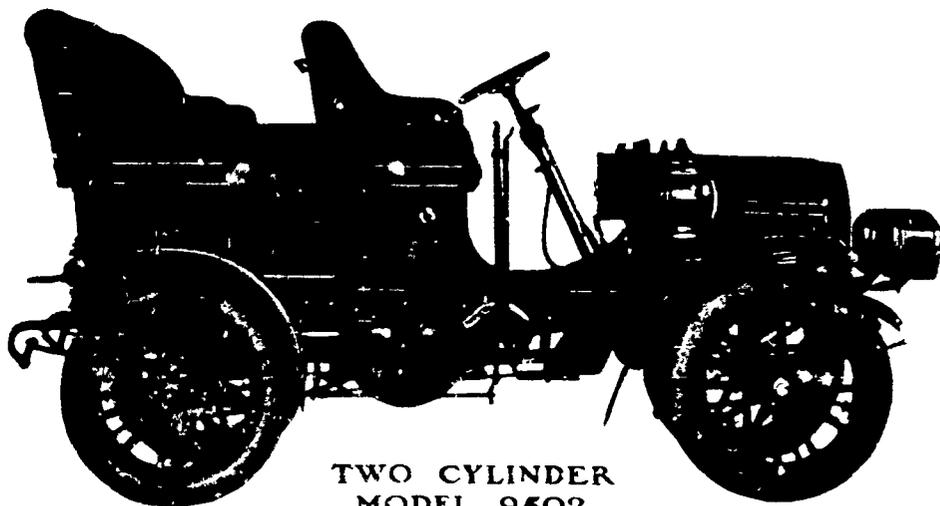
Member Association Licensed Automobile Manufacturers.

THE MARMON CAR



1905 STUDEBAKER

"The Automobile with a Reputation behind it."



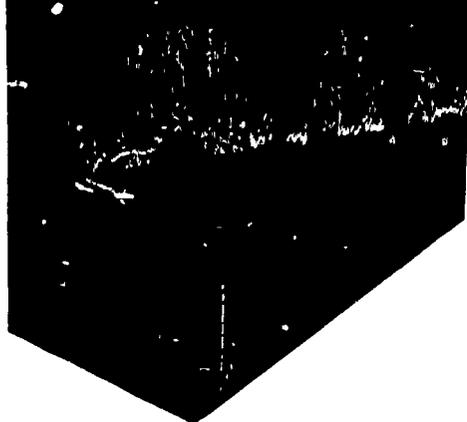
TWO CYLINDER
MODEL 9502

Price \$1,350 side entrance \$1,250 rear entrance, including side lights, 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

905



Vesta

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

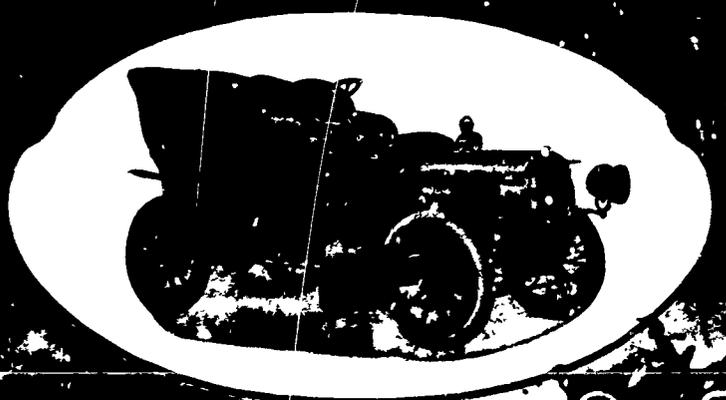
60 Amp. hour, 4 volt	9 long	x 8 1/2 high	x 3 7/8 wide,	inches,	price,	\$15.00
60 " " 6 " 9 "	x 8 1/2 "	x 5 1/4 "	" "	" "	" "	22.50
60 " " 8 " 9 "	x 8 1/2 "	x 7 "	" "	" "	" "	30.00

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

VESTA ACCUMULATOR CO.,

336 Michigan Avenue, - - - - - CHICAGO.

THE MARMON CAR



Peerless Direct Drive Touring Cars

For 1905

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

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**Simplicity of Construction—Perfection of Control—
Absolutely Dependable**

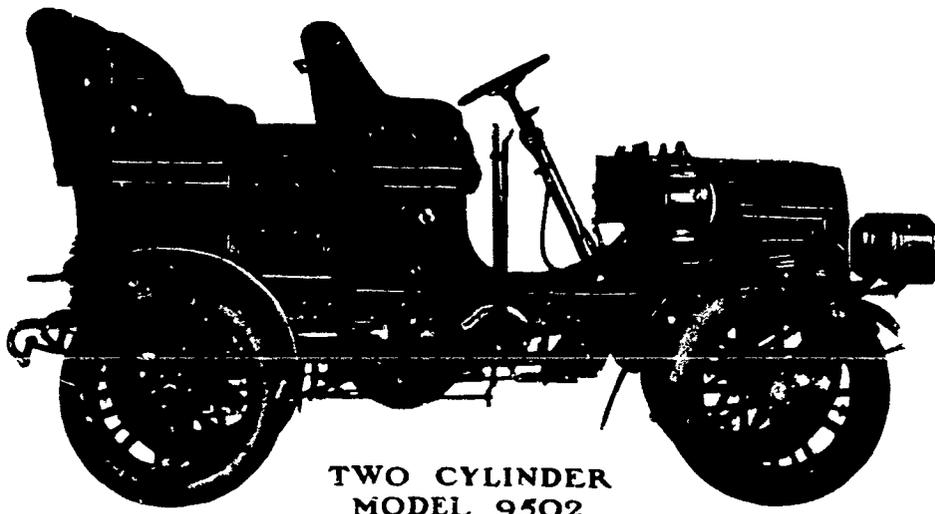
Catalogue now ready.

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 lights, 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.

Finish. In upholstery and appointments it is fully equal to the highest priced cars.

Wheels, Axles and Chains. A 10,000 mile test applied to each of several cars selected at random, brought no accident and revealed no flaws. **Every part of this car is "Studebaker" quality.**

Special Features. The least vibration in any car of its class. All working parts easily accessible and well protected. Light feed oil-r on dash keeps all engine bearings thoroughly lubricated. Ample locker space for baggage.

Control. The method of control is the simplest and surest known in automobile practice, and is within the ready comprehension of a woman or inexperienced person. An improved form of planetary change gear extremely durable and free from noise is used. Speed may be regulated at will by a foot lever, leaving both hands free for steering. The steering gear is of an improved irreversible type with provision for taking up wear. Brakes act both on rear axle and rear wheel hubs. One turn of the crank starts the engine. For complete details write for catalogue.

The Studebaker Electric Victoria Phaeton and the Studebaker Four Cylinder Gasoline Car, 1905 Models, are ready. Each is without exception the handsomest machine of its type ever constructed.

Studebaker Automobile Co., South Bend, Ind.

Member Association Licensed Automobile Manufacturers

BRANCH HOUSES

- New York City, Broadway & 7th Ave. at 48th St
- Denver, Col. cor. 15th & Blake Sts
- Chicago, Ill. 375-388 Wabash Ave
- Salt Lake City, Utah, 157-159 State St
- Kansas City, Mo. 810-814 Walnut St
- Portland, Ore. 330-336 E. Morrison St
- San Francisco, Cal. cor. Market & 10th Sts.
- Dallas, Texas. 317-319 Elm St

AGENCIES IN ALL PRINCIPAL CITIES

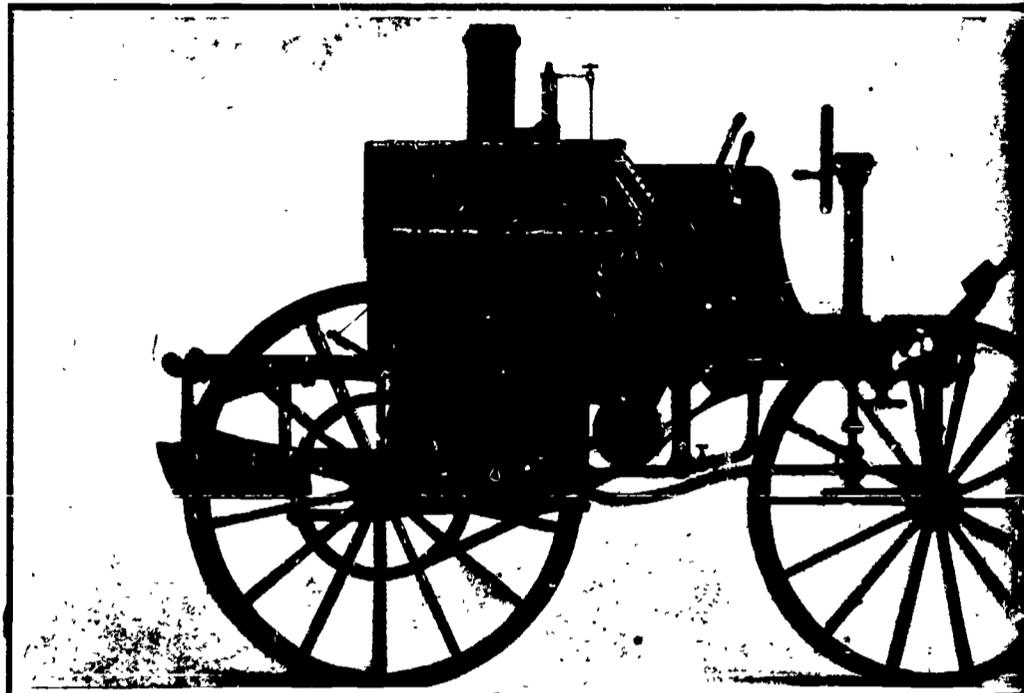


None of these cars had windshields.

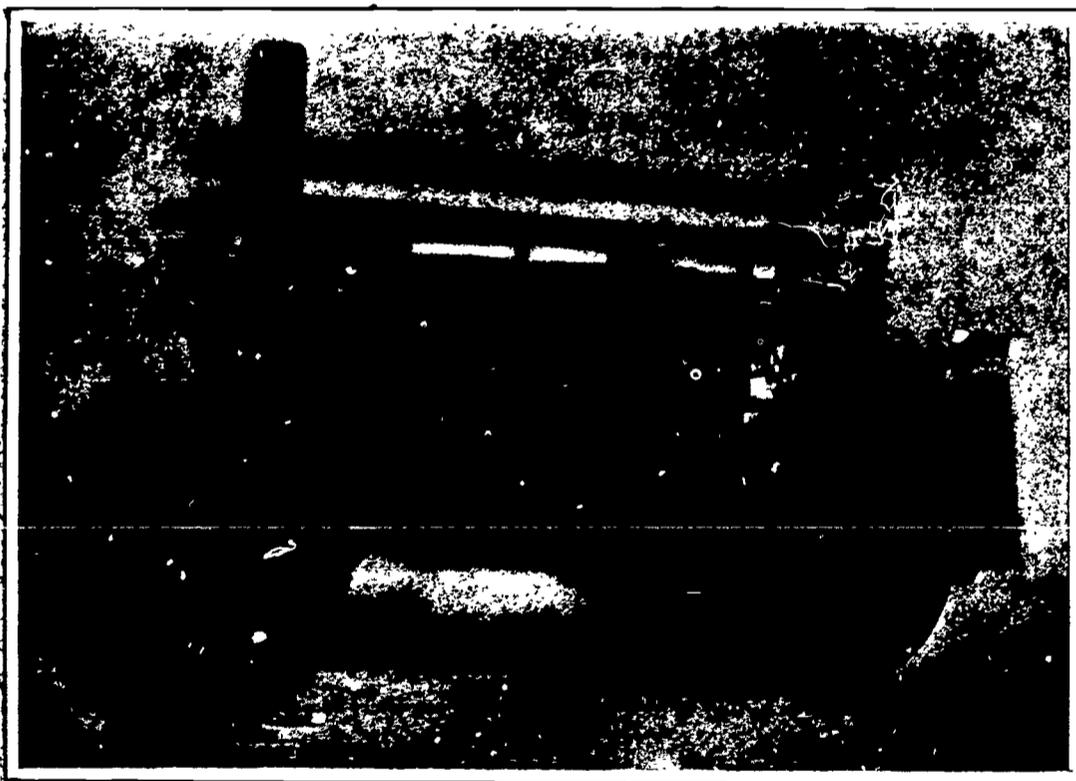
CARS



A. L. Biker'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 1855.

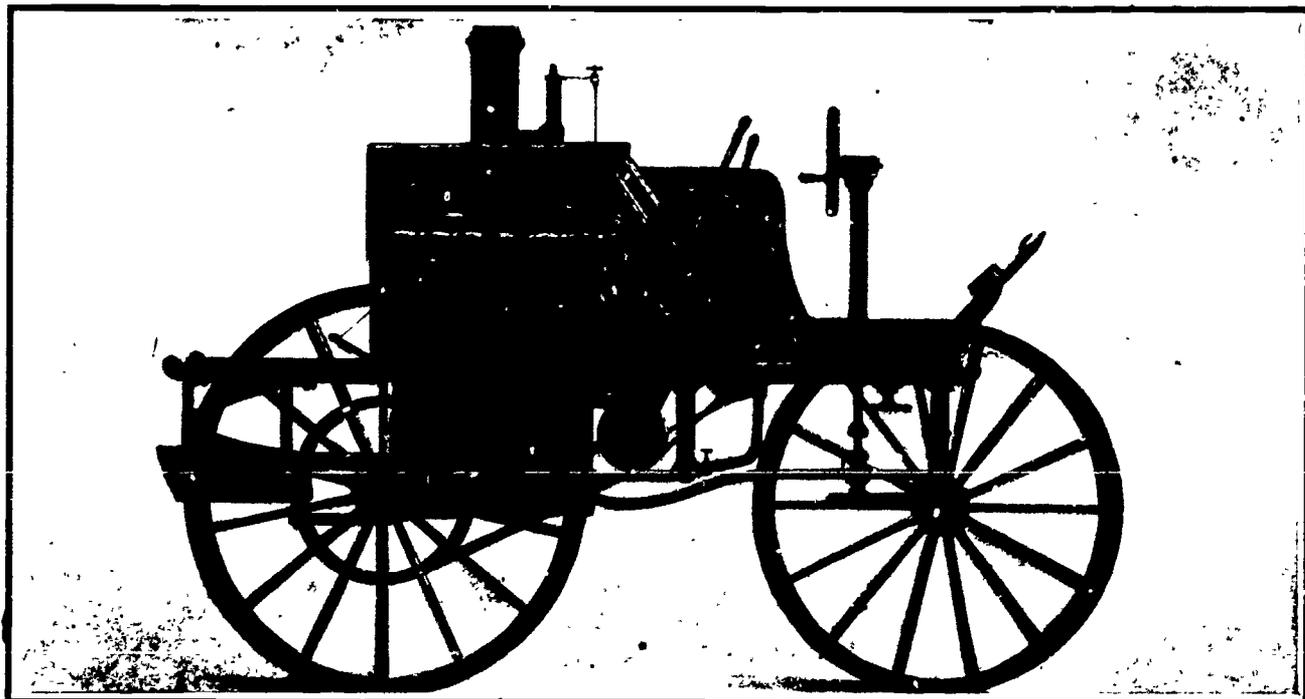


Mr. R. E. Olds' First Gasoline Machine.
The 5-horse-power motor and 3-speed transmission were arranged





Electric Tricycle, Built Twenty Years Ago.
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 1855.

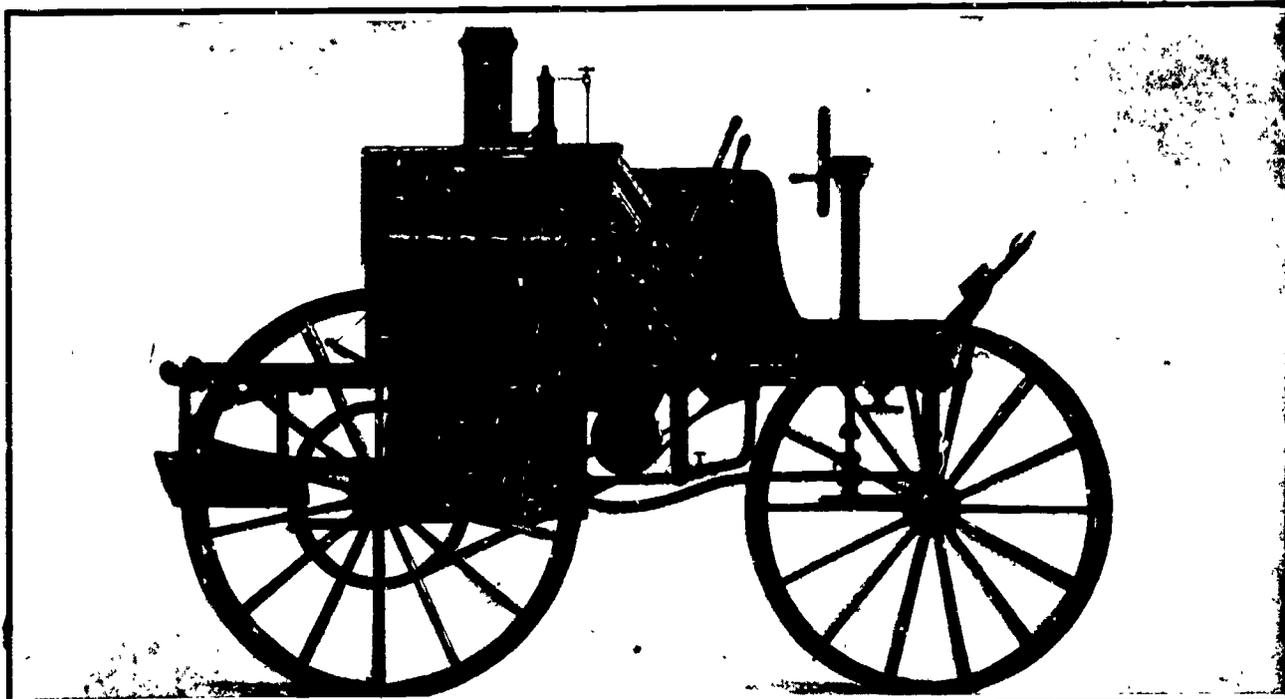


Mr. R. E. Olds' First Gasoline Machine, Built in 1896.
The 5-horse-power motor and 3-speed transmission were arranged on the running gear.

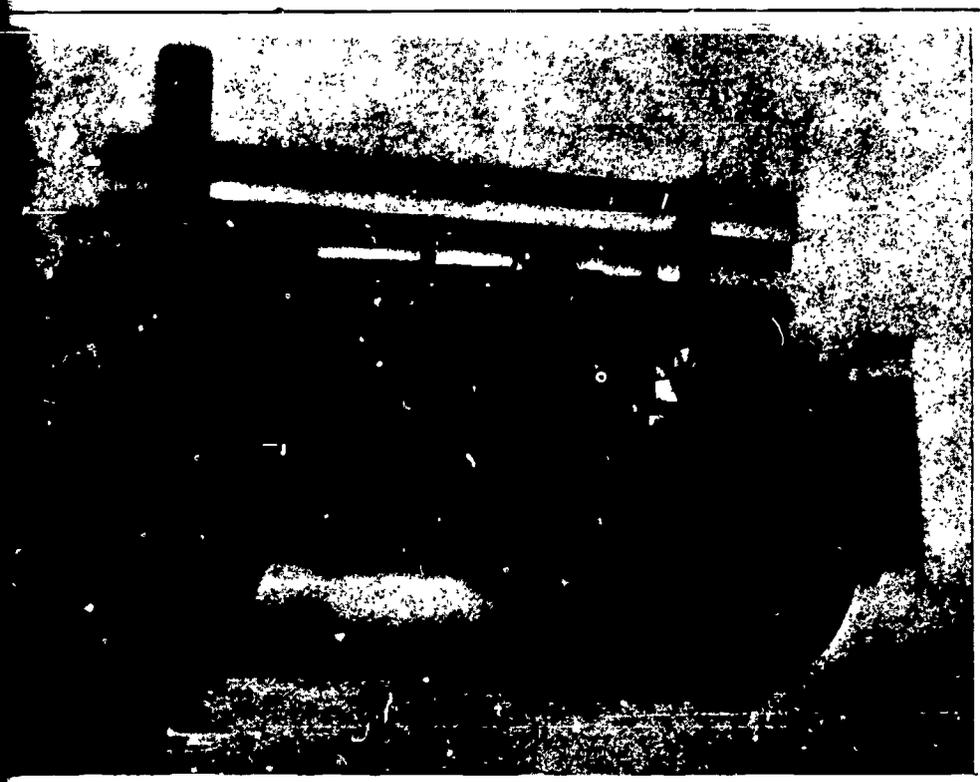




Maker's Electric Tricycle, Built Twenty Years Ago.
A small battery motor drove the large wheel by friction



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



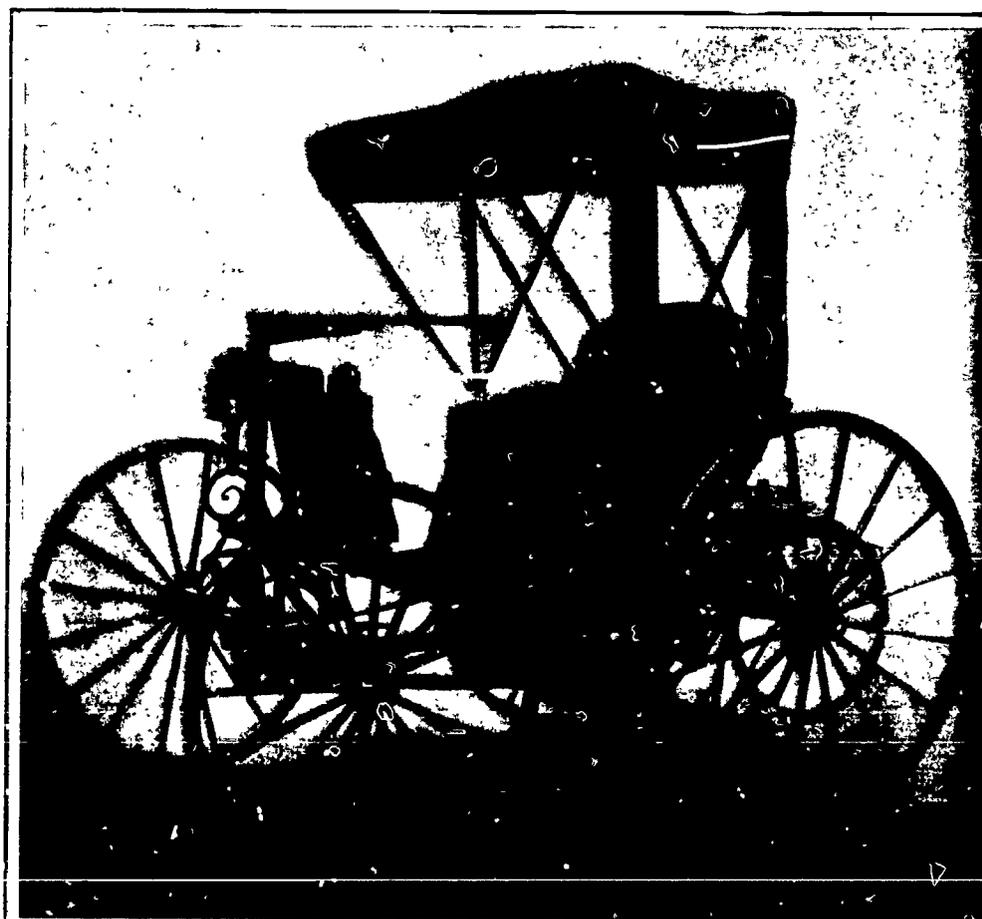
Richard Dudgeon's Steam Road Car, Built in 1860.
The original machine, of which this is a duplicate, was constructed in 1855.



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.



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



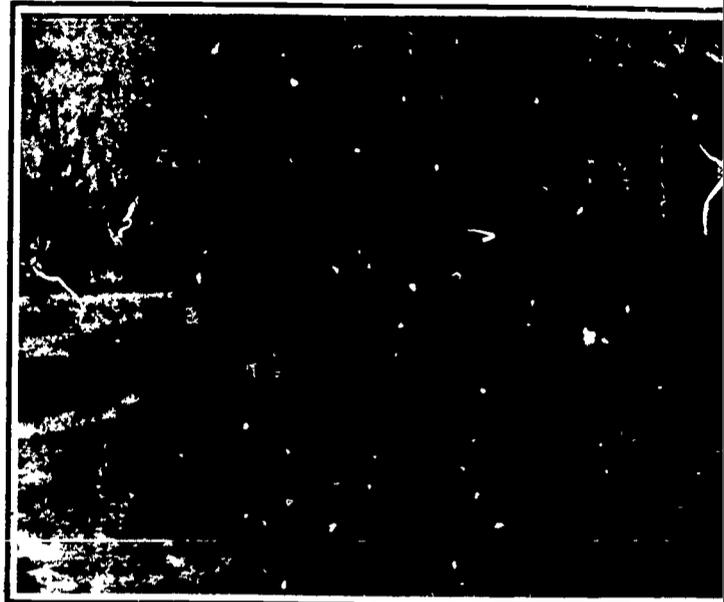
One of Mr. Charles E. Duryea's Oldest Gasoline Machines, Built in 1885.

CARS



The 30-Horse-Power Studebaker Touring Car.

Engine: $4\frac{1}{2} \times 5\frac{1}{4}$, 4-cylinder, water-cooled; make-and-break igniters with magneto. Transmission: 3-speed progressive type. Clutch: Cone. Drive: Shaft. Weight: 2,400 pounds. Wheel base: 104 inches. Tires: 34×4 .



The 45-Horse-Power Royal Tourist Limousine

Engine: $5\frac{1}{2} \times 5\frac{1}{4}$, 4-cylinder, water-cooled. Transmission: 3-speed selective. Weight: 3,700 pounds. Wheel base: 114 inches. Tires: 34×4 .



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

Engine: $4\frac{1}{2} \times 5\frac{1}{4}$, 4-cylinder, air cooled with blower. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,950 pounds. Wheel base: 98 inches. Tires: Solid, $32 \times 3\frac{1}{2}$.



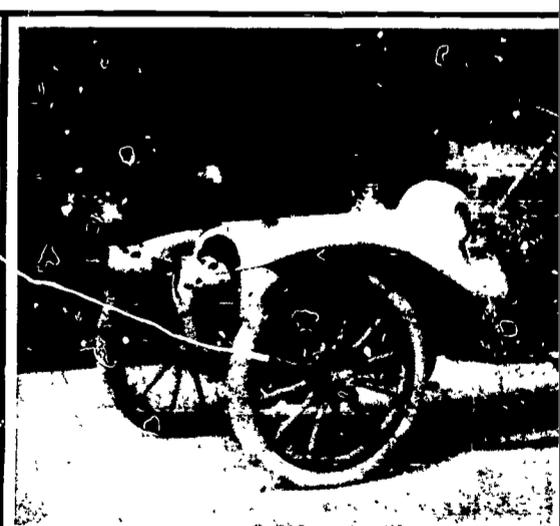
The New 20-Horse-Power Cadillac Light Touring Car

Engine: $4 \times 4\frac{1}{2}$, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,000 pounds. Wheel base: 100 inches. Tires: 32×4 .



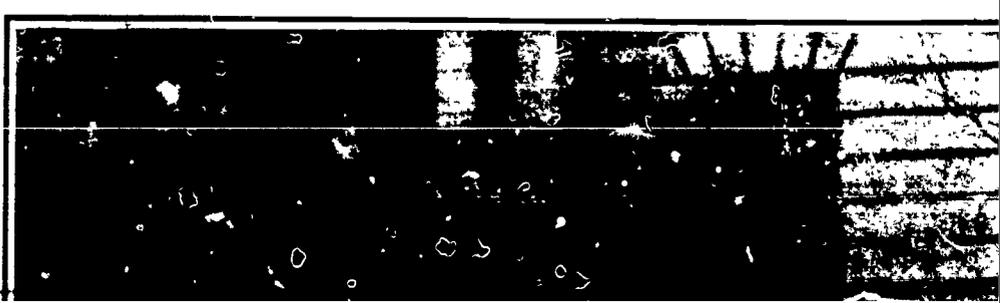
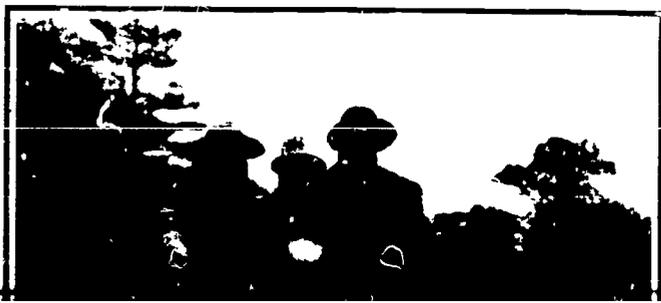
The Locomobile 85-Horse-Power, 7-Passenger Touring Car.

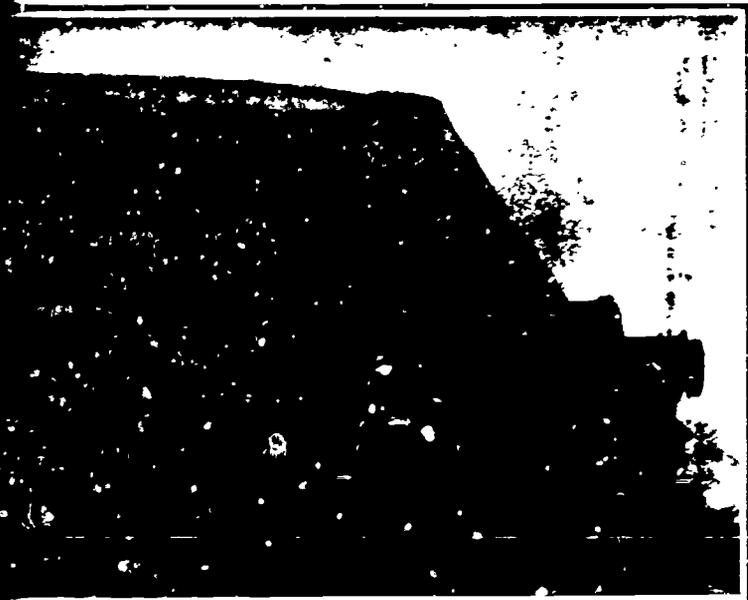
Engine: $4\frac{1}{2} \times 5\frac{1}{4}$, 4-cylinder, water-cooled; low-tension magneto ignition. Transmission: 4 speed selective type. Clutch: Cone. Drive: Double side chain. Weight: 2,800 pounds. Wheel base: 120 inches. Tires: Front, 34×4 ; rear, $34 \times 4\frac{1}{2}$.



The 20-Horse-Power Aerocar

Engine: 4×4 , 4-cylinder, air-cooled. Transmission: 3-speed selective type. Drive: Shaft. Weight: 2,100 pounds. Wheel base: 90 inches. Tires: 32×4 .





The 30-Horse-Power Studebaker Touring Car.

Engine: 4 cylinder, water-cooled; make-and-break igniters with magneto. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,400 pounds. Wheel base: 114 inches. Tires: 34 x 4 1/4.



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

Engine: 5 1/2 x 5 1/4 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 3,700 pounds. Wheel base: 114 inches. Tires: 34 x 4 1/4.



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

Engine: 4 cylinder, air-cooled with blower. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,950 pounds. Wheel base: 96 inches. Tires: Solid, 32 x 3 1/4.



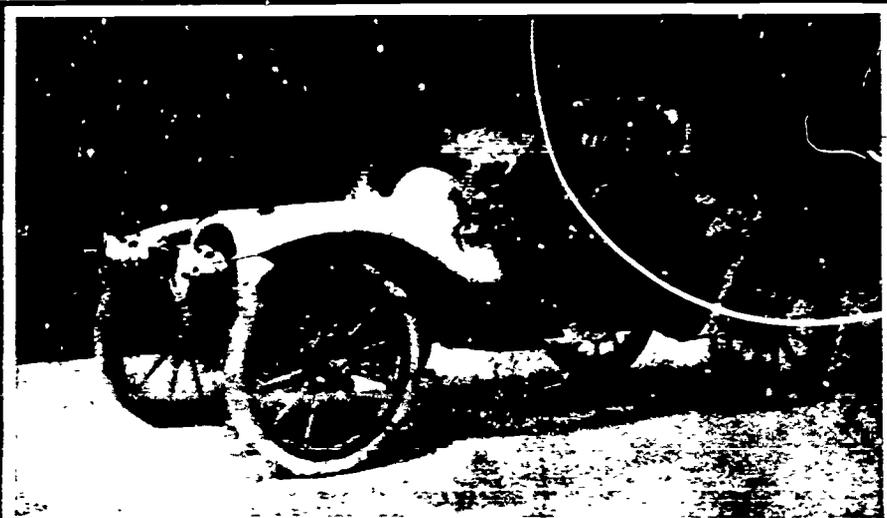
The New 20-Horse-Power Cadillac Light Touring Car.

Engine: 4 x 4 1/4 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,000 pounds. Wheel base: 100 inches. Tires: 32 x 3 1/4.



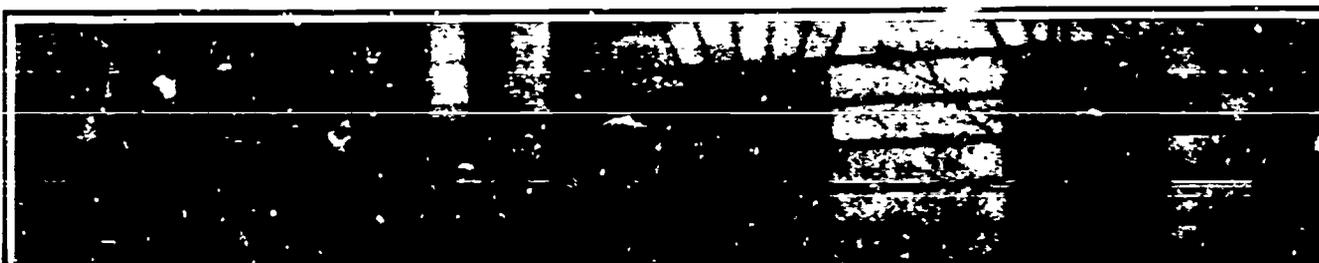
The Locomobile 85-Horse-Power, 7-Passenger Touring Car.

Engine: 4 cylinder, water-cooled; low-tension magneto ignition. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,900 pounds. Wheel base: 120 inches. Tires: Front, 34 x 4; rear, 34 x 4 1/4.



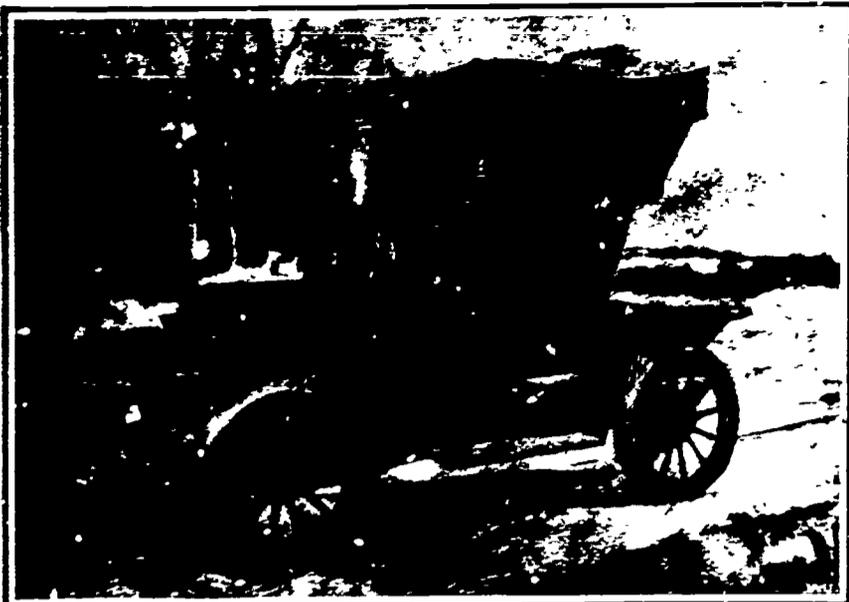
The 20-Horse-Power Aerocar Runabout.

Engine: 4 x 4 4-cylinder, air-cooled. Transmission: 3-speed progressive type. Clutch: Multiple-disk. Drive: Shaft. Weight: 2,100 pounds. Wheel base: 104 inches. Tires: 32 x 3 1/4.



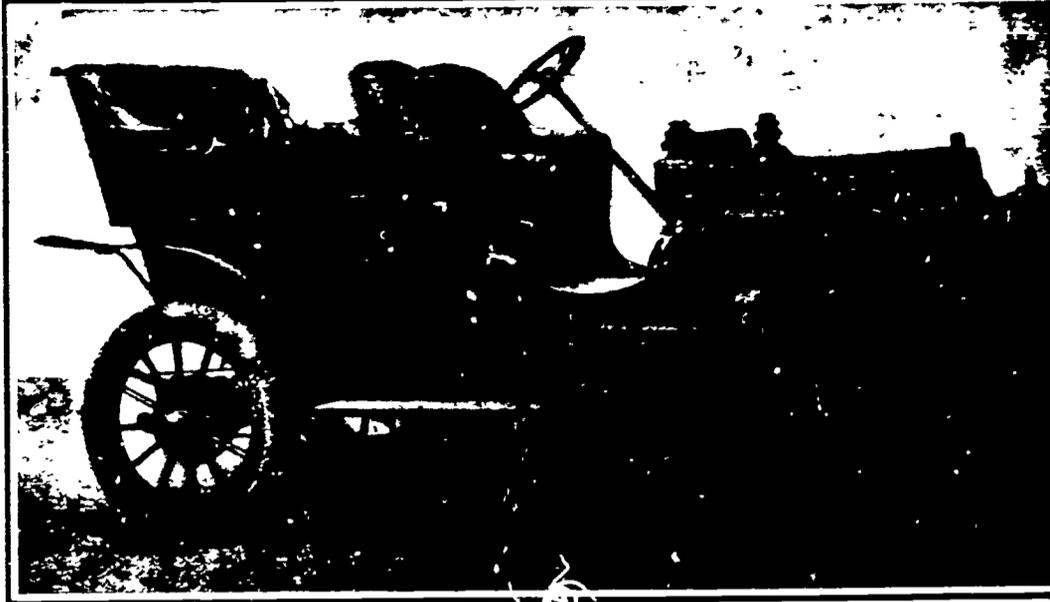
The 30-Horse-Power Studebaker Touring Car.

Engine: 4 1/2 x 5 1/2, 4-cylinder, water-cooled; make-and-break ignition with magnets. Transmission: 3-speed progressive type. Clutch: Cone. Drive: Shaft. Weight: 2,400 pounds. Wheel base: 114 inches. Tires: 34 x 4.



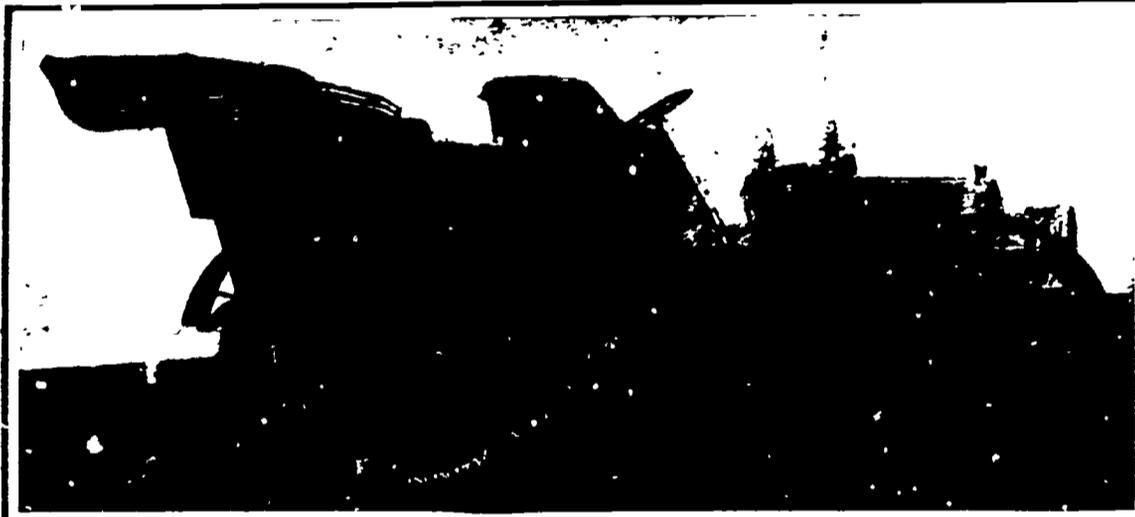
The 45-Horse-Power Royal Tourist Limousine for Winter Use.

Engine: 4 1/2 x 5 1/2, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 3,700 pounds. Wheel base: 114 inches. Tires: 34 x 4 1/2.



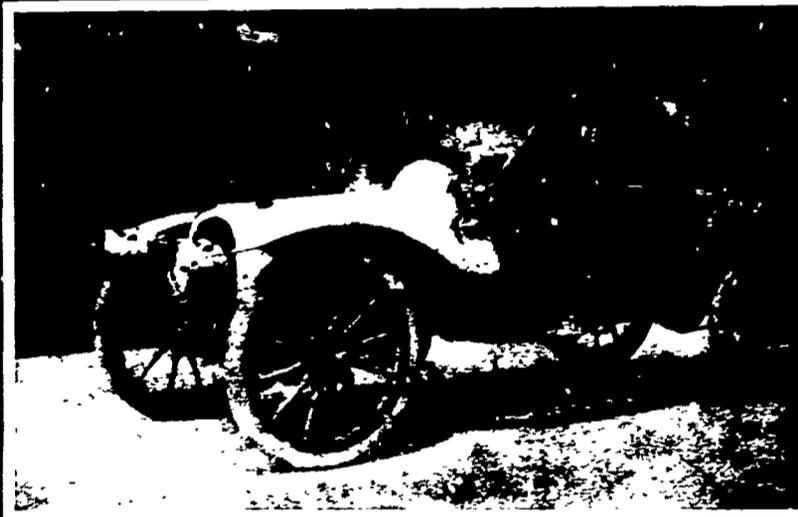
The Frayer-Miller 24-Horse-Power Coupé With Driver's Seat Behind.

Engine: 4 1/2 x 5 1/2, 4-cylinder, air-cooled with blower. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,350 pounds. Wheel base: 96 inches. Tires: Solid, 32 x 3 1/2.



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

Engine: 4 x 4 1/2, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,000 pounds. Wheel base: 100 inches. Tires: 32 x 3 1/2.



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

Engine: 4 1/2 x 5 1/2, 4-cylinder, water-cooled; low-tension magneto ignition. Transmission: 4 speed selective type. Clutch: Cone. Drive: Double side chain. Weight: 2,800 pounds. Wheel base: 120 inches. Tires: Front, 34 x 4; rear, 34 x 4 1/2.



The 20-Horse-Power Aerocar Runabout.

Engine: 4 x 4, 4-cylinder, air-cooled. Transmission: 3-speed progressive type. Clutch: Triple-disk. Drive: Shaft. Weight: 2,100 pounds. Wheel base: 104 inches. Tires: 32 x 3 1/2.



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

Engine: 2 1/2 x 3 1/2, 4-cylinder, water-cooled. Transmission: 3-speed progressive type. Clutch: Cone. Drive: Shaft. Weight: 1,700 pounds. Wheel base: 86 inches. Tires: 30 x 3 1/2.

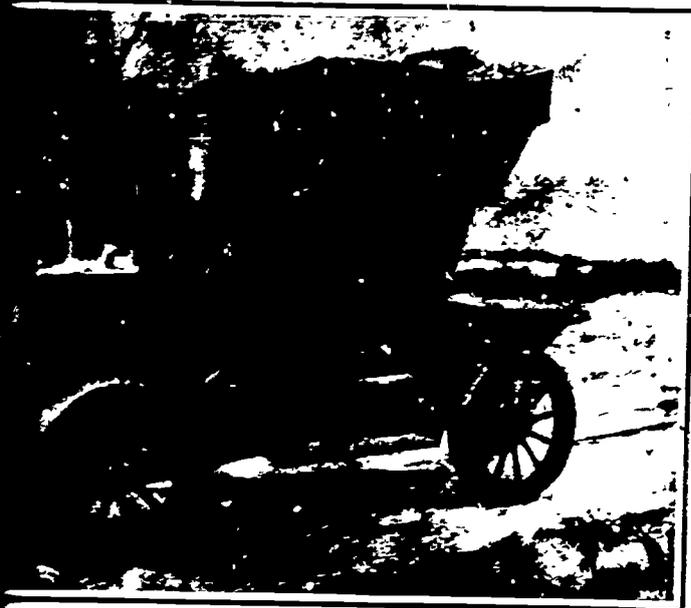


The New White 80-Horse-Power Steam Touring Car With Pullman Body.

Engine: Compound with cylinders of 3 and 6 inch bore by 4 1/2 inches stroke. Boiler: Flash type maintaining steam pressure constant. Weight: 2,000 pounds. Wheel base: 115 inches. Tires: Front, 36 x 4; rear, 36 x 4 1/2. The new method of closing the top of the fenders and covering the body by means of patent leather strips secured by lacing or buttons, is shown in the photograph. New type of square oil lamps are also to be noted.

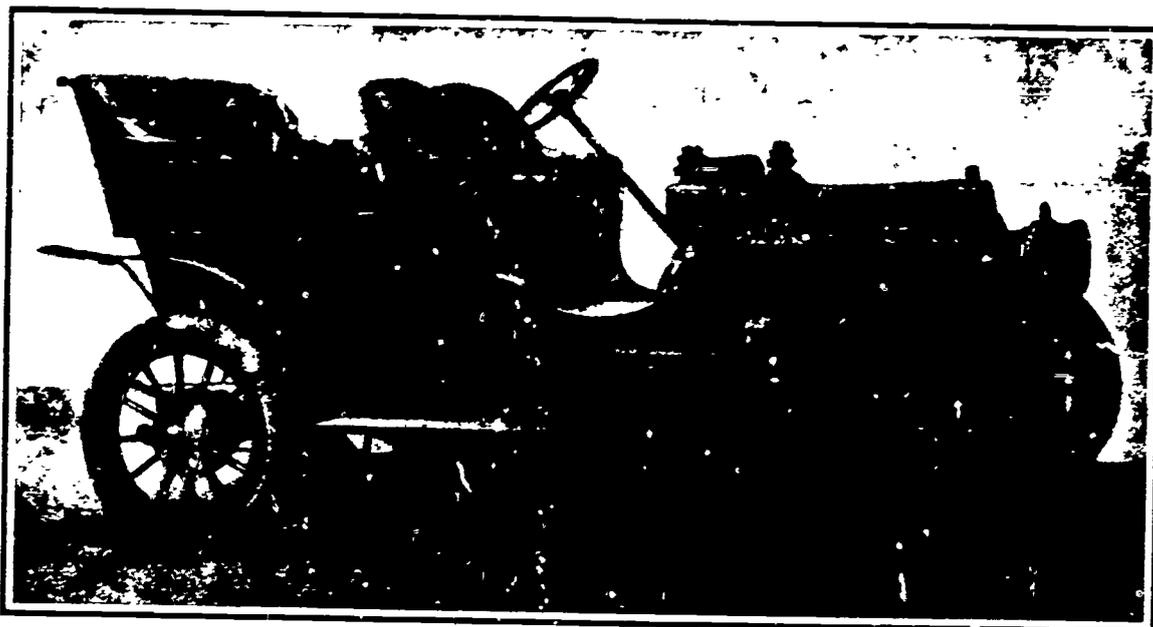
The 30-Horse-Power Studebaker Touring Car.

4-cylinder, water-cooled, make-at-break ignition with magnets. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,400 pounds. Wheel base: 114 inches. Tires: 34 x 4.



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

Engine: 4 x 4, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 3,500 pounds. Wheel base: 114 inches. Tires: 34 x 4 1/4.



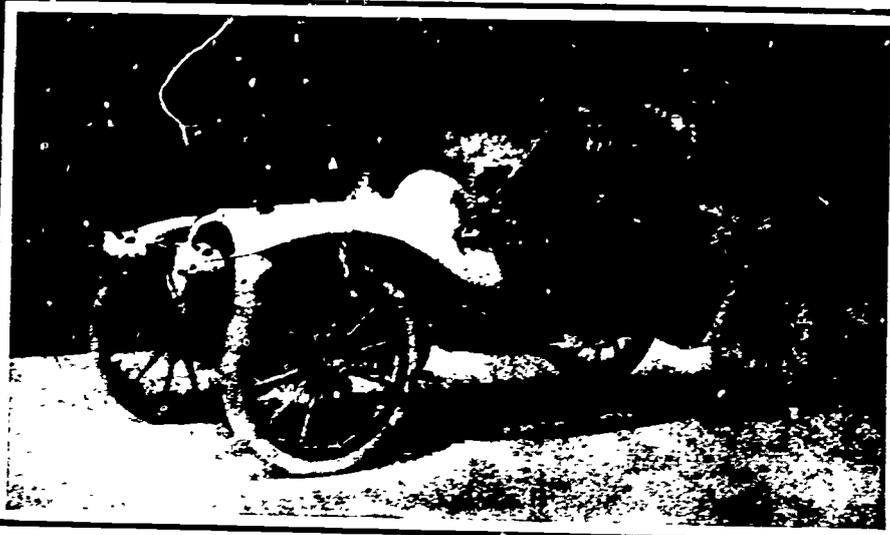
The 24-Horse-Power Coupe With Driver's Seat Behind.

Engine: 4-cylinder, water-cooled with blower. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,950 pounds. Wheel base: 96 inches. Tires: Solid, 32 x 3 1/2.



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

Engine: 4 x 4 1/2, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,000 pounds. Wheel base: 100 inches. Tires: 32 x 3 1/4.



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

Engine: 4-cylinder, water-cooled; low-tension magneto ignition. Transmission: 4 speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,800 pounds. Wheel base: 120 inches. Tires: Front, 34 x 4; rear, 34 x 4 1/2.



The 20-Horse-Power Aerocar Runabout.

Engine: 4 x 4, 4-cylinder, air-cooled. Transmission: 3-speed progressive type. Clutch: Multiple-disk. Drive: Shaft. Weight: 2,100 pounds. Wheel base: 104 inches. Tires: 36 x 3 1/4.



The New Maxwell Touring Car Which Ran Without Stopping the Engine.

Engine: 5-cylinder compound type, water-cooled. Transmission: 4-speed selective type. Clutch: Cone. Drive: Shaft. Weight: 2,800 pounds. Wheel base: 80 inches. Tires: 30 x 3 1/4.

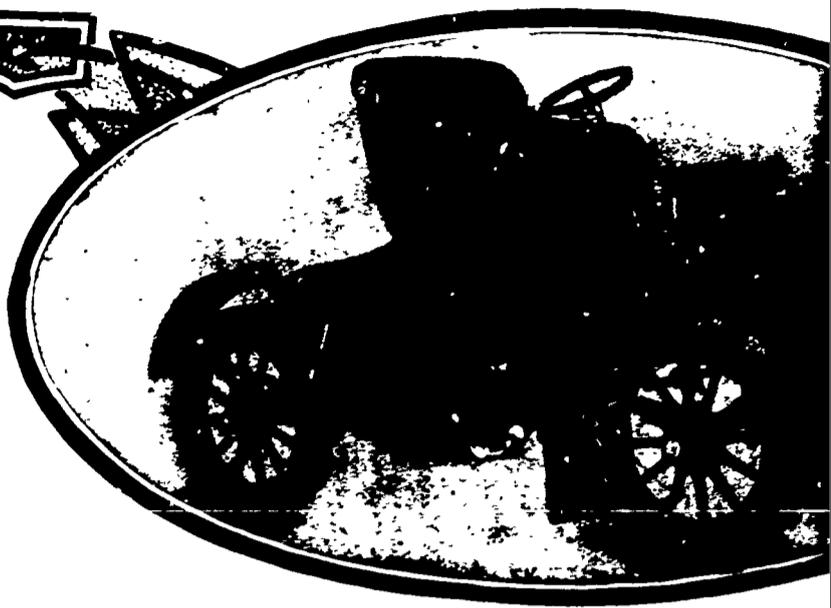
The New White 80-Horse-Power Steam Touring Car With Pullman Body.

Engine: Compound with cylinders of 5 and 6 inch bore or 4 1/2 inch stroke. Boiler: Flash type maintaining steam pressure constant at 600 pounds. Weight: 3,000 pounds. Wheel base: 115 inches. Tires: Front, 36 x 4; rear, 36 x 4 1/4. The new method of closing the space between the fenders and running board and the body by means of patent leather strips secured by lacing or buttons, is shown in the photograph. The new type of square oil lamps are also to be noted.

SOME LEADING TYPES OF 1907 AUTOMOBILES.

ADVERTISEMENT

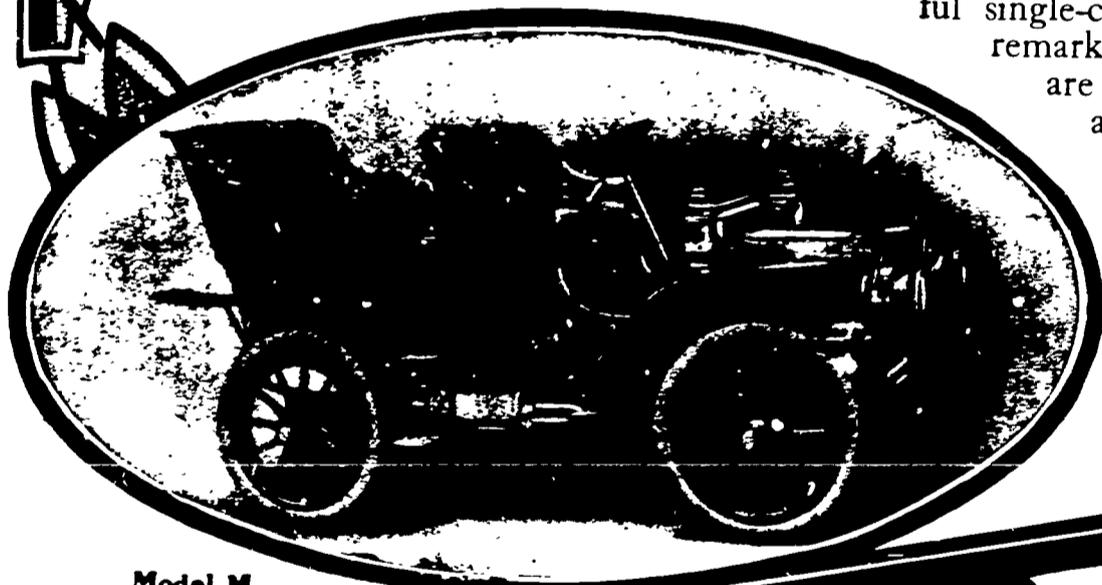
What You Get When You Get a CADILLAC



You get a car as scientifically designed and as perfectly finished as if the reputation of the 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, 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 in 1907 practically without change—a fact which alone places the serviceableness of these cars beyond question.

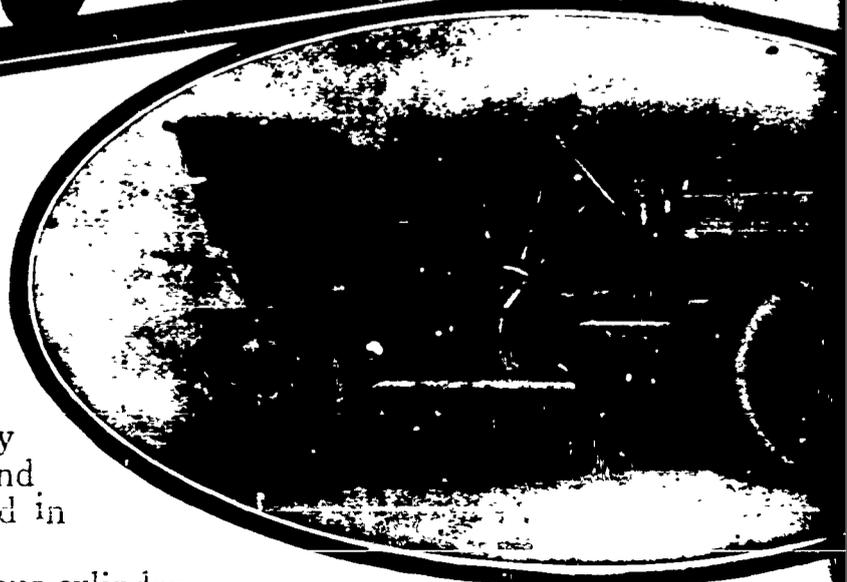


Model M,
\$950

CADILLAC

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 characterizes the Cadillac was scarcely possible until the development of equipment and system so marvelously efficient as those found in the Cadillac factory.

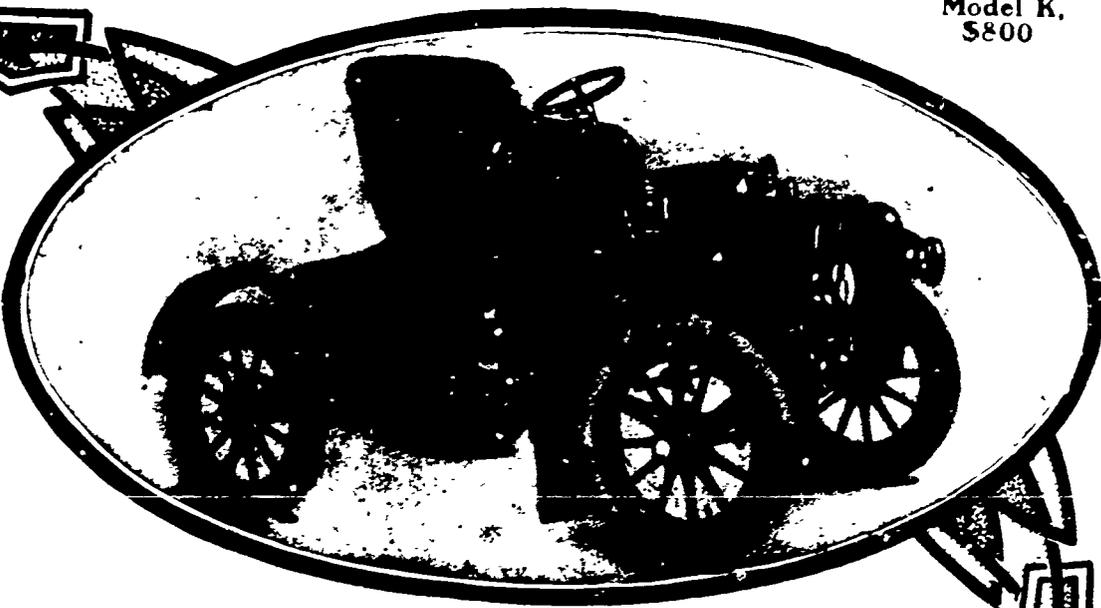
Simplicity is a cardinal virtue with these four-cylinder wonders, a feature which every operator will appreciate. Add to this, thorough dependability in all weather or road conditions, ease of control truly surprising, comfort of riding not surpassed in any vehicle, power that will negotiate the steepest grade or furnish ample speed, and you have the quality



ADVERTISEMENT

Model K.
\$800

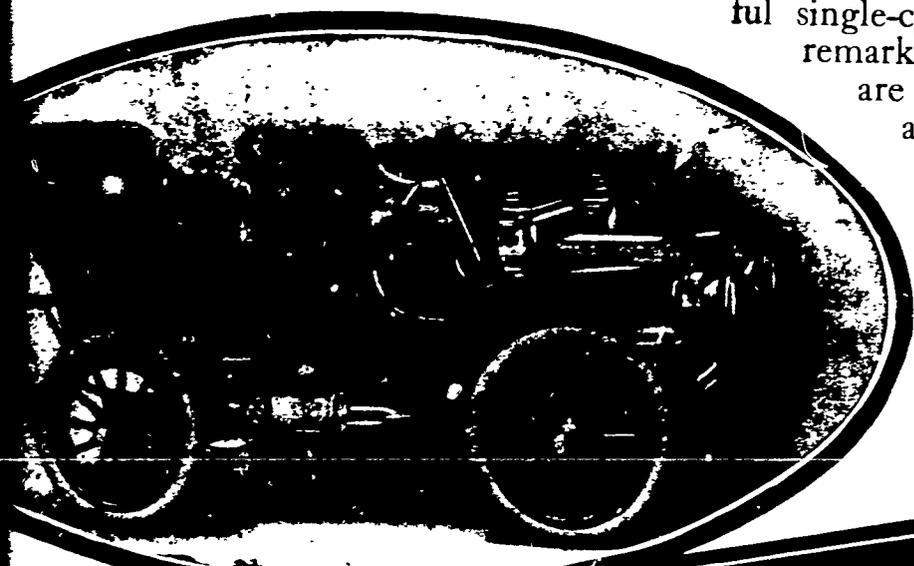
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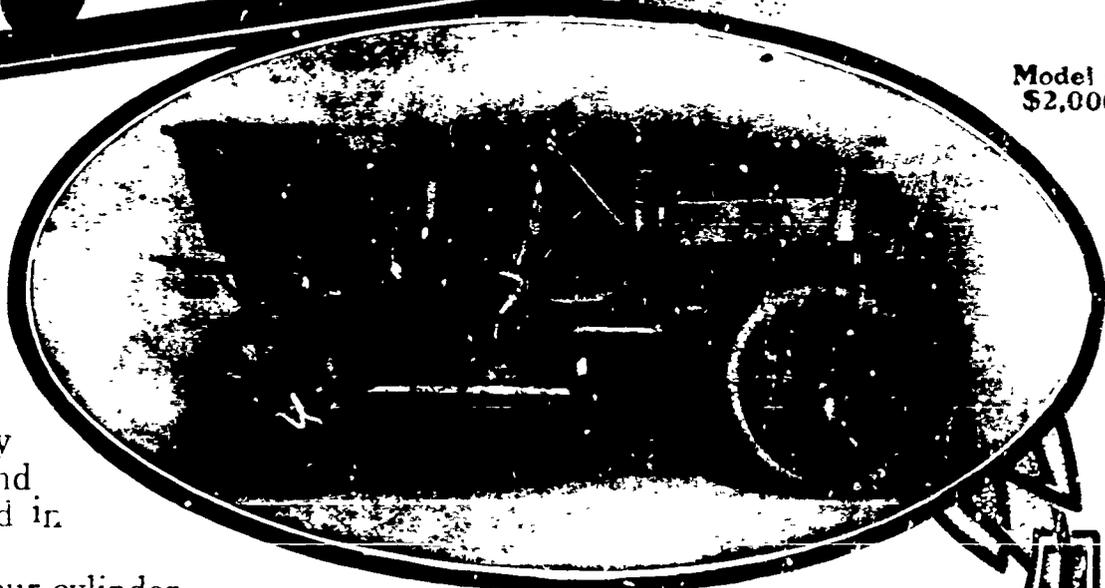
The Cadillac Runabout (Model K) and Light Touring Car (Model M) are fitted with our wonderful single-cylinder engine, to which the dependability and remarkably low cost of maintenance of these models are chiefly attributable. By its great power, speed and hill-climbing ability, this engine has proved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



Model M.
\$1,500

CADILLAC

Model G.
\$2,000



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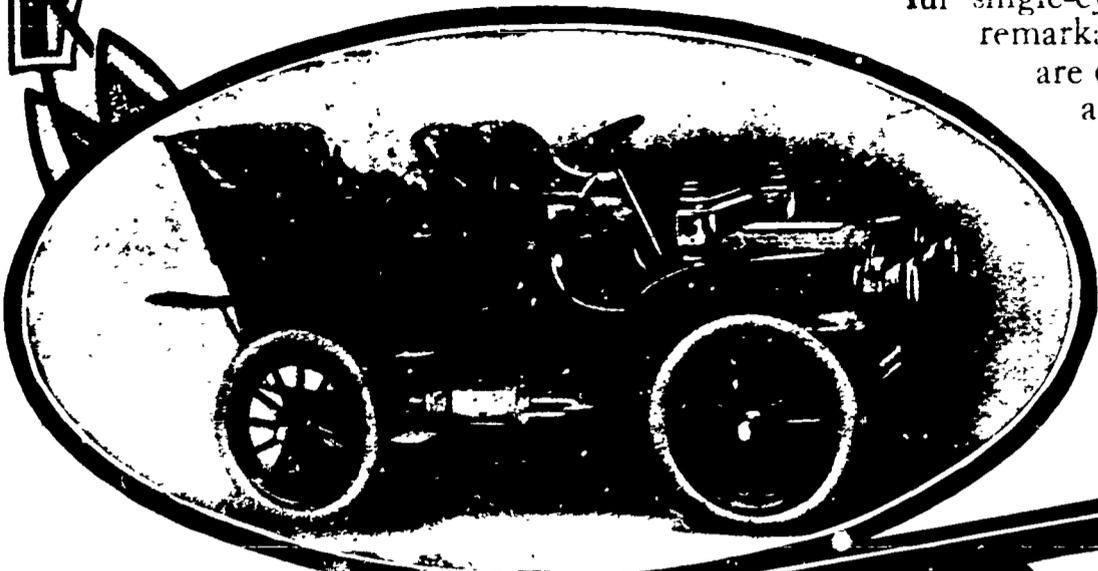
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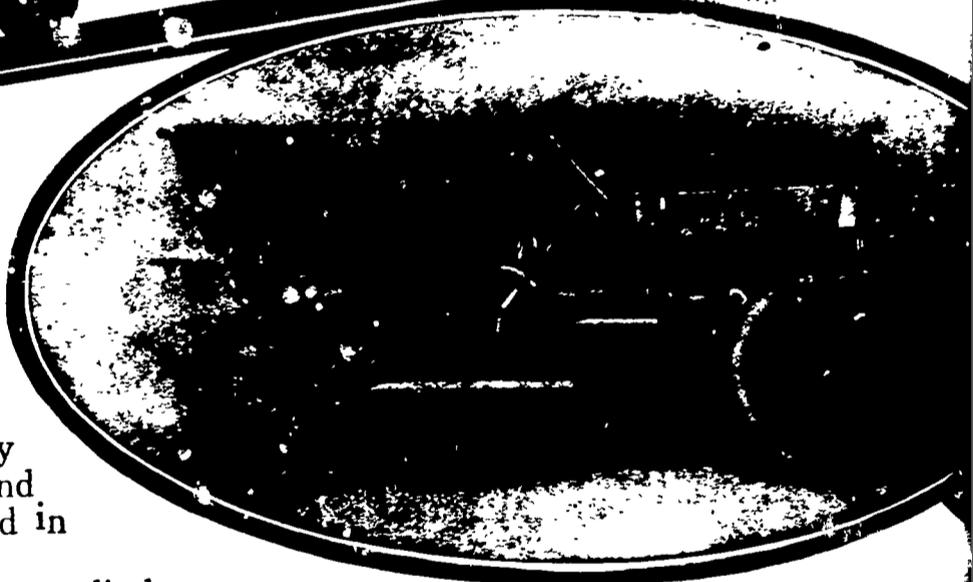
Model M,
\$950

CADILLAC

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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 not surpassed in any other vehicle, power that will negotiate the steepest grade or furnish ample speed, and you have the qualities which make the Cadillac a car that is essentially one of unfailing service, not only day after day, but year after year.

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,
\$2,500

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} _{victoria body} \$950
(Described in Catalogue M N)

Model K, 10 h.p. Runabout \$800
(Described in Catalogue M N)

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.

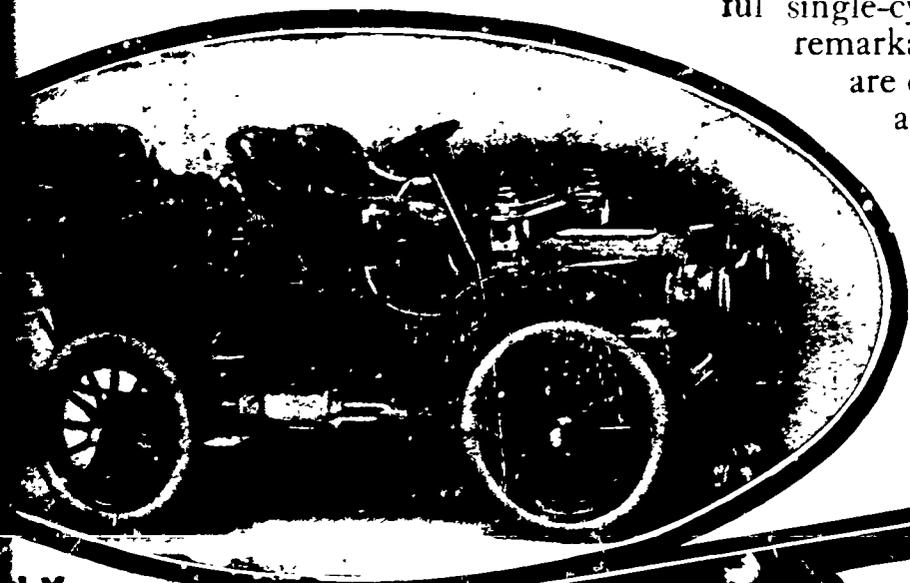
Member A. L. A. M.

CADILLAC

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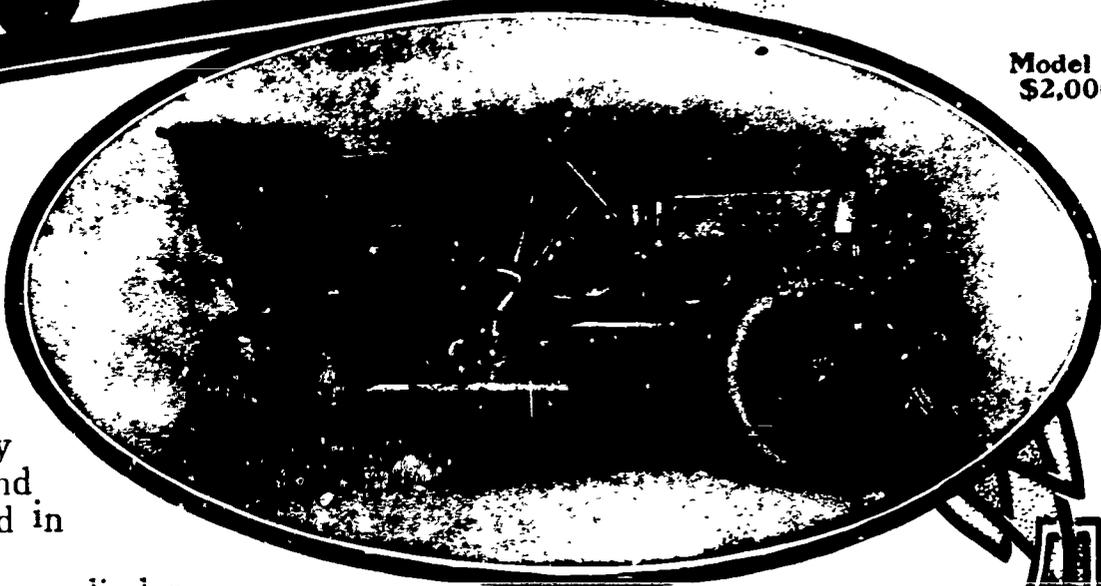
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M.
30

CADILLAC

Model G.
\$2,000



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H.
30

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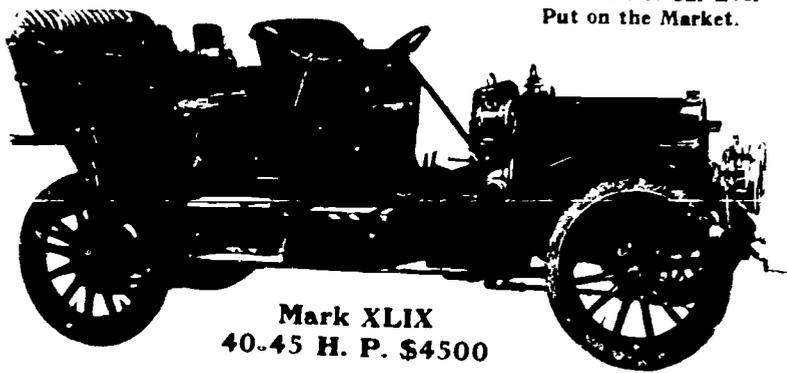
CADILLAC MOTOR CAR CO.
DETROIT, MICH.

Member A. L. A. M.

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Columbia

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 exclusive automobile factory in the world has been centered on two Gasoline Models to make them leaders in all respect.

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.

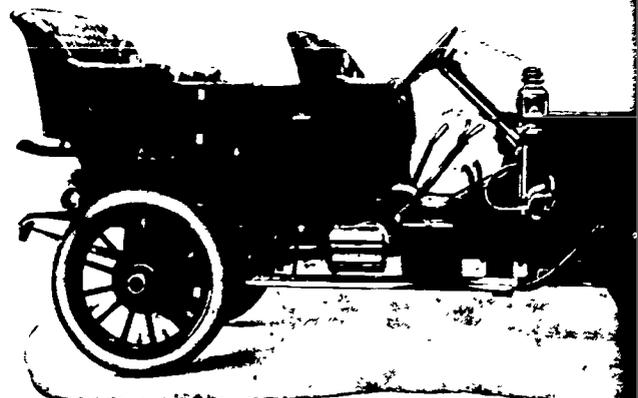
NEW YORK BRANCH: Electric Vehicle Company, 124-126 West 29th St. CHICAGO BRANCH: Electric Vehicle Company, 1222-1224 Michigan Ave. BOSTON: The Columbia Motor Vehicle Company, Trinity Place and Manly St. WASHINGTON: Washington F. V. Transit Co., 15th St. and Ohio Ave. SAN FRANCISCO: Middleton Motor Car Company, 250 Golden Gate Ave.

Member A. L. A. M.

We shall exhibit at Madison Square Garden, New York, Jan. 11th to 19th, 1907, and at the Coliseum, Chicago, Feb. 2d to 9th, 1907.

Wayne

"The car that takes you th



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

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 trouble-free.

Metal body. Exceptionally roomy tonneau.

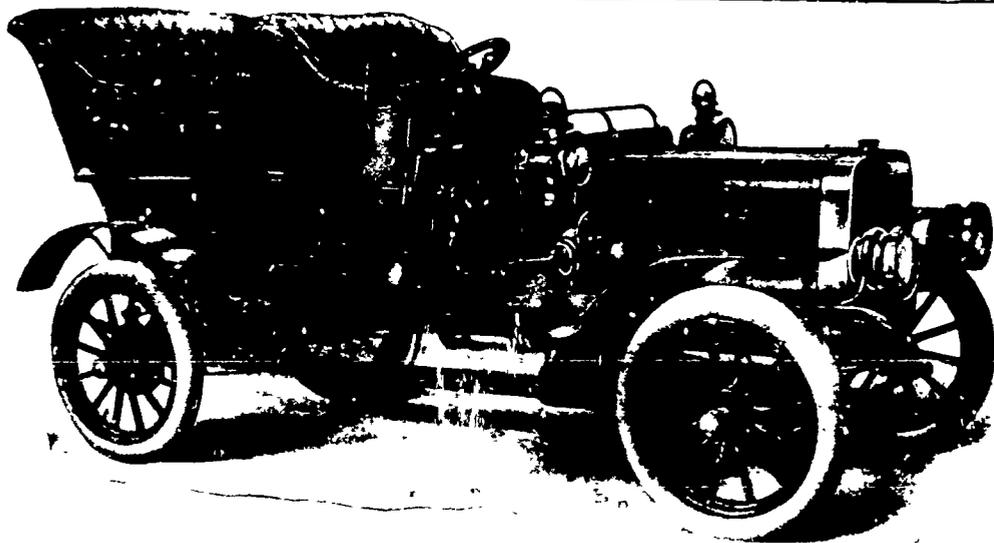
Only the best materials procurable.

Other Waynes are Model R, 50 H. P., touring car with Pullman body, selling at \$3,500, and Model S, 35 H. P., five passenger car, selling at \$2,500—both.

CATALOGUE SENT UPON REQUEST.

WAYNE AUTOMOBILE COMPANY

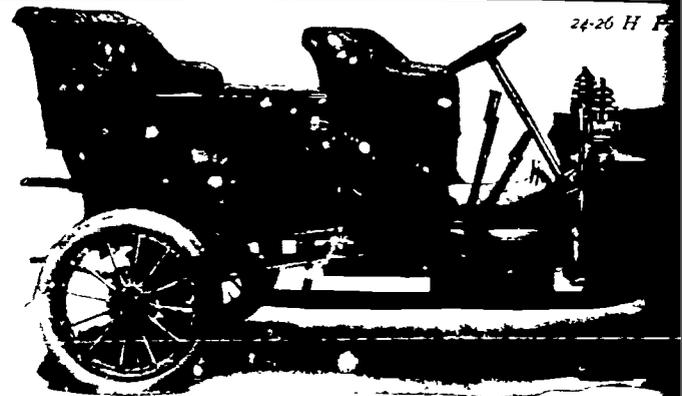
Dept. 10, Detroit, Michigan



1907

OLDSMOBILE

TYPE "B"



The Actual Ability of an Automobile

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

To determine the actual hill-climbing and speeding ability of a car, how much horse power is actually delivered to the rear wheels, then the car when filled to its full capacity, calculate the ratio of actual horse power to the weight of car.

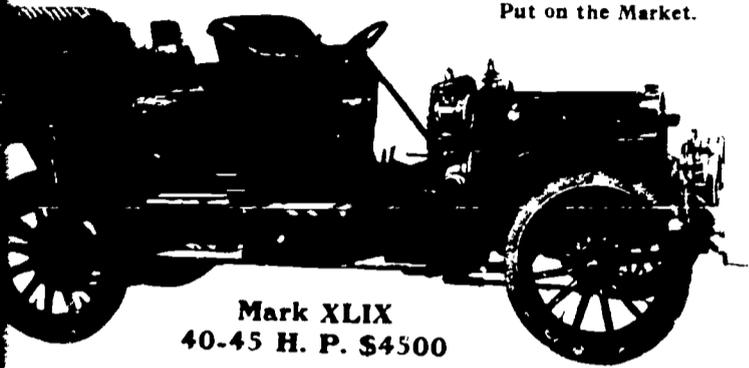


OLDSMOBILE

ADVERTISEMENT

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Put on the Market.



Mark XLIX
40-45 H. P. \$4500

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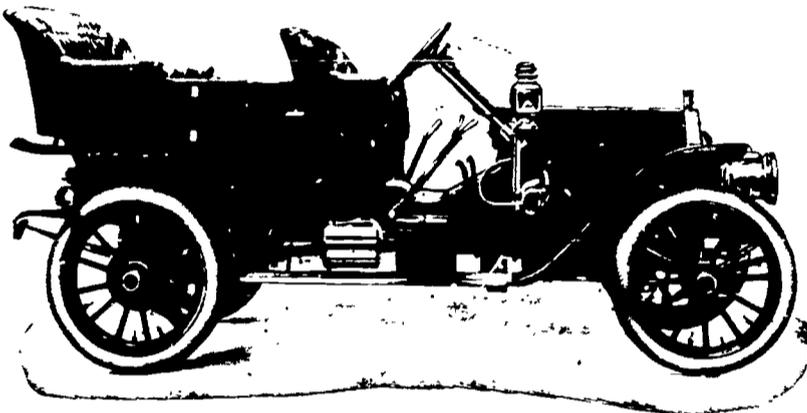
ELECTRIC VEHICLE COMPANY
HARTFORD, CONN.

NEW YORK BRANCH: Electric Vehicle Company, 124-126 West 39th St. CHICAGO BRANCH: Electric Vehicle Company, 1222-1224 Michigan Ave. BOSTON: The Columbia Motor Vehicle Company, Trinity Place and Stanhope St. WASHINGTON: Washington E. V. Trans. Co., 12th St. and Ohio Ave. SAN FRANCISCO: Middleton Motor Car Company, 550 Golden Gate Ave.
Member A. I. A. M.

We shall exhibit at Madison Square Garden, New York, Jan. 12th to 19th, 1907, and at the Coliseum, Chicago, Feb. 2d to 9th, 1907.

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.

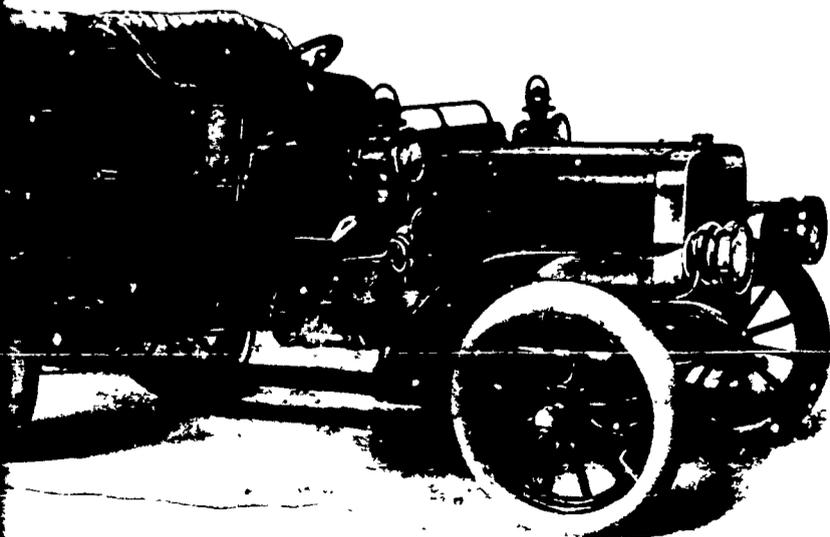
Only the best materials procurable.

Other Waynes are Model R, 50 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.

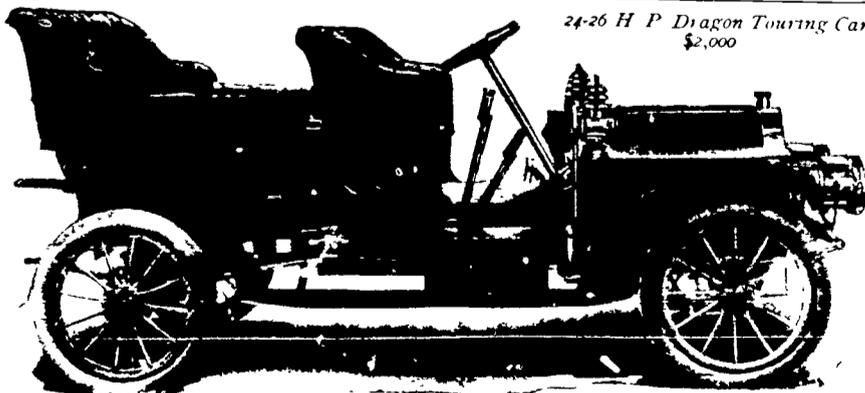
CATALOGUE SENT UPON REQUEST.

WAYNE AUTOMOBILE COMPANY

Dept. 10, Detroit, Michigan



07 **DETHLEFSEN**
TYPE "B"



24-26 H. P. Dragon Touring Car
\$2,000

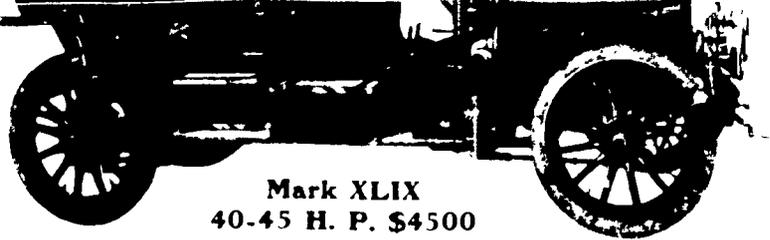
The Actual Ability of an Automobile

"28-30 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.



DRAGON



Mark XLIX
40-45 H. P. \$4500

SMARTNESS of style—the most graceful outlines and proportions—we 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 durability, smoothness of operation, and speed.

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

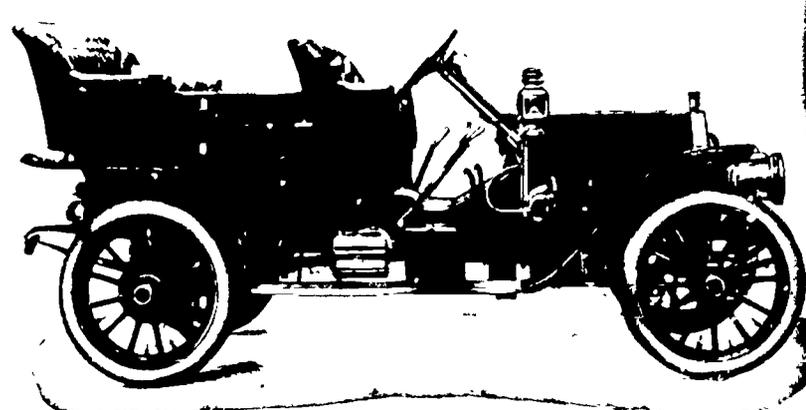
In 1907 Columbia four-cylinder cars, both 40-45 H. P. and 24-28 H. P. models, Chrome Nickel Steel will be found *in fact* as well as in name. Practically all the genuine crucible-made Chrome Nickel Steel produced in America for Automobile use was secured for the Columbia Cars. The use of this, the toughest 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.**

NEW YORK BRANCH: Electric Vehicle Company, 134-136 West 30th St. CHICAGO BRANCH: Electric Vehicle Company, 1232-1234 Michigan Ave. BOSTON: The Columbia Motor Vehicle Company, Trinity Place and State St. WASHINGTON: Washington E. V. Transportation Co., 15th St. and Ohio Ave. SAN FRANCISCO: Mission Motor Car Company, 550 Golden Gate Ave.
Member A. I. A. M.

We shall exhibit at Madison Square Garden, New York, Jan. 12th to 19th, 1907, and at the Coliseum, Chicago, Feb. 1st to 9th, 1907.



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

Selective type sliding gear transmission, located on rear axle.

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

All working parts easily accessible.

Simplicity and strength making it trouble proof.

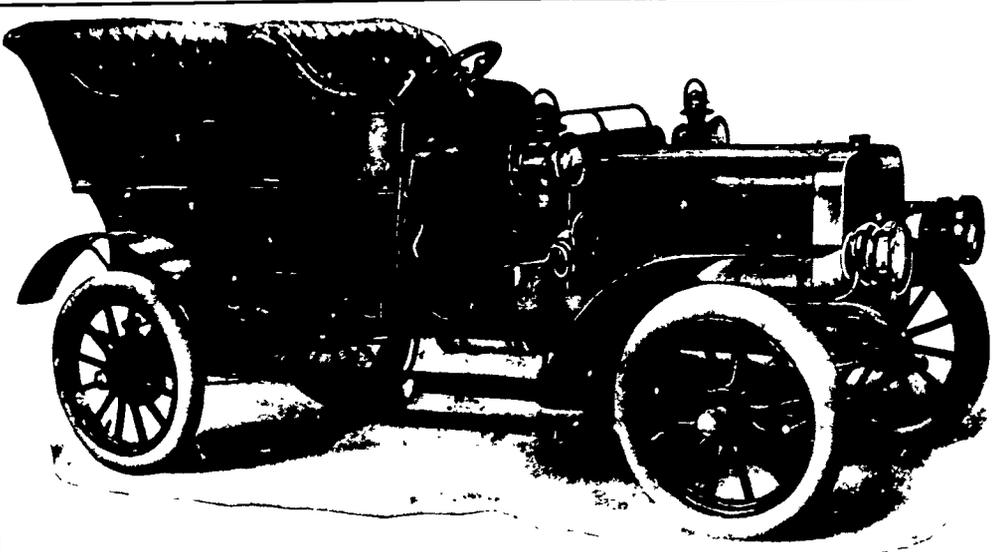
Metal body. Exceptionally roomy tonneau.

Only the best materials procurable.

Other Waynes are Model R, 50 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**



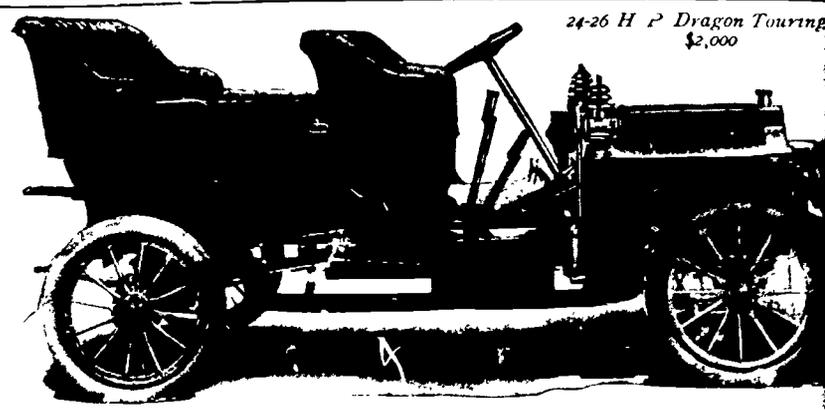
1907 DEERE-CLARK

TYPE "B"

SPECIFICATIONS

- MOTOR.** Four-cylinder, water cooled. Cylinders 4 x 5 H. P. 25, 40.
- TRANSMISSION.** Selective, no gears slide, roller bearing.
- REAR AXLE.** Clutch driven, floating type.
- FRONT AXLE.** I-Beam section.
- FRAME.** Pressed steel, with subframe.
- SPRINGS.** Elliptic scroll, rear 38 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.** 34 inches by four inches.
- GASOLINE.** Eighteen-gallon tank under front seat, glass gauge.
- WATER.** Capacity, four gallons.
- MUFFLER.** Free, silent with no back pressure.
- CARBURETOR.** Float feed type.
- CLUTCH.** Disc 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 ready for road use.
- WEIGHT.** Twenty-three hundred and fifty pounds.
- PRICE.** \$2,500, f. o. b. factory.
- TOP.** Extra \$125 for stock top.

**Deere-Clark Motor Car Co., 119 Blackhawk Avenue
MOLINE, ILL.**



24-26 H. P. Dragon Touring
\$2,000

The Actual Ability of an Automobile

"28-30 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 find out 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. Calculate the ratio of actual horse-power to weight, or the lowest ratio of weight to power found in any five-passenger touring car of equal motor capacity.



DRAGON

The Dragon has 24-26 H. P. actually delivered at rear-wheels, the car empty weight of car filled 2,600 lbs. Taking the horse-power as 26, we find that the Dragon has an actual power for every 100 lbs. of weight with car filled to capacity. This is the highest ratio to weight, or the lowest ratio of weight to power found in any five-passenger touring car of equal motor capacity.

Hence we claim that the Dragon has greater hill-climbing and speeding ability than any car of same horse-power and passenger capacity. Our claim is based on the same principle: a light passenger train can be hauled faster by a passenger locomotive than a heavy train by a mammoth "camel back."

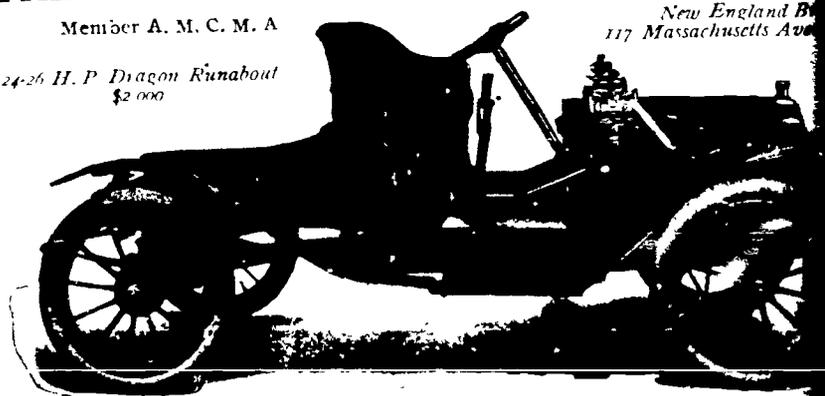
WRITE FOR BOOKLET TO "DEPT. A."

THE DRAGON AUTOMOBILE CO., 30th, 31st and Chestnut Sts., PHILADELPHIA

Member A. M. C. M. A.

New England Branch
117 Massachusetts Ave.

24-26 H. P. Dragon Runabout
\$2,000



Mark XLIX
40-45 H. P. \$4500

ARTNESS of style—the most graceful outlines and proportion—
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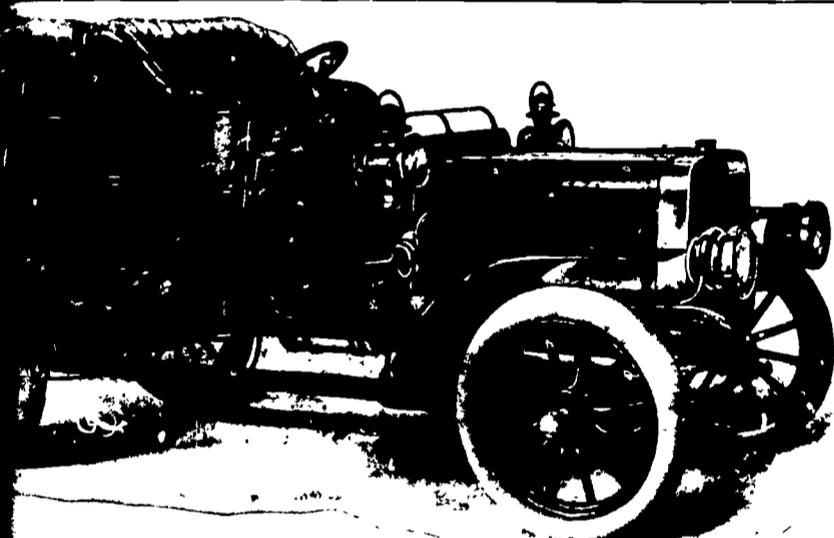
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ELECTRIC VEHICLE COMPANY
HARTFORD, CONN.

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Stanhope St. WASHINGTON: Washington F. V. Trans.
Co., 15th St. and Ohio Ave. SAN FRANCISCO: Middleton
Motor Car Company, 530 Golden Gate Ave.
Member A. E. A. M.

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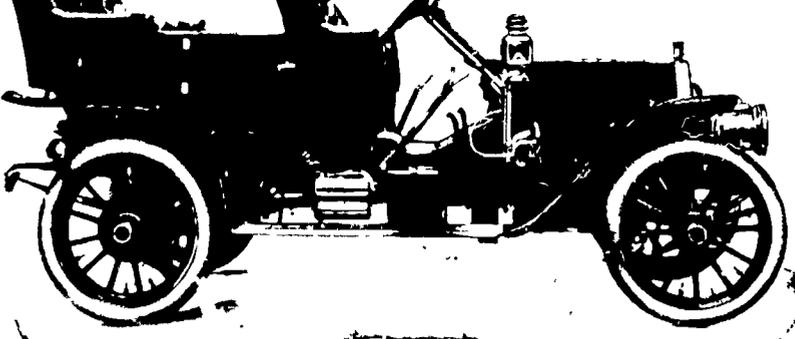
07 DUFFEL

TYPE "B"

SPECIFICATIONS

- Four-cylinder, water cooled. Cylinders 4 x 5 H. P. 25, 40.
- MISSION. Selective, no gears slide, roller bearing.
- CLUTCH. Clutch driven, floating type.
- AXLE. I-Beam section.
- CHASSIS. Pressed steel, with subframe.
- FRONT END. Elliptic scroll, rear 38 inches long, semi-elliptic front 40 inches long.
- STEERING. Crandall, six feed mechanical oiler.
- DRIVE. With bevel gears.
- BATTERY. Storage battery, six dry cells.
- BRAKES. Exterior and interior brakes on rear hubs, foot pedal and side lever.
- SEATING. Body, straight line design, seats four comfortably.
- WHEELS. 30 inches by 30 inches.
- FUEL. Eighteen-gallon tank under front seat, glass gauge.
- CAPACITY. Four gallons.
- OPERATION. Free, silent with no back pressure.
- VALVE. TOR. Float feed type.
- CLUTCH. Disc clutch, metal to metal, roller bearing, carried in flywheel.
- AXLE. ASE. One hundred and six inches.
- WHEELS. CE. Nine inches.
- PAINT. Seal brown, standard, any color on time orders.
- EQUIPMENT. NT. Three oil lamps, two gas lamps, generator, clock, dragon horn, tools; in fact, car ready for road use.
- PRICE. Twenty-three hundred and fifty pounds.
- FACTORY. 500, f. o. b. factory.
- DELIVERY. \$125 for stock top.

Clark Motor Car Co., 119 Blackhawk Avenue
MOLINE, ILL.

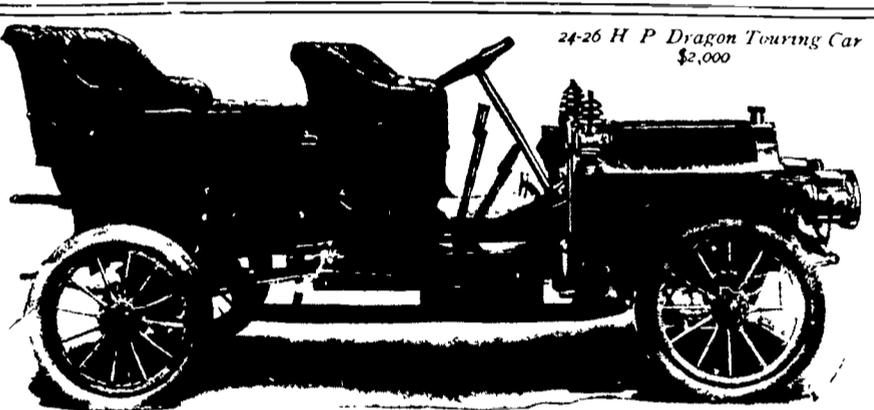


Model N. 30-35 H. P., \$2,500

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.
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Other Waynes are Model R, 50 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



24-26 H. P. Dragon Touring Car \$2,000

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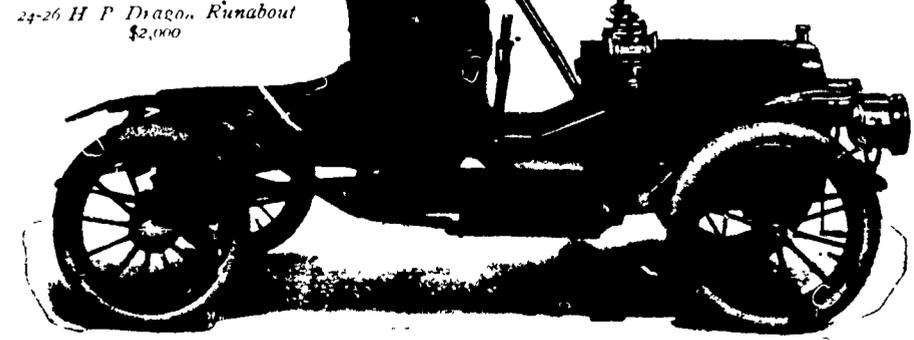
DRAGON

The Dragon has 24-26 H. P. actually delivered at rear-wheels, the car empty weighs 1850 lbs., it holds five passengers which if they average 150 lbs. a piece, adds 750 lbs., making gross weight of car filled 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 to weight, or the lowest ratio of weight to power found in any five-passenger touring car of equal motor capacity.

Hence we claim that the Dragon has greater hill-climbing and speeding ability than any other car of same 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."

WRITE FOR BOOKLET TO "DEPT. A."
THE DRAGON AUTOMOBILE CO., 30th, 31st and Chestnut Streets
PHILADELPHIA

Member A. M. C. M. A. New England Branch
117 Massachusetts Avenue, Boston

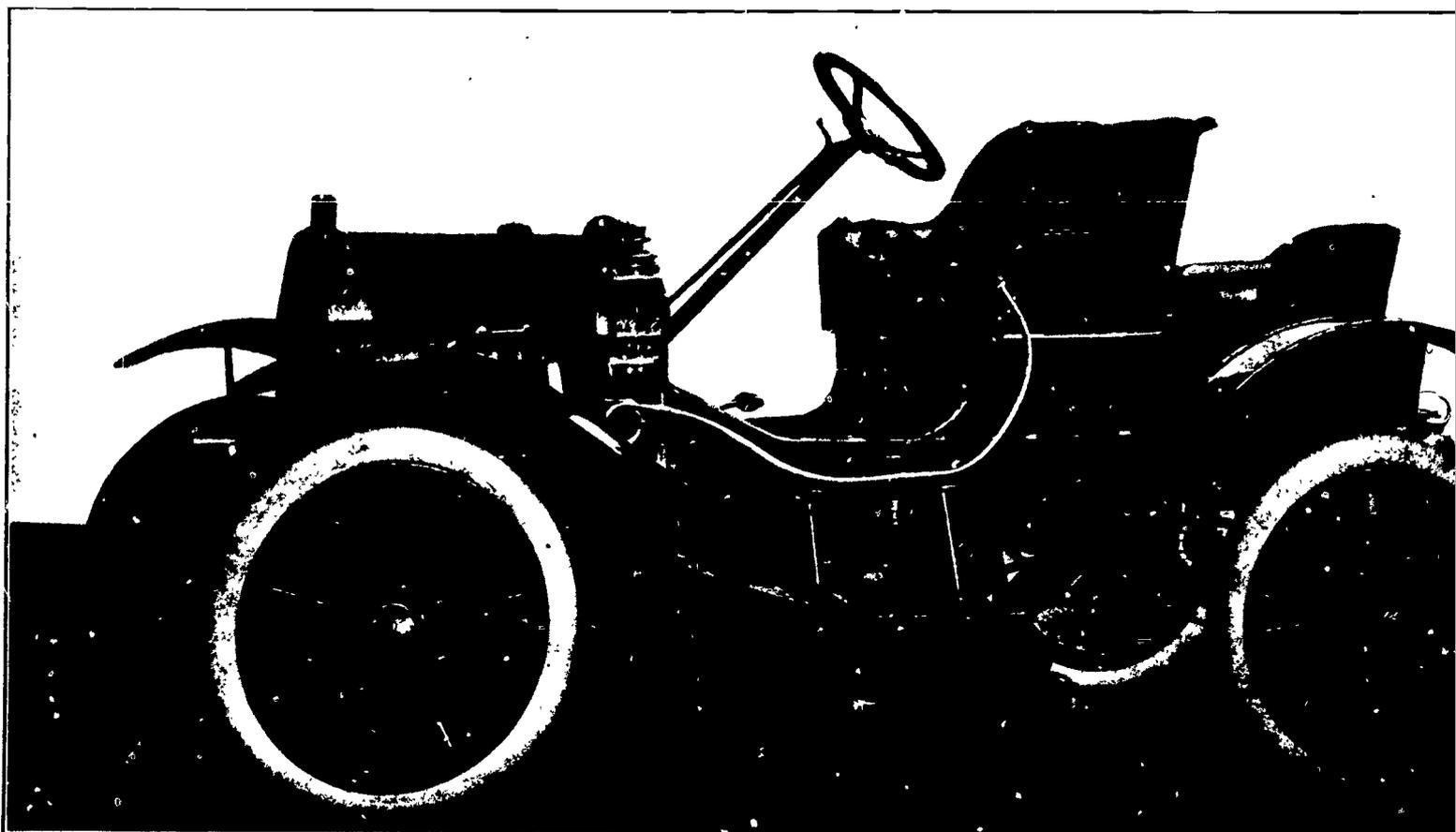


24-26 H. P. Dragon Runabout \$2,000



ADVERTISEMENT

Everyman's Car at 1910 BRUSH \$485⁰⁰



RUMBLE SEAT AND TOOL BOX \$20.00 EXTRA

Everyman's Car—

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

Merchants
Physicians
Salesmen
Corporations
Contractors
Farmers
Clubmen
Suburbanites

The Young Folks—

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

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

As for reliability between the Brush and a

of large multi-cylinder With the new Brush simplicity, reliability,

and oil consumption, large cylinder power and smooth

Its new balanced four-cylinder and is astonishing.

The most wonderful Car construction in years

While the balanced able feature of the 1910

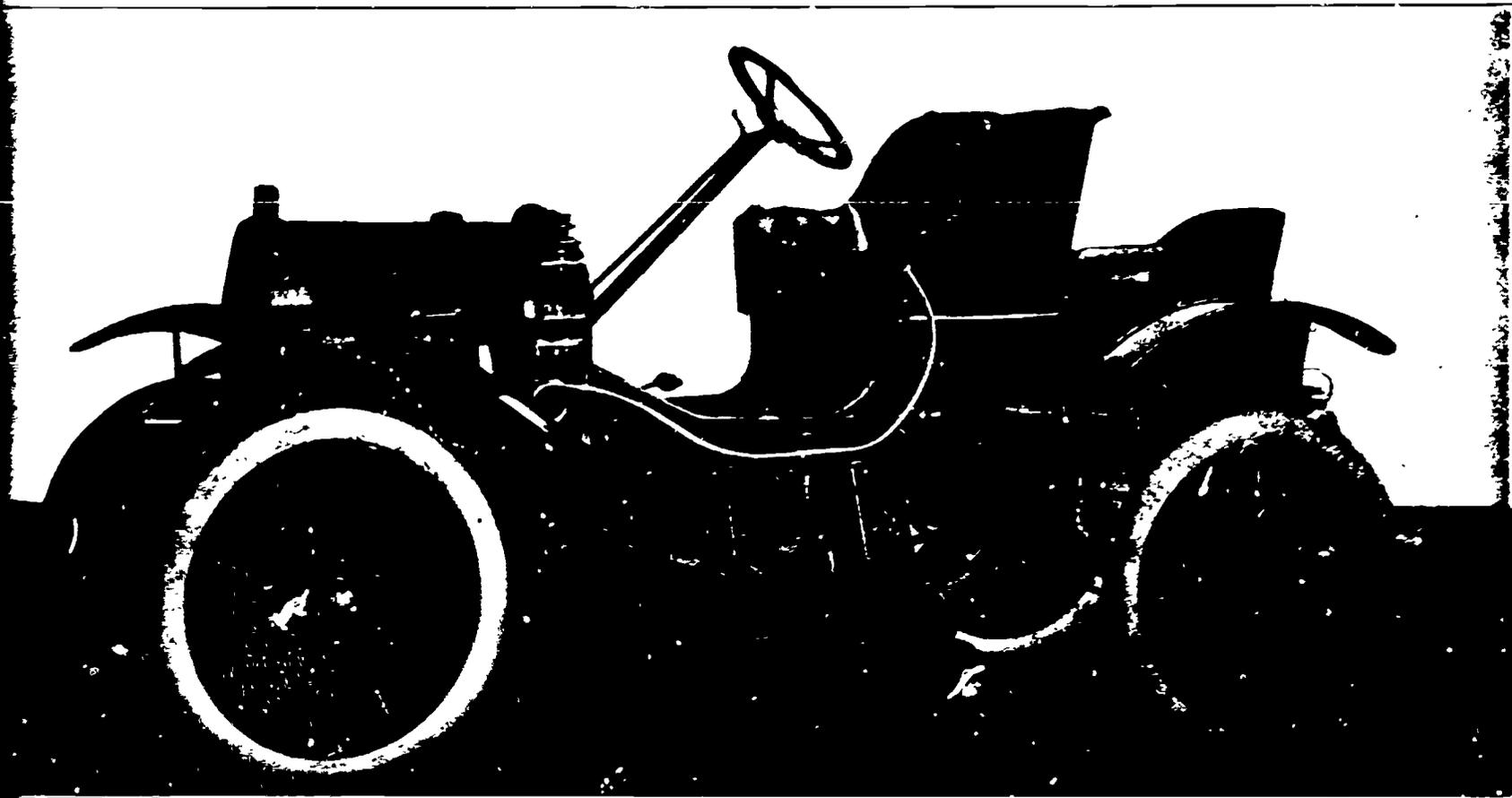
numerous other improvements Here are some of them: 6 inches; more graceful Mercedes type radiator universal coupling-shaft commutator; multiple clutches; transmission bearded and oil-tight; new

In our magnificent part of the Brush electric equipment. The middleman's or parts-

READ THE SPECIFICATIONS

ADVERTISEMENT

Everyman's Car at Last 1910 BRUSH \$485⁰⁰



RUMBLE SEAT AND TOOL BOX \$20.00 EXTRA

Everyman's Car—

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

Merchants
Physicians
Businessmen
Corporations
Contractors
Farmers
Workmen
Suburbanites
Young Folks—

The New Brush Rumble seat not only out-classes 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 car 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 Rumble seat 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 will give the best results in every respect.

It is a car which will give the best results in every respect. It is a car which will give the best results in every respect. It is a car which will give the best results in every respect.

Symmetry makes it possible to build the car right and still sell it at this wonderful price.

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

With the new Brush you get single-cylinder simplicity, 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 astonishing.

The most wonderful improvement in Motor Car construction in years.

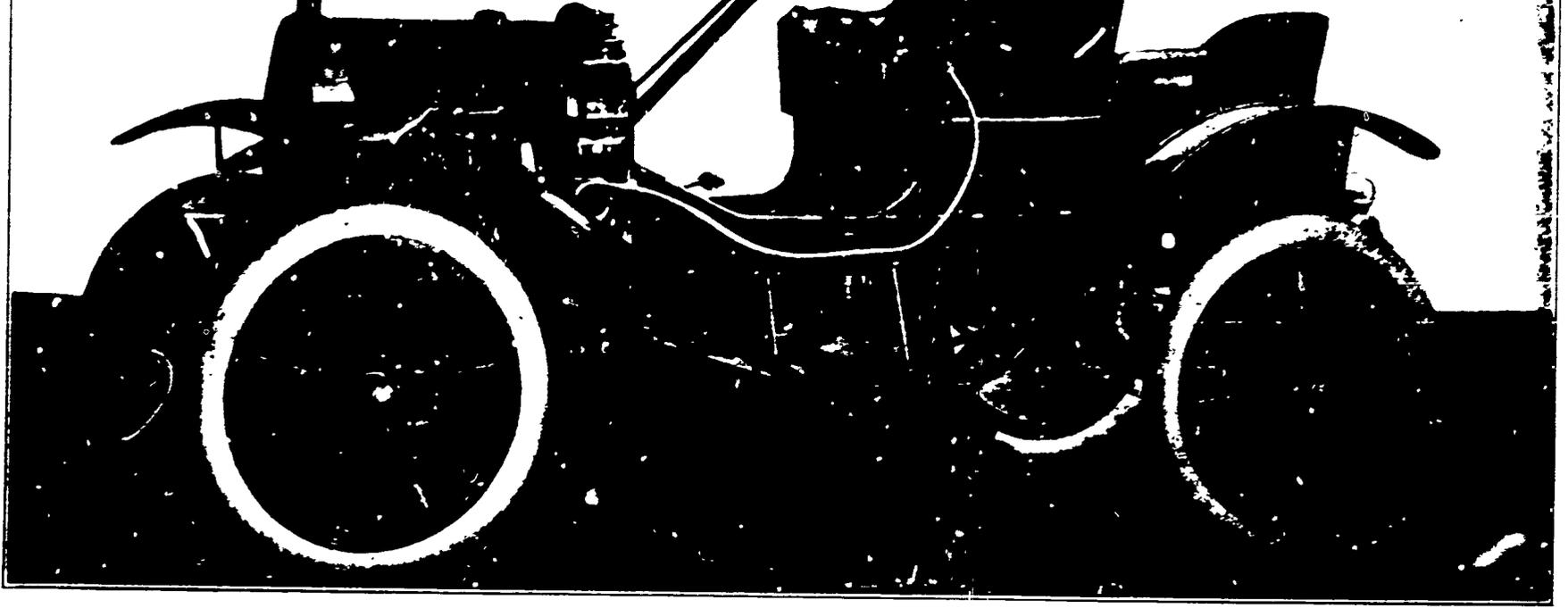
While the balanced motor is the most remarkable feature of the 1910 Brush, we have made numerous other improvements and refinements.

Here are some of them: wheel-base lengthened 6 inches, more graceful and rakish lines, More's type radiator, new selective control universal coupling-shaft, improved dust-pan of new design, multiple use of front and reverse gears, transmission control levers, entirely new steering mechanism, etc.

These improvements will make even the most fastidious car buyer satisfied and pleased. The Brush buyer pays no more for a car than he would for a car of the same class.

Brush knows no class; merit to its use—

READ THE SPECIFICATIONS



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 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, handsomest small automobile in the world!

The New Brush Runabout, not only out-classes 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 possible to build it right and still sell it at this wonderful price.

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

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

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

The most wonderful improvement in car construction in years.

While the balanced motor is the most reliable feature of the 1910 Brush, we have numerous other improvements and refinements.

Here are some of them: wheel-base lengthened 6 inches; more graceful and rakish Mercedes type radiator; new selective coupling-shaft; improved dust commutator; multiple disc low and reverse clutches; transmission control levers enclosed and oil-tight; more quiet muffler.

In our magnificent new plant we make every part of the Brush except the wheels, tires, electric equipment. The Brush buyer pays no middleman's or parts-maker's profit.

READ THE SPECIFICATIONS

Motor—10 H.P., balanced single cylinder, four-cycle, vertical 4" x 5", water cooled, located in front under hood, every part instantly accessible, three point suspension.

Balancing—After balancing by the usual counterweights, one extra loaded balance gear, driven by a crankshaft gear, is applied, the result of which is to take out 90% of the vibration due to reciprocating weight and in addition most (or at times all) of the torque vibration theoretically in better balance than a four-cylinder motor.

Transmission—Internal gear type, perfectly quiet; entirely enclosed and absolutely oil-tight.

Cooling—Mercedes type radiator, on Briscoe thermo-siphon system, eliminating pump.

Drive—Double side chains to rear wheels.

Control—Single hand-lever of selective action for all speeds; spark and throttle under steering-wheel; foot pedal releases clutch without touching the hand-lever, and also applies the brake. This clutch release by the foot is one of the fine features of the Brush and is found on no other low-priced car.

Steering Gear—Another exceptional feature is internal reducing spur gear, slow and powerful at straight-ahead and accelerating as the wheel turns, entirely enclosed and oil-tight.

Axles and Frames—Oil-treated, selected wood oak, hickory and maple, wonderful for strength, durability and lightness.

Springs—Springs located at extreme four corners; absolutely the easiest riding springs on any car and mechanically impossible to break.

Brakes—Internal expanding in rear speed.

Wheels—Artillery, with 28" x 3" pneumatic tires.

Wheel Base—80 inches.

Tread—56". For Southern trade 60".

Equipment—Tools, tire kit, 3 oil lamps.

Color—Maroon, except coupe.

Body—Divided seat, trimmed in high-grade leather. Platform on rear, as pictured above, with \$485 (0).

Six special bodies, furnished on order, at extra cost, as follows: rear platform with steel tool compartment with removable steel deck; double rumble with wooden tool box; coupe.

Speed—35 miles an hour, except racer type, has special gearing.

MAIL THIS COUPON TODAY

BRUSH RUNABOUT CO.
167 Baltimore Ave., Detroit, Mich.

Please send me copy of the new Brush Catalog

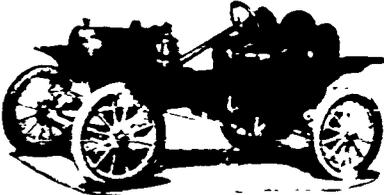
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Address

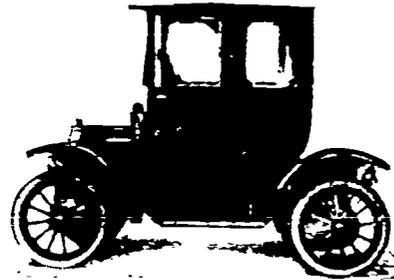
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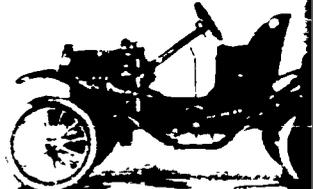
BRUSH RUNABOUT COMPANY, 167 BALTIMORE AVE., DETROIT, MICHIGAN



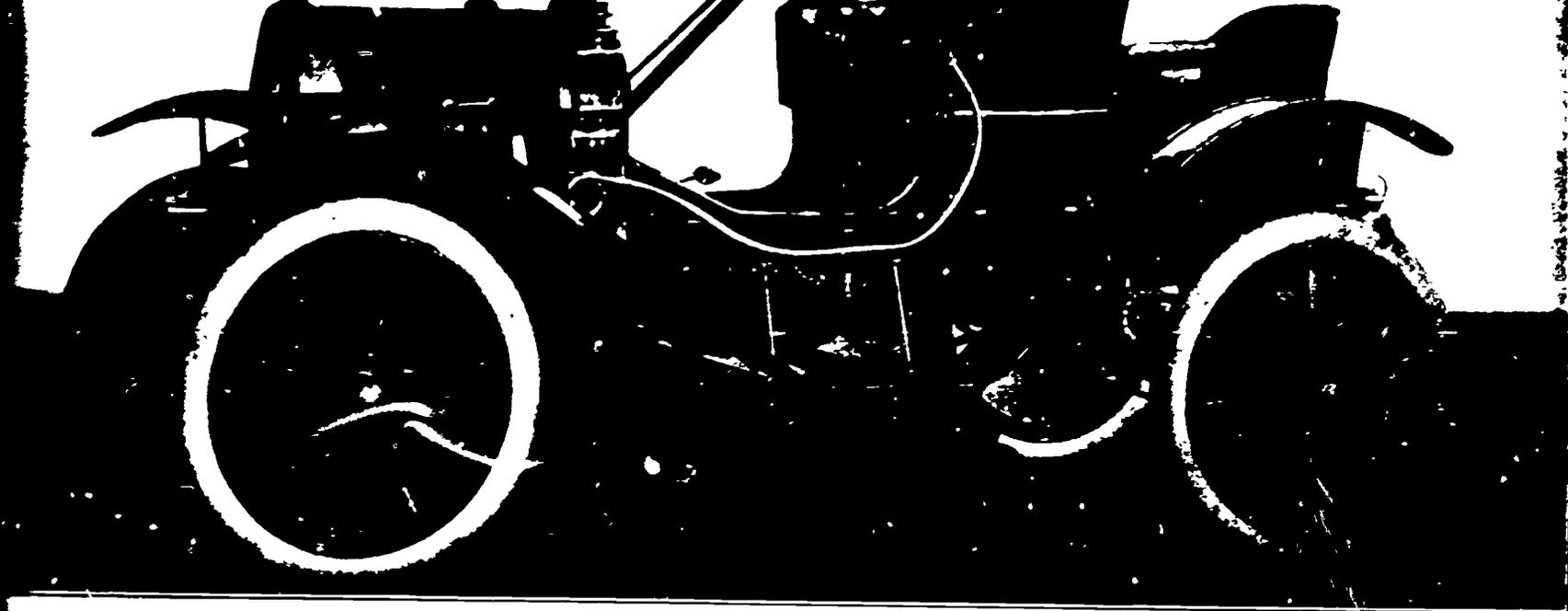
Model D 28



Model D Coupe



Model D 26



RUMBLE SEAT AND TOOL BOX \$20.00 EXTRA

Man's Car—

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

Merchants
Physicians
Businessmen
Corporations
Contractors
Farmers
Workmen
Urbanites

Young Folks—

Brush knows no class;
no limit to its use—
A tried, proven
car for less than
of a good horse
price.

The New Brush Runabout not only out-classes 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.

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STURDINESS makes it possible to build the car right and still sell it at this wonderful price.

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

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The most wonderful improvement in Motor Car construction in years.

While the balanced motor is the most remarkable feature of the 1910 Brush, we have made numerous other improvements and refinements.

Here are some of them: wheel-base lengthened 6 inches; more graceful and rakish lines; Mercedes type radiator; new selective control; universal coupling-shaft; improved dust-proof commutator; multiple disc low and reverse clutches; transmission control levers entirely housed and oil-tight; more quiet muffler.

In our magnificent new plant we make every part of the Brush except the wheels, tires and electric equipment. The Brush buyer pays no middleman's or parts-maker's profit.

READ THE SPECIFICATIONS

Motor—10 H. P., balanced single cylinder, four-cycle, vertical, 4" x 5", water cooled, located in front under hood, every part instantly accessible; three point suspension.

Balancing—After balancing by the usual counter-weights, one extra loaded balance gear, driven by a crankshaft gear, is applied, the result of which is to take out all of the vibration due to reciprocating weight and in addition most (or at times all) of the torque vibration. Theoretically a better balance than a four-cylinder motor.

Transmission—Internal gear type, perfectly quiet; entirely enclosed and absolutely oil-tight.

Cooling—Mercedes type radiator, on Bruce thermo syphon system, eliminating pump.

Drive—Double side clutches to rear wheels.

Control—Single hand-lever of selective action for all speeds, spark and throttle under steering wheel, foot-pedal releases clutch without touching the hand-lever, and also applies the brake. This clutch release by the foot is one of the fine features of the Brush and is found on no other low-priced car.

Steering Gear—Another exceptional feature, internal reducing spur gear, slow and powerful at straight ahead and accelerating as the wheel turns, entirely enclosed and oil-tight.

Axles and Frames—Oil-treated, selected wood oak, hickory and maple, wonderful for strength, durability and lightness.

Springs—Springs located at extreme four corners, absolutely the easiest riding springs on any car and mechanically impossible to break.

Brakes—Internal expanding in rear sprocket hubs.

Wheels—Artillery, with 28" x 3" pneumatic tires.

Wheel Base—89 inches.

Tread—56" For Southern trade 60"

Equipment—Tools, tire kit, 3 oil lamps, horn.

Color—Maroon, except coupe.

Body—Divided seat, trimmed in high-grade leather. Platform on rear, as pictured above with equipment \$485.00.

Six special bodies furnished on order at extra prices, as follows: rear platform with steel tool box, rear compartment with removable steel deck, single or double rumble with wooden tool box, racer type, coupe.

Speed—35 miles an hour, except racer type which has special gearing.

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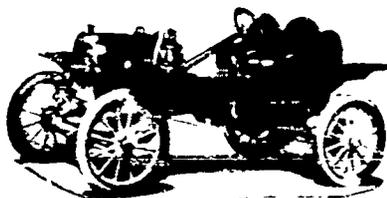
BRUSH RUNABOUT CO.

167 Baltimore Ave., Detroit, Mich.

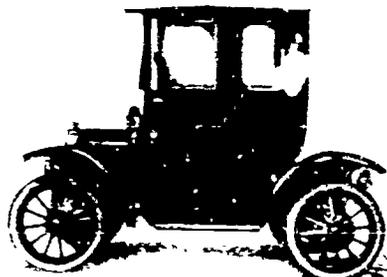
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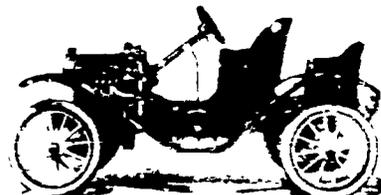
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Model D 28



Model D Coupe



Model D 26

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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 in progressive American manufacturing 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 “A” touring car to \$3,800 for the “G-B” landaulet.

Even if you desire a smaller car than the White, it will be your advantage to inspect the White or at least to write to us for a copy

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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



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The above features, combined in good design with the best materials which money can buy, and with the famous White

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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.

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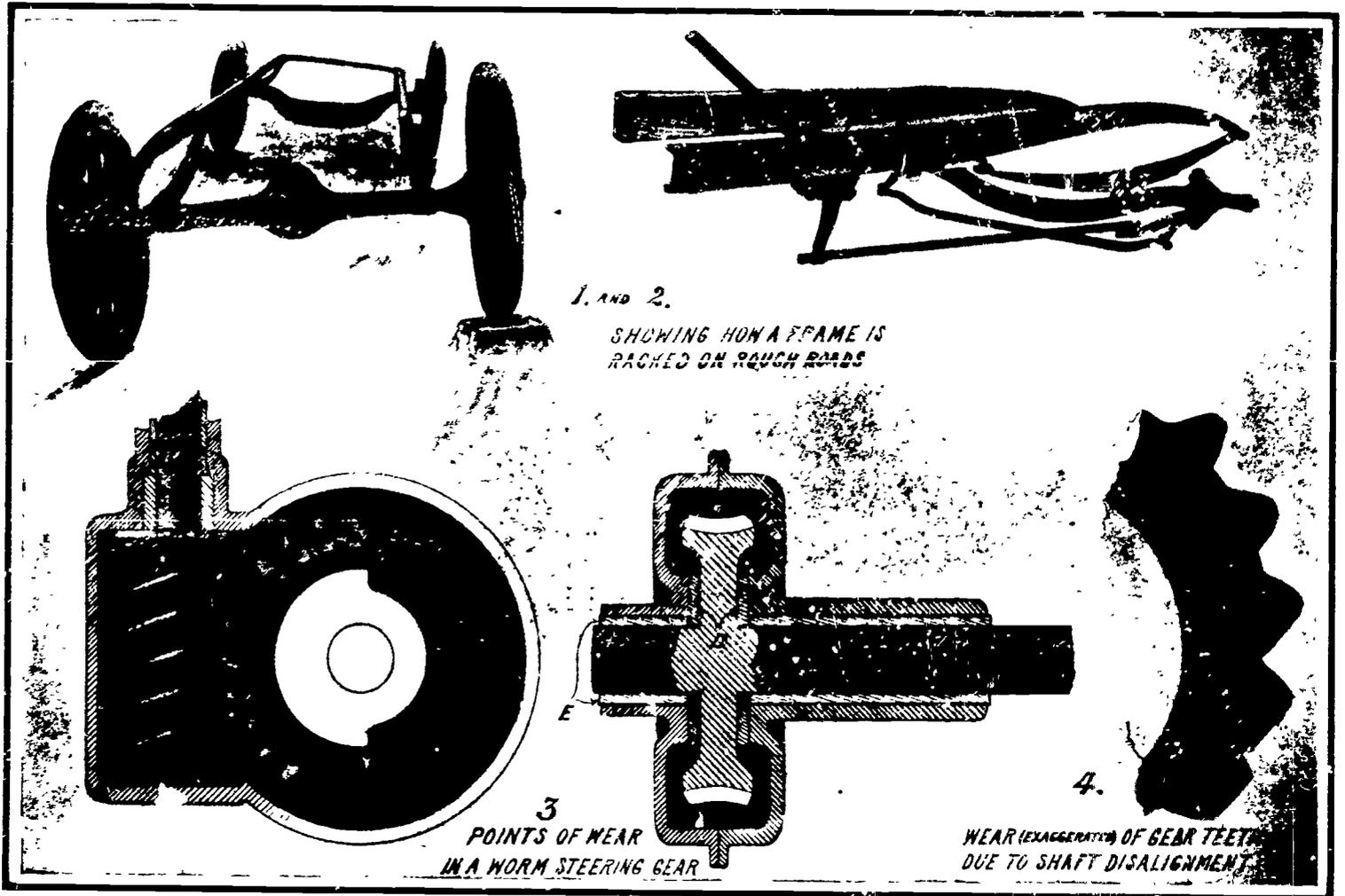
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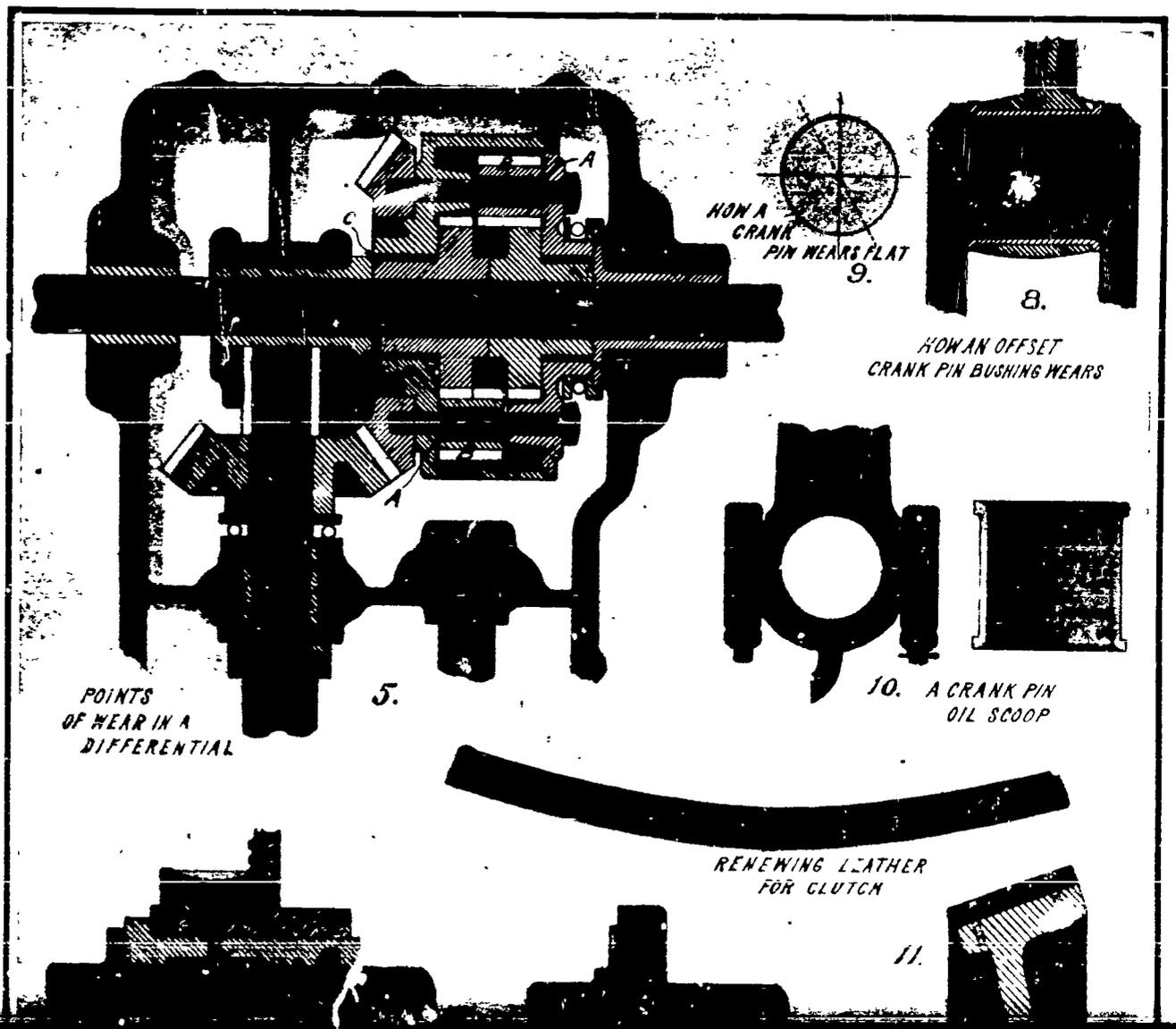
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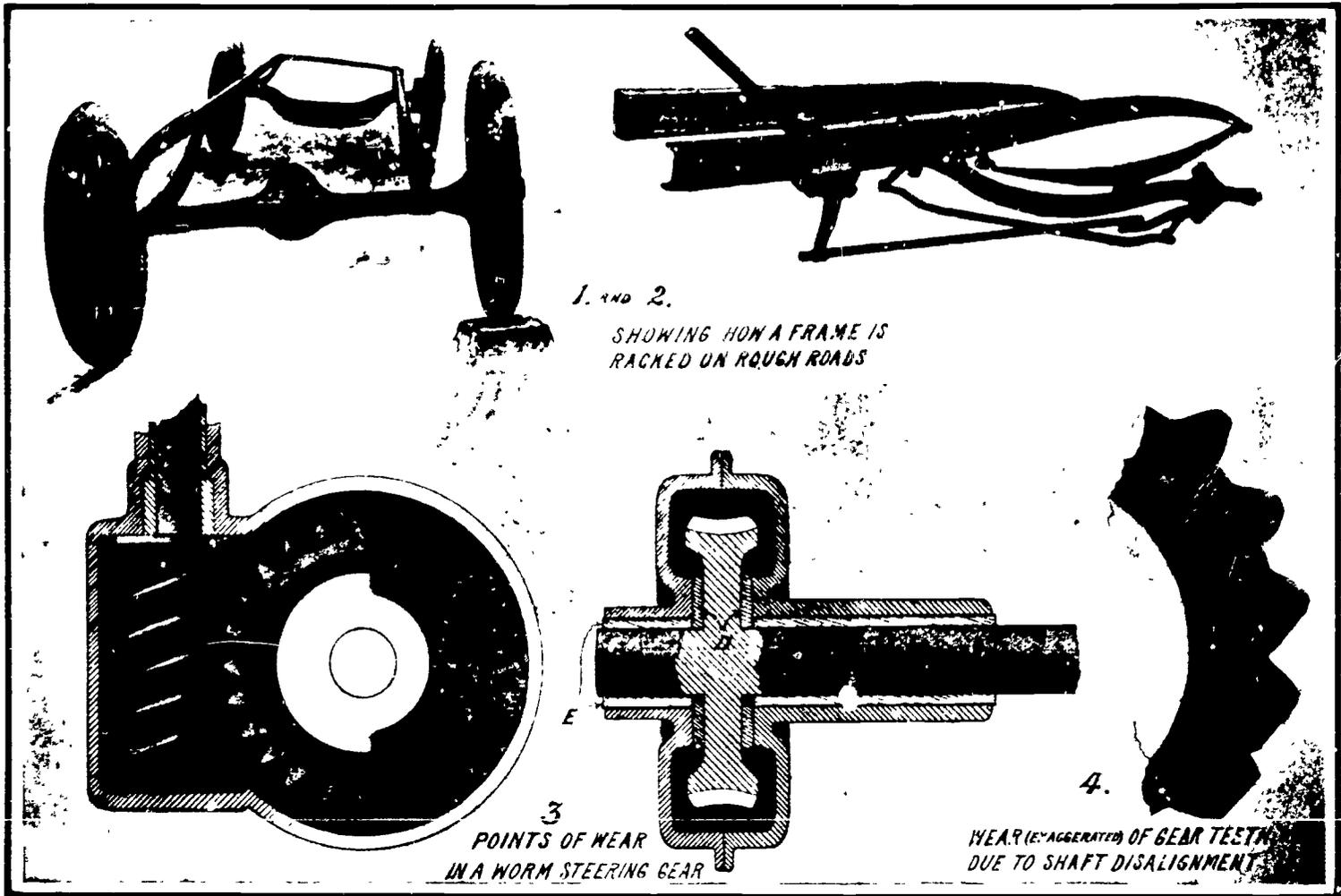
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PARTS

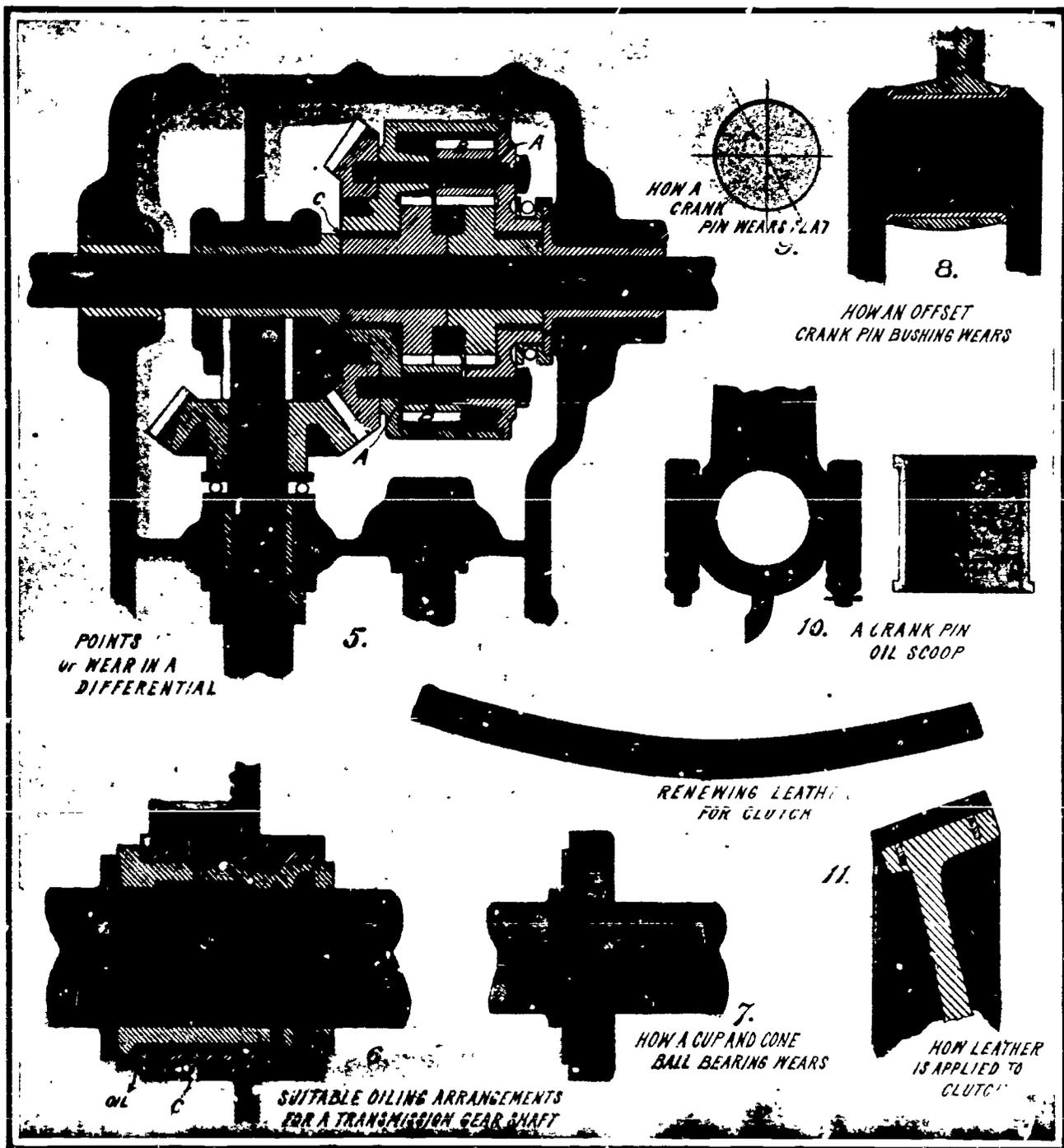


SOME PARTS OF A CAR WHICH MUST BE CAREFULLY CONSIDERED IN OVERHAULING.



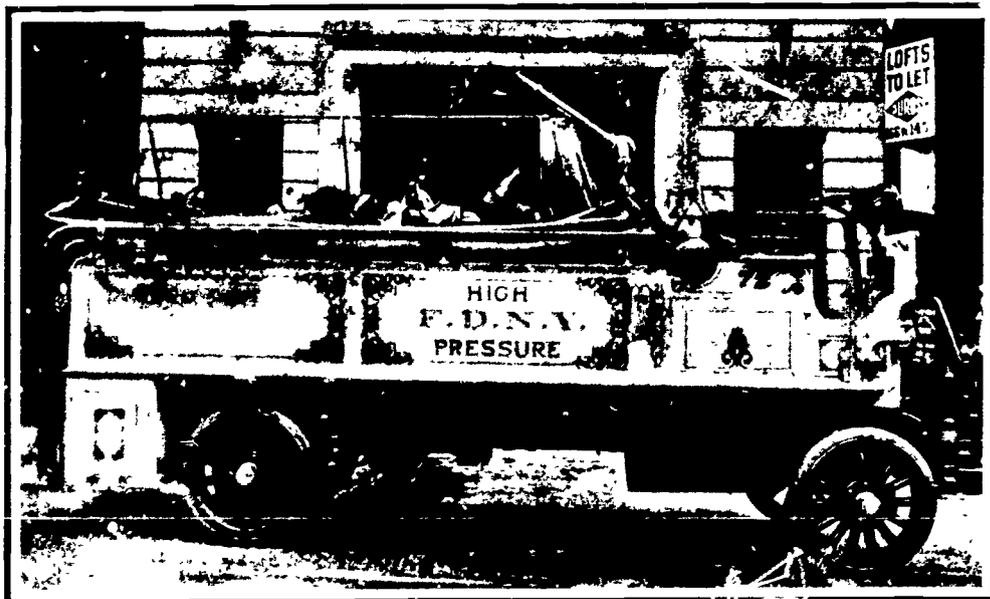


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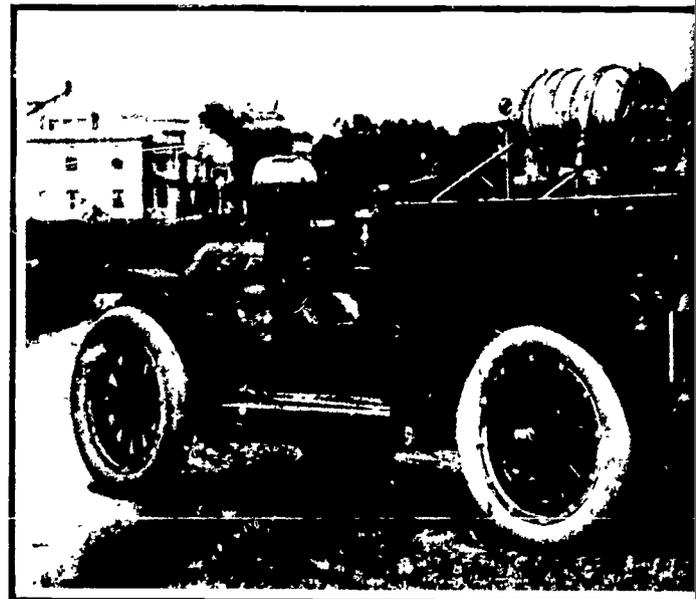


HOW PARTS WEAR IN AN AUTOMOBILE.

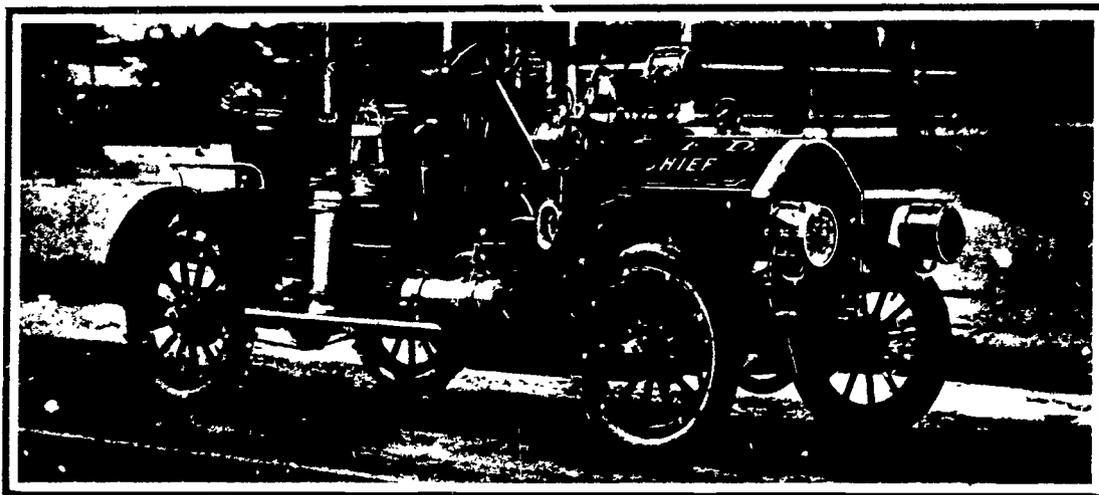
FIRE ENGINES



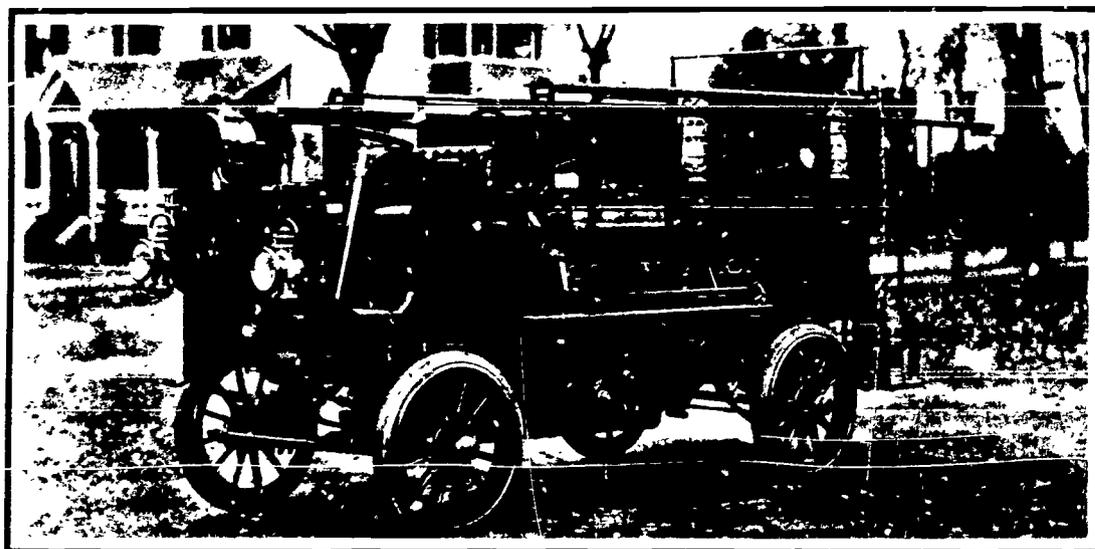
A NEW YORK AUTOMOBILE HIGH-PRESSURE SERVICE WAGON.



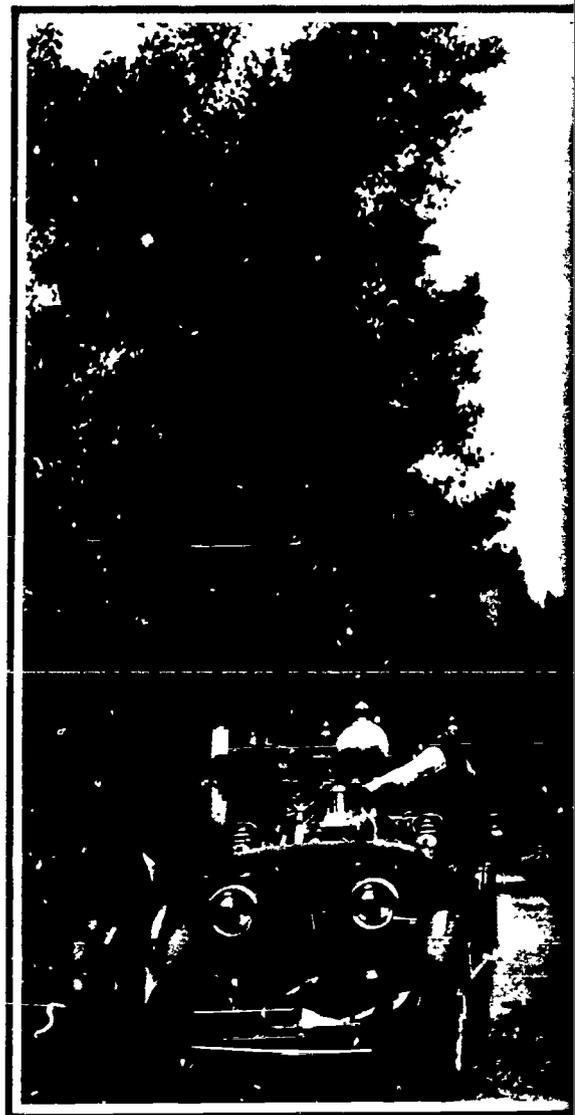
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A COMBINATION TRUCK FOR SMALL COMMUNITIES.



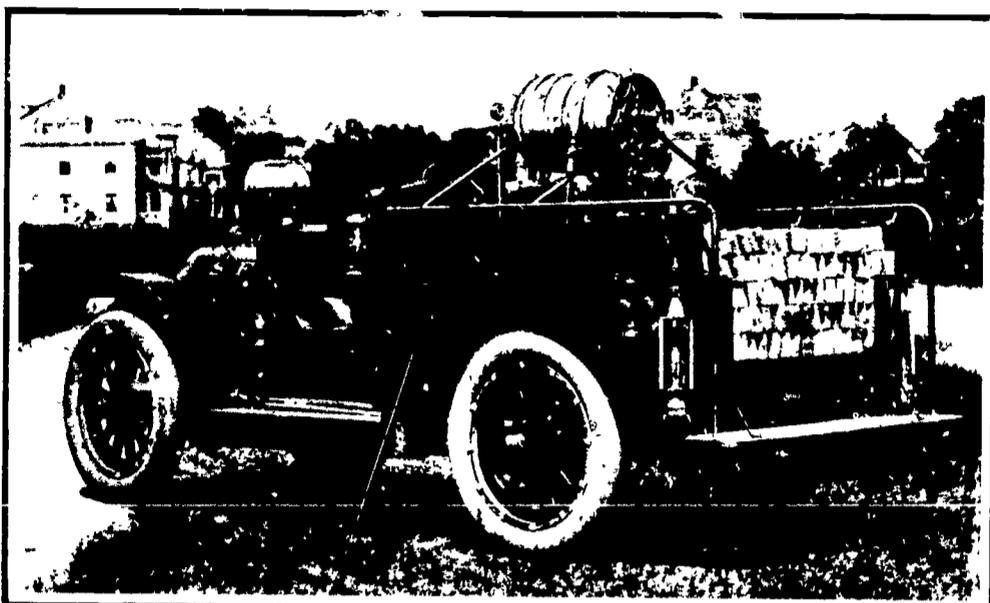
MOTOR-FIRE PUMP AT WORK.



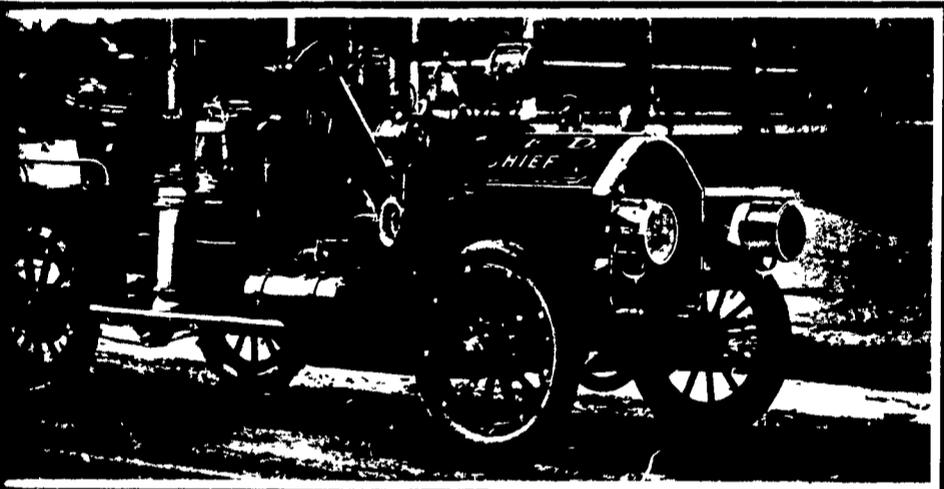
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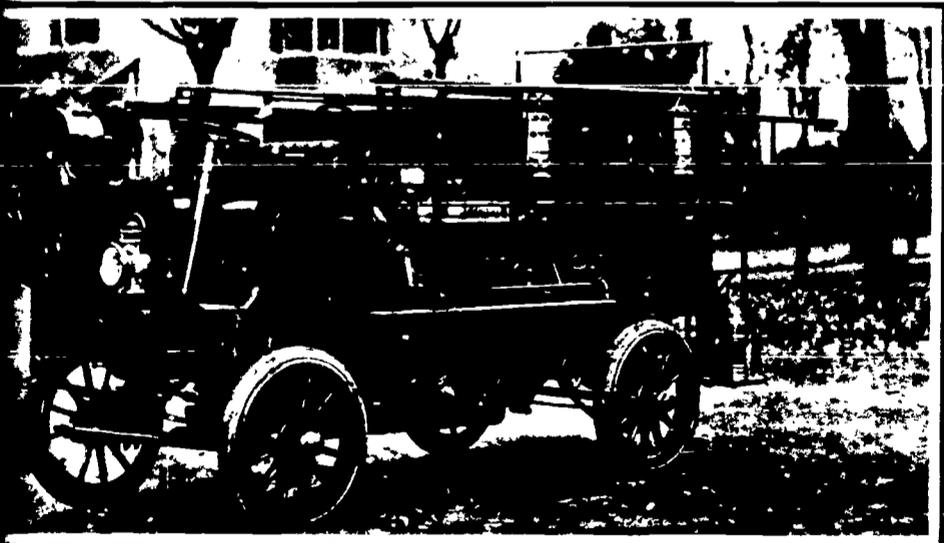
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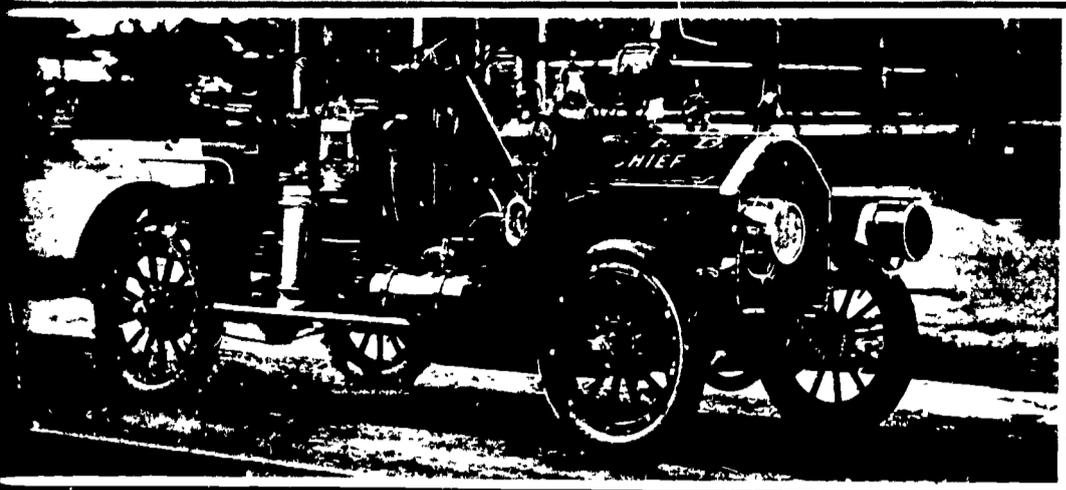


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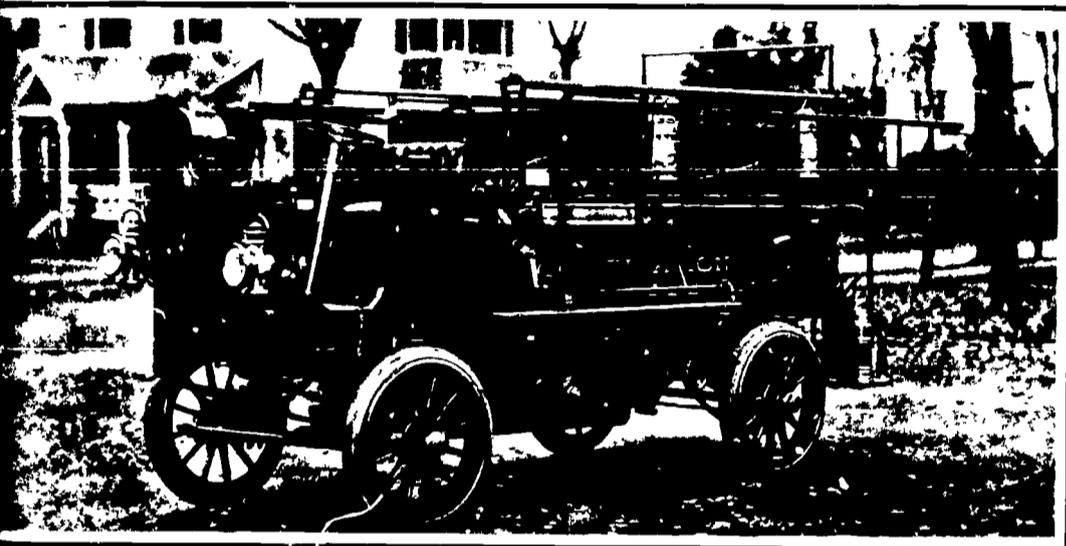
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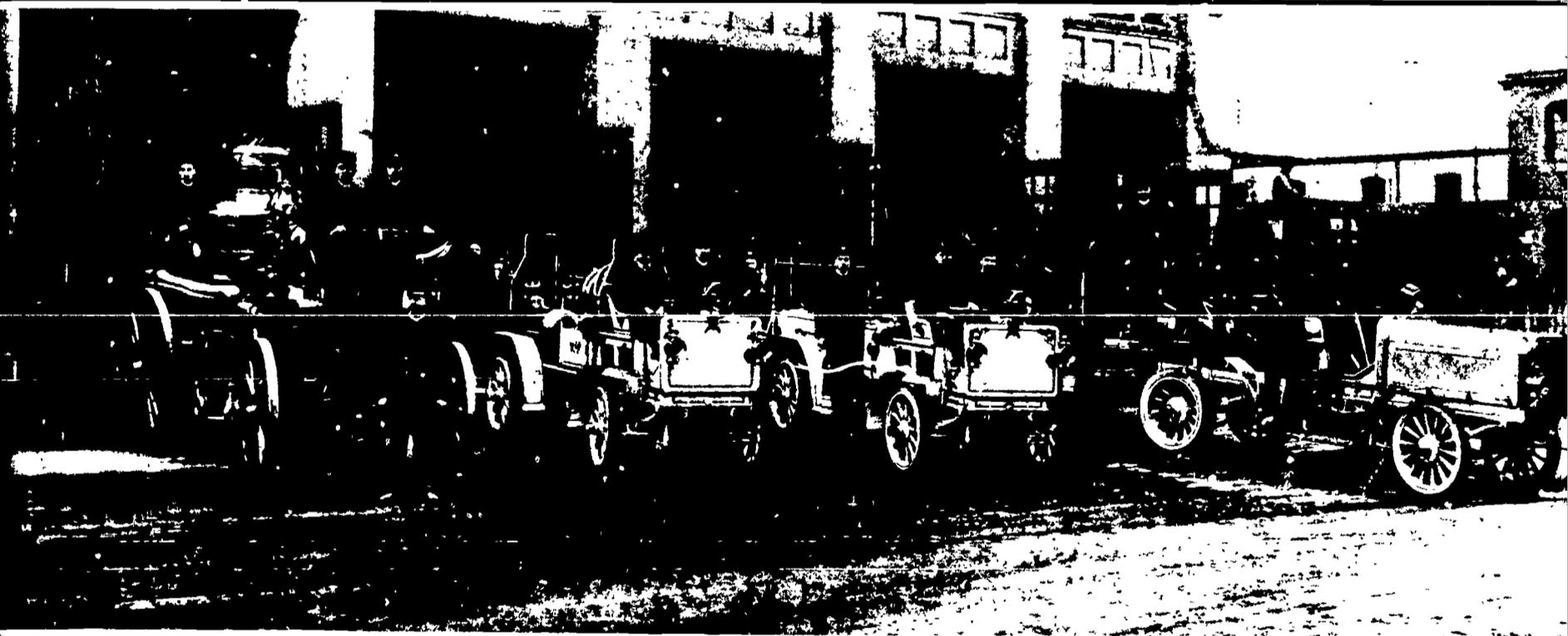
FIRE CHIEF'S AUTOMOBILE.



MOTOR-FIRE PUMP AT WORK.

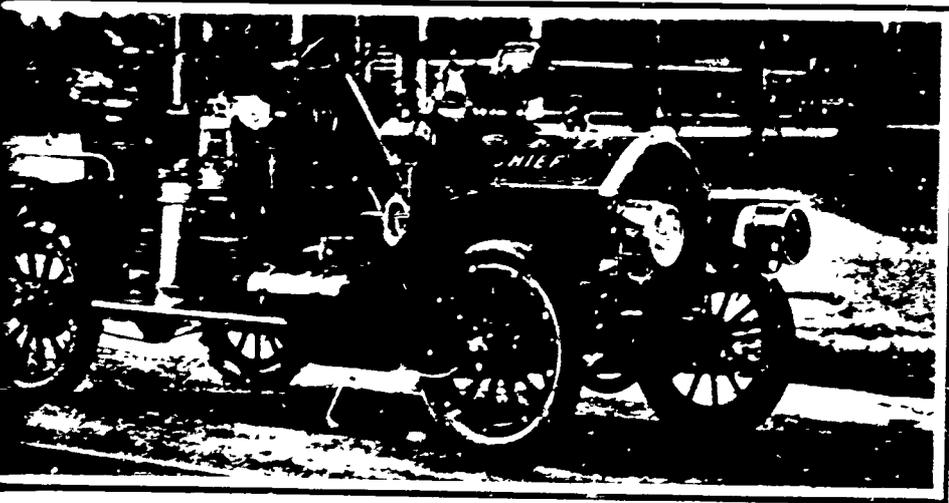


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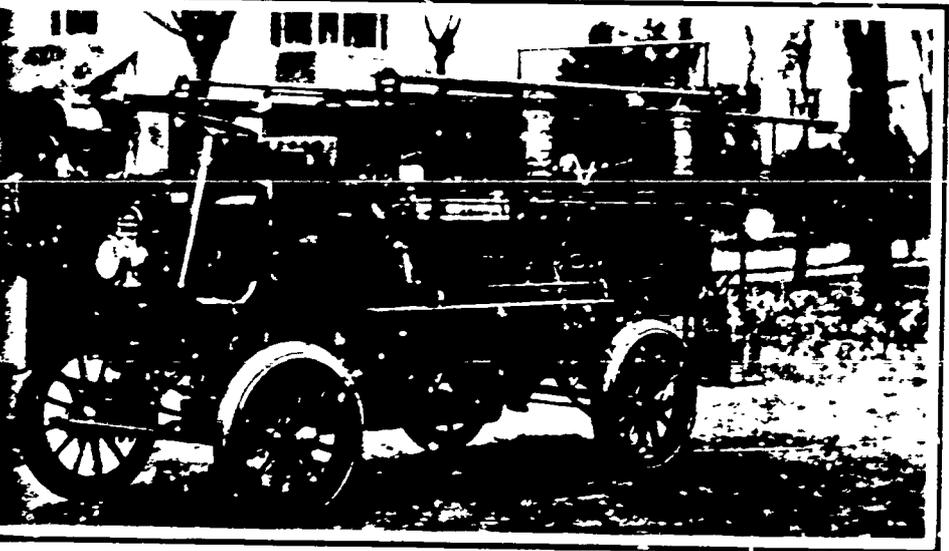
NEW YORK AUTOMOBILE HIGH PRESSURE SERVICE WAGON



AN AUTOMOBILE HOSE CART

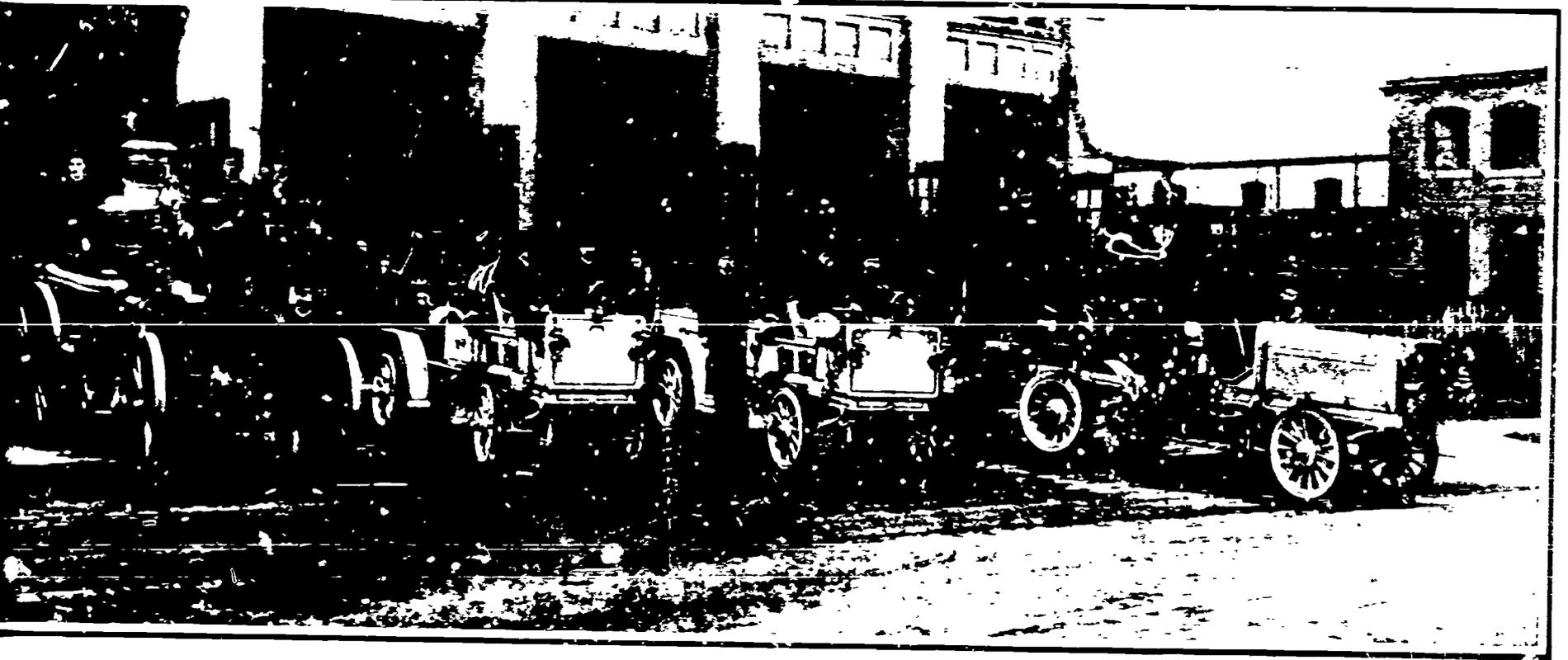


FIRE CHIEF'S AUTOMOBILE



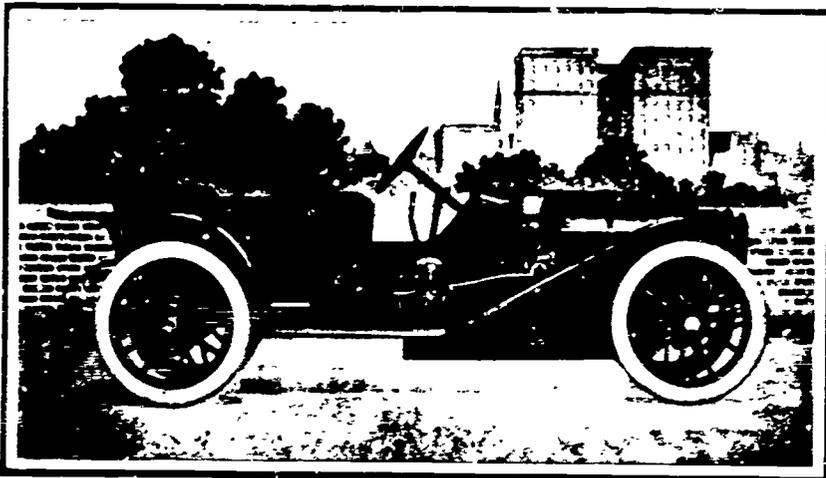
A COMBINATION TRUCK FOR SMALL COMMUNITIES.

MOTOR-FIRE PUMP AT WORK.



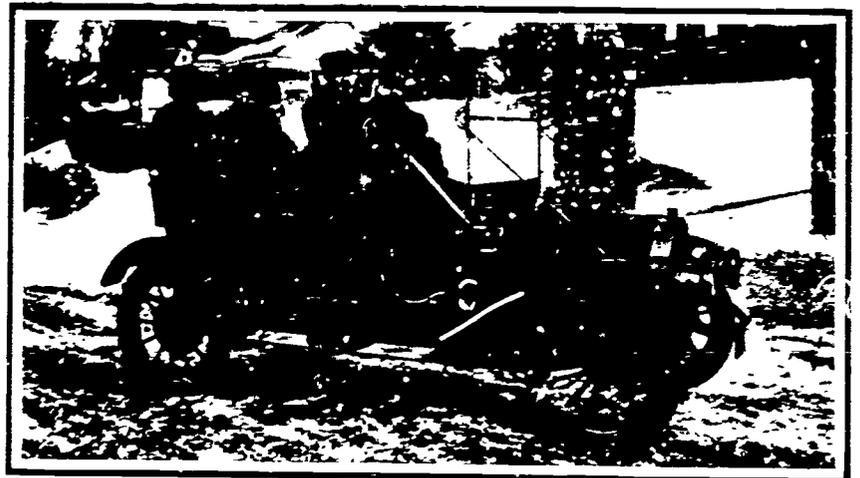
A COMPLETE AUTOMOBILE FIRE DEPARTMENT.

CARS



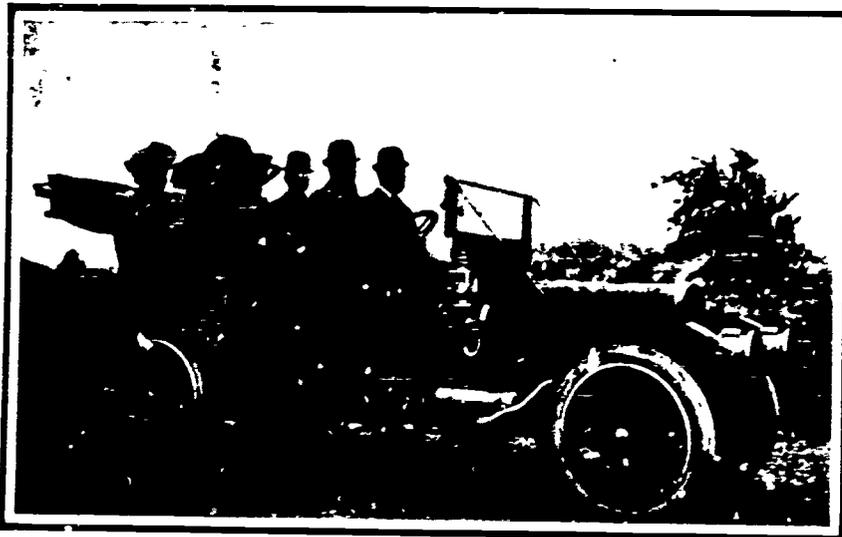
Chalmers-Detroit 40-horse-power pony tonneau.

Model 100. 4-cylinder, 34-inch bore, 4-inch stroke, 10-horse-power motor, 20-horse-power engine, 20-horse-power motor, 20-horse-power engine. Price, \$2,200.



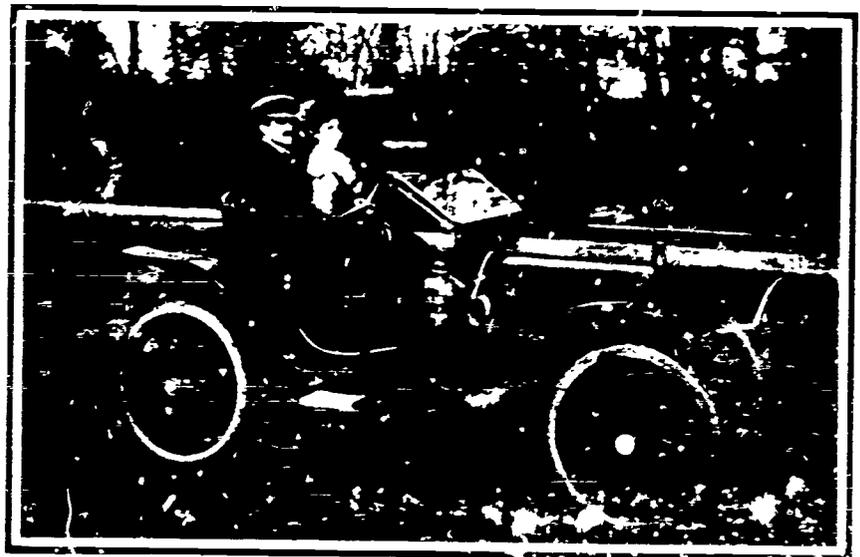
Cartercar, 35-horse-power.

Model 100. 4-cylinder, 34-inch bore, 4-inch stroke, 10-horse-power motor, 20-horse-power engine, 20-horse-power motor, 20-horse-power engine. Price, \$2,200.



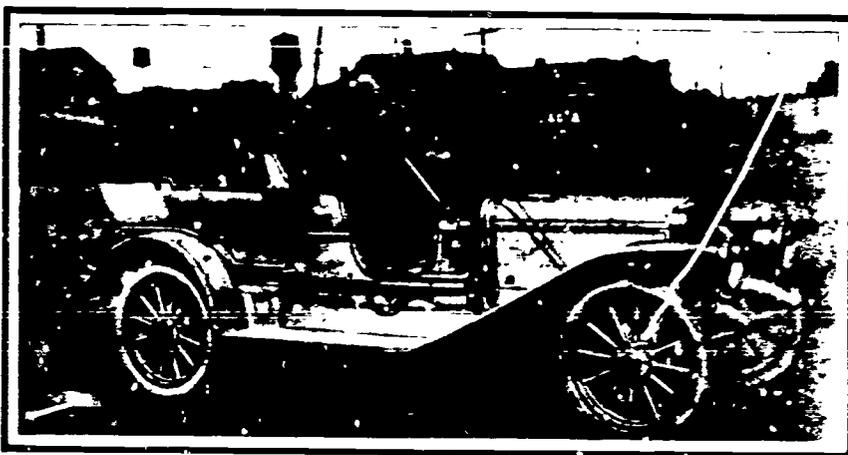
Franklin 42-horse-power touring car.

Model 100. 4-cylinder, 34-inch bore, 4-inch stroke, 10-horse-power motor, 20-horse-power engine, 20-horse-power motor, 20-horse-power engine. Price, \$2,200.



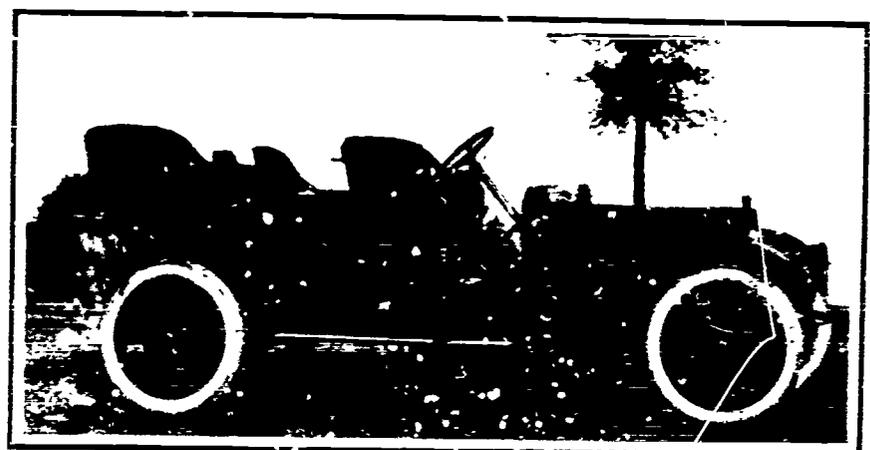
Hupmobile runabout.

Model 100. 4-cylinder, 34-inch bore, 4-inch stroke, 10-horse-power motor, 20-horse-power engine, 20-horse-power motor, 20-horse-power engine. Price, \$2,200.



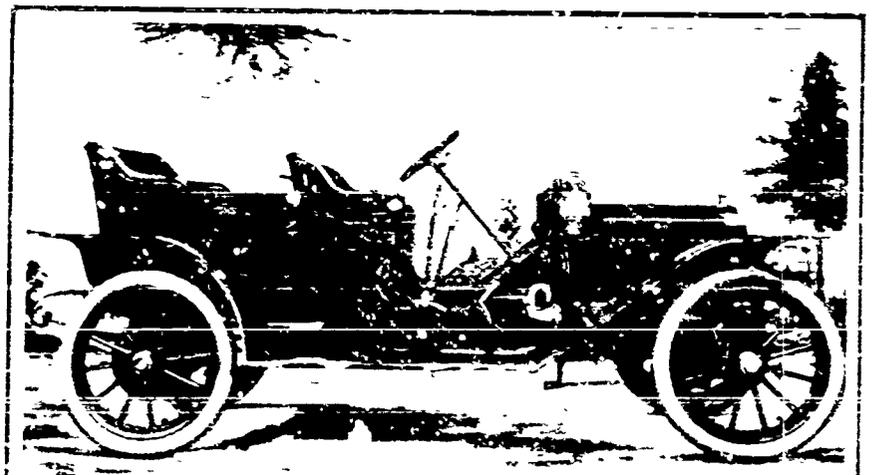
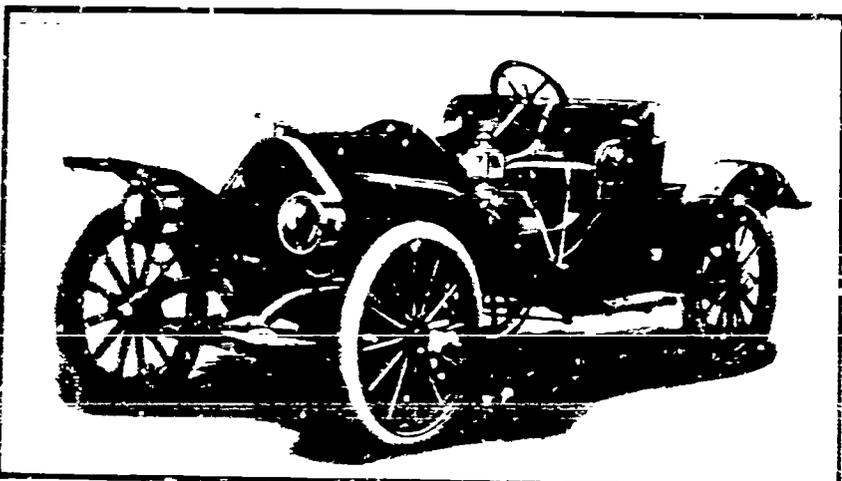
Winton touring car.

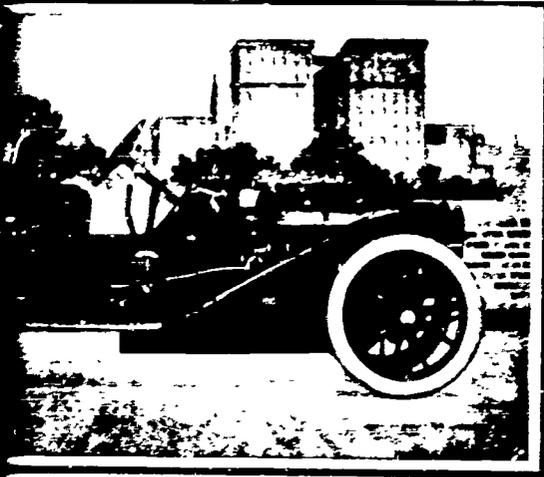
Model 100. 4-cylinder, 34-inch bore, 4-inch stroke, 10-horse-power motor, 20-horse-power engine, 20-horse-power motor, 20-horse-power engine. Price, \$2,200.



Pierce Arrow touring car.

Model 100. 4-cylinder, 34-inch bore, 4-inch stroke, 10-horse-power motor, 20-horse-power engine, 20-horse-power motor, 20-horse-power engine. Price, \$2,200.





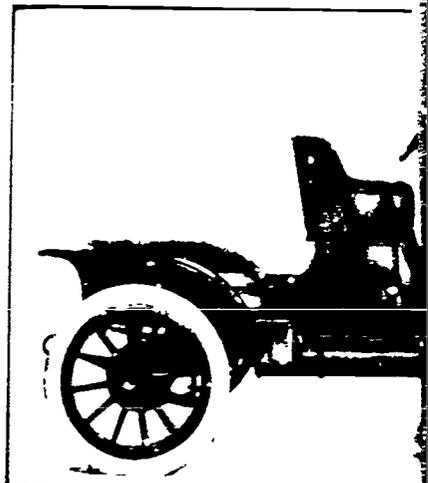
40-horse-power pony tonneau.

Motor, 40-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



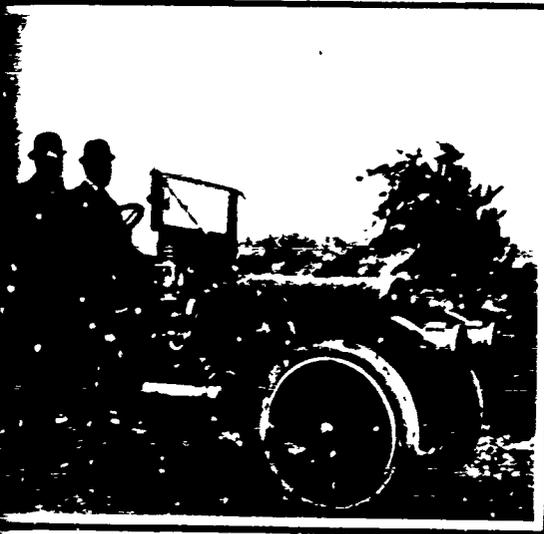
Carter car, 35-horse-power.

Motor, 35-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



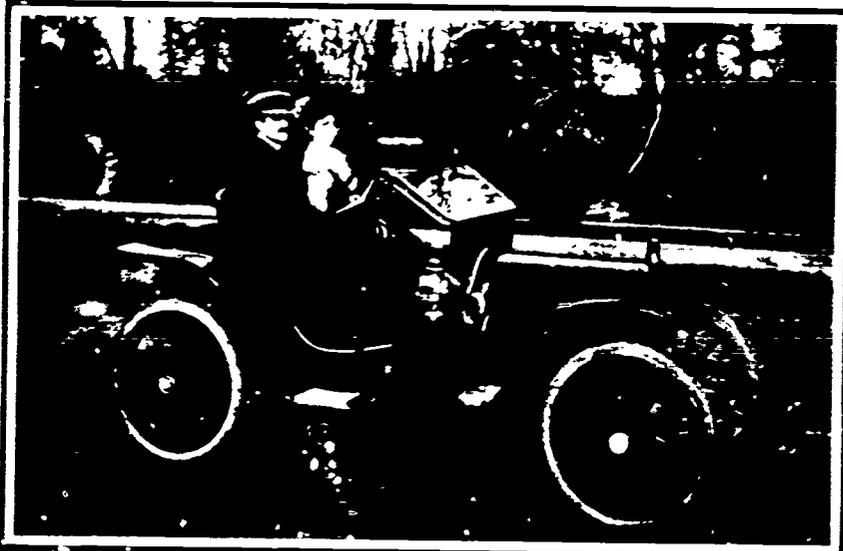
Schacht car.

Motor, 40-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



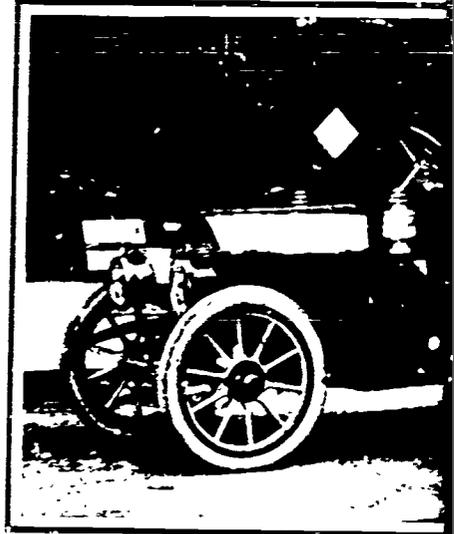
42-horse-power touring car.

Motor, 42-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



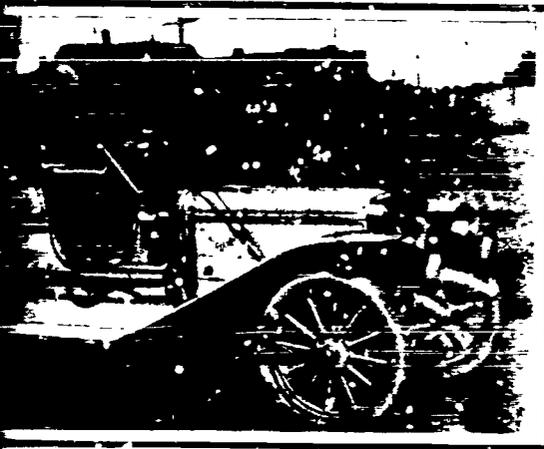
Hupmobile runabout.

Motor, 24-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



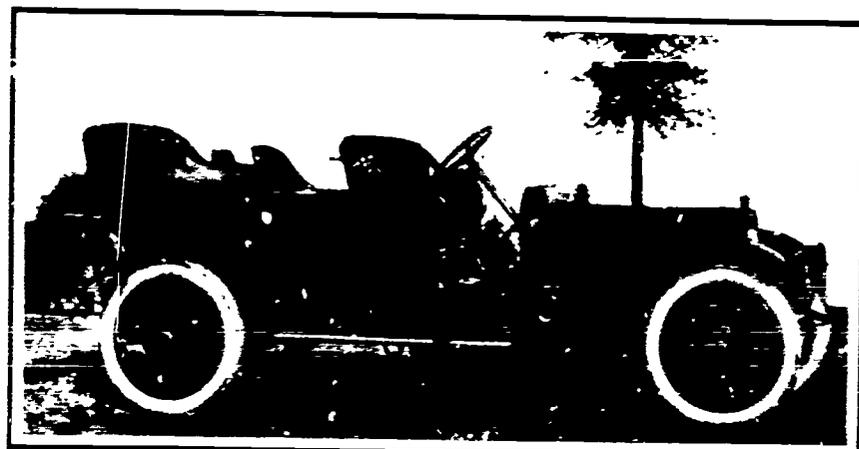
Premier 40-horse-power.

Motor, 40-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



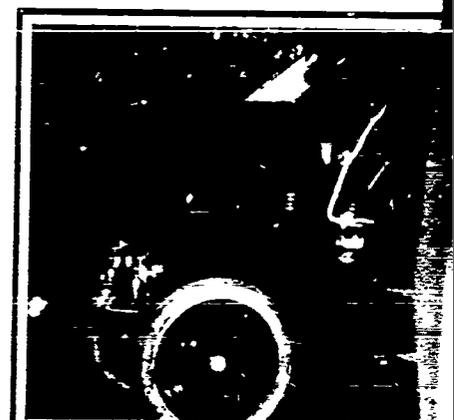
Winton touring car.

Motor, 40-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



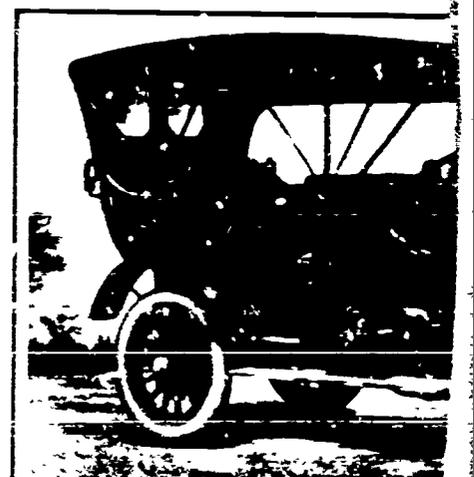
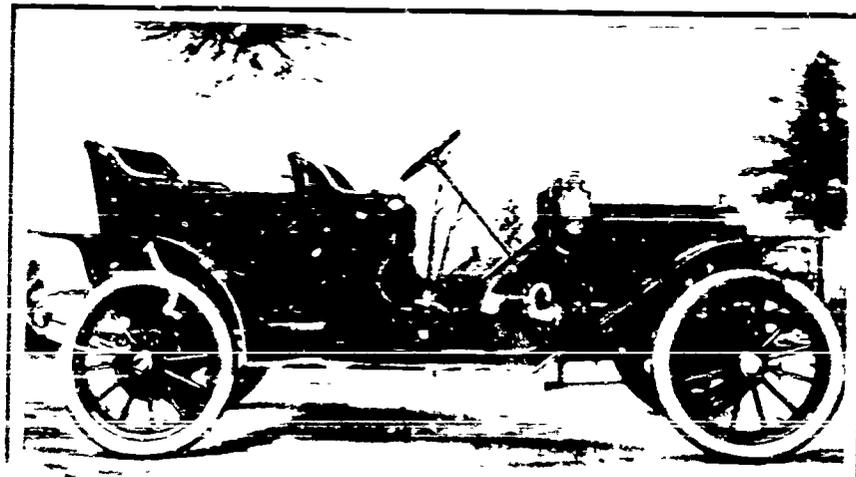
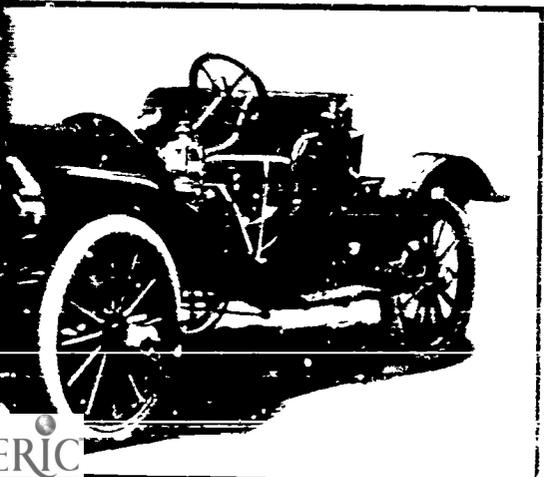
Fire Arrow touring car.

Motor, 40-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



Cadillac 30-horse-power.

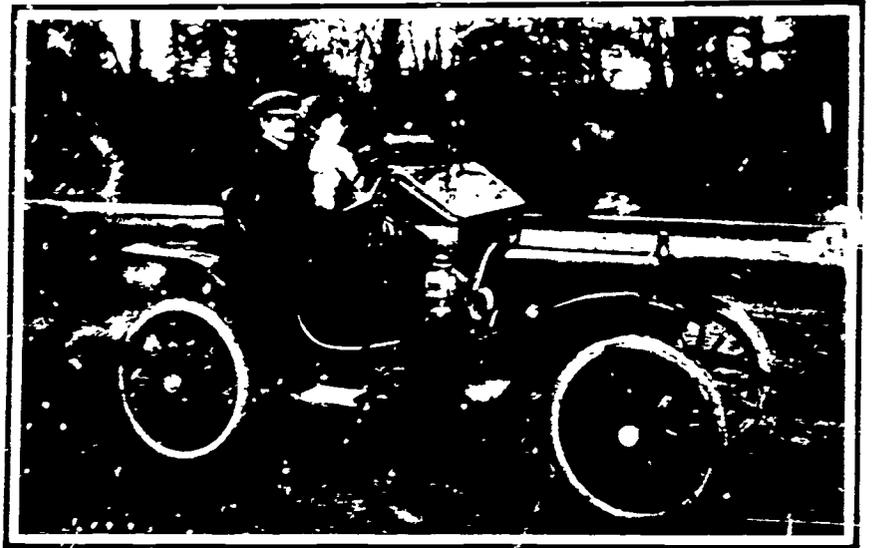
Motor, 30-horse-power, 4-cylinder, 24-inch bore, 34-inch stroke, 2400 rpm. Transmission, 4-speed, sliding gear. Price, \$1750.



Chadwick-Detroit 40-horse-power pony tonneau.



Cartercar, 35-horse-power.

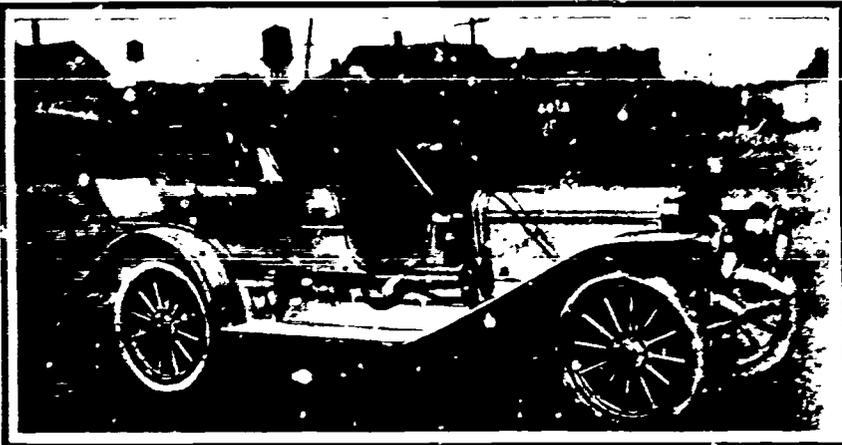


Franklin 42-horse-power touring car.

Horsepower (A. I. A. M. rating) 42. Bore 4 1/2 inches; stroke 4 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$2,700.

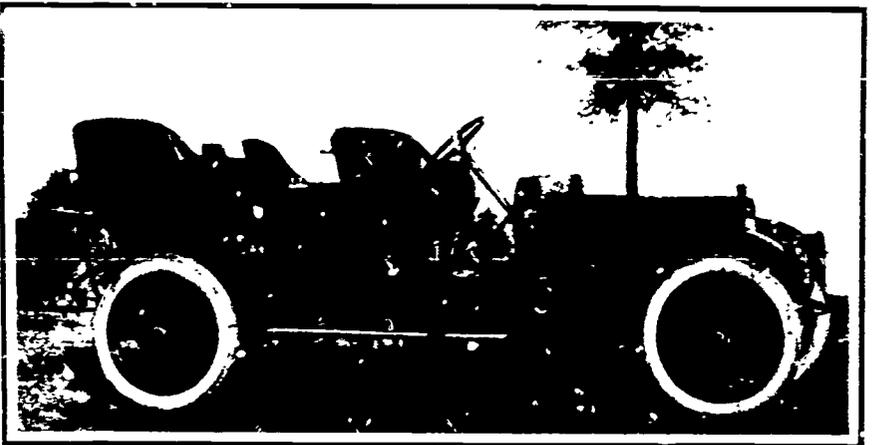
Hupmobile runabout.

Horsepower (A. I. A. M. rating) 24. Bore 3 1/4 inches; stroke 3 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$750.



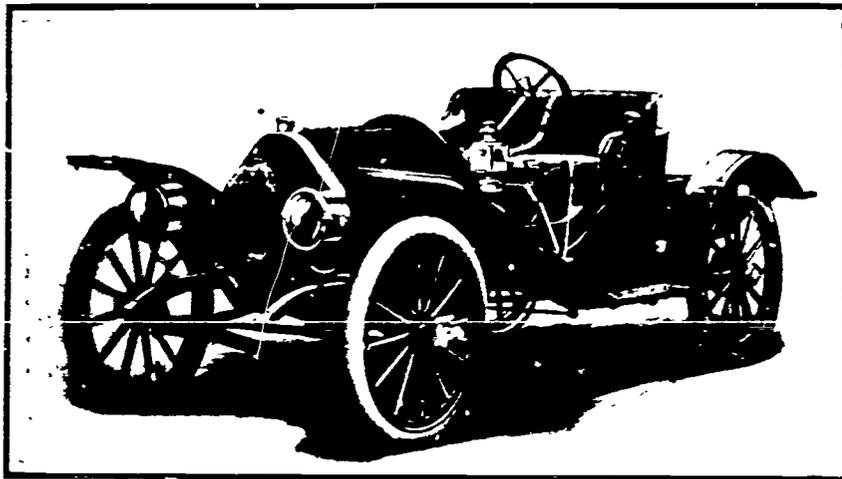
Winton touring car.

Horsepower (A. I. A. M. rating) 48. Bore 4 1/2 inches; stroke 4 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$2,000.



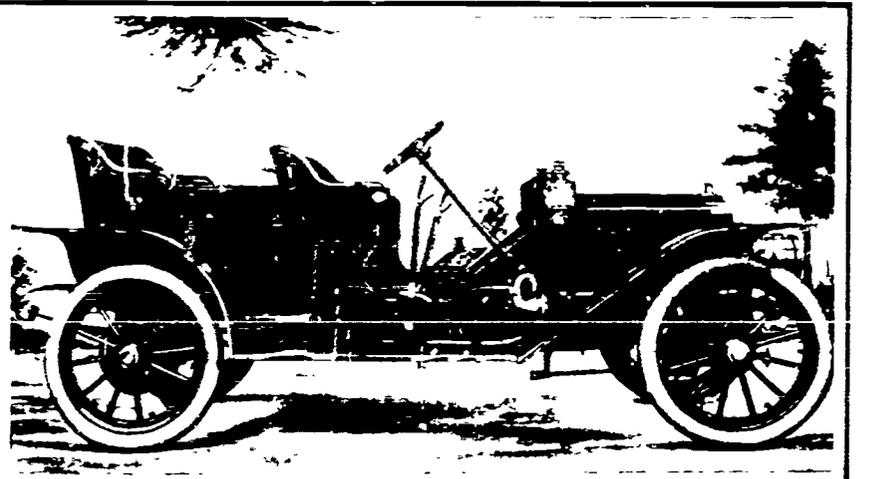
Pierce-Arrow touring car.

Horsepower (A. I. A. M. rating) 48. Bore 4 1/2 inches; stroke 4 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$5,000.



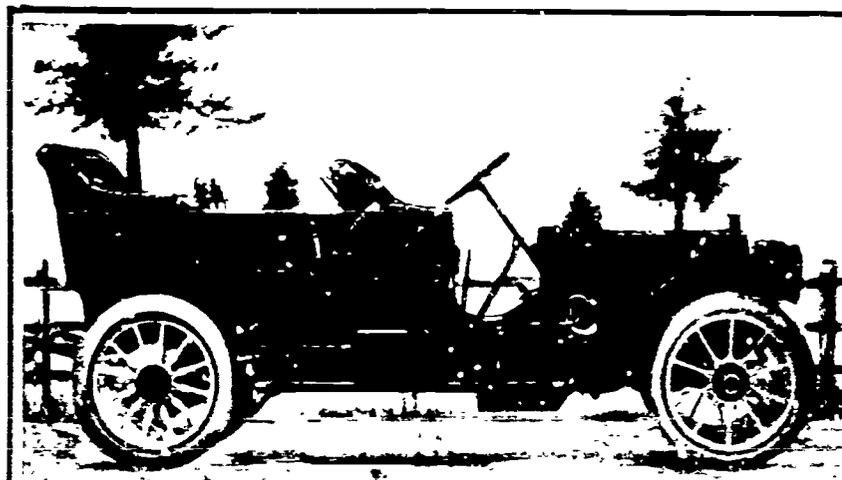
The K-R-I-T runabout.

Water-cooled, 20-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$800.



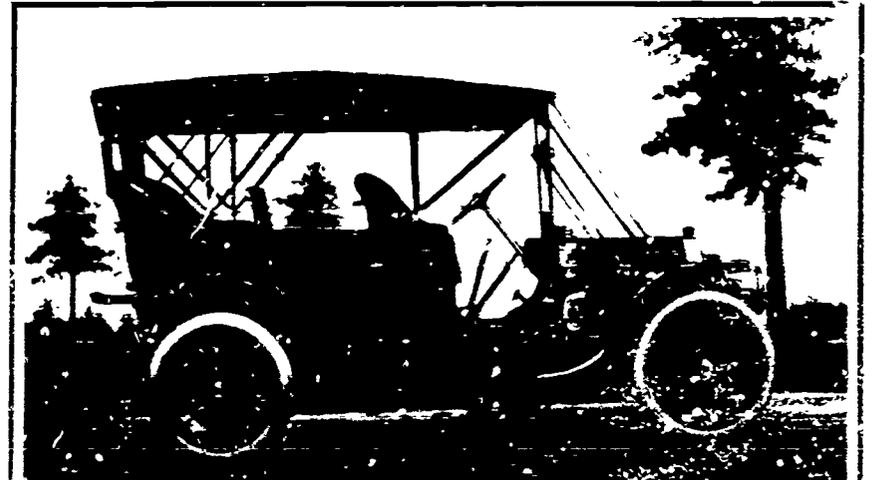
Maxwell 40-horse-power touring car.

Horsepower (A. I. A. M. rating) 40. Bore 4 1/2 inches; stroke 4 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$2,700.



Packard 30-horse-power touring car.

Horsepower (A. I. A. M. rating) 30. Bore 4 1/2 inches; stroke 4 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$2,500.



Herless 20-horse-power touring car.

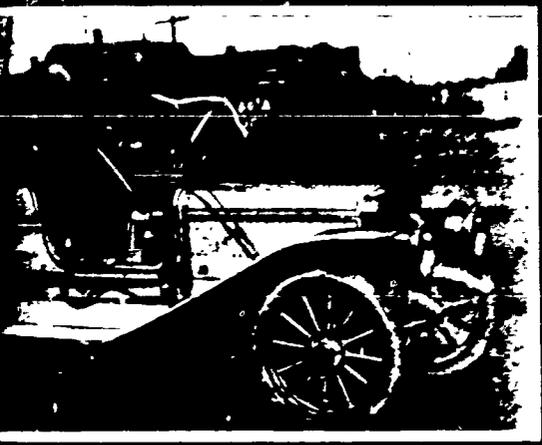
Horsepower (A. I. A. M. rating) 20. Bore 4 1/2 inches; stroke 4 1/2 inches. Water-cooled, 120-hp spark shaft drive. 1 in. over-all front axle distance. 2 in. over-all rear axle distance. Price, \$1,100.

41 40-horse-power pony tonneau.



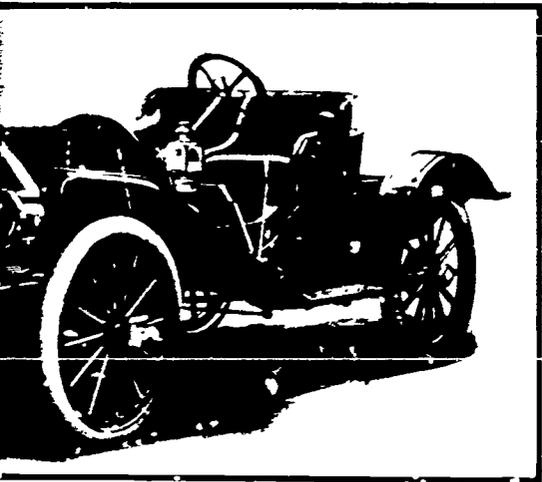
42-horse-power touring car.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,750.



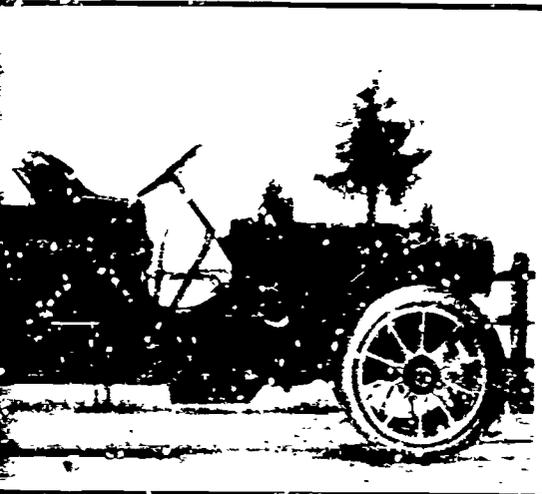
Winton touring car.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$3,000.



The K-R-I-T runabout.

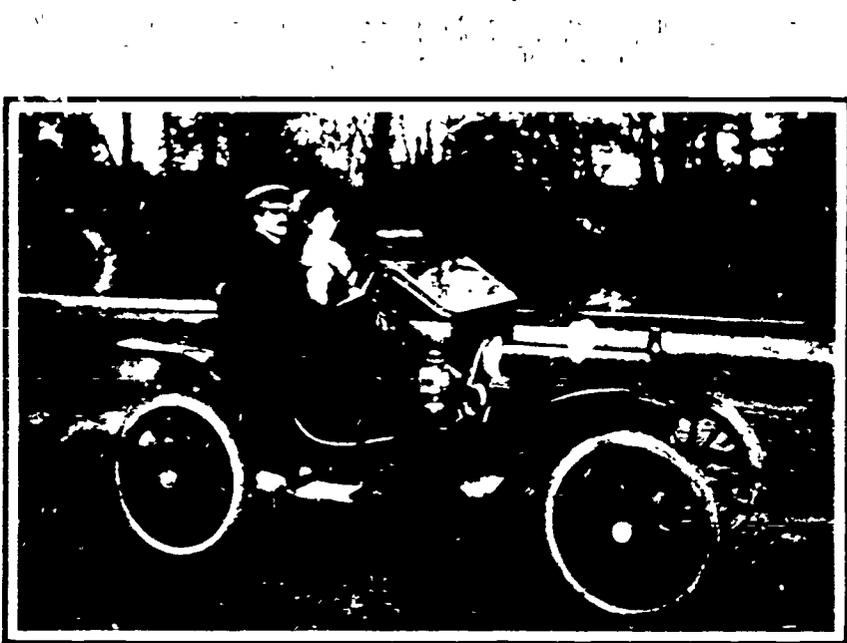
Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,400.



30-horse-power touring car.

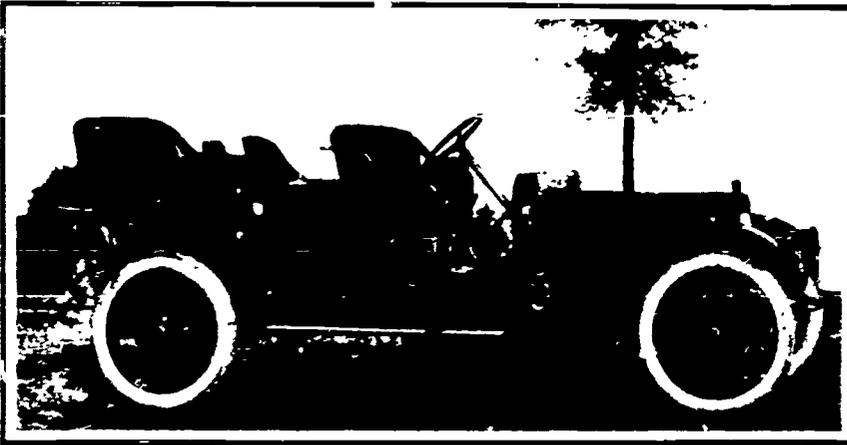
Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,400.

Cartercar, 35-horse-power.



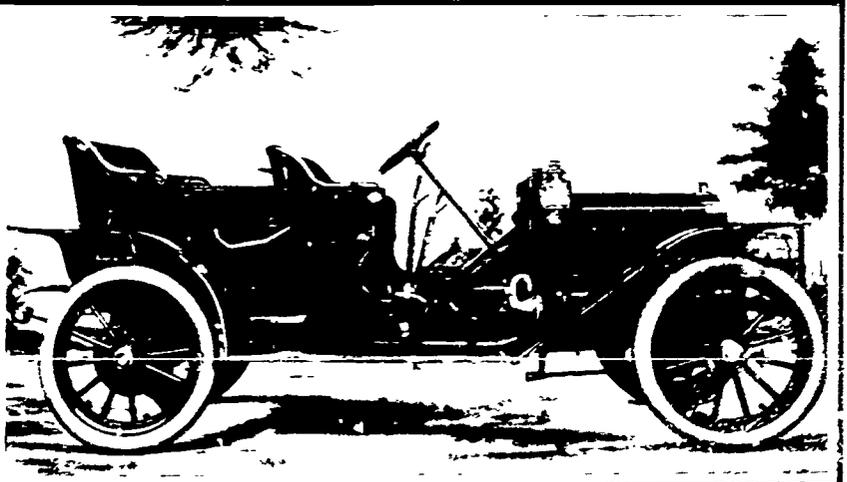
Hupmobile runabout.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,750.



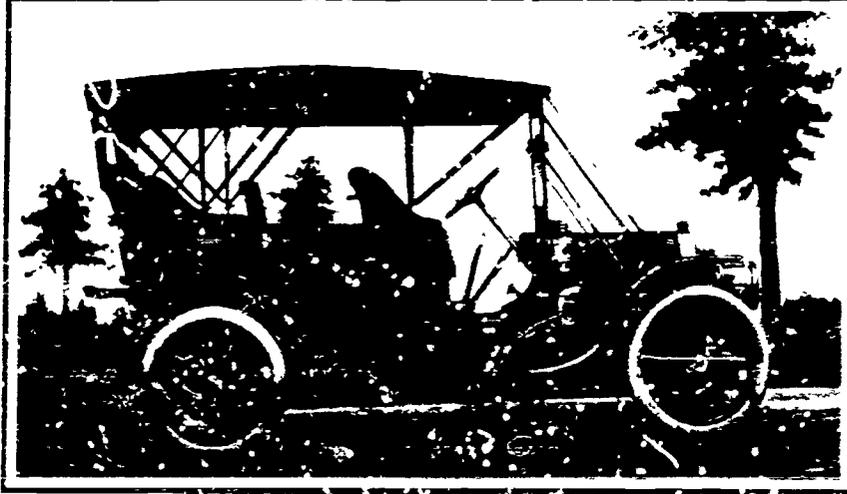
Pierce-Arrow touring car.

Horse power (A. I. A. M. rating) 48; 6 cylinders; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$5,000.



Maxwell 40-horse-power touring car.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,750.



Pierless 30-horse-power touring car.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,400.

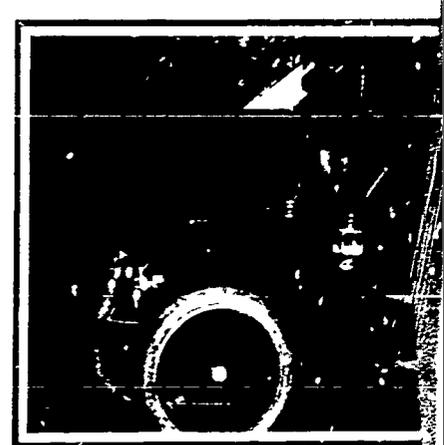


Schubert car.



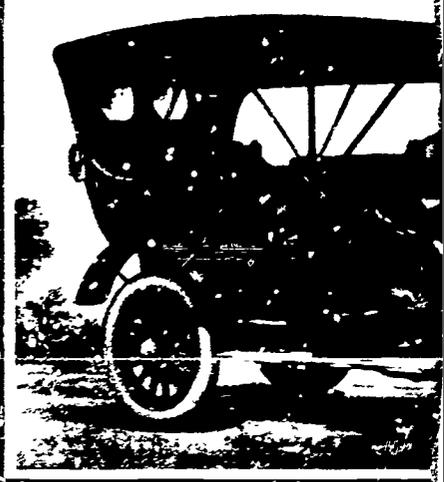
Premier 40-horse-power.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,750.



Cadillac 30-horse-power.

Cone clutch; contracting and expanding brakes; bore 4 1/2 inches by stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,750.



Royal Tourist.

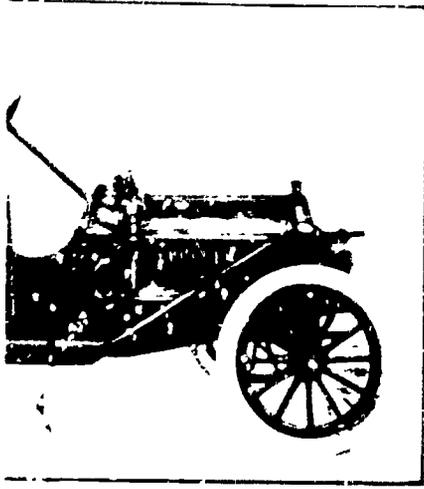
Horse power (A. I. A. M. rating) 48; 6 cylinders; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$5,000.



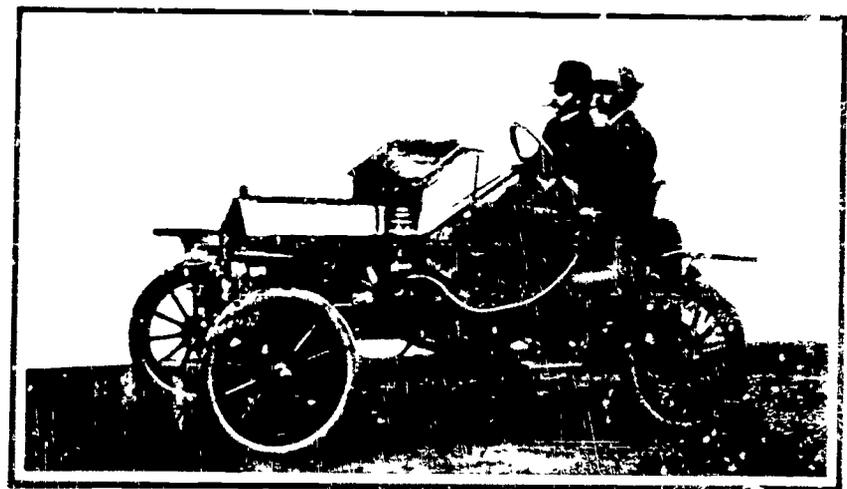
The Hudson.

Four cylinders; cast iron; bore 4 1/2 inches; stroke 4 1/2 inches; water-cooled; 5 amp spark ignition; shaft drive; cone clutch; expanding brakes. Price, \$2,750.



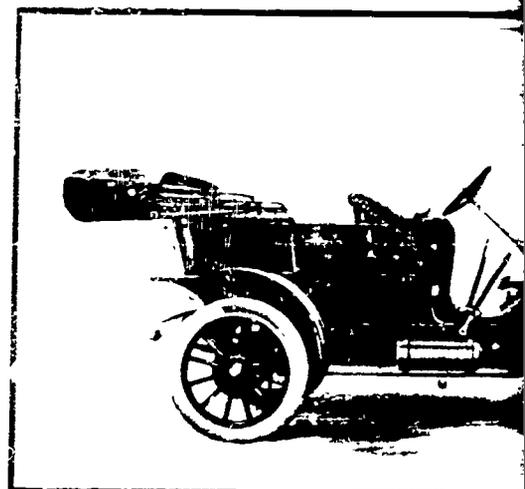


Convertible car.



Brush runabout

101 1/2 inch wheel base, 4 cylinders, 4 valves, 40 h.p. by 6000 rpm. Motor bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$485



Overland touring car. 35-40

40 h.p. 4 cylinders, 4 valves, 40 h.p. by 6000 rpm. Motor bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$485



Power touring car.

40 h.p. 4 cylinders, 4 valves, 40 h.p. by 6000 rpm. Motor bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$2750



Rambler touring car.

Motor bore 5 inches; stroke 5 1/2 inches; 4 cylinders; ignition, high-tension; transmission, 3 speeds selective; horse-power, 45; brakes on hubs. Price \$2750



Oldsmobile 40-horse-power special

Four cylinders; bore 4 3/4 inches; stroke 4 3/4 inches; water cooled; high-tension magneto and dry battery; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$2750



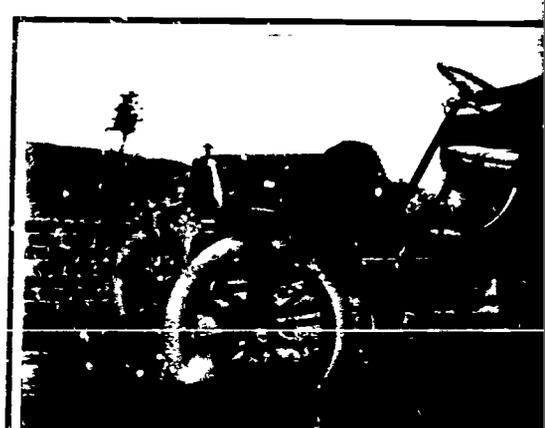
Power limousine.

40 h.p. 4 cylinders, 4 valves, 40 h.p. by 6000 rpm. Motor bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$3000



Pope-Hartford 30-horse-power touring car.

Four cylinders; bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; jump spark ignition; expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$2750

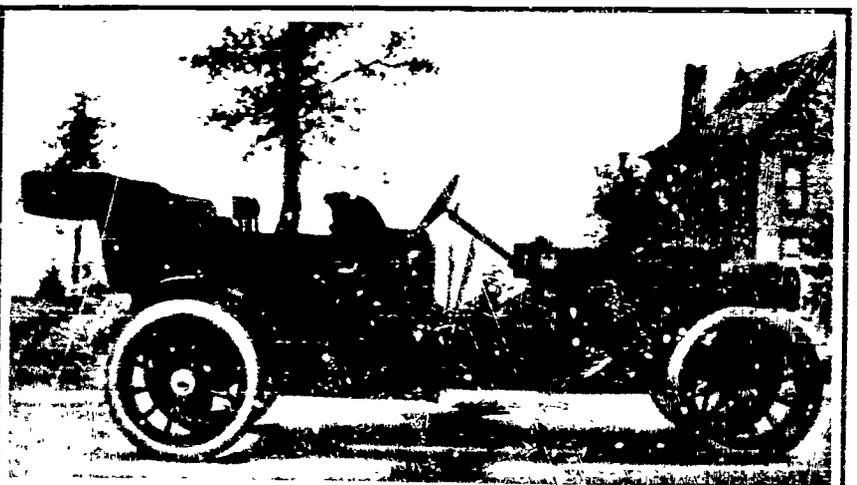


Baker electric runabout

Bevel gear shaft drive; semi-floating rear axle with ball joint; controller, continuous torque drum type; reverse, 3 brakes, 2 internal and 1 emergency. Price \$2750



Touring car



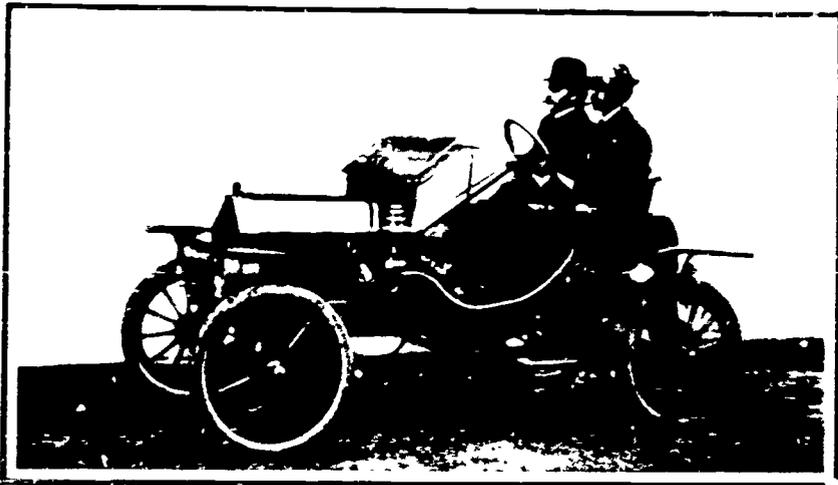
Mitchell touring car

40 h.p. 4 cylinders, 4 valves, 40 h.p. by 6000 rpm. Motor bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$3000



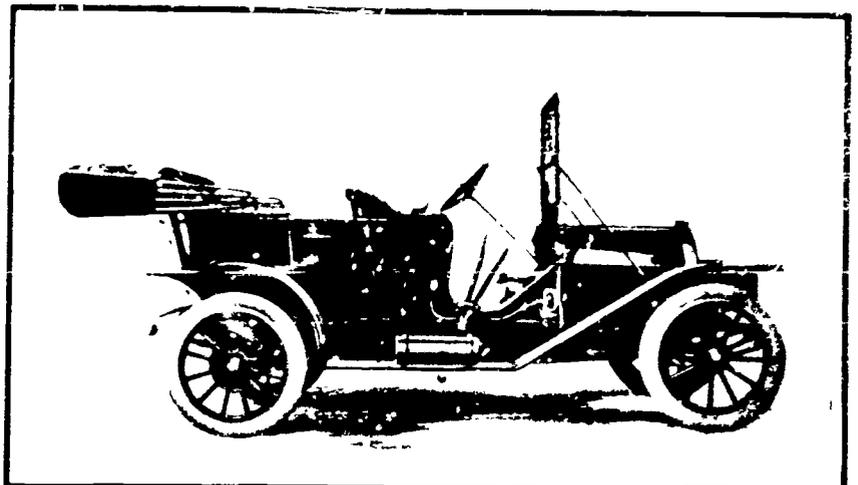
Stevens-Duryea touring car

40 h.p. 4 cylinders, 4 valves, 40 h.p. by 6000 rpm. Motor bore 4 1/2 inches; stroke 5 1/2 inches; water cooled; shaft drive; selective expansion brake on propeller shaft and both rear wheels; shaft drive selective sliding gear transmission. Price \$3000



Brush runabout

Four cylinders; bore, 4 1/2 inches; stroke, 5 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$485.



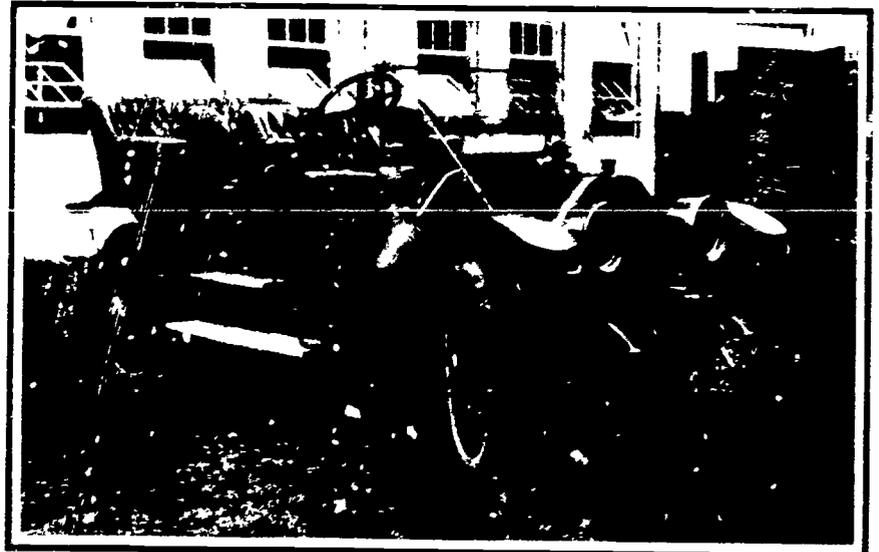
Overland touring car, 35-40 horse-power

Four cylinders; bore, 4 1/2 inches; stroke, 5 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$1,500.



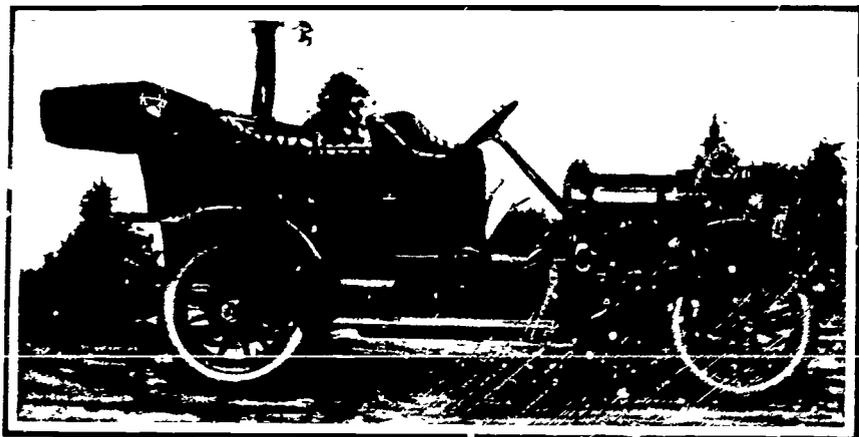
Rambler touring car.

Motor: bore, 5 inches; stroke, 5 1/2 inches; 4 cylinders; ignition, high-tension; transmission, 3 speeds selective; horse-power, 45; brakes on hubs. Price, \$2,700.



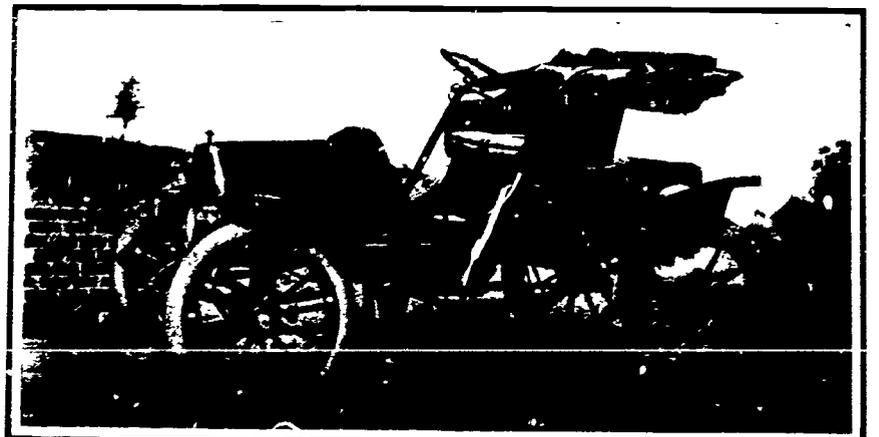
Oldsmobile 40-horse-power special touring car.

Four cylinders; bore, 4 3/4 inches; stroke, 4 3/4 inches; water cooled; jump spark ignition; high-tension magneto and dry battery; shaft drive; selective sliding gear transmission. Price, \$3,000.



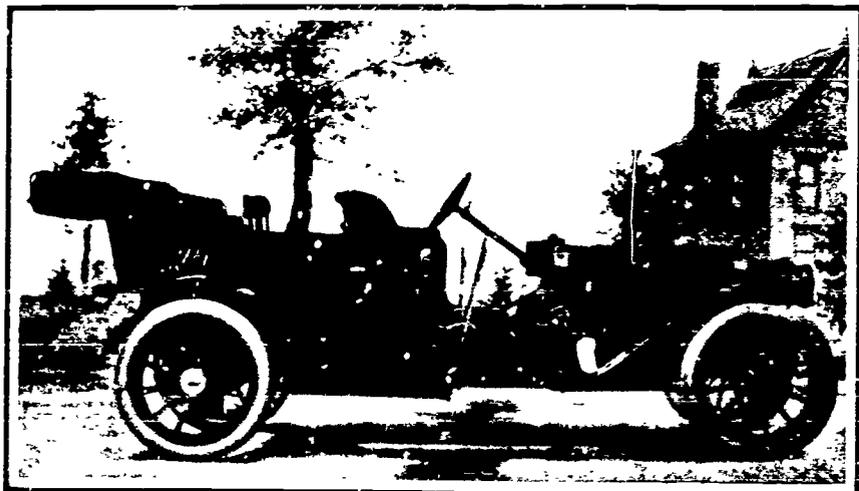
Pope-Hartford 30-horse-power touring car.

Four cylinders; bore, 4 1/2 inches; stroke, 5 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,750.



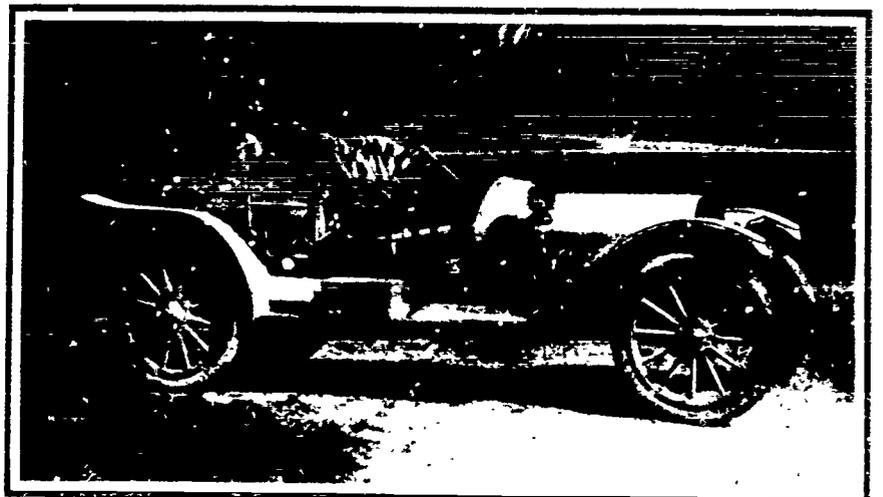
Baker electric runabout.

Bevel gear shaft drive; semi-floating rear axle with ball bearings; motor, four-pole series wound; controller, continuous torque drum type with 6 speeds forward and 3 reverse; 3 brakes, 2 internal and 1 emergency. Price, \$2,000.



Mitchell touring car

Four cylinders; bore, 4 1/2 inches; stroke, 5 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,000.

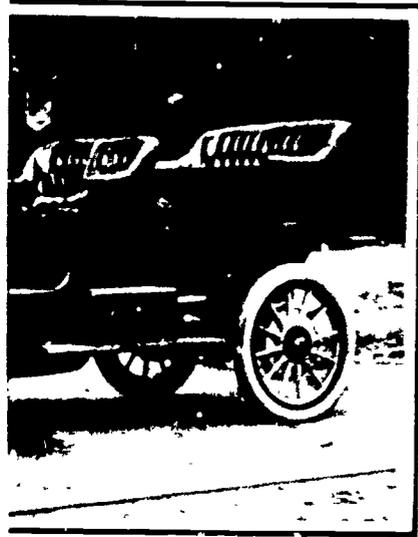


Stevens-Duryea touring car.

Four cylinders; bore, 4 1/2 inches; stroke, 5 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,500.

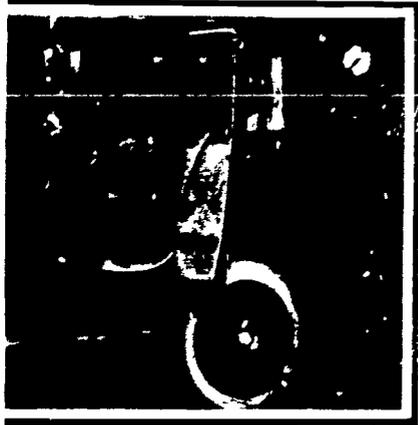


Available car.



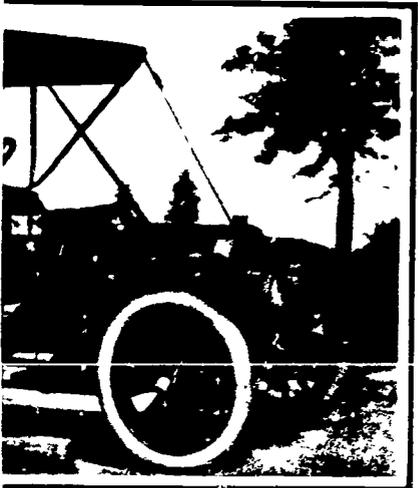
Over touring car.

Four cylinders; bore 3 1/4 inches; stroke 4 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,400.



power limousine.

Four cylinders; bore 3 1/4 inches; stroke 4 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$3,000.



touring car.

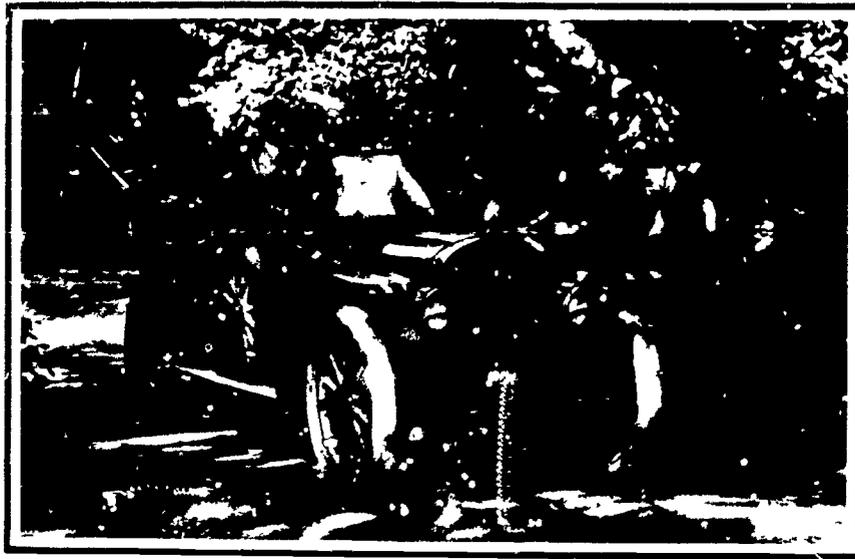
Four cylinders; bore 3 1/4 inches; stroke 4 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,400.



runabout.

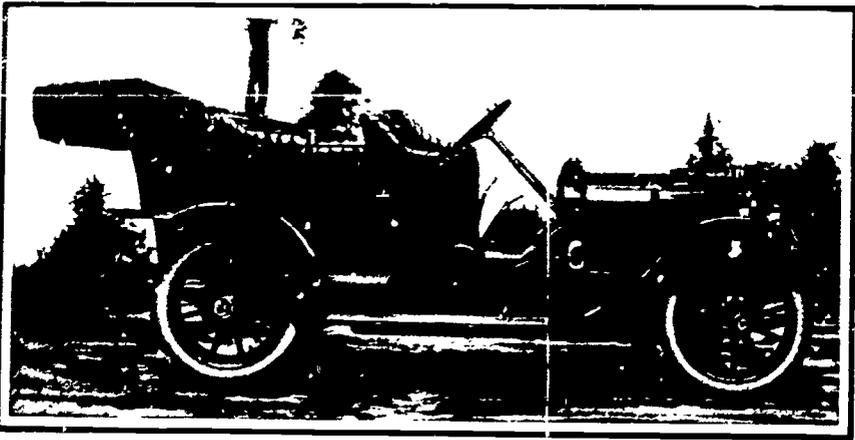
Two cylinders; bore 2 1/4 inches; stroke 3 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$1,200.

Brush runabout.



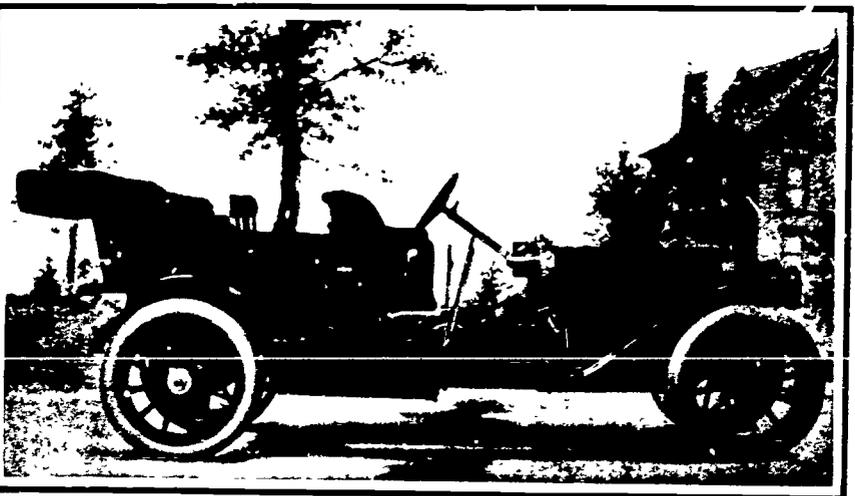
Rambler touring car.

Motor: bore 5 inches; stroke 5 1/2 inches; 4 cylinders; ignition: high-tension; transmission: 3 speeds; shaft drive; horse-power: 17; brakes on hubs. Price, \$2,500.



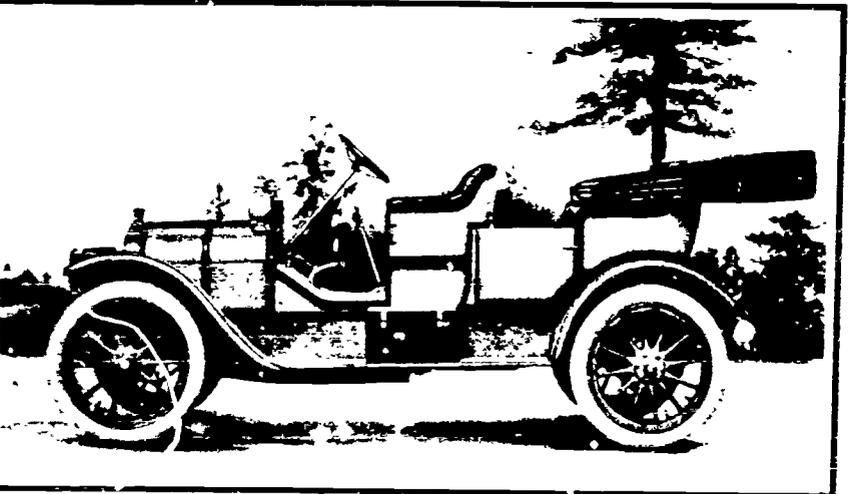
Pope-Hartford 30-horse-power touring car.

Four cylinders; bore 4 1/4 inches; stroke 5 1/4 inches; water cooled; jump spark ignition; expanding brake on propeller shaft and both rear wheels; shaft drive; selective sliding gear transmission. Price, \$2,750.



Mitchell touring car.

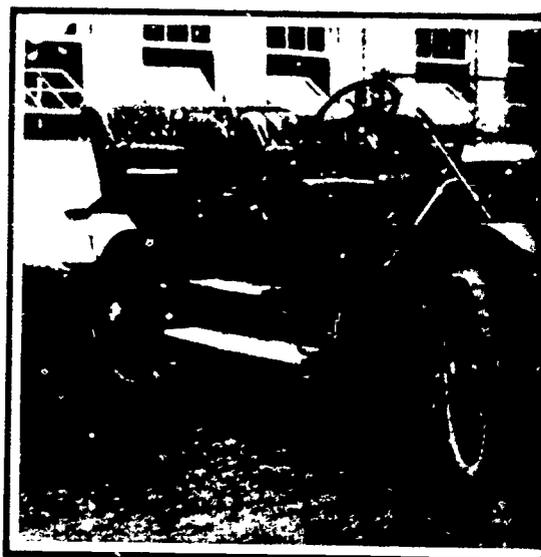
Horse-power: A. L. A. M. rating: 48; 6 cylinders; bore 4 1/4 inches; stroke 5 inches; water cooled; jump spark ignition; high-tension magneto and dry battery; shaft drive; transmission: selective sliding gear. Price, \$2,000.



White 20-horse-power gasoline car.

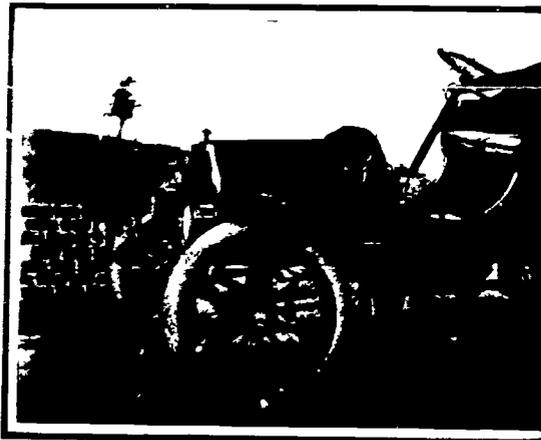
Four cylinders; bore 3 1/4 inches; stroke 4 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,000.

Overland touring car. 35-40



Oldsmobile 40-horse-power special.

Four cylinders; bore 3 1/4 inches; stroke 4 1/4 inches; water cooled; high-tension magneto and dry battery; shaft drive; selective sliding gear transmission. Price, \$2,400.



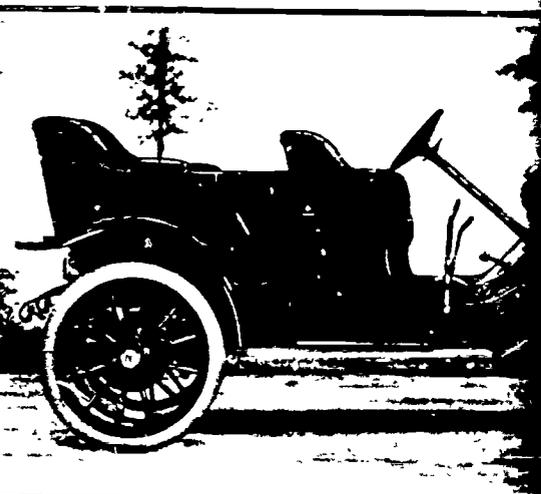
Baker electric runabout.

Bevel gear shaft drive; semi-floating rear axle with ball bearings; wound; controller, continuous torque drum type; reverse; 3 brakes, 2 internal and 1 emergency.



Stevens-Duryea touring car.

Horse-power (A. L. A. M. rating) 36.1; 4 cylinders; bore 3 1/4 inches; stroke 4 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; transmission: progressive sliding gear.



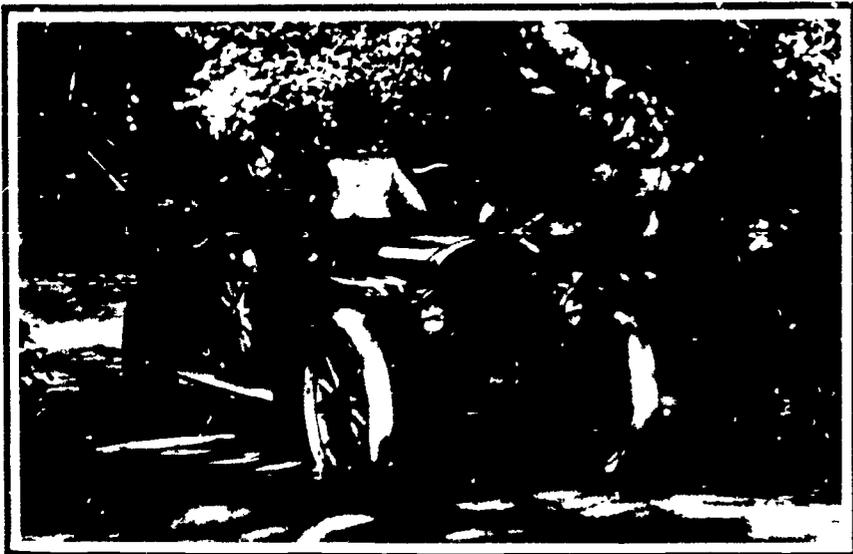
Everett-Metzger-Flanders 30-horse-power car.

Wheel base: 108 inches; four cylinders; bore 3 1/4 inches; stroke 4 1/2 inches; water cooled; jump spark ignition; high-tension magneto; shaft drive; selective sliding gear transmission. Price, \$2,200.

-BIG AND LITTLE.

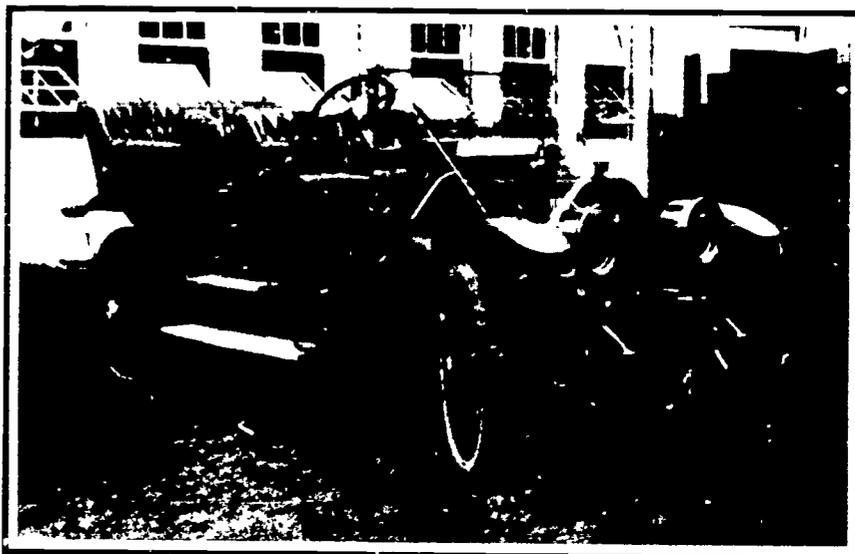
Brush runabout

Motor: bore, 5 inches; stroke, 5 1/2 inches; 4 cylinders; ignition, high tension; transmission, 3 speeds; shaft drive; brakes on hubs. Price, \$2,495.



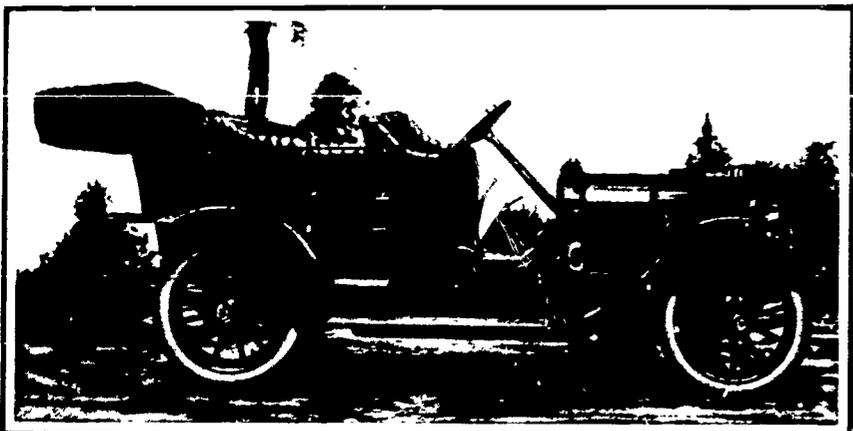
Overland touring car, 35-40 horse-power

Motor: bore, 4 1/2 inches; stroke, 5 1/2 inches; 4 cylinders; ignition, high tension; transmission, 3 speeds; shaft drive; brakes on hubs. Price, \$1,700.



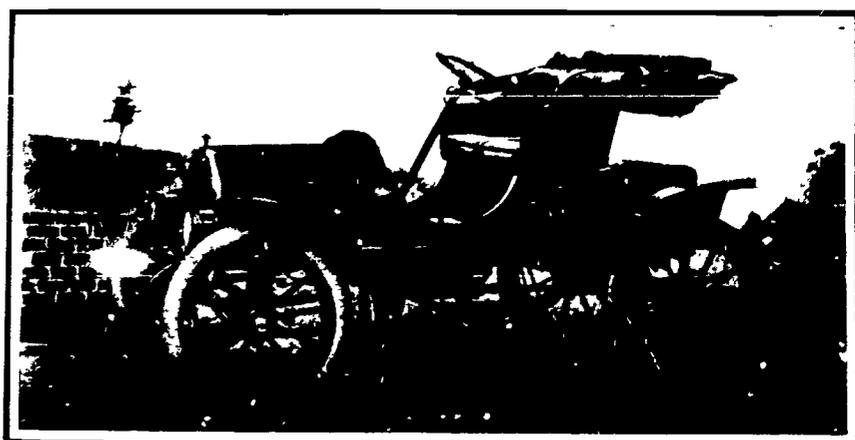
Rambler touring car.

Motor: bore, 5 inches; stroke, 5 1/2 inches; 4 cylinders; ignition, high tension; transmission, 3 speeds; shaft drive; brakes on hubs. Price, \$2,700.



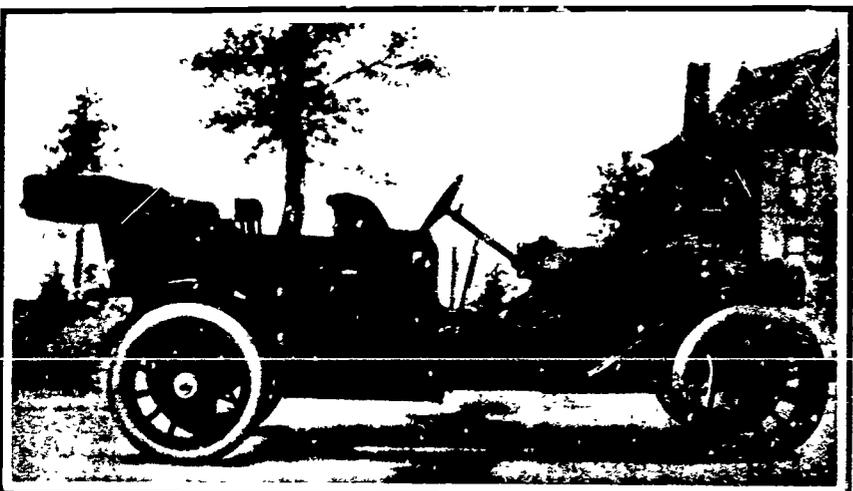
Oldsmobile 40-horse-power special touring car.

Four cylinders; bore, 4 1/4 inches; stroke, 4 1/4 inches; water cooled; jump spark ignition; high tension magneto and dry battery; shaft drive; selective sliding gear transmission. Price, \$3,000.



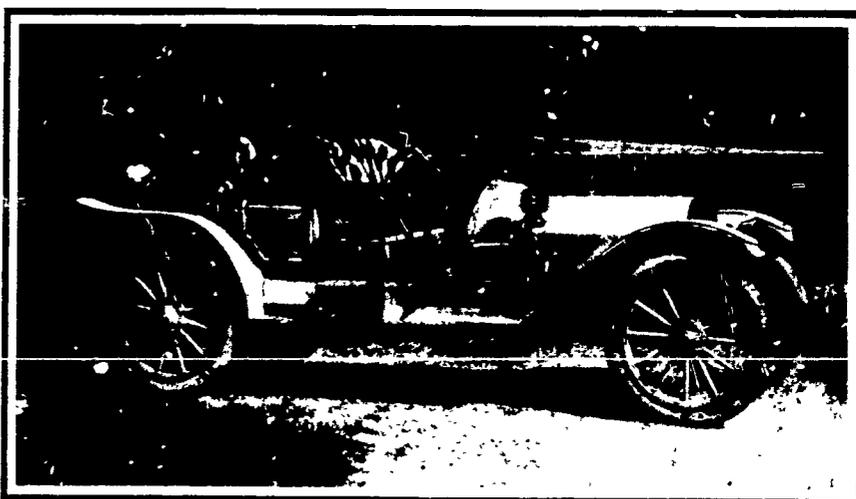
Pope-Hartford 30-horse-power touring car.

Four cylinders; bore, 4 1/4 inches; stroke, 5 1/4 inches; water cooled; jump spark ignition; expanding brake on propeller shaft and both rear wheels; shaft drive; selective sliding gear transmission. Price, \$2,750.



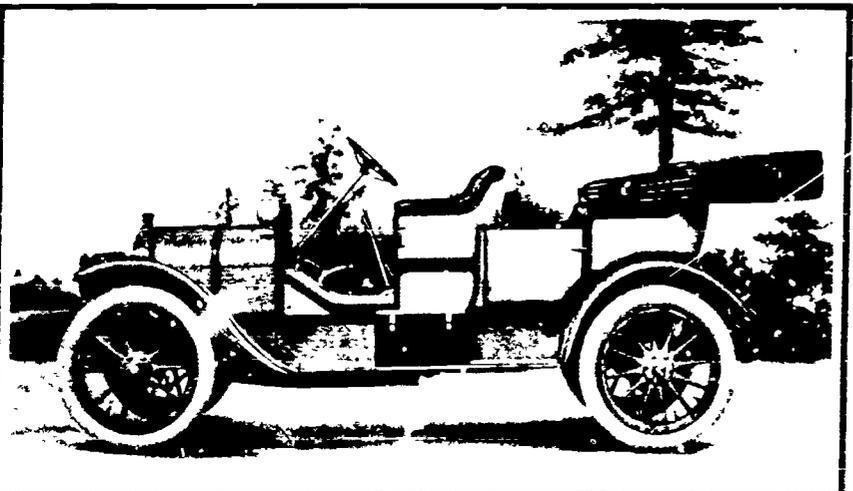
Baker electric runabout.

Bevel gear shaft drive; semi-floating rear axle with ball bearings; motor, four pole series wound; controller, continuous torque drum type with 6 speeds forward and 3 reverse; 3 brakes, 2 internal and 1 emergency. Price, \$2,000.



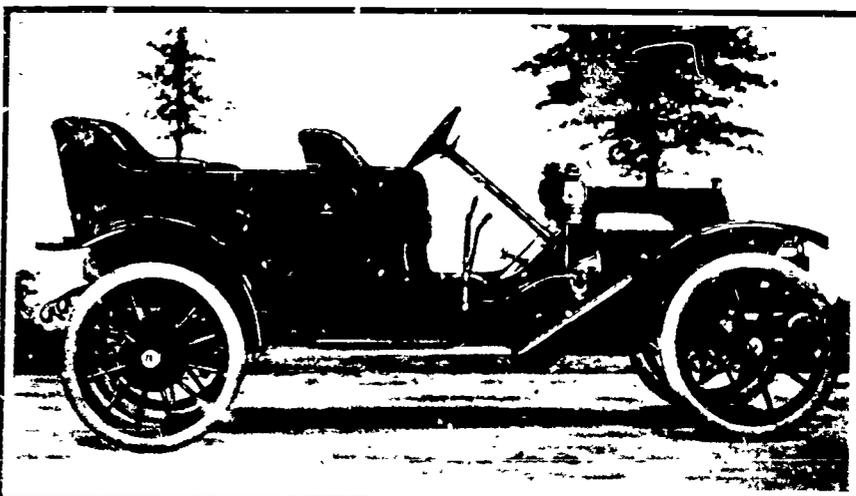
Mitchell touring car.

Horse-power (A. I. A. M. rating) 49.8; 6 cylinders; bore, 4 1/4 inches; stroke, 5 inches; water cooled; jump spark ignition; high-tension magneto and dry battery; shaft drive; transmission, selective sliding gear. Price, \$2,000.



Stevens-Duryea touring car.

Horse-power (A. I. A. M. rating) 36.1; 4 cylinders; bore, 4 1/4 inches; stroke, 4 1/4 inches; water cooled; jump spark ignition; high-tension magneto and dry battery; shaft drive; transmission, progressive sliding gear. Price, \$2,850.



White 20-horse-power gasoline car.

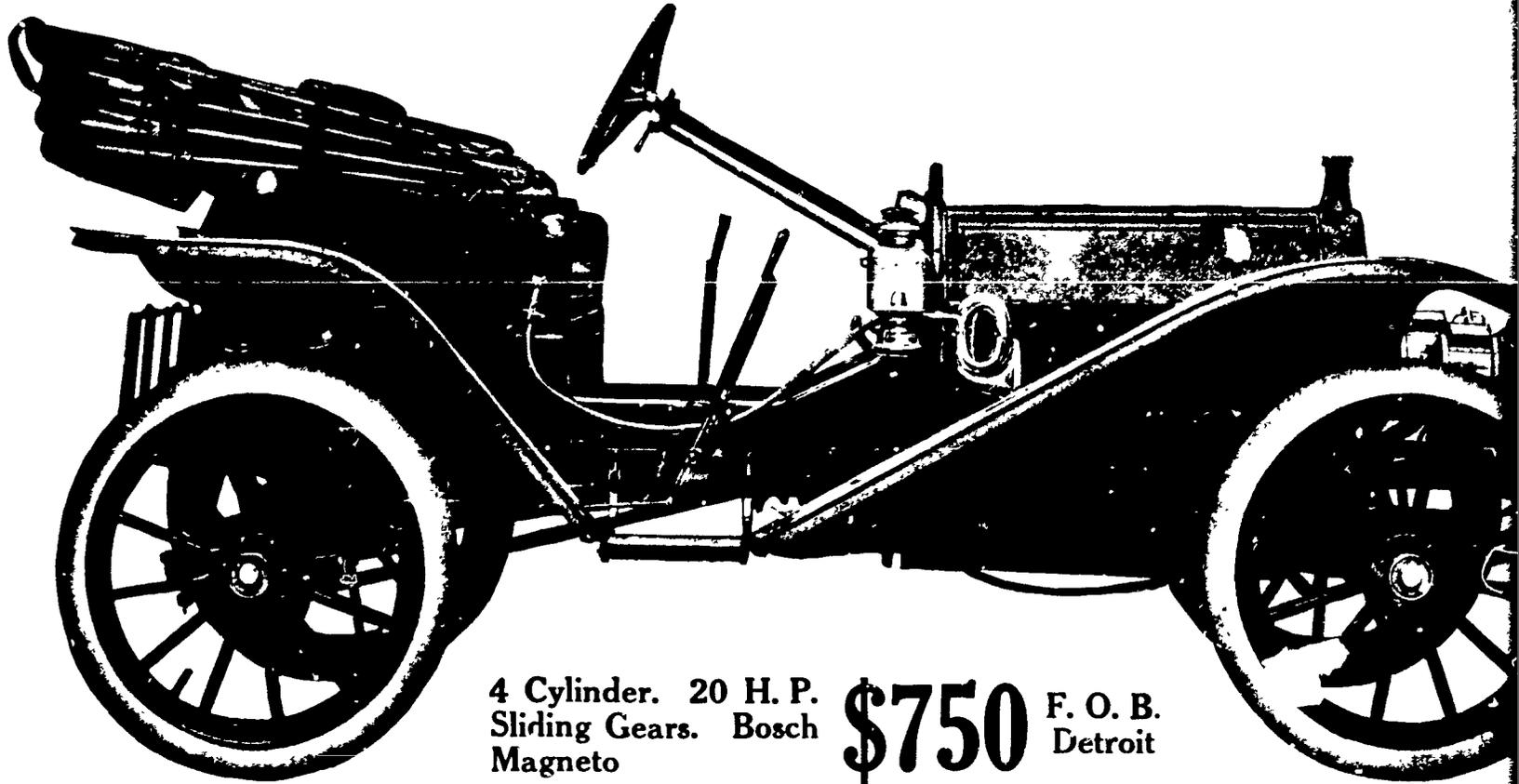
Motor: bore, 4 1/4 inches; stroke, 4 1/4 inches; 4 cylinders; ignition, high tension; transmission, 3 speeds; shaft drive; brakes on hubs. Price, \$2,000.

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

Wheel base, 108 inches; four cylinders; cast iron; bore, 4 inches; stroke, 4 1/4 inches; water cooled; jump spark ignition; selective sliding gear transmission. Price, \$1,200.

ADVERTISEMENT

COMPARES WITH THE COSTLIEST CARS AS A PE
SMALL DIAMOND WITH A LARGE ONE



4 Cylinder. 20 H. P. \$750 F. O. B.
Sliding Gears. Bosch Detroit
Magneto

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 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 precisely as good and fine as the same

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

Everybody, if you will stop and think a little bit, has seen things about the Hupmobile.

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

A year ago there were only a few Hupmobiles in commission.

Today 5,000 are being built. The excellence of workmanship and the materials will permit of handling the demand which sprang up almost immediately before the first Hupmobile was completed.

Of course, you want to own a car which has been given the warmest approval ever given by an American motor-buying public.

Even if you own a car, if you are strongly attached, you will be glad to place before you all the things which will shed light upon the Hupmobile as it is today—created.

And if you are wavering about the purchase of a car, your desire

SPECIFICATIONS

ENGINE—4 cylinder 20 H. P., 3 1/4 inch bore, 3 3/8 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.

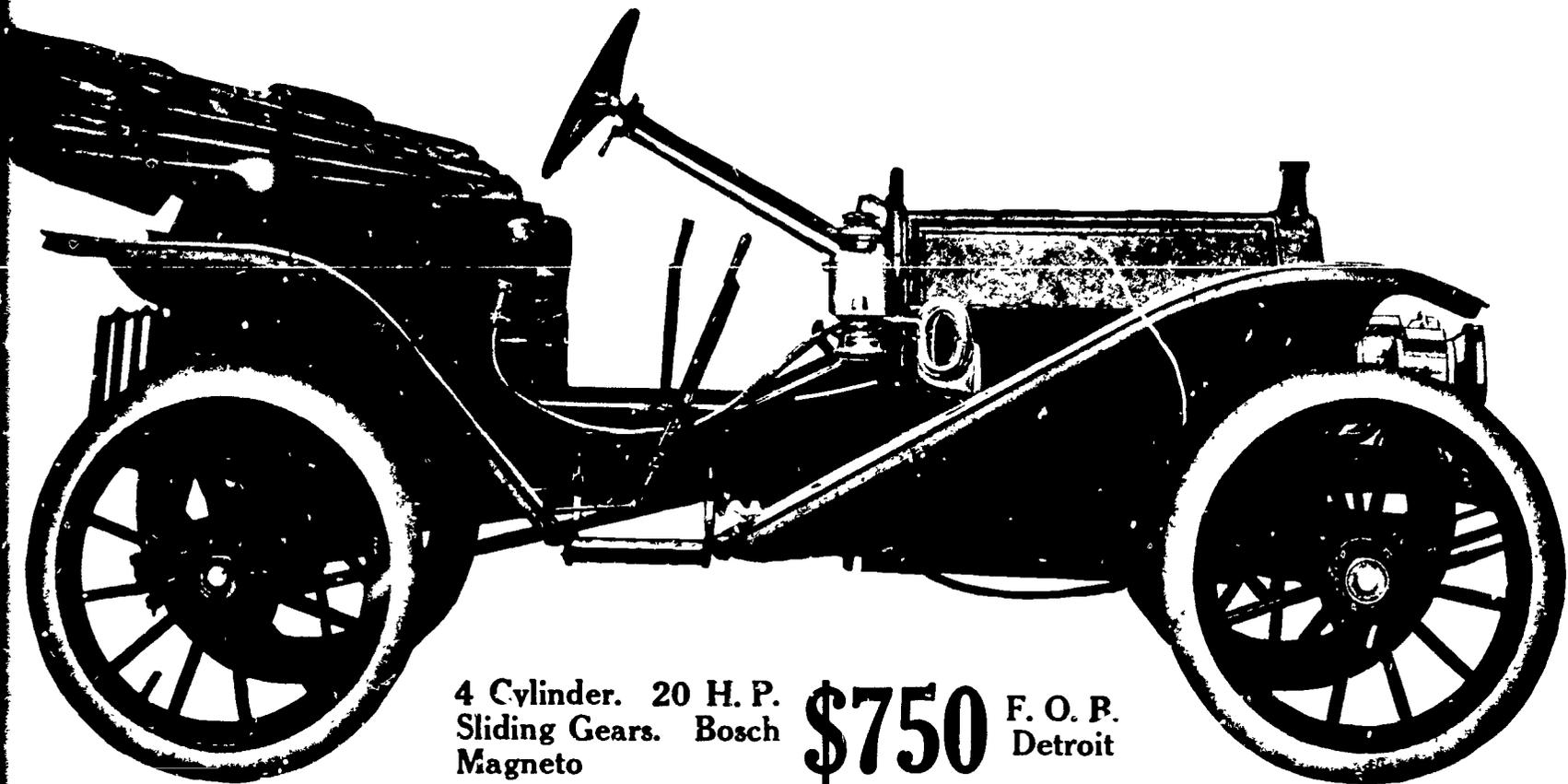
BRAKES—Two foot and two emergency (internal expanding) lined with Thermoid on rear hubs.

IGNITION—Bosch high tension magneto, doing away with spark coil, batteries and connecting wires.

TIRES—30 x 3 inches.

ADVERTISEMENT

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



4 Cylinder. 20 H. P. \$750 F. O. B.
Sliding Gears. Bosch Magneto Detroit

Hupmobile

Diamond is relatively just as good and just as valuable as
in the same sense the Hupmobile is precisely as fine as the
best and the most expensive cars made.
the comparison because we
learn to associate the Hupmo-
mind with the finest cars you

Hupmobile claims the right (and
is conceded by discriminating
travel side by side with the
acts of motordom.

There are no delinquencies; admits no
concedes no advantage save
carrying capacity, to cars costing
more than its price.

The personnel of its ownership
in a city.

It is the majority of men who drive
who are the men who know good
the private garage, perhaps,
several fine cars of other types.

The Hupmobile was built to fill a particu-
lar want—to supply a special want—to
a type of car that was lacking.

Others could see no reason why a
car for two passengers should not be
built—just as sound and just as
the best big car built.

It contributes to power and
smoothness in the Hupmobile

These things (which are literally true) will explain to you what
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Hupmobile

SPECIFICATIONS

ENGINE—4 cylinder 20 H. P., 3 1/4 inch
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TRANSMISSION—Selective sliding gears
in extension bolted to crank case; shift-
ing without noise.

CLUTCH—Multiple disc type; self-adjust-
ing; 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 trans-
mission.

BRAKES—Two foot and two emergency
(internal expanding) lined with Thermoid
on rear hubs.

IGNITION—Bosch high tension magneto,
doing away with spark coil, batteries and
connecting wires.

TIRES—32 x 3 inches

Everybody, if you will stop to think back-
ward 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.

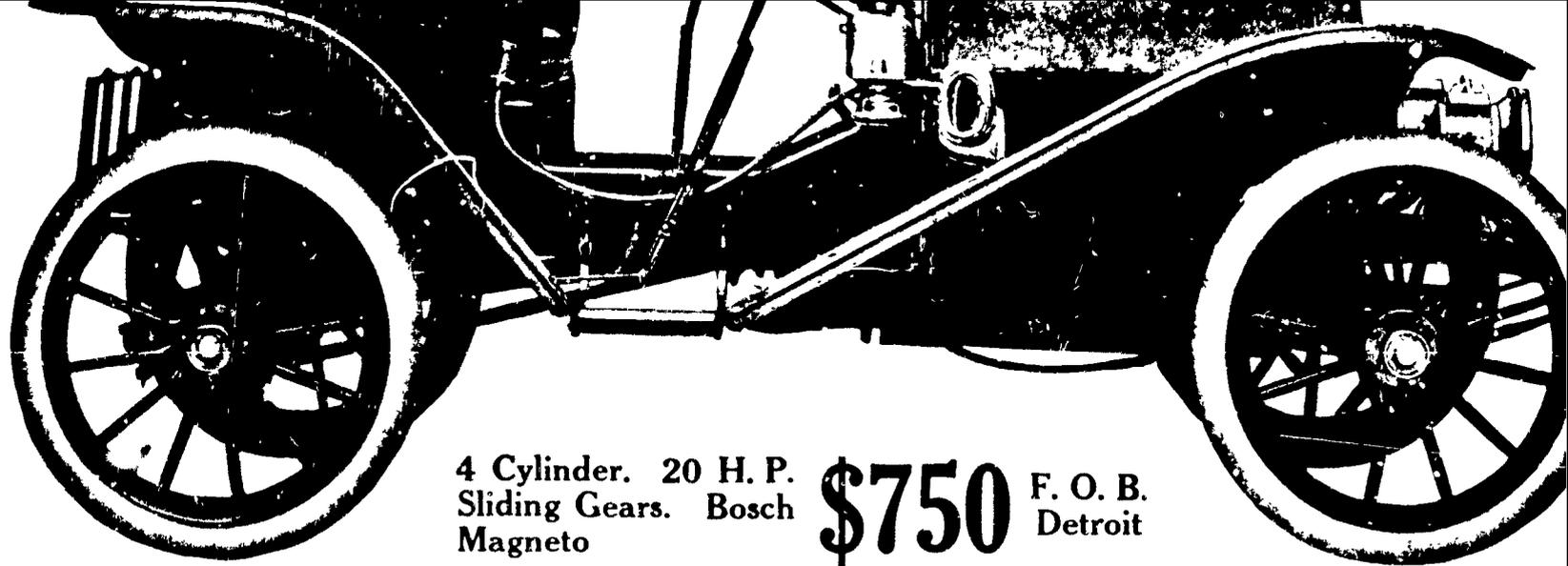
A year ago there were less than 100
Hupmobiles in commission.

Today 5,000 are being built, as rapidly as
excellence of workmanship with the finest
materials will permit of hurry—to satisfy a
demand which sprang up in incredible vol-
ume 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



4 Cylinder. 20 H. P. \$750 F. O. B.
 Sliding Gears. Bosch Detroit
 Magneto

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 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 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 not 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.

These things (which are literally true) will explain to you perhaps, you had not understood before—why you countered in the year past so many enthusiastic partisanshipes.

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

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

A year ago there were less than 5,000 Hupmobiles in commission.

Today 5,000 are being built, and the excellence of workmanship with which the materials will permit of hurry—demand which sprang up in immense volume before the first hundred had been completed.

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

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

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

Sign and send the coupon.

It will bring you not only the literature, picturing and description of the 1910 Hupmobile in every detail.

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

SPECIFICATIONS

ENGINE—4 cylinder 20 H. P., 3¼ inch bore, 3⅞ 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 (internal expanding) lined with Thermoid 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.

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.

Send literature address of H

Name

Address



4 Cylinder. 20 H. P. \$750 F. O. B.
 Sliding Gears. Bosch Detroit
 Magneto

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SPECIFICATIONS

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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.

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HUPP MOTOR CAR COMPANY

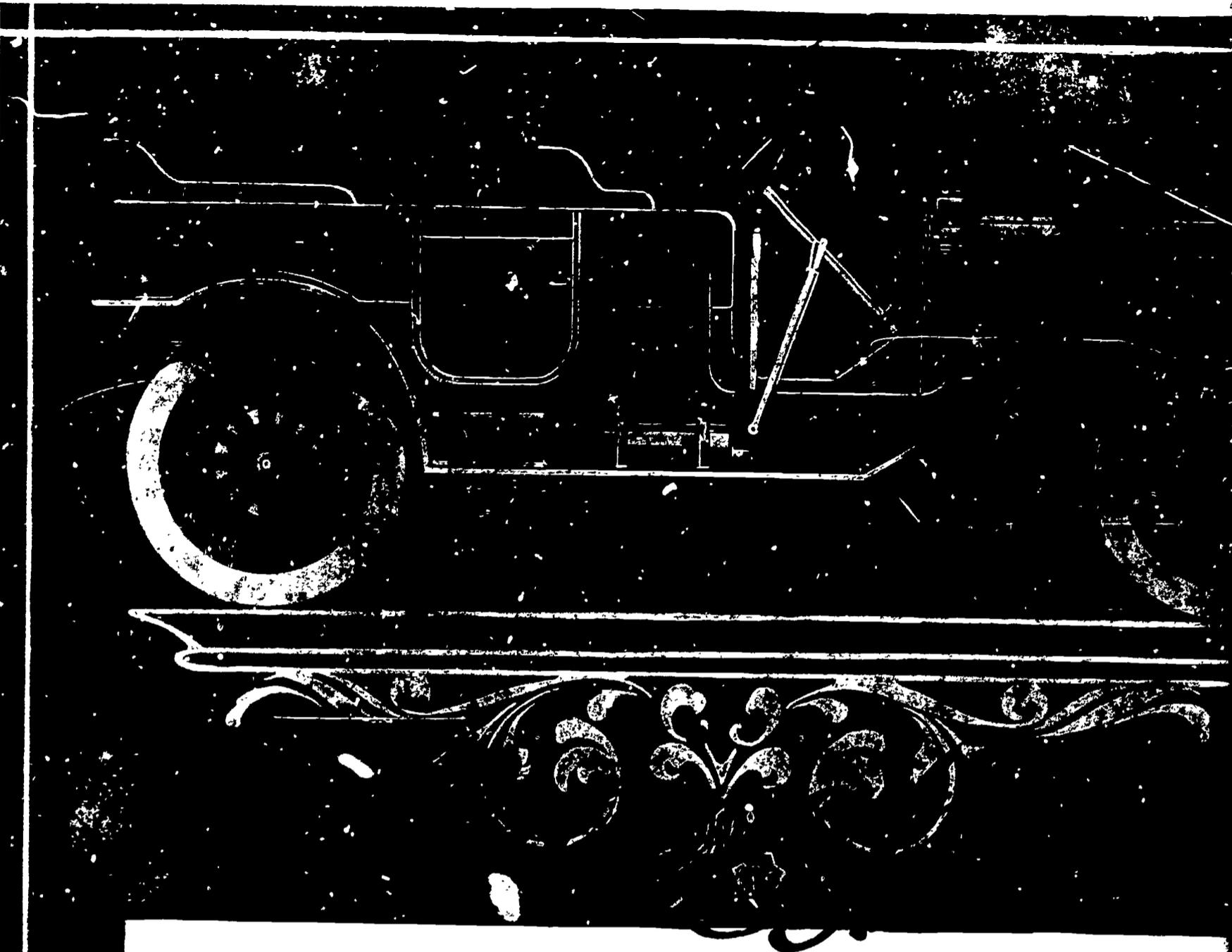
DETROIT, MICH.

Name.....
 Address.....

**Hupp
 Motor
 Car Co.**

Dept. Q
 DETROIT, MICH.

Send 1910 Hupmobile
 literature and name and
 address of Hupmobile dealer.



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" 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 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 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 five hundred cars.

The fact that we manufacture practically every part that enters into the Springfield makes it impossible (even 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 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 3/4 inch stroke.

VALVES—All on one side, interchangeable; operated by single cam shaft with cam integral with shaft, and mounted on Annular Ball Bearings. Idler Gear, Pump and magneto shaft mounted on genuine imported Annular Ball Bearings.

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

REAR AXLE—One piece cast iron drive Chrome Vanadium Steel housing of the clutch driven shafts, type. Gears and shafts Chrome Vanadium steel, heat treated, mounted on genuine imported Annular Ball Bearings.

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

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

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

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

BRAKES—Two independent systems, internal expanding type, Raybestos lined. Foot brake 2 1/4 inches in diameter; operated by cam arrangement.

BODY—Quick fit, for all sizes, standard, heat treated.

GASOLINE CAPACITY—Twenty gallons under pressure.

MUFFLER—Our own construction, 20 and 22 inch back pressure.

RADIATOR—Latest design, genuine horizontal, large so efficient.

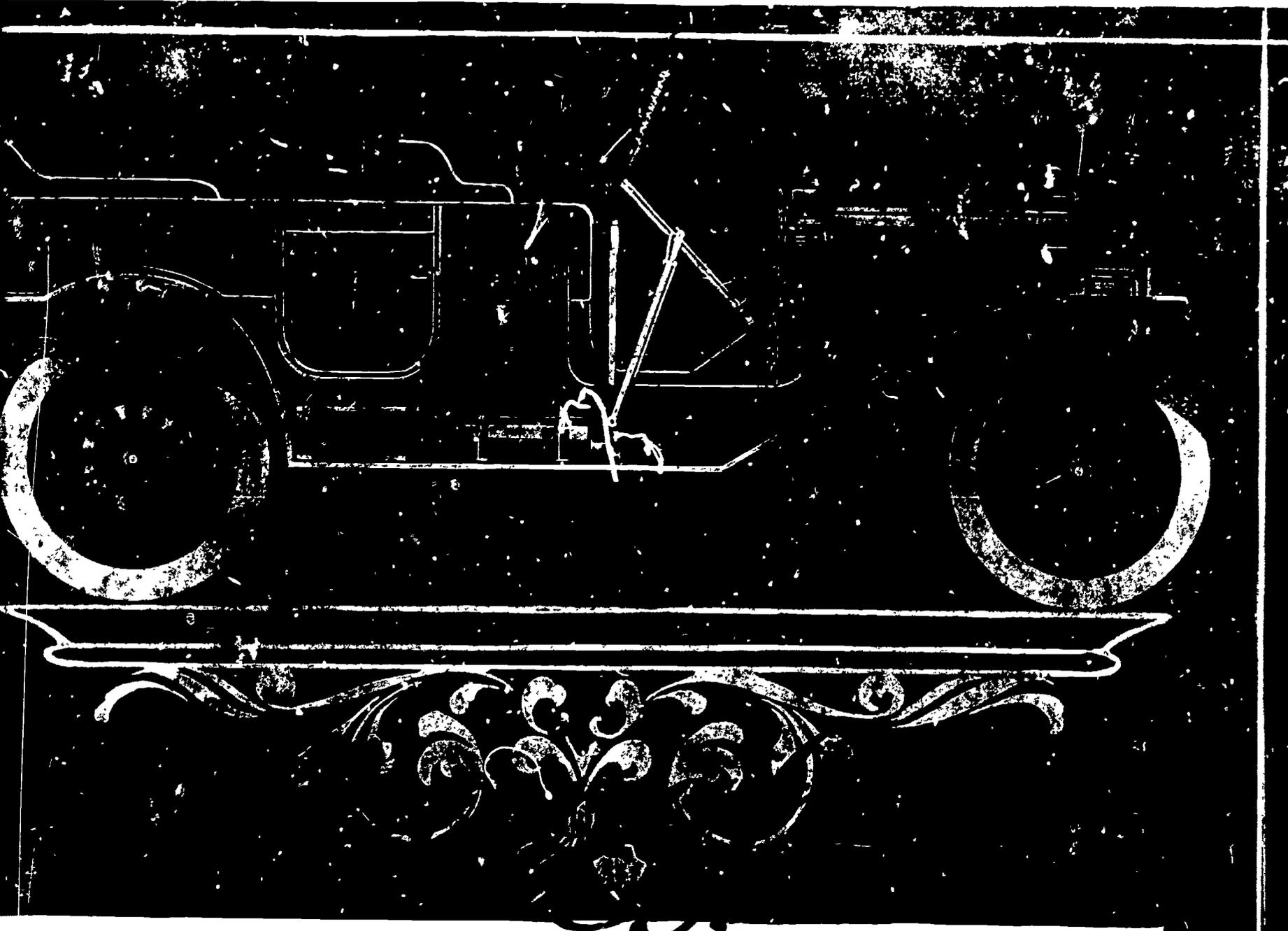
CARRETOR—Stromberg, float feed type, cast valve and water jacketed.

CLUTCH—Large cone type with ball thrust bearing, means of spring adjustment.

WHEEL BASE—125 inches.

TRAIL—5 1/2 inches.

GEAR RATIO—3.1.



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.

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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.

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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.

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SPECIFICATIONS :

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

VALVES—All on one side, interchangeable; operated by single cam shaft with cams integral with shaft, and mounted on Annular Ball Bearings. Idle Gear, Pump and magnets cast mounted on genuine Impressed Annular Ball Bearings.

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

REAR AXLE—One piece massive drawn Chrome Vanadium Steel housing of the clutch driven housing type. Gears and shafts medium steel, heat treated, mounted on genuine Impressed Ball Bearings.

AXLE—Special 3-beam drop forged in one piece, of Chrome Vanadium Steel, with ball bearing mounting.

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

IGNITION—A 1/2 volt spark, 4-unit coil on dash, storage battery, double system with genuine Type D-4 Bosch magnets; 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.

BRAKES—Two independent systems, internal expanding type, Raybestos faced. Foot brake 14 inches in diameter; operated by cam arrangement.

BODY—Straight line, five or seven passenger, sheet metal and upholstered in genuine hand tufted leather.

TIRES—36 x 5 inches rear, 36 x 4 inches front; Quick Detachable rim.

GASOLINE CAPACITY—Twenty gallons under front seat.

MUFFLER—Our own construction, free and silent, with no back pressure.

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

CARBURETOR—Bromberg, float feed type, auxiliary air valve and water jacketed.

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

WHEEL BASE—128 inches.

TREAD—56 1/2 inches.

GEAR RATIO—3:1.

CLEARANCE—10 inches.

COLOR—Greens, grays, blues, maroons, yellows, etc.

WEIGHT—2,900 pounds.

EQUIPMENT—Two 6" and three oil lamps, generator, horn, etc.

ERIC

Here is a Special Car for a few Select Buyers

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SPECIFICATIONS:

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

VALVES—All on one side, interchangeable; operated by single cam shaft with cam integral with shaft, and mounted on Annular Ball Bearings. Miler Gear, Pump and magneto shaft mounted on genuine imported Annular Ball Bearings.

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

REAR AXLE—One piece seamless drawn Chrome Vanadium Steel housing of the clutch driven floating type. Gears and shafts Chrome Vanadium Steel, heat treated, mounted on genuine imported Annular Ball Bearings.

FRONT AXLE—Special I-beam drop forged in one piece, of heat-treated Chrome Vanadium Steel, with ball bearing steering knuckle.

FRAME—Pressed steel, reinforced.

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

IGNITION—Jump spark, 4-unit coil on dash, storage battery, double system with genuine Type D-4 Bosch magnets; 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.

BRAKES—Two independent systems, internal expanding type, Raybestos faced. Foot brake 1 1/2 inches in diameter; operated by cam arrangement.

BODY—Straight line, six or seven passenger, sheet metal and upholstered in genuine hand buffed leather.

TIRES—36 x 5 inches rear, 36 x 4 inches front; Quick Detachable rim.

STEERING GEAR—Irreversible, 10 inch wheel; controlling mechanism on top of wheel.

GASOLINE CAPACITY—Twenty gallons under front seat.

MUFFLER—Our own construction, free and silent, with no back pressure.

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

CARBURETOR—Stranberg, float feed type, auxiliary air valve and water jacketed.

CLUTCH—Large cone type with ball thrust bearing. Simple means of spring adjustment.

WHEEL BASE—120 inches.

TREAD—56 1/2 inches.

GEAR RATIO—3:1.

CLEARANCE—10 inches.

COLOR—Greens, grays, blues, maroons, yellows, etc.

WEIGHT—2,900 pounds.

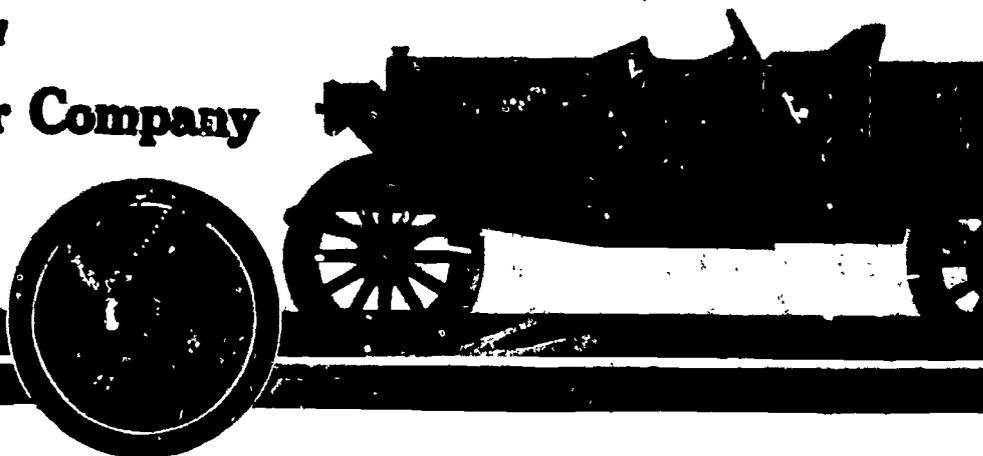
EQUIPMENT—Two gas and three oil lamps, generator, horn, jack, tire and repair tools.

PRICE—\$2,500.

Correspondence Solicited

The Springfield Motor Car Company

311 Monroe Street
SPRINGFIELD, ILL.



ADVERTISEMENT

New Automobile Program 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 the highest possible through the co-operation of all realized in the formation of this company. We manufacture one-fourth of all cars made in the United States and one-eighth of all cars made in the world. We control the manufacturing processes.

Cars Made by United States Motor Company Organized Ranging in Price from \$450 to \$8000

BRUSH, formerly \$485, is now \$450
This is the standard runabout, model E
Roadster, Model E 26, formerly \$600, now
with equipment extra \$485
MAXWELL, 16 H. P. runabout \$600
This **Model AB Runabout** now includes \$70
equipment, consisting of top, gas lamps and
generator, at the former \$600 price.
Model Q, 22 H.P., 4 cylinder, formerly \$900, now \$750
Model I, 25 H.P., fore-door touring car, formerly
\$1100, equal to any car in the \$1250 class, now \$950
Model EA, 30 H. P., fore-door touring car, for-
merly \$1600, equal to any car in the \$1500 to
\$1800 class, now \$1350
SAMPSON 35, touring car, a recent addition to
our line, is listed at a price to command instant
attention \$1250 to \$1325

STODDARD-DAYTON models, from \$1175
These models are all unchanged in price, but
every case show worth higher than the 1910
models. The 50 H. P. **Stoddard-Dayton**
distinguished by exceptional refinements.
COLUMBIA, a new model, for
Higher powered and more exquisite finish at
slightly higher price than formerly.
Both **Stoddard-Dayton** and **Columbia** cars set
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
This is the 600-pound delivery wagon.
SAMPSON TRUCKS, 1000 pound delivery models
1 ton, 2 ton, 3 ton, 4 ton, 5 ton trucks, and 20 ton
ton road trains, \$1150

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—Detroit

THIS readjustment 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 unquestioned 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 49 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 still directs it, but spurred by friendly rivalry to greater exertion. The broad plans and policies of the parent company are outlined and executed in the fulness 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.

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.

IN BUYING raw material we are able, by massing our purchases, to secure lower prices and maintain higher quality. By interchange of experience in 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.

If particular skill and equipment produce better results in one place, all work of this character is done there.

By co-operative selling it is possible for one factory to sell in places where it would otherwise be possible to sell only at a prohibitive cost. Not only does this saving benefit the purchaser, but the service that

WE HAVE conducted persistently and permanently and temporarily or local. While others were cutting stock or left-over cars, or selling; we were not ready. point where the fruit of our buyer without sacrificing holders.

We make a profit at needed to unload we wait four months ago. We had stock to work up. As a result for three months ending percent greater than for the

The season for the market about to open. Over ninety percent is already contracted. indicator points to a sharp

Nevertheless, by basis is lowered by legitimate and the benefits of co-operative

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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**
This is the standard runabout, model E
- Roadster**, Model E 26, formerly \$600, now with equipment extra **\$485**
- MAXWELL**, 16 H. P. runabout **\$600**
This Model AB Runabout now includes \$70 equipment, consisting of top, gas lamps and generator, at the former \$600 price.
- Model Q**, 22 H. P., 4 cylinder, formerly \$900, now **\$750**
- Model L**, 25 H. P., fore-door touring car, formerly \$1100, equal to any car in the \$1250 class, now **\$950**
- Model EA**, 30 H. P., fore-door touring car, formerly \$1600, equal to any car in the \$1500 to \$1800 class, now **\$1350**
- SAMPSON 35**, touring car, a recent addition to our line, is listed at a price to command instant attention **\$1250 to \$1325**

- 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 cars stand 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**

GRAY Marine and Stationary Engines—Recognized as standard all over the world.

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

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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 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 raw material we are able, by massing our purchases, to secure lower prices and maintain higher quality. By interchange of experience in 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.

If particular skill and equipment produce better results in one place, all work of this character is done there.

By co-operative selling it is possible for one factory to sell in places where it would otherwise be possible to sell only at a prohibitive cost. Not only does

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 dispose 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 57 1/2 per cent. greater than for the same period in 1909.

The season for the heaviest buying is now just about to open. Over ninety-five per cent. of our product is already contracted for with deposits. Every indication points to a shortage of our cars this Spring.

Nevertheless, by basing our prices on a cost which is lowered by legitimate saving, made possible through the benefits of co-operative production, we are

ment, 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

We manufacture one-fourth of all the motor cars made in the United States and one-sixth of all the motor 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

BRUSH, formerly \$485, is now **\$450**
This is the standard runabout, model E

Roadster, Model E 26, formerly \$600, now with equipment extra **\$485**

MAXWELL, 16 H. P. runabout **\$600**

This **Model AB Runabout** now includes \$70 equipment, consisting of top, gas lamps and generator, at the former \$600 price.

Model Q, 22 H. P., 4 cylinder, formerly \$900, now **\$750**

Model I, 25 H. P., fore-door touring car, formerly \$1100, equal to any car in the \$1250 class, now **\$950**

Model EA, 30 H. P., fore-door touring car, formerly \$1600, equal to any car in the \$1500 to \$1800 class, now **\$1350**

SAMPSON 35, touring car, a recent addition to our line, is listed at a price to command instant attention **\$1250 to \$1325**

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** cars stand 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**

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 Everywhere

THIS readjustment 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 unquestioned 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 49 acres. It employs 14,000 skilled workmen 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 still directs it, but spurred by friendly rivalry to greater exertion. The broad plans and policies of the parent company are outlined and executed in the fulness 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 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.

IN BUYING raw material we are able, by massing our purchases, to secure lower prices and maintain higher quality. By interchange of experience in 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.

If particular skill and equipment produce better results in one place, all work of this character is done there.

By co-operative selling it is possible for one factory to sell in places where it would otherwise be possible to sell only at a prohibitive cost. Not only does this saving benefit the purchaser, but the service that can be rendered to the owner after purchase could not be given in this locality by any other plan at any practical expense.

WE HAVE conducted this getting-ready persistently and patiently, untroubled by temporary or local conditions in the market. While others were cutting prices to dispose of stock or left-over cars, or to raise cash, we were not ready. We have now reached a point where the fruit of our effort can be enjoyed by the buyer without sacrificing the interests of the holders.

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

The season for the heaviest buying is now about to open. Over ninety-five per cent. of our production is already contracted for with deposits. This indication points to a shortage of our cars.

Nevertheless, by basing our prices on a fair value, we are lowered by legitimate saving, made possible by the benefits of co-operative organization, we are maintaining our Company, now and for all time, in the confidence and earning the support which we always to retain.

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.

Benj. Briccoe, President

United States Motor Company

Broadway and 61st Street
New York City

All Our Cars Are Licensed Under Selden Patent

Maxwell-Briccoe Motor Company

Providence Engineering Works

Alden Sampson Manufacturing Company

Gray Motor Company

Dayton Motor Car Company

Brush Runabout Company

Westchester Appliance Company

and United International Motors, Ltd., London

Columbia Motor Car Company

Briccoe Manufacturing Company

Courier Car Company



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

Cars Made by United States Motor Company Organizations

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

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The United States Motor Company is composed of constituent companies—each the leader of its separate eighteen separate factories, with floor space of 49 acres. It employs 14,000 men and a corps of original investigators, whose work is shared by all the companies. The individual genius which built up each constituent company still directs it, by friendly rivalry to greater exertion. Plans and policies of the parent company are executed in the fulness of the competence of these men.

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

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in the hands of owners that cannot be duplicated by any other company.

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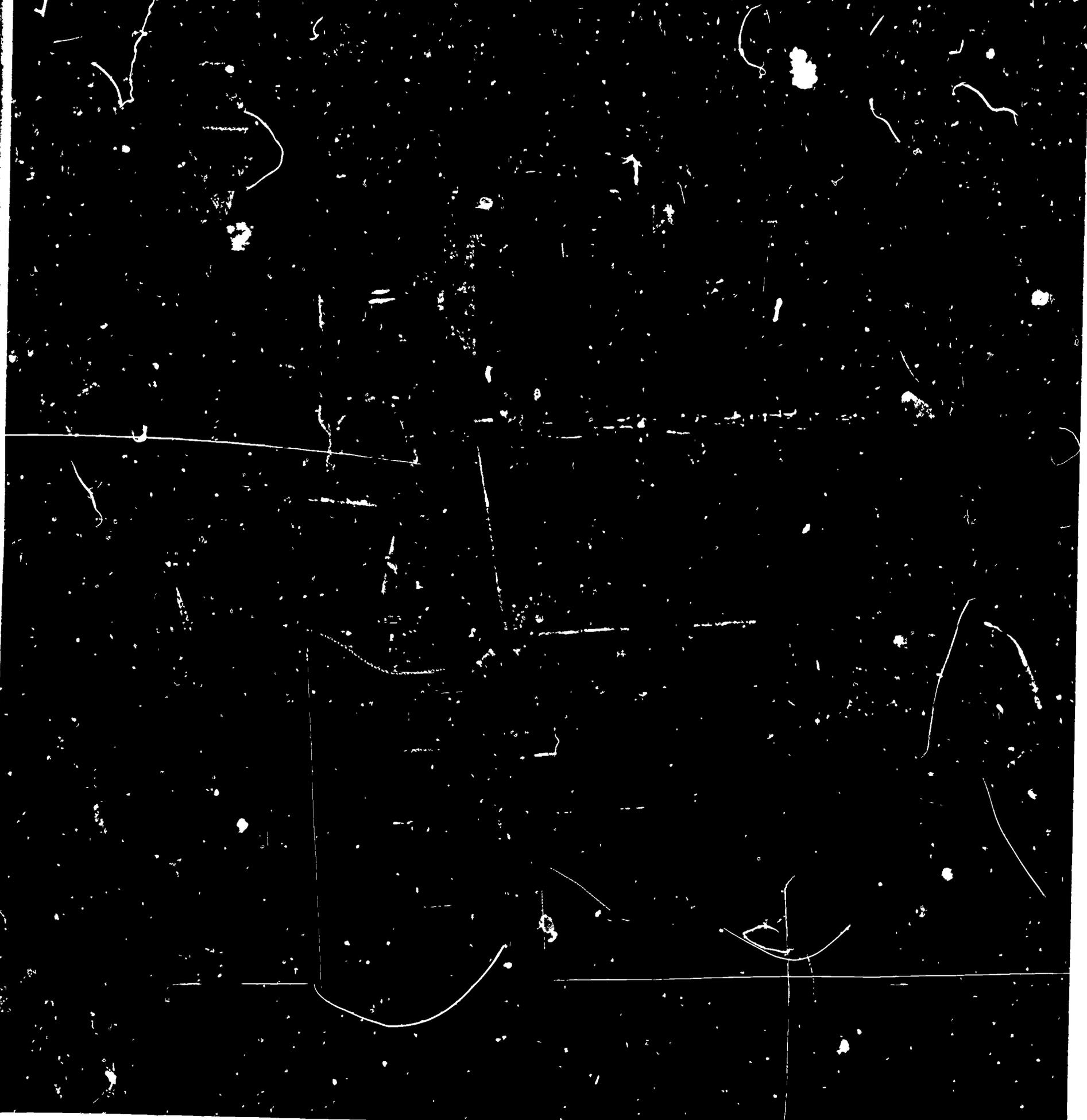
Courier Car Company

and United International Motors, Ltd., London



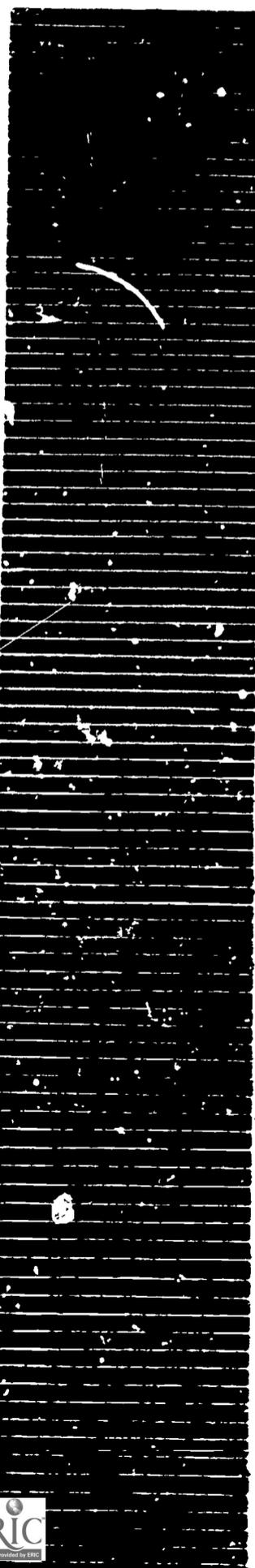
EDISON'S BATTERY





THOMAS A. EDISON AND HIS IMPROVED STORAGE BATTERY

ADVERTISEMENT



Overland

Mechanical Excellence of this 30-Horsepower Touring Car

yourself with the mechanical side of an automobile and you can quickly get 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 difference and judge values accordingly. The more you know of this the more intelligent a car's value in dollars and cents.

ADVERTISEMENT

Overland

Mechanical Excellence of this 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
a professional engineer does, but you *should* know enough of
be able to tell the difference and judge values accordingly. The
an automobile and the more you know of this the more intelli-
car's value in dollars and cents.

cutting gear as shown in such a manner as to minimize stresses
and vibrations.

The transmission is of the selective type—three speeds and
reverse. The speed change, final drive, and differential gears
are contained in the rear axle unit.

A smoother, more delicate, and at the same time more posi-
tive 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 peripheral area, ensuring quietness and extremely long life.
Lubrication is provided by a force feed mechanical oiler.

Springs are of the semi-elliptic and three-quarter elliptic type.
The rear springs are mounted on spring chairs that have a lubri-
cated bearing on the rear axle tubes. This form of construction
produces an easy-riding car, as it permits the springs to act freely.

Final drive is effected from the propeller shaft to the rear axle
by means of accurately cut and carefully hardened bevel gears,
the usual differential and two live axle shafts which drive the rear
wheels. Special roller bearings are provided for all rotating com-
ponents, and the bevel gears and pinion are of drop-forged
nickel steel, cut in accurate Overland style, and scientifically
heat treated.

We have tried to make this as brief as possible without omit-
ting any of the essentials. It is the kind of information that shows
you exactly what a car is worth.

We have published a book which we want you to read. It

Overland

The Mechanical Excellence of this \$900 30-Horsepower Touring Car

50

FAMILIARIZE yourself with the mechanical side of an automobile and you arrive at any car's real value. This does not necessarily mean that you 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 accordingly. The chassis is the backbone of an automobile and the more you know of this the more 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 fitness 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 mushroom type and interchangeable, made from 35% nickel steel heads, electrically welded to carbon steel

column gear is placed in such a manner as to minimize 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 peripheral area, ensuring quietness and extremely long life. Lubrication is provided by a force-feed mechanical oiler

Springs are of the semi-elliptic type. The rear springs are mounted on special cast bearing on the rear axle tubes. This produces an easy-riding car, as it permits the final drive to be effected from the front by means of an accurately cut and cast differential. Special roller bearings are used on the front and rear axles, and the bevel gears are made of nickel steel, cut in accurate Overland heat treated.

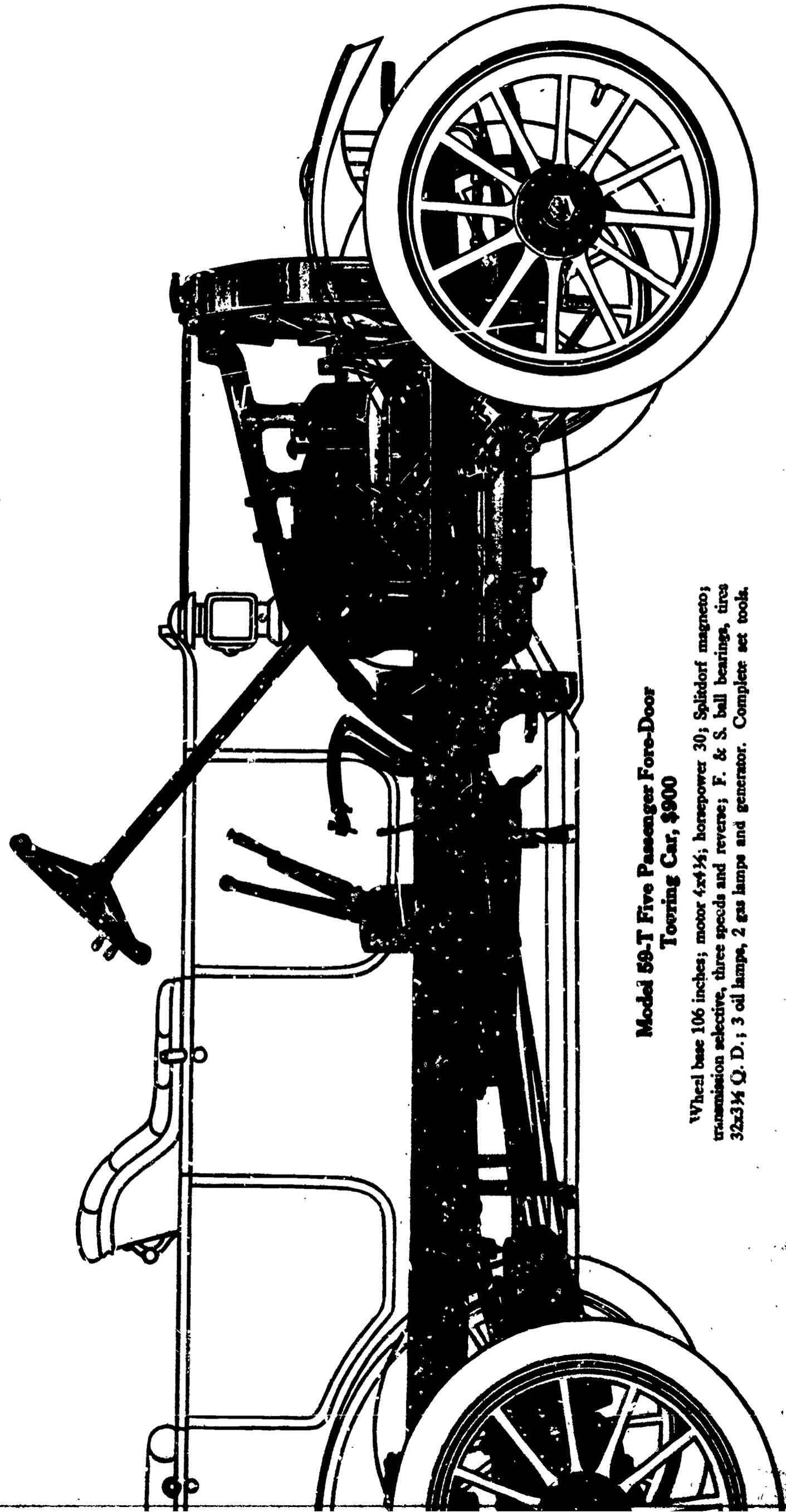
We have tried to make this as complete as possible. It is the only car of the essential. It is the only car you exactly what a car is worth. We have published a book, "The

enable the motor to develop other motor of the same bore
 Kinwood flat tube type. The
 large, with large diameter intake
 of cold rolled pressed steel, formed
 design, great strength and stability.
 worm and worm-gear type. The steering
 knuckles and steering

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.

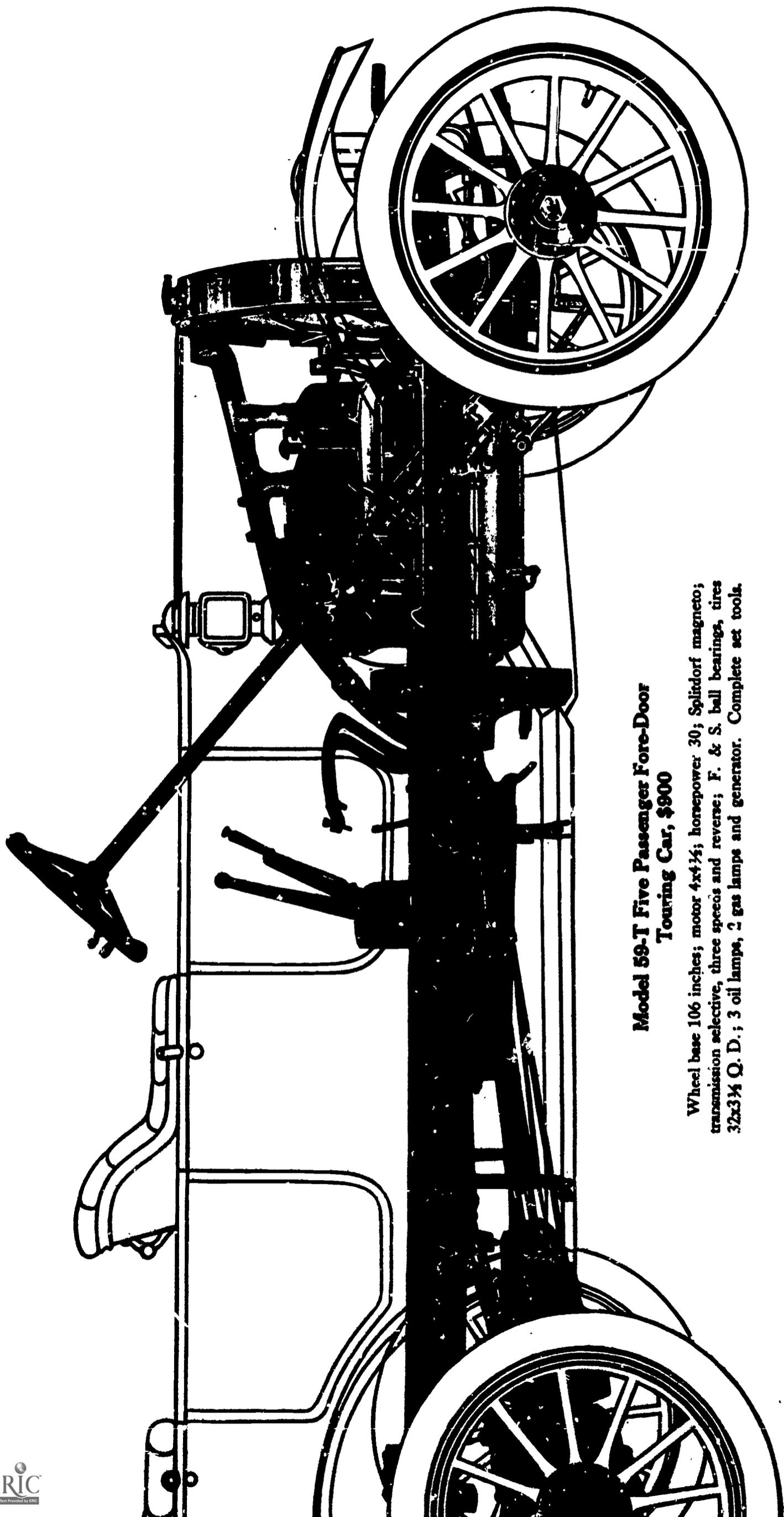
covers in detail every single part of this car. Not only what the
 construction is, but how each part is made—showing each factory
 operation from body to bolt.
 Better let us send you one of these books. It is the most
 interesting and thorough work of its kind ever written and fully
 explains the ability of the greatest automobile plant in the world
 to make a car of the 30-horsepower, 5-passenger touring car
 type to sell at from 30% to 40% less money than any other
 similar car on the market.
 Write to-day and ask for book F21.

The Willys-Overland Company, Toledo, Ohio



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

Wheel base 106 inches; motor 4x4 1/2; horsepower 30; Splitdorf magneto;
 transmission selective, three speeds and reverse; F. & S. ball bearings, tires
 32x3 1/2 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 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.

stems. Their design and large size enable the motor to develop 15% more horsepower than any other motor of the same bore and stroke.

The radiator is of the famous Kinwood flat tube type. The radiating surfaces is unusually large, with large diameter intake 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

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.

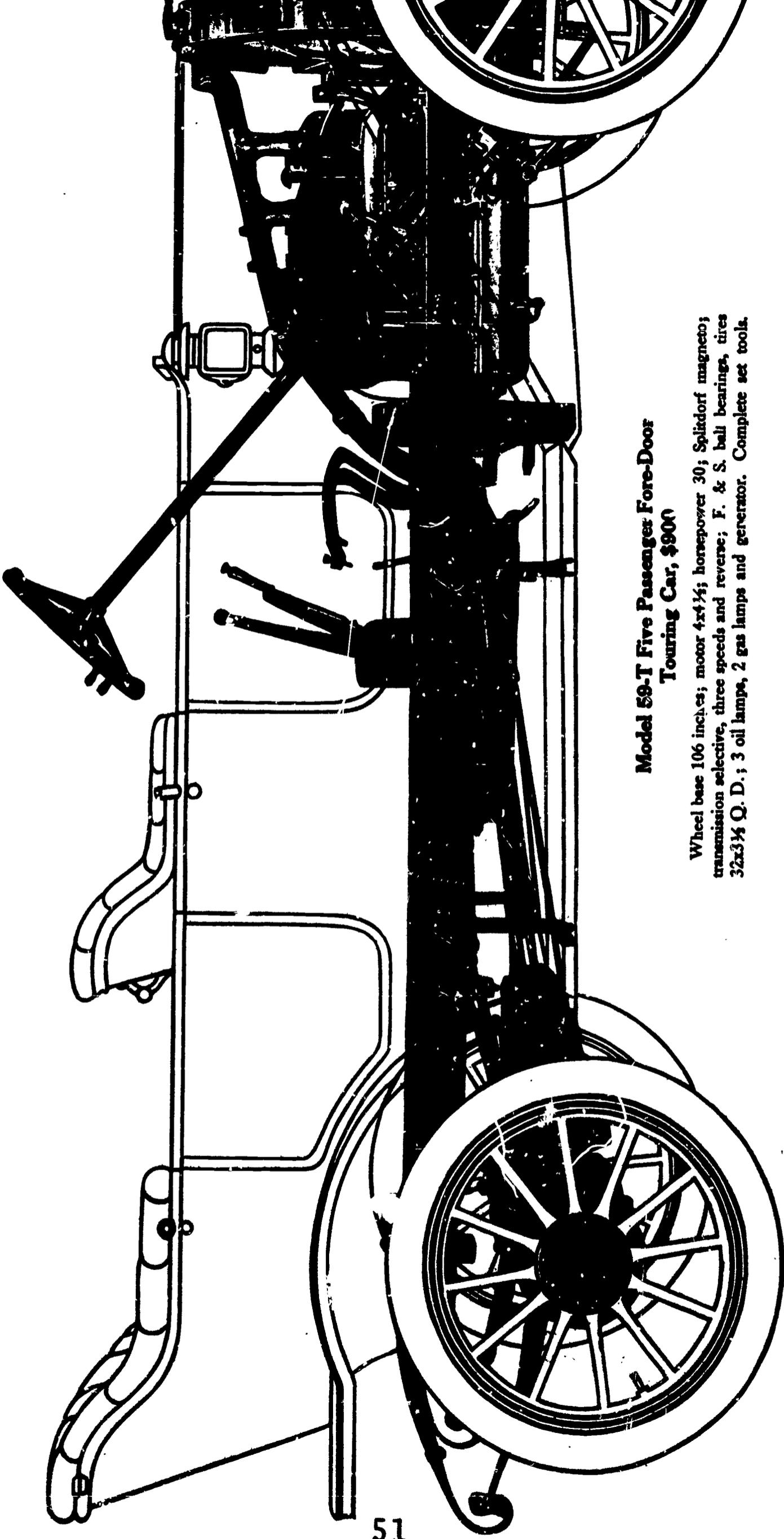
Brakes are particularly large and have ample friction areas. There are two brakes on each rear wheel, the inside or foot-brake which is internal expanding; the outside or emergency brake which is external contracting.

Covers in detail every single part of construction is, but how each part is operation from body to bolt.

Better let us send you one of our interesting and thorough work of it explains the ability of the greatest type to make a car of the 30-horsepower type to sell at from 30% to 40% similar car on the market.

Write to-day and ask for book

The Willys-Overland Company, Toledo, Ohio



**Model 58-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.

ADVERTISEMENT



This monogram on the radiator stands for all you can get in a motor car



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 \$1800. See if you can get all of them in any other car at any price.

Why They Bought "Thirty-Sixes"

We have delivered more than 2000 of the "Thirty-Sixes." 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 these ten big reasons:

- 1. Chalmers Self-Starter**
Beats away with cranking. Adds at least \$50 to the value of an automobile. Simple, safe, efficient, air pressure type. Nothing complicated—just press a button on the dash and away goes your motor.
- 2. 36" x 4" Tires and Dismountable Hubs**
Big tires insure ease of riding and reduce tire trouble to the minimum. Dismountable hubs and pneumatic tires of their make—a change can be made in two or three minutes.
- 3. Five Speed Transmission—Four Speeds Forward and Reverse**
Affords utmost flexibility of control. With it you can climb steepest grades without loss of time and without punishing your motor.

9. Beauty and Style

Chalmers symmetry is the kind of beauty that means efficiency. You cannot find a car at any price with greater beauty of line. Finish is superb—is coats of paint and varnish. Choice of three attractive color schemes.

10. Price—\$1800

Because of the features listed 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 the money of any motor car built.

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 the 1912 season gone, we are pleased to be able to vary this quotation and say, "This is the biggest Chalmers year of all." Since July 1st we have shipped 425 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 reaping the results of building, from 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-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 L. Jones, Councillor at Law, New York City.

The new features of the "Thirty-six" are fine. The long stroke motor gives so much power that I can't see where anyone could desire more. The four speed transmission makes it an ideal touring car, for you can negotiate any hill or road without loading your engine. The self-starter works perfectly.

George H. Poole, Boston, Mass.

The "Thirty-six" is not only a fine looking car but everything about

The Chalmers

"It runs"

Seven passenger Touring Car

54 horsepower;
pressure type
36" x 4 1/2" tires;
rims; ten inch
axles and rear
brakes; nickel
sheet aluminum

The Chalmers mechanical

has been accorded the highest quality this year

We are quite confident that these are the very finest cars ever

We sincerely believe that no other motor car than the Chalmers "Thirty-Six" can be asked to do it? Can it?

Here's

In answer to the question, "Can it do it because of its construction and the "Thirty-Six"

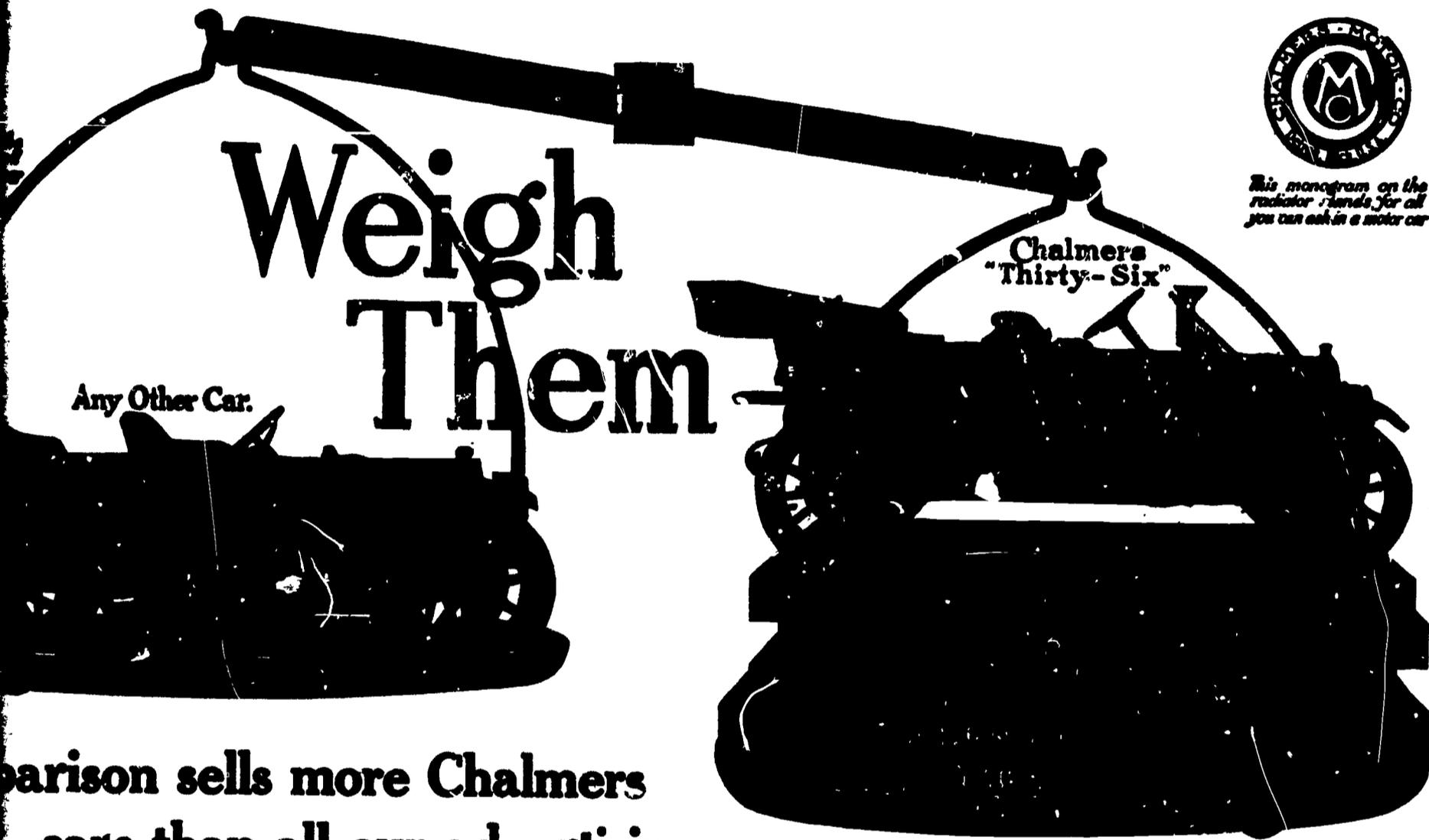
Large production—Good design, modern methods cut down the cost of building cars in sufficient quantities to make the head expense to the consumer. Equipped with the latest and labor-saving devices.

We get the advantage of

ADVERTISEMENT



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Weigh Them

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Buy the car that has the most features designed for your convenience, your safety, your economy and ownership.

They seem to be built to please the buyer. You want one that was built to please you or you are a buyer. You will use it. You will find out from day to day whether it is thoroughly convenient to operate. You will find out whether it is perfectly safe under all conditions; perfectly safe; economical.

Refer you to the diagram above. Chalmers is a car for the buyer. Look over the entire car. See if you can get all of these "Thirty-Six" features at \$1800. See if you can get all of them in any price.

They Bought "Thirty-Sixes"

Over more than 2000 of the "Thirty-Sixes." In a few weeks we have been asking many to tell us the principal reasons why they bought "Thirty-Six." Everybody seems to agree on these reasons:

Self-Starter
Starts with cranking. Adds at least \$50 to the cost of an automobile. Simple, safe, efficient, air pressure type. Nothing complicated—just press a button and the dash and away goes your motor.

Three and Demountable Rims
Assure ease of riding and reduce tire trouble minimum. Demountable rims reb punctures of tires—a change can be made in two or three minutes.

Four Speed Transmission
Economy of control. With it you can change gears without loss of time and without jarring your motor.

2. Beauty and Style

Chalmers symmetry is the kind of beauty that means efficiency. You cannot find a car at any price with greater beauty of line. Finish is superb—15 coats of paint and varnish. Choice of three attractive color schemes.

10. Price—\$1800

Because of the features listed 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 the money of any motor car built.

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 the 1912 season gone, we are pleased to be able to vary this quotation and say, "This is the biggest Chalmers year of all." Since July 1st we have shipped 42% 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 reaping the results of building, from 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-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 L. Jones, Counsellor at Law, New York City.

The new features of the "Thirty-six" are fine. The long stroke motor gives so much power that I can't see where anyone could desire more. The four speed transmission makes it an ideal touring car, for you can negotiate any hill or road without heating your engine. The self-starter works perfectly.

George B. Peck, Boston, Mass.

The "Thirty-six" is not only a fine looking car, but everything about

The Chalmers "SIX"

"It runs with eagerness"

Seven passenger Touring Four passenger Torpedo **\$3250**

54 horsepower; Chalmers self-starter, air pressure type; 130 inch wheel base; 36" x 4 1/2" tires; Continental demountable rims; ten inch upholstery; nickel steel axle and rear axle housing; extra large brakes; nickel steel frame side members; sheet aluminum bodies.

The Chalmers "Six" is a high powered, mechanically perfected, luxurious car at a price lower than the motoring public has been accustomed to pay for the qualities this car possesses.

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

We sincerely believe that the "Six" is a better motor car than many which sell for higher prices. Any manufacturer who makes this claim is sure to be asked two questions: First, why are you able to do it? Second, why are you willing to do it?

Here's The Answer

In answer to the first question, we say: We can do it because we have the factory, the organization and the "know how."

Large production cuts down overhead expense. Good design, modern machinery and up-to-date methods cut down manufacturing expense. We build cars in sufficient quantities to reduce overhead expense to the minimum. Our factory is equipped with the most up-to-date machinery and labor-saving devices.

We get the advantage of buying materials in large quantities. We take every care to

Any Other Car.

Them-

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 seller. 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; persistent; economical.

Therefore we refer you to the diagram above. Chalmers "Thirty-Six" is a car for the buyer. Look over the entire year sold and see if you can get these "Thirty-Six" features on any other car at \$1800. See if you can get all of them in any other car at any price.

Why They Bought "Thirty-Sixes"

We have delivered more than 2000 of the "Thirty-Sixes." 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 the ten big reasons:

- 1. Chalmers Self-Starter**
Do away with cranking. Adds at least \$50 to the value of an automobile. Simple, safe, efficient, air pressure type. Nothing complicated—just press a button on the dash and away goes your motor.
- 2. 36" x 4" Tires and Demountable Rims**
Big tires insure ease of riding and reduce tire trouble to the minimum. Demountable rims rob punctures of their terrors—a change can be made in two or three minutes.
- 3. Five Speed Transmission—Four Speeds Forward and Reverse**
Affords utmost flexibility of control. With it you can climb steepest grades without loss of time and without punishing your motor.
- 4. Long Stroke Motor**
Maximum power at low engine speed, splendid pulling, longer service, greater quietness, freedom from vibration.
- 5. Dual Ignition**
Simplest ignition system yet devised. Nothing equals a magnet for furnishing perfect ignition.
- 6. Dash Adjustment for Carburetor**
You can get the proper mixture for starting or to suit varying weather conditions without getting out of car and fiddling hood.
- 7. Genuine Cellular Radiator**
The best you find on highest priced cars. None better made. Insures perfect cooling, longer life, good looks.
- 8. Comfort and Convenience**
Long wheel base, big wheels and tires, deep upholstered, rumpled bodies make for maximum comfort. Con-
venience is secured by a score of real means that will appeal to you when you see the car.

9. Beauty and Style

Chalmers symmetry is the kind of beauty that means efficiency. You cannot find a car at any price with greater beauty of line. Finish is superb—18 coats of paint and varnish. Choice of three attractive color schemes.

10. Price—\$1800

Because of the features listed 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 the money of any motor car built.

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 the 1912 season gone, we are pleased to be able to vary this quotation and say, "This is the biggest Chalmers year of all." Since July 1st we have shipped 42% 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 reaping the results of building, from 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-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:

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George E. Peels, Boston, Mass.

The "Thirty-six" is not only a fine looking car but everything about it is solid and carefully built. It has plenty of power and speed and is one of the easiest riding cars I ever sat in.

W. R. Leonard, Supt. American Car and Foundry Co., Detroit.

The Chalmers "Thirty-six" more than meets my expectation. I have accomplished everything that is possible with the highest priced cars in the way of high and slow speed, easy handling, hill-climbing, etc.

Charles N. Strid, Kansas City, Mo.

Since buying my "Thirty-six" I can't understand how anyone is willing to drive a car without a self-starter. It is the greatest addition to an automobile yet designed. With it and the demountable rims there is no unpleasant feature about motoring.

H. D. Wheat, Gaffney, S. C.

Chalmers "Thirty-six" is all right. The motor is flexible and a great puller, carrying the car up our steep Piedmont Hills on high gear without laboring at all. The control is simple. My 15 year old daughter drove from Gaffney to Charlotte, 60 miles, without the slightest trouble.

In view of these facts, is it any wonder that this is the biggest Chalmers year of all? So the time to place your order is now—and the earlier the date set for delivery the better. Our new catalog free on request.

The Chalmers "Six"

"It runs with eagerness"

Seven passenger Touring \$325
Four passenger Torpedo \$325

54 horsepower; Chalmers self-starter, air pressure type; 130 inch wheel base; 36" x 4 1/4" tires; Continental demountable rims; ten inch upholstery; nickel steel axles and rear axle housing; extra large brakes; nickel steel frame side members; sheet aluminum bodies.

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Here's The Answer

In answer to the first question, we say: we can do it because we have the factory, the organization and the "know how."

Large production cuts down overhead expense. Good design, modern machinery and up-to-date methods cut down manufacturing expense. build cars in sufficient quantities to reduce overhead expense to the minimum. Our factory equipped with the most up-to-date machinery and labor-saving devices.

We get the advantage of buying material in large quantities. We take every cash discount offered. We know that we can build a high grade, high powered car, using the same quality material and workmanship, at a lower cost than many who turn out only high priced cars. This is a question of equipment and organization.

What Good Value Does

To answer the second question: It has always been our policy to give unusually good value. Good value in the car cuts down selling expense and "service" expense after the sale. We have always stood for small profits per car and have gained our fair annual profit by doing a large volume of business.

We invite the most careful comparison of other cars. The "Six"—and all other Chalmers models—may be seen at the leading automobile shows this winter. Special "Six" booklet on request.

Chalmers Motor Company, Detroit, Mich.

ADVERTISEMENT

My Farewell Car

By R. E. Olds, Designer

Reo the Fifth—the car I now bring out—is considered by me as pretty close to finality.

So close that I call it "My Farewell Car." I shall let it stand as my topmost achievement.

Embodied here are the final results of my 25 years of experience.

I have spent 18 months on 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. 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 right way for each purpose.

All the steel that I use is in standard order. And each lot is analyzed and accord with the formula. Experience has taught me not to take any chances.

I used to test gears with a crushing machine of 50 tons. Now I use a crushing machine of 500 tons. And I know to exactness what will stand.

I took the maker's word for the quality of one time. Now I require a racing car. I have found but two makes which will stand.

The axles are immensely improved. Nickel Steel of unusual diameter with Timken Roller Bearings.

The carburetor is doubly improved. It takes air and hot water—for the perfect combustion of gasoline.

The car is over-tired.

So with every part. From the engine to the wheels this car is built under laboratory conditions. The various parts pass a thousand tests.

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

The best thing I have learned from decades of experience, is the value of experience and the chances.

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

That's where this car excels. It is a car of caution taught by 25 years' experience. I am not abler than other designers. I have simply been learning longer.

Reo the Fifth
\$1,055

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The axles are immensely important. I use
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The various parts pass a thousand inspections.

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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
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I had one of these new cars run for ten
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to three years' average usage. Then I took
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Reo the Fifth
\$1,055

30-35
Horsepower
Wheel Base—
112 inches
Wheel—
34 inches
Detachable
Rims
Speed—
45 Miles per
Hour
Made with 2,
4 and 5 Pas-
senger Bodies

Top and windshield not included in price. We equip this car with mahar top, side curtains and snap-covers, windshield, gas tank and speedometer—all for \$100 extra. Self-starter, if wanted, \$25 extra.

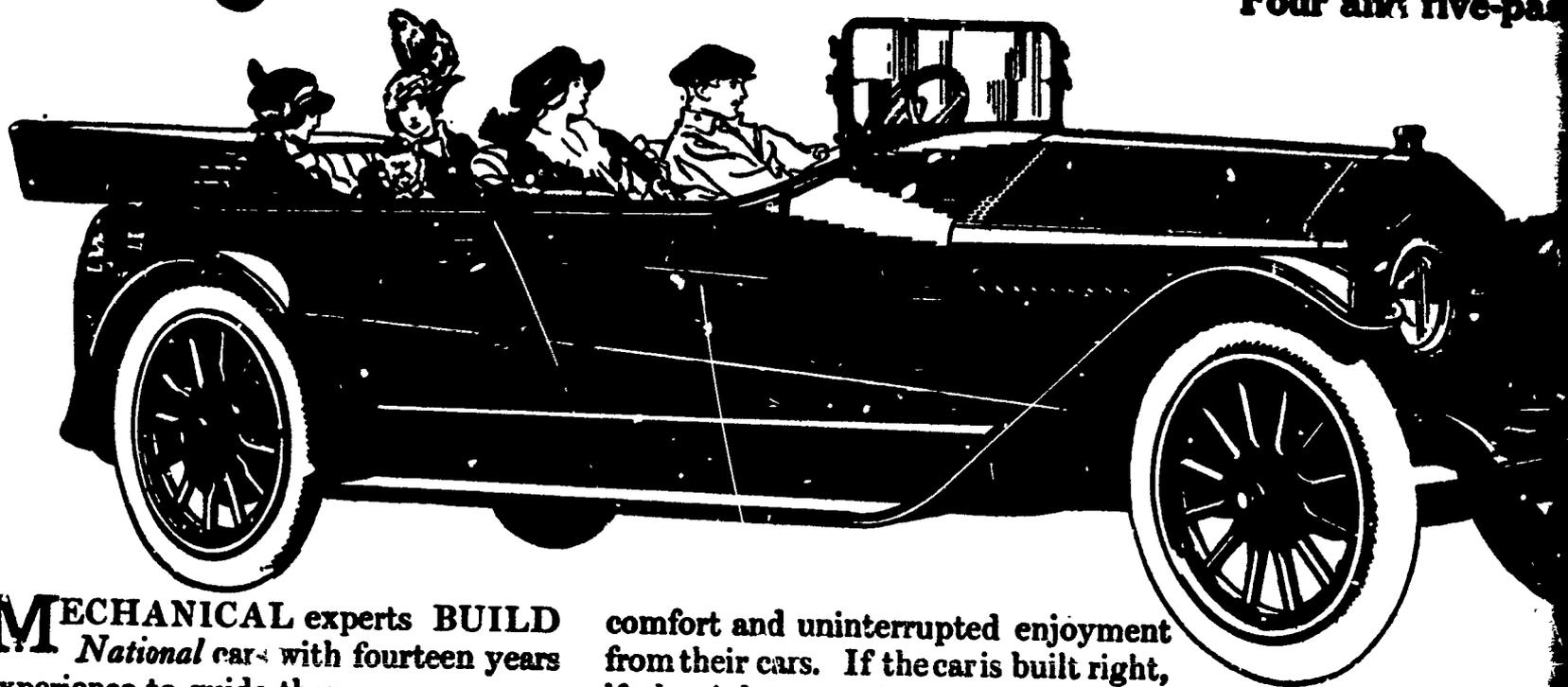
ADVERTISEMENT

Machinist or Motorist

You don't have to be a mechanical expert to safely buy a

National Six—\$22

Four and five-passenger



MECCHANICAL 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 car is 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.

antee—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 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

Brief Sp

Motor, 6-cylinder, 3½x5½-inch, pump, integral part of motor. C aluminum cone. Starting and light unit system. Transmission, all type, three speeds forward, one 88 inches. Oiling, crank-case oil feed, with gear-driven pump. Ign dual magneto with storage battery. Firestone demountable rims. A feed, generated by small pump in ity, 23 gallons. Automatic carbide brakes on 16-inch rear wheel drive through straight line shaft and torsion member. Full-floating side drive. Access all four wide in center controls all speeds. In front; special *National* construction. Equipment:—Top complete with boot, ventilating rain vision window, stone rim, electric lighting and 19-inch double bulb electric license tail light, Warner speedometer tools and jack.



You can buy over telephone

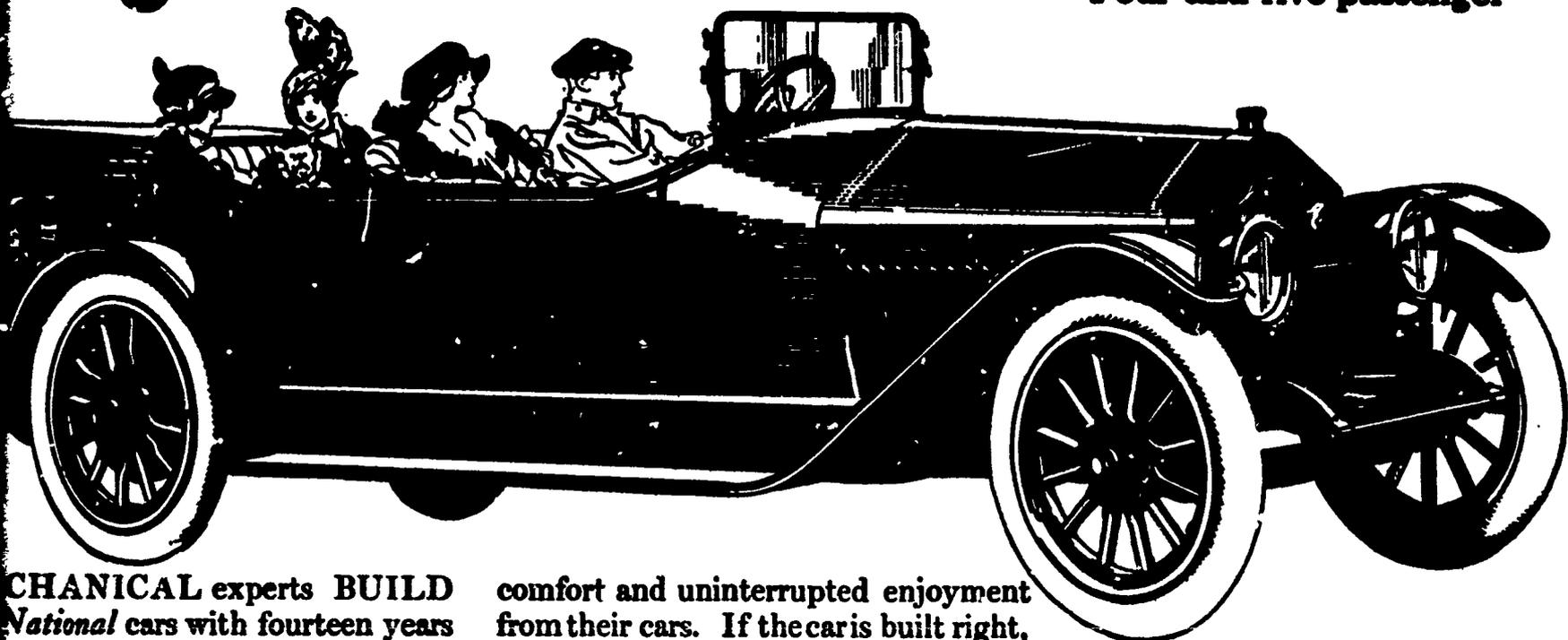
ADVERTISEMENT

Machinist or Motorist?

You don't have to be a mechanical expert to safely buy a

National Six—\$2375

Four and five-passenger



MACHINICAL experts BUILD *National* cars with fourteen years experience to guide them.

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

Give us a detailed analysis of the *National*; we invite you to visit and inspect our factories. But what motorist's demand today is service, confidence,

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NATIONAL owners have learned that we build *whole* cars—the name *National* is a guarantee. Every *National* car is built as a unit. Every mechanical part operates harmoniously to produce satisfactory results. You have no responsibility for its mechanical care—our experience—forget that there are no mechanical parts in the car. Just rest and enjoy your ride with absolute confidence.

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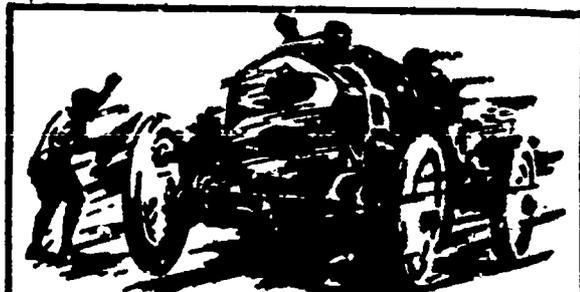
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Brief Specifications—*National* Six

Motor, 6-cylinder, $3\frac{1}{2} \times 5\frac{1}{2}$ -inch, cast on bloc. Tire pump, integral part of motor. Clutch, self-contained aluminum cone. Starting and lighting, electric two-unit system. Transmission, sliding gear selective type, three speeds forward, one reverse. Gauge, 23 inches. Oiling, crank-case constant level, force feed, with gear-driven pump. Ignition, high tension, dual magneto with storage battery. Tires, $36 \times 4\frac{1}{2}$. Firestone demountable rims. Air-pressure gasoline feed, generated by small pump in crank-case. Capacity, 23 gallons. Automatic carburetor. Two sets of brakes on 16-inch rear wheel drums. Bevel gear drive through straight line shaft with universal joints and torsion member. Full-floating rear axle. Left-side drive. Access all four wide doors. Single lever in center controls all speeds. Half elliptic springs, front; special *National* construction, rear.

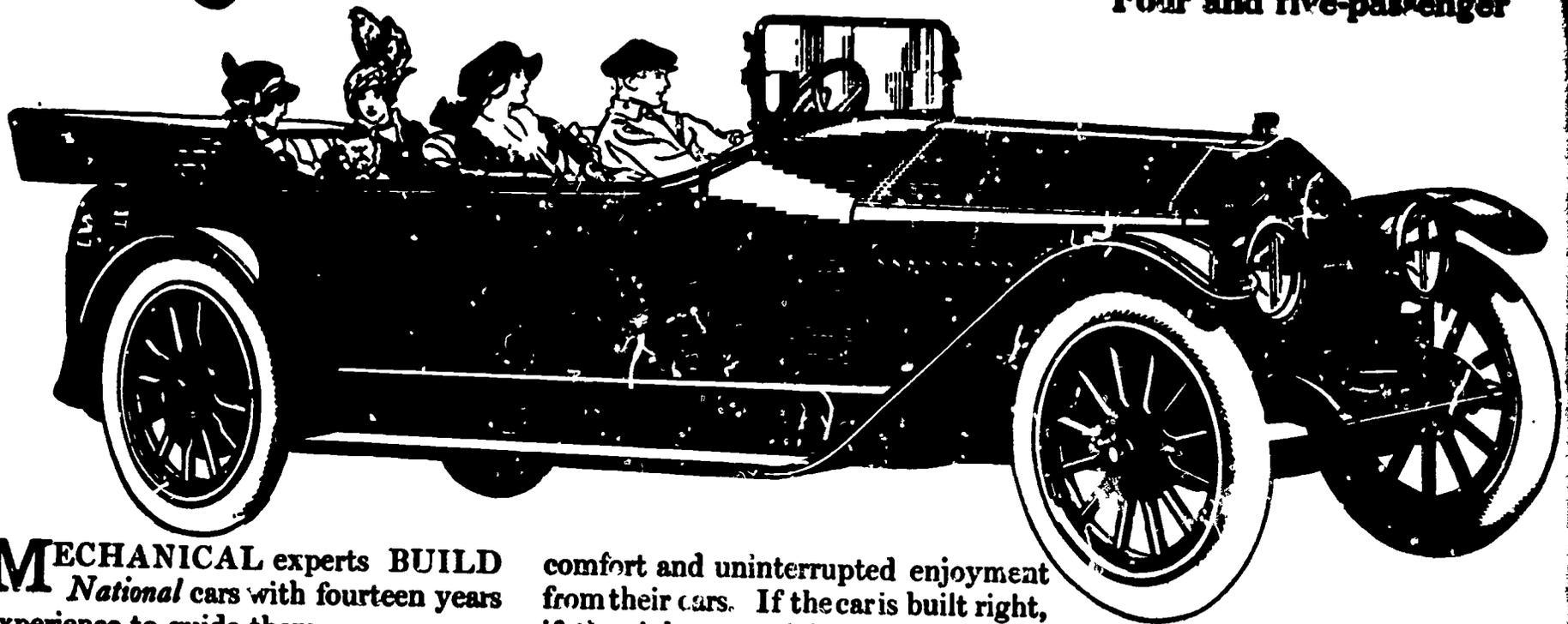
Equipment:—Top complete with side curtains and boot, ventilating rain vision windshield, extra Firestone rim, electric lighting and starting systems, 19-inch double bulb electric headlights, electric license tail light, Warner speedometer, electric horn, tools and jack.



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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.

Brief Specifications—*National Six*

Motor, 6-cylinder, 3 1/4 x 5 1/2-inch, cast on bloc. Tire pump, integral part of motor. Clutch, self-contained aluminum cone. Starting and lighting, electric two-unit system. Transmission, sliding gear selective type, three speeds forward, one reverse. Gauge, 56 inches. Oiling, crank-case constant level, forced feed, with gear-driven pump. Ignition, high tension, dual magneto with storage battery. Tires, 36 x 1 1/2. Firestone demountable rims. Air-pressure gasoline feed, generated by small pump in crank-case. Capacity, 23 gallons. Automatic carburetor. Two sets of brakes on 16-inch rear wheel drums. Bevel gear drive through straight line shaft with universal joints and torsion member. Full-floating rear axle. Left-side drive. Access all four wide doors. Single lever in center controls all speeds. Half elliptic springs, front; special *National* construction, rear.

Equipment:—Top complete with side curtains and boot, ventilating rain vision windshield, extra Firestone rim, electric lighting and starting systems, 19-inch double bulb electric headlights, electric license tail light, Warner speedometer, electric horn, tools and jack.

"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.

You can buy over telephone

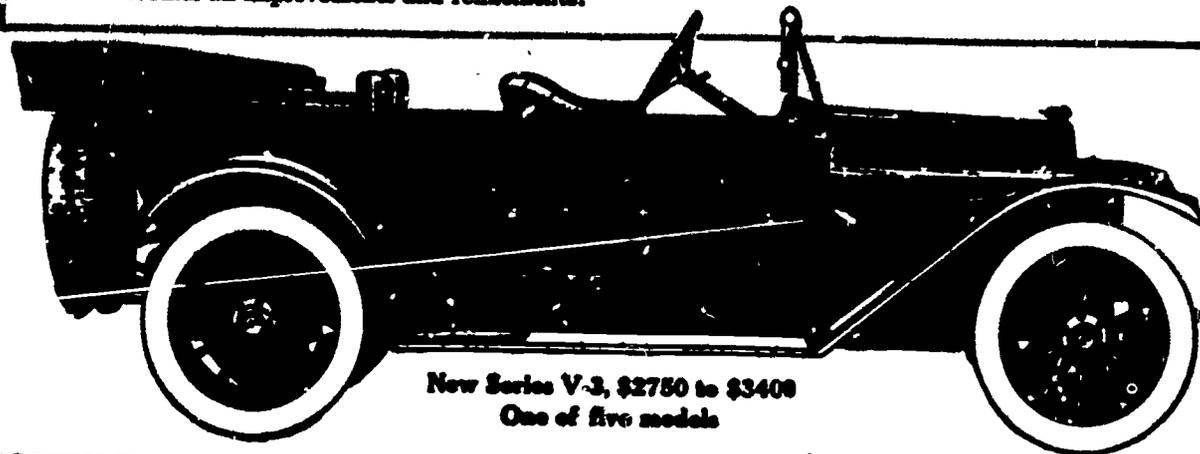
NATIONAL owners buy performance and not specifications—they can buy their new *Nationals* over the telephone. We sell our experience, ability, responsibility and our guar-

antee—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.

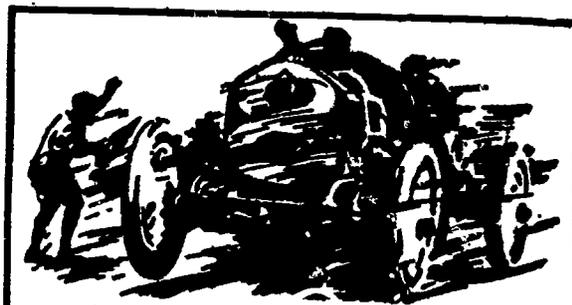
Lavish in comfort

THIS new *National* embodies all our internationally 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 pioneer beginning. It marks a most coveted improvement in motor car designing. It is the one car that harmonizes 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.



New Series V-3, \$2750 to \$3400
One of five models



REMEMBER

When you say "*National!*" you are talking about the world's champion car. The *National* is the World's Stock Champion; International Champion 500-mile race record holder; Fastest Mills for stock car record holder, etc. No other has ever equalled the *National* in actual performance and demonstration of its quality, power, speed, reliability and sureness.

Send this Coupon today

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

Name _____

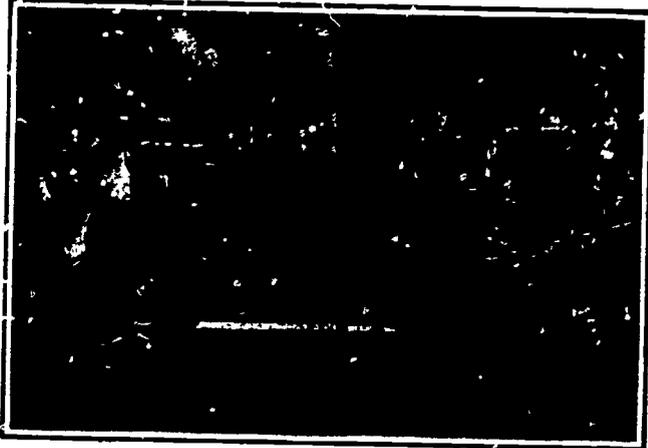
Address _____

National Motor Vehicle Co.
Indianapolis, Ind., U.S.A.

CARS



An interesting example of the "boat type" body.
The peculiar feature of the design lies in its ram-like forward lines and its torpedo stern; it is styled a skiff-torpedo and the body, though metal, is grained to represent wood. Lightness of construction evidently was sought, for running boards are missing and the mudguards are small.



Modified type of two-passenger coupé model.
When closed, this body has much the appearance of a "conning tower." It is a good example of the European practice of sloping the engine hood sharply to blend 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.



A clever solution of
In this body, the designer has achieved an echelon by way of giving all the room. The design, incidentally, is inclined among the passengers; consequently one is required to lean over a



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.



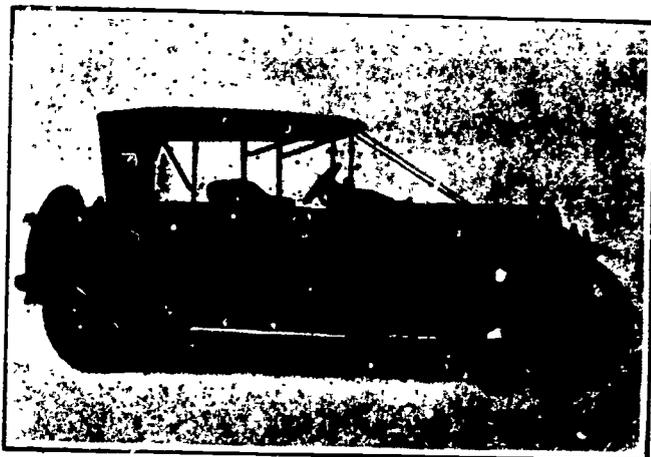
Is closer resemblance to a real boat possible?
The fidelity with which the boat builder's art has been imitated in this body is truly astonishing; the "hull" is properly built up of a number of "skins;" decks are laid in true nautical fashion and even the cockpit has a coaming. Note the protected fuel tank.



Dodging the conventional
The resemblance to an aeroplane is unmistakable. The miniature dash, are in marked contrast. The windshield, unbound at the top, is a marked tendency in design. The body



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 sloping 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 though fairly large, it does not obstruct the running board.



Clever combination of
When the top is folded back, the occupants and purposes are open to the sky. What a contrast between the severity of American practice

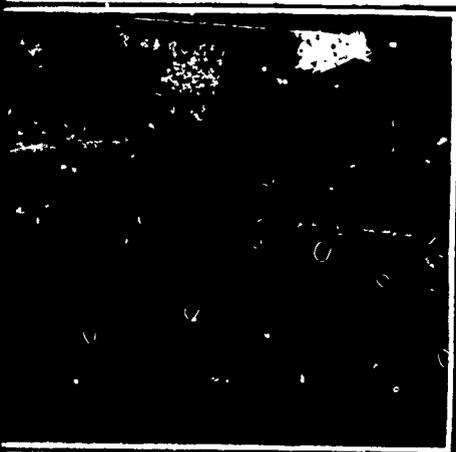


Another of the curious foreign "boat" bodies.



How far...





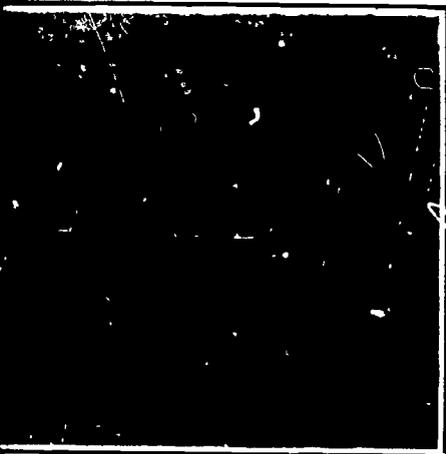
example of the "boat type" body.
The design lies in its ram-like form of torpedo stern; it is styled a skiff-torpedo which metal is grained to represent wood. Attention evidently was sought, for running and the mudguards are small.



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When closed, this body has much the appearance of a "conning tower." It is a good example of the European practice of sloping the engine hood sharply to blend 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.



A clever solution of the seating problem.
In this body, the designer has placed the tonneau seats on *echelon* by way of giving all three occupants plenty of elbow room. The design, incidentally, provides for sociability among the passengers; conversation is facilitated; for no one is required to lean over any one else.



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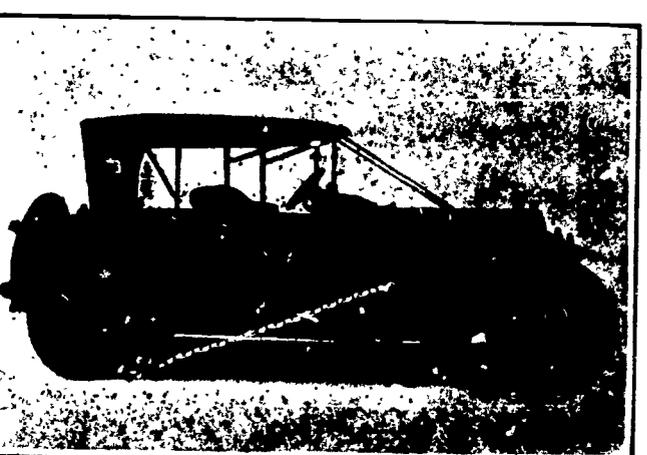
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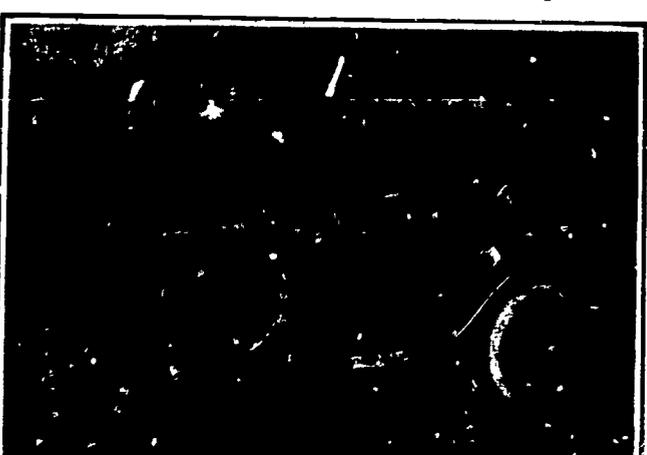
Dodging the conventional in front elevations.
The resemblance to an aeroplane with its widespread wings is unmistakable. The miniature "side" lamps, set into the dash, are in marked contrast to the powerful head lamps. The windshield, unbound at the top, reflects a well-defined tendency in design. The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



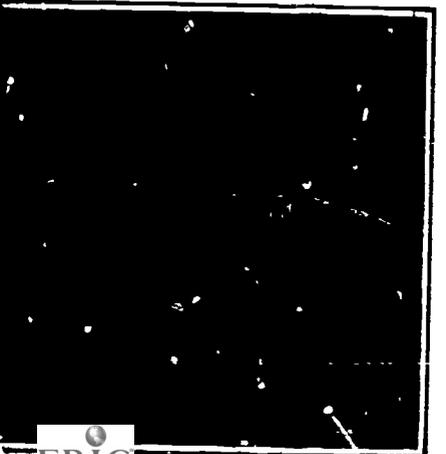
Recently developed runabout model.
predominating feature of this vehicle resembles a great black beetle, what with its low rear and its low-hung chassis. The storage on the rear luggage compartment



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 though fairly large, it does not obstruct the running board.



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!



Foreign "boat" bodies.
In the first place, the lines often consist



How foreign designers reduce wind resistance.
None of these bodies is either the



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

An interesting example of the "boat type" body.

The peculiar feature of the design lies in its ram-like forward lines and its torpedo stern; it is styled a skin-torpedo and the body, though metal, is grained to represent wood. Lightness of construction evidently was sought, for running boards are missing and the mudguards are small.



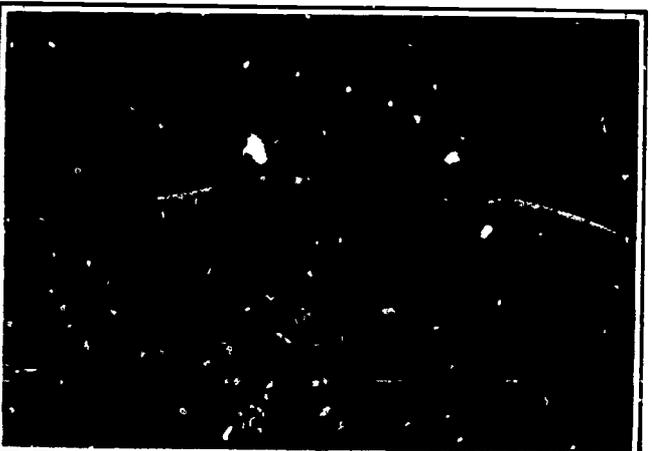
Ingenious storage spaces that satisfy a real demand.

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 latest developed runabout model.

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



Another of the curious foreign "boat" bodies.

The exaggerated flare to the top-sides, the tiny after cockpit and the peculiar stern all proclaim the marine origin of the type. Mudguards are reduced to the minimum, it will be noted, and there are no side entrances to the single rear seat; running lamps are mounted atop the head lamps.



A representative type of fast foreign runabout.

Disked wheels, practically unknown in America, serve to reduce wind resistance and to promote cleanliness; they are fairly common abroad where little attention is paid to convention in the matter of appearance. Note the "turtle-back" rear effect and the lowness of the chassis.

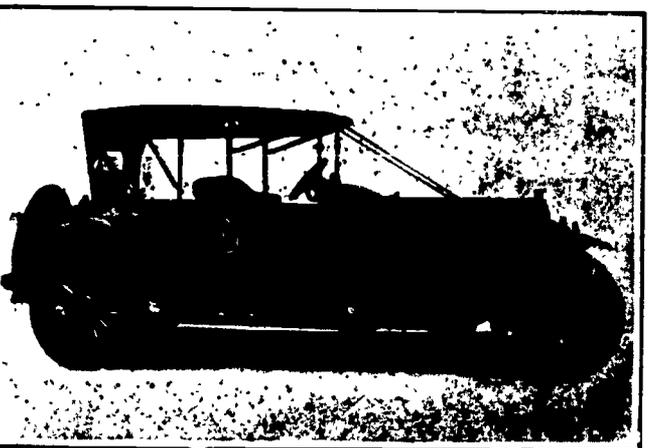
Modified type of two-passenger coupé model.

When closed, this body has much the appearance of a "combing tower." It is a good example of the European practice of sloping the engine hood sharply to blend 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.



Is closer resemblance to a real boat possible?

The fidelity with which the boat builder's art has been imitated in this body is truly astonishing; the "hull" is properly built up of a number of "skins;" decks are laid in true nautical fashion and even the cockpit has a coaming. Note the protected fuel tank.



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 though fairly large, it does not obstruct the running board.



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 the idea is carried is indicated by the rudder-like projections on the rear frame members.



The exaggerated coupé type of town vehicle.

The apparent great length of the chassis is accounted for by the fact that more than half the space is taken up by engine and driver. The abrupt, unfinished appearance of the inclosed part offsets the elaborate attempt at line blending at the front.

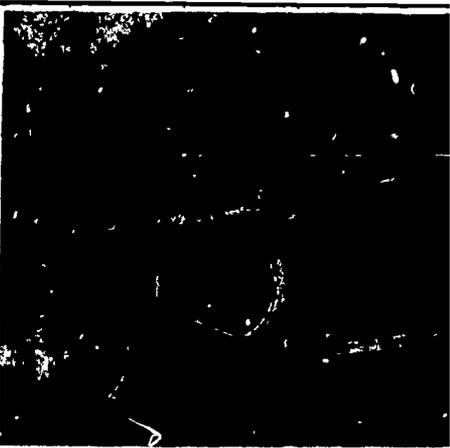
A clever solution of the seating problem.

In this body, the designer has placed the seats in a row by way of giving all three occupants a room. The design, incidentally, provides for conversation among the passengers; conversation is possible as one is required to lean over any one else.



Dodging the conventional in front.

The resemblance to an aeroplane with its wings in an unmistakable. The miniature "side" dash, are in marked contrast to the power windows. The windshield, unbound at the top, reflects the tendency in design. The body is styled a



Clever combination of sedan and touring car.

When the top is folded back, as shown, it serves two intents and purposes an open touring body, raised the occupants may be as snug as in a sedan. What a contrast between the curving lines of the body and the severity of American practice!



Another view showing lines of the "terrace" type.

From the side, the resemblance to a boat is pronounced; the lines are those of the typical launch. The illusion is made complete by the use of a dark color as to obscure the engine hood. This body was shown at the recent French salon.



Brand new arrangement of seats and dashboard.

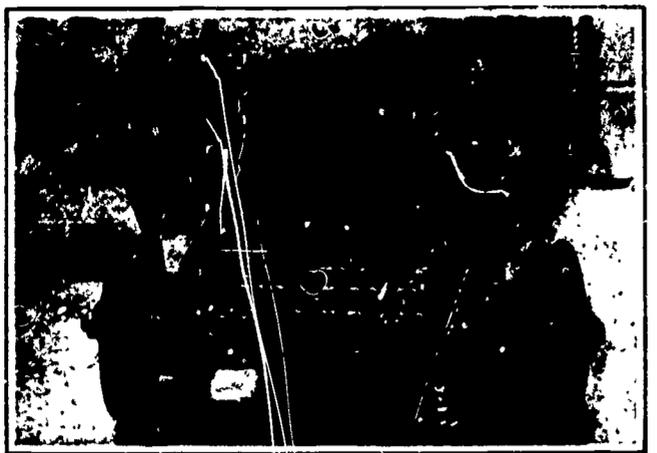
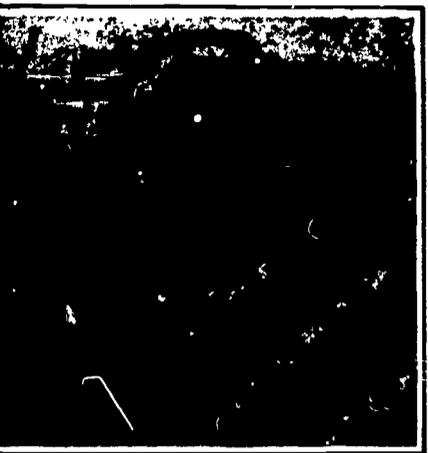
It will be noted that the forward seats are arranged for the purpose of providing both occupants with a view of the road. The body is a utilitarian one, though the appearance is somewhat limited.

NEW IDEAS IN CAR BODIES DEVELOPED CHIEFLY ABROAD

...of the design lies in its ram-like ser-
pedo stern; it is styled a skiff-torpedo
metal, is grained to represent wood.
...tion evidently was sought, for running
and the mudguards are small.

When closed, this body has much the appearance of a "cas-
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of sloping the engine hood sharply to blend 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.

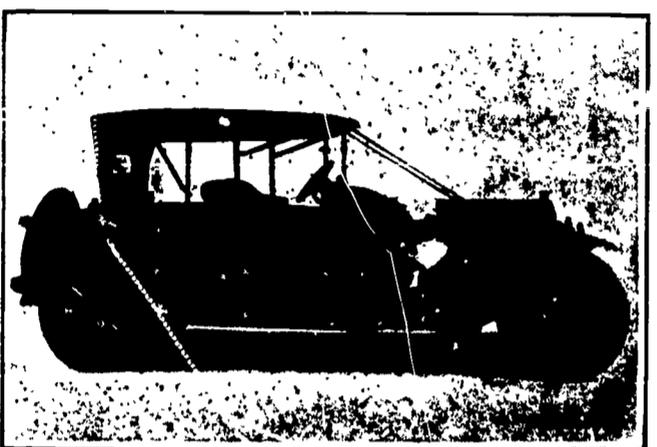
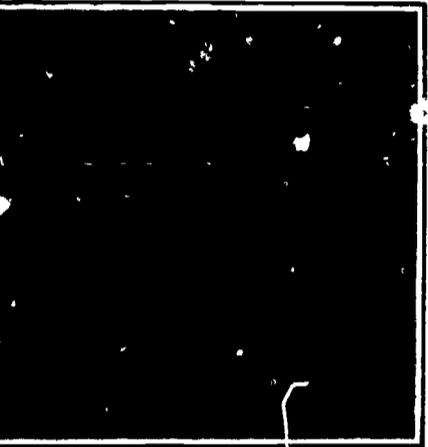
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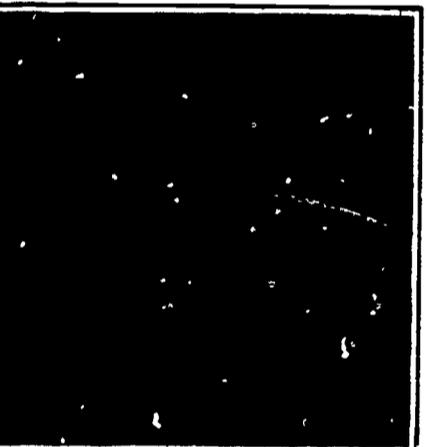
Dodging the conventional in front elevations.
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to which the idea is carried is indicated by the rudder-
like projections on the rear frame members.

Another view showing lines of the "terra marine" body.
From the side, the resemblance to a boat is even more pro-
nounced; the lines are those of the typical, fast runabout
launch. The illusion is made complete by holding a card so
as to obscure the engine hood. This body caused a genuine
sensation at the recent French salon.



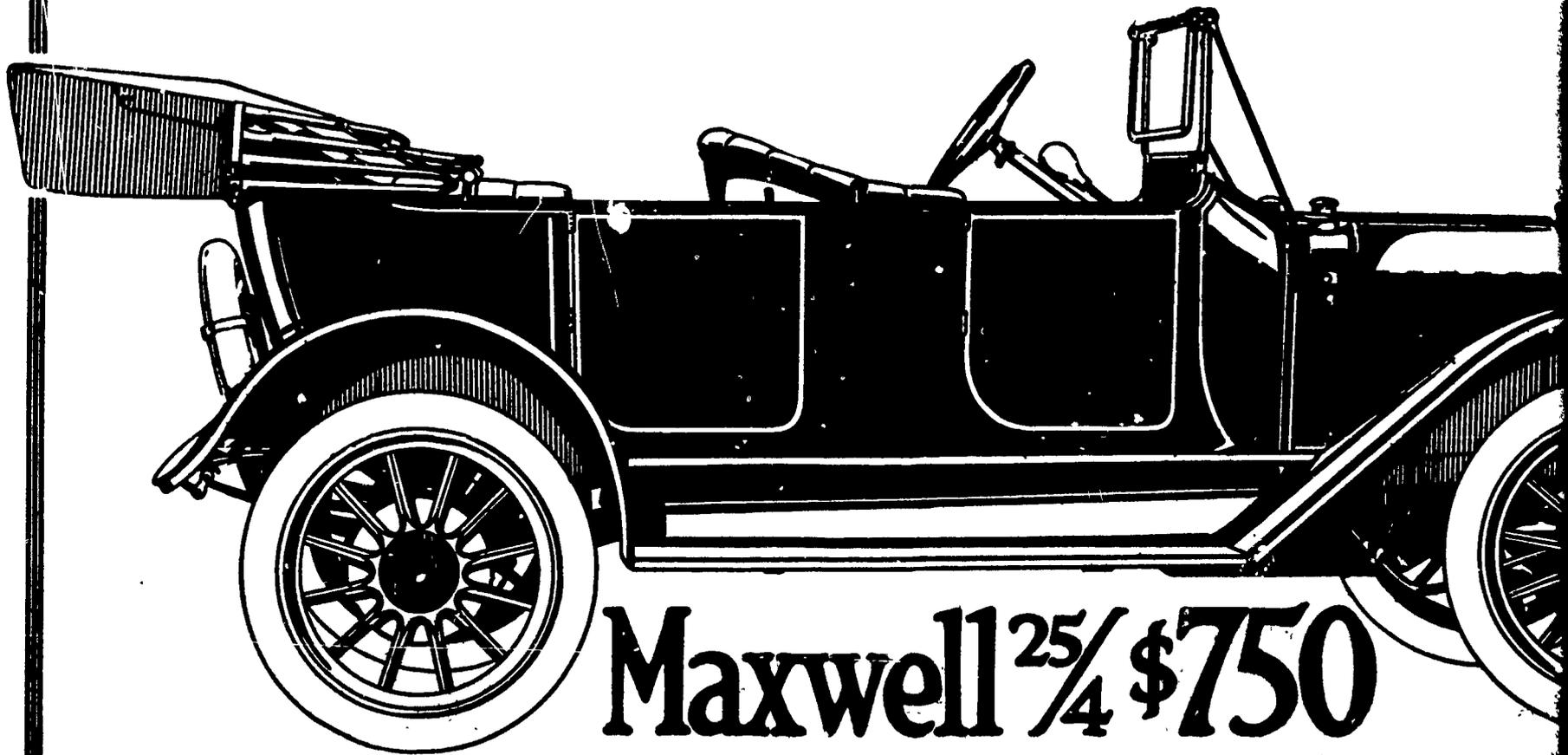
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ing at the front.

Brand new arrangement of seats and storage space.
It will be noted that the forward seats are staggered for the
laudable purpose of providing both occupants with plenty
of room, and half the tonneau is reserved for luggage.
The body is a utilitarian one, though the passenger capacity
is somewhat limited.

NEW IDEAS IN CAR BODIES DEVELOPED CHIEFLY ABROAD

ADVERTISEMENT



Maxwell ²⁵/₄ \$750

The Pioneer of the Past—and of the Future

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—the 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 recalling 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 in the Show—because more years of experience and more combined engineering skill and know-how have gone into it than went into any other automobile at the price.

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

Add to this, honesty of purpose and a desire to make good and well at the hands of every one of you have the elements that

ADVERTISEMENT



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Revolutionary, too, because maintenance has been reduced to the minimum. ERIC Full Text Provided by ERIC **Nothing in this car the best steel**

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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 pro-



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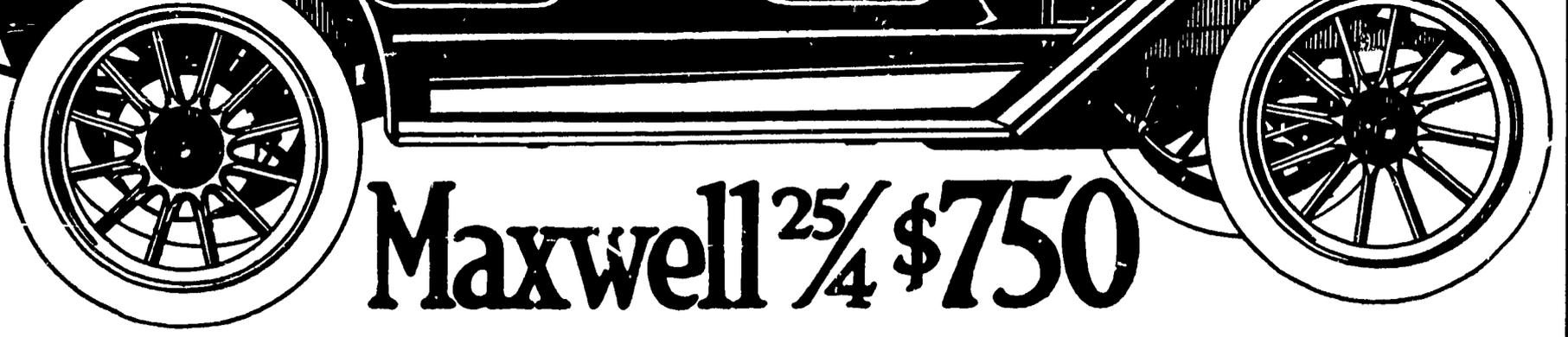
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MAXWELL MOTOR COMPANY

(INCORPORATED) DETROIT MICHIGAN



Maxwell ²⁵/₄ \$750

The Pioneer of the Past—and of the Future

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MAXWELL MOTOR COMPANY

INCORPORATED DETROIT MICHIGAN

CARS

Scientific American

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 floatless atomizer 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 through 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 type of transmission. With this type of transmission it is possible to pass instantly from one speed to another by simply pushing a lever. The

telescopic universal joint, 59, is to be noted. The car has a spur-gear differential and bevel driving pinion, 61, which can be readily adjusted from the outside. The main rear axle is a solid tube having ball bearings on each end for the wheels. The live axle extends through these, and drives them by means of jaw clutches that lock it to the outside face of the hubs. The car has long, heavy springs, besides a transverse spring at the back. Its wheels are shod with 34 x 4 1/2-inch tires, and it has a wheel base of 100 inches, while the length of the frame itself is over 12 feet. The weight complete is in the neighborhood of 2,600 pounds. The 4 1/2 x 5-inch engine is rated at 30 horse-power, and it is capable of driving the machine at a rate of speed of 50 miles an hour.

Altogether this car is a good example of that simplicity of construction that is aimed at by almost all American builders.

A Novel System of Wireless Telegraphy.

BY DR. ALFRED GRADENWITZ.

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.

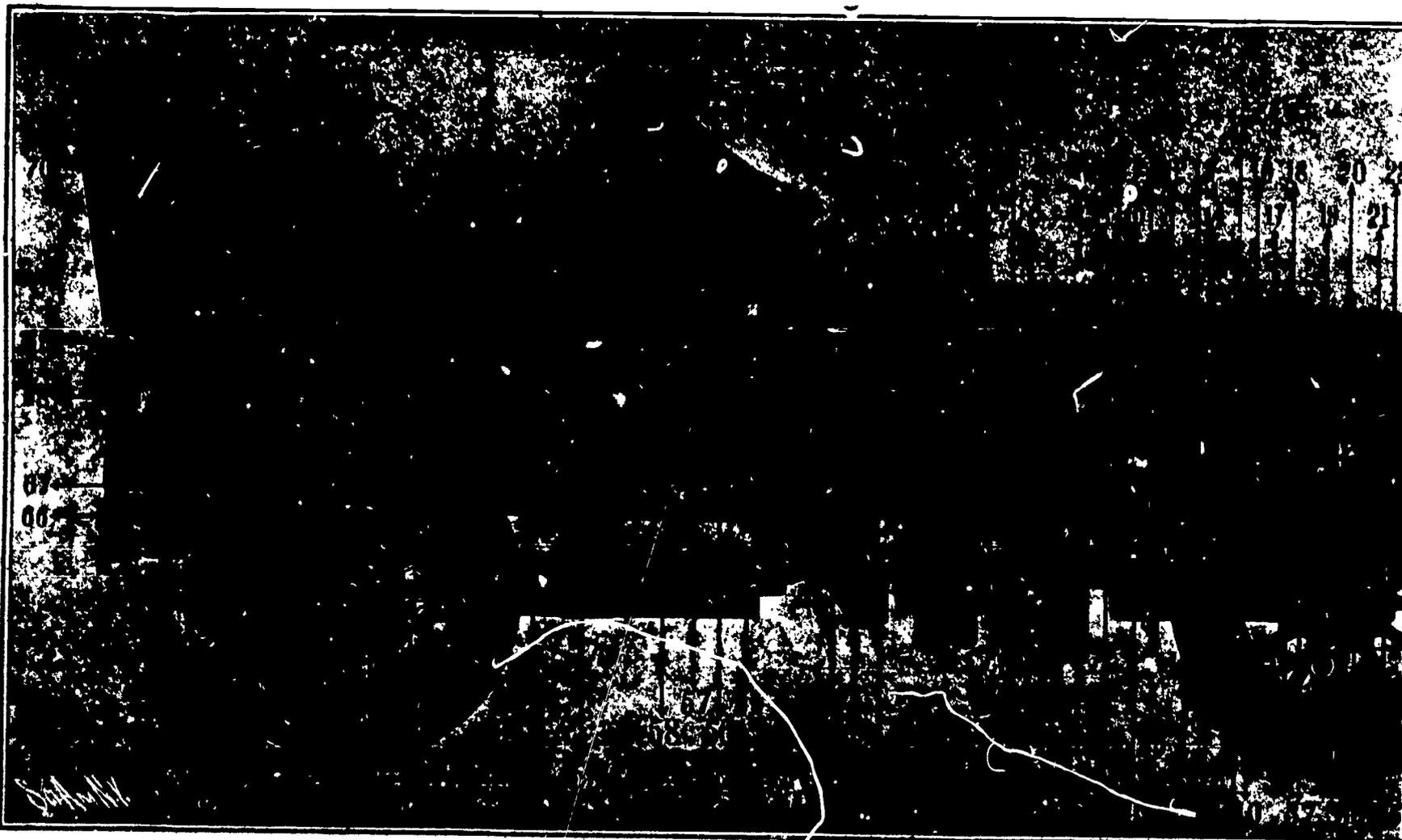
In optical telegraphy the rays issuing from a photo-

cell at the receiving end of the electric circuit through producing intermittent flashes with intervals corresponding to the pitch of the sound of the interrupter. Where uncertainties are possible acoustical intensities of the sounds have to be heard through longed intervals. It has insured perfectly clear transmission of a communication in inclement atmospheric conditions which cult the transmission of a selenium cell without the need of using it with the transmitter.

The satisfactory results made, go to show that this like the analogous system may be used to special advantage over short distances.

A Prize for

Prizes to the value of 11,000 marks conjointly by the Prussian Society of Portland Cement works on the processes which are used in the setting of hydraulic cement.



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

1, Throttle lever; 2, steering wheel; 3, steering column; 4, clutch and brake pedal; 5, spark coil; 6, vibrator; 7, 5-gallon gasoline tank for supplying carburetor by gravity; 8, copper water pump; 9, piston and oil groove; 10, compression chamber; 11, inlet valve; 12, spark plug; 13, relief cock; 14, exhaust valve; 15, carburetor; 16, inlet pipe; 17, exhaust pipe; 18, bonnet; 19, driving oil pump; 20, radiator cap; 21, water tank; 22, radiator; 23, radiator fan; 24, chain for driving fan; 25, starting crank; 26, centrifugal water pump; 27, spring bearing; 28, control column; 29, exhaust valve cam; 30, variable inlet valve cam; 31, bearing for slidable cam shaft; 32, reserve oil chamber of governor; 33, rod connecting steering levers of front wheel; 34, ball bearings of transmission shaft; 35, planetary transmission giving three speeds ahead and one reverse; 36, double-acting transmission brake; 37, universal joint of driving shaft; 38, pressure pipe from exhaust pipe to gasoline tank; 39, universally-jointed driving shaft; 40, universal joint; 41, telescopic universal joint; 42, rear spring; 43, bevel driving pinion; 44, differential gear casing; 45, 20-gallon gasoline tank; 46, transverse rear spring support; 47, pressed steel side frame; 48, swinging filler for gasoline tank; 49, wood frame of body; 50, side entrance door.

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-

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are those offered for investment may be taken by the company the properties and of the business.

AMERICAN TOURING CAR.

Longitudinal cut shows in considerable detail of a gasoline touring car of distinctive type. From the manufacture of an about and light tonneau, the machine has risen to the condition of a touring car seen below. In doing this, the designers have wisely retained features which have proved to the success of the smaller models. In addition, they have added several novel improvements on the touring car engine copper water jacket, mechanically-operated inlet valve, floatless atomizer or mixer that is a distinct novelty, and the employment of a planetary gear which, in connection with a clutch, gives three speeds forward with a direct gear on the third, or high speed. The three-speed planetary gear for the touring car was developed from the two-speed gear for machines by the addition of only one gear. As is well known, this transmission is free from continuous heavy pulling, because the parts and its gears are subjected to less strain, size for size, than those of any other type of transmission. With this type of transmission it is possible to pass instantly from one gear to another by simply pushing a lever. The

telescopic universal joint, 59, is to be noted. The car has a spur-gear differential and bevel driving pinion, 61, which can be readily adjusted from the outside. The main rear axle is a solid tube having ball bearings on each end for the wheels. The live axle extends through these, and drives them by means of jaw clutches that lock it to the outside face of the hubs. The car has long, heavy springs, besides a transverse spring at the back. Its wheels are shod with 34 x 4 1/2-inch tires, and it has a wheel base of 100 inches, while the length of the frame itself is over 12 feet. The weight complete is in the neighborhood of 2,600 pounds. The 4 3/4 x 5-inch engine is rated at 30 horse-power, and it is capable of driving the machine at a rate of speed of 50 miles an hour.

Altogether this car is a good example of that simplicity of construction that is aimed at by almost all American builders.

A Novel System of Wireless Telegraphy.

BY DR. ALFRED GRADENWITZ.

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 pro-

jectum cell at the receiving station to alter the resistance of the electric circuit through the telephone, thereby producing intermittent humming sounds which vary with intervals corresponding to those of Morse signals. 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 therefore 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



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

1, front wheel; 2, steering column; 3, clutch and brake pedal; 4, spark coil; 5, vibrator; 6, 8-gallon gasoline tank for supplying carburetor by gravity; 7, copper water jacket; 8, cylinder wall; 9, piston and oil groove; 10, compression chamber; 11, inlet valve; 12, spark plug; 13, relief cock; 14, exhaust valve; 15, carburetor; 16, inlet pipe; 17, exhaust pipe; 18, bonnet; 19, 20, water pipes; 21, gear for governing device; 22, tubular sub-frame supporting engine; 23, piston of oil governor; 24, reserve oil chamber of governor; 25, rod connecting steering levers of front wheels; 26, connection to steering valve cam; 27, variable inlet valve cam; 28, bearing for adjustable cam shaft; 29, 41, connecting rod and crank; 30, crank check; 31, crankshaft; 32, flywheel; 33, double-faced expanding clutch in flywheel; 34, transmission shaft; 35, planetary transmission giving three speeds ahead and one reverse; 36, double-acting transmission brake; 37, universal joint of driving shaft; 38, exhaust pipe; 39, brake linkage from exhaust pipe to gasoline tank; 40, universally-jointed driving shaft; 41, muffler; 42, telescopic universal joint; 43, rear spring; 44, bevel driving pinion; 45, 46, pinions of spur gear differential; 47, 20-gallon gasoline tank; 48, transverse rear spring support; 49, pressed steel side frame; 50, swinging filler for gasoline tank; 51, wood frame of body; 52, aluminum body; 53, tonneau; 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72.

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jector are, as a rule, intercepted at given intervals, so as to form luminous flashes, succeeding one another more or less rapidly. In the Ruhmer telegraph system, on the contrary, the so-called speaking arcs are utilized

are those offered for investigation, any or all of which may be taken by the competitor: Demonstration of the properties and of the hardening process of calcareous hydraulic cements, synthetically, analytically, mi-

...the flywheel, gives three speeds forward with a direct through 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 type of transmission. With this type of transmission it is possible to pass instantly from one speed to another by simply pushing a lever. The

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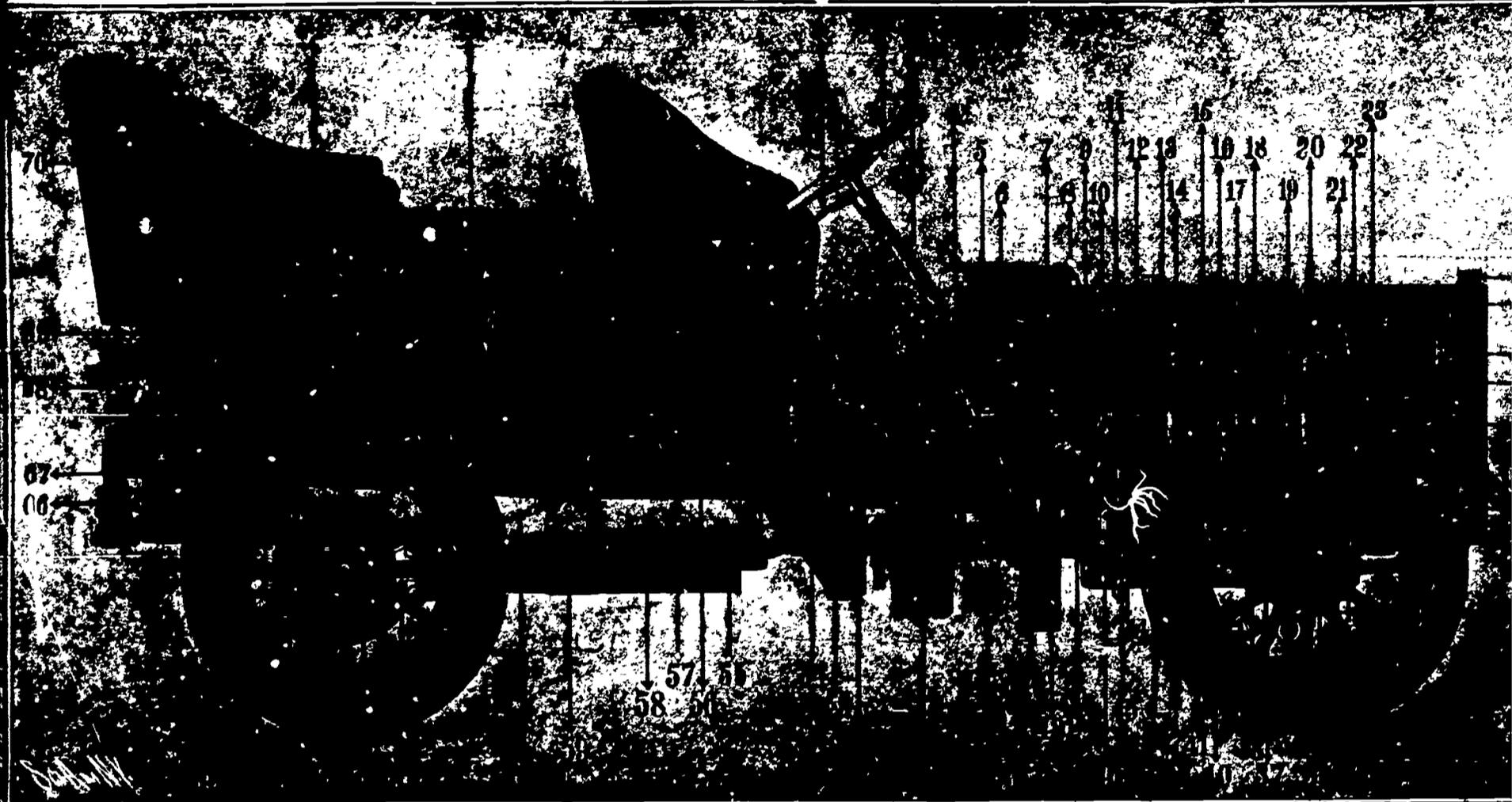
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The engine is governed by varying the lift of the inlet valves. This is accomplished by sliding the camshaft (the inlet-valve cams of which are tapered) bodily lengthwise and thus bringing the lower part of the inlet cam, 42, beneath the roller of the inlet-valve stem, 13. The result is the valve does not open so much and the engine is throttled. The camshaft is slid by means of a piston, 37, 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, 35, 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 box pick up oil and conduct it to the bearings. The commutator is placed in a hole at the base of the radiator. The jump-spark system with coils having vibrators and with batteries as a current source, is used. A gear-driven centrifugal pump circulates the water. Ball bearings are used throughout, and a special form of

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The receiving station is arranged in a way analogous to those of optical telephony, comprising two telephones and one parabolic reflector in the focus of which the selenium cell is placed. The luminous oscillations of the transmitting station act on the selen-

are those offered for investigation, any one may be taken by the competitor: Determine the properties and of the hardening process of various hydraulic cements, synthetically, and microscopically, mineralogically (hardening water, and sea water). (a) To prove what substances are engaged in the hardening process. Consideration of the swelling phenomenon accompanies the hydraulic hardening. (d) To determine the influence of the temperature and length of the burning process on the different kinds of hydraulic cements. (e) Properties of puzzolana, beginning with siliceous puzzolana, and iron, and manganese, independently and in combination with silicic acid, either as natural puzzolana. The papers must be written and submitted under a *nom de plume* to the Director of Public Works, 80, Wilhelmstrasse, Berlin before December 31, 1906. The papers will be judged by a committee comprising Prof. Schliebe, and Fresenius, Drs. Michaelis and Messrs. E. Crammer and F. Schott, at the Royal Testing Station, Berlin.

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A Novel System of Wireless Telegraphy.

BY DR. ALFRED GRADENWITZ.

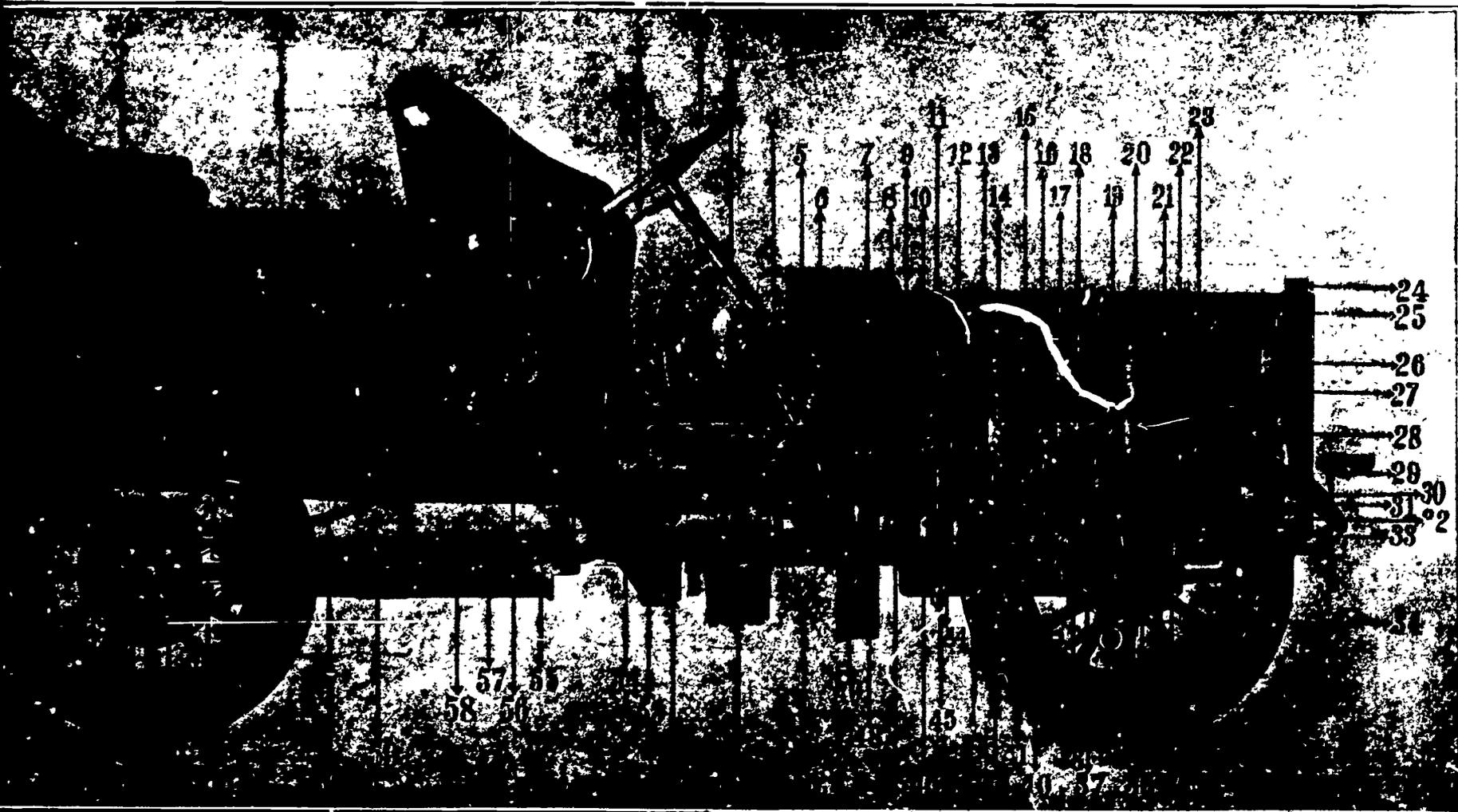
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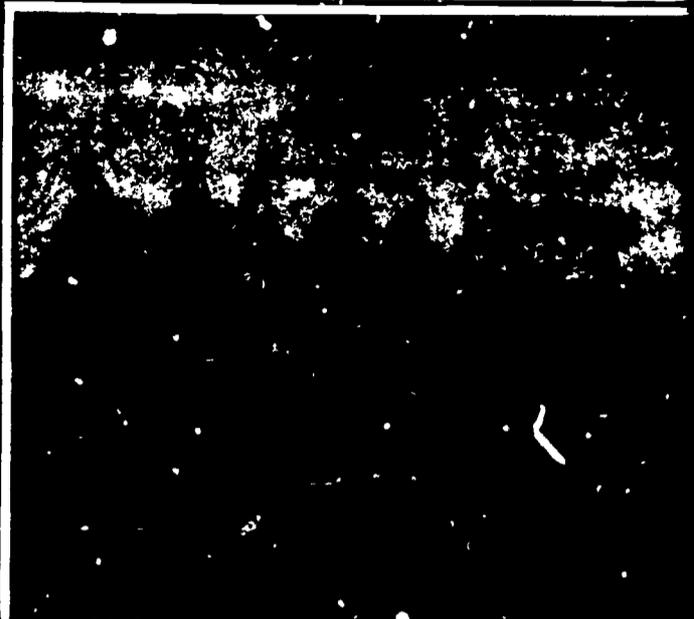
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CARS



The New 12-Horse-Power Franklin Light Runabout.

Engine: $2\frac{1}{2} \times 3\frac{1}{4}$, 4-cylinder, air-cooled. Transmission: 2-speed progressive type. Clutch: Multiple disk in flywheel. Drive: Shaft. Weight: 1,350 pounds. Wheel base: 90 inches. Tires: Front, 20 x 8; rear, 20 x $2\frac{1}{2}$.



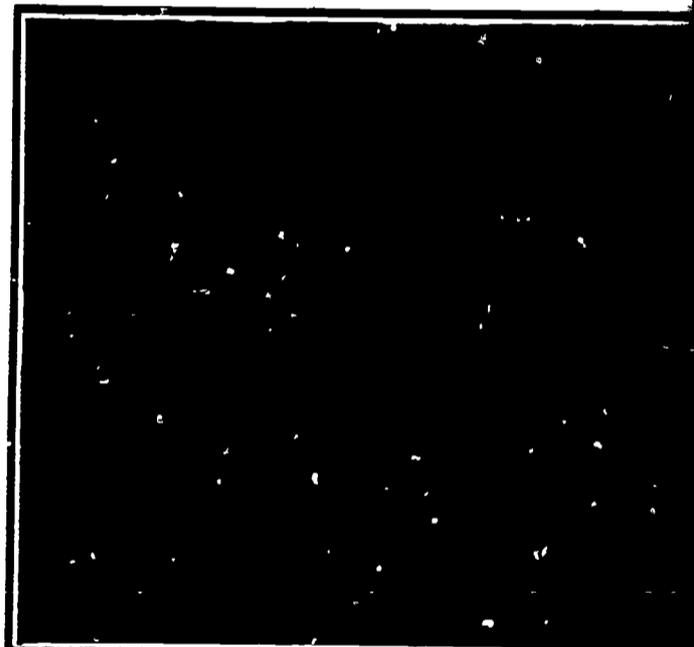
The Oldsmobile 25-Horse-Power Runabout With

Engine: $4\frac{1}{2} \times 4\frac{1}{2}$, 4-cylinder, water-cooled. Transmission: 2-speed selective. Drive: Shaft. Weight: 2,600 pounds. Wheel base: 106 inches. Tires: Front, 24 x 8; rear, 24 x 8.



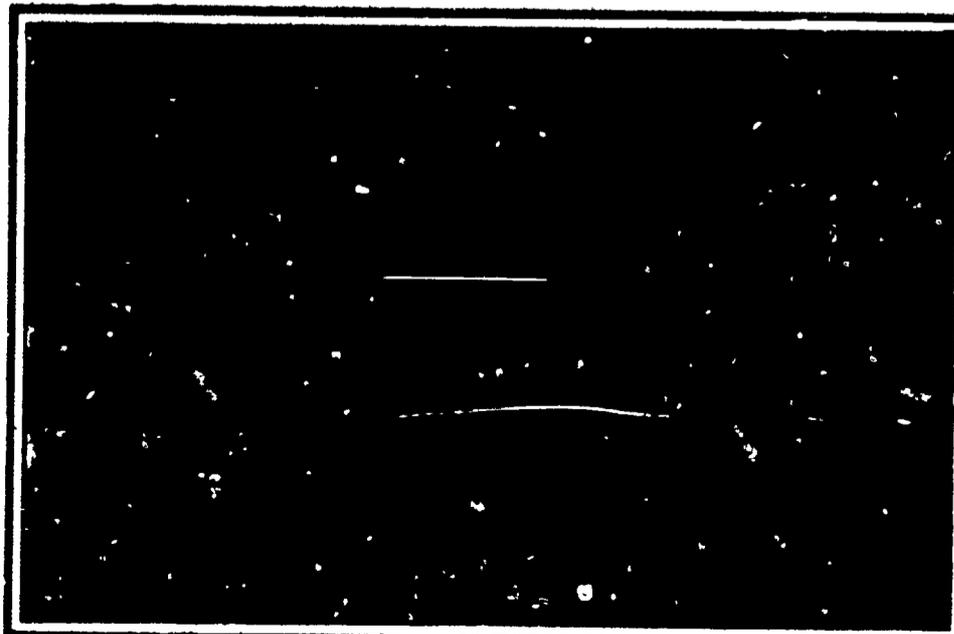
Mrs. F. D. Cottle—98 Years of Age—in a 40-Horse-Power American Mercedes.

Mrs. Cottle made trip from New York to Boston pleasantly and without fatigue in two days. Engine: 120 x 180 mm. ($4\frac{1}{2} \times 7\frac{1}{8}$ in.), 4-cylinder, water-cooled. Transmission: 4-speed selective type. Clutch: Metallic expanding ring. Drive: Double side chain. Weight: 2,440 pounds. Wheel base: 127 inches. Tires: 28 x 4.



The New 24-32-Horse-Power Model of the American

Engine: 4.9 x 5.9, 4-cylinder, water-cooled. Transmission: 4-speed selective. Drive: Double side chain. Weight: 2,800 pounds. Wheel base: 118 inches. Tires: Front, 28 x 8; rear, 28 x 8.



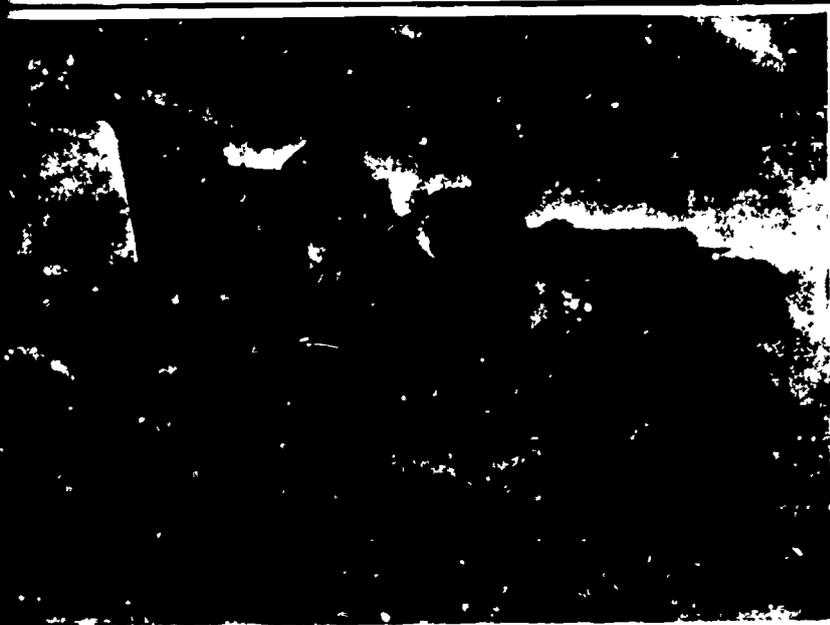
The 15-Horse-Power, 7-Passenger Pierce Touring Car.

Engine: $5 \times 6\frac{1}{2}$, 4-cylinder, water-cooled, with two valves per cylinder and high-tension ignition system by battery and high-tension magnets. Transmission: 2-speed selective type operated by lever on steering column. Clutch: Chain. Drive: Shaft. Weight: 2,400 pounds. Wheel base: 124 inches. Tires: Front, 24 x 4; rear, 24 x 4.



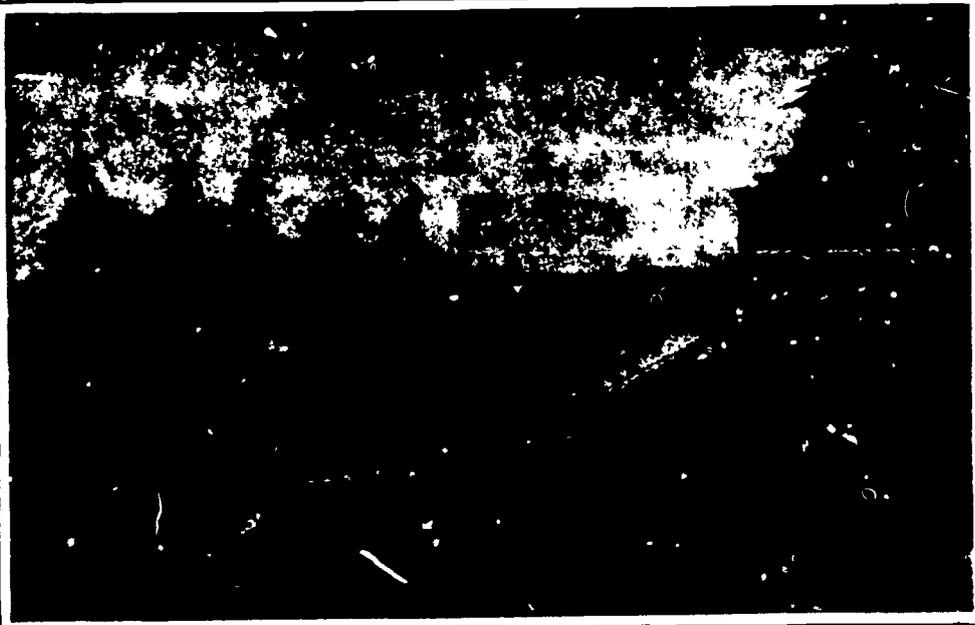
The Pepto-Toledo 40-Horse-Power, 7-Passenger Pulling

Engine: $4\frac{1}{2} \times 6\frac{1}{2}$, 4-cylinder, water-cooled, with valves in heads. Transmission: 4-speed selective. Drive: Double side chain. Clutch: Multiple-disk in gear box. Weight: 2,800 pounds. Wheel base: 118 inches. Tires: Front, 28 x $3\frac{1}{2}$; rear, 28 x 8.



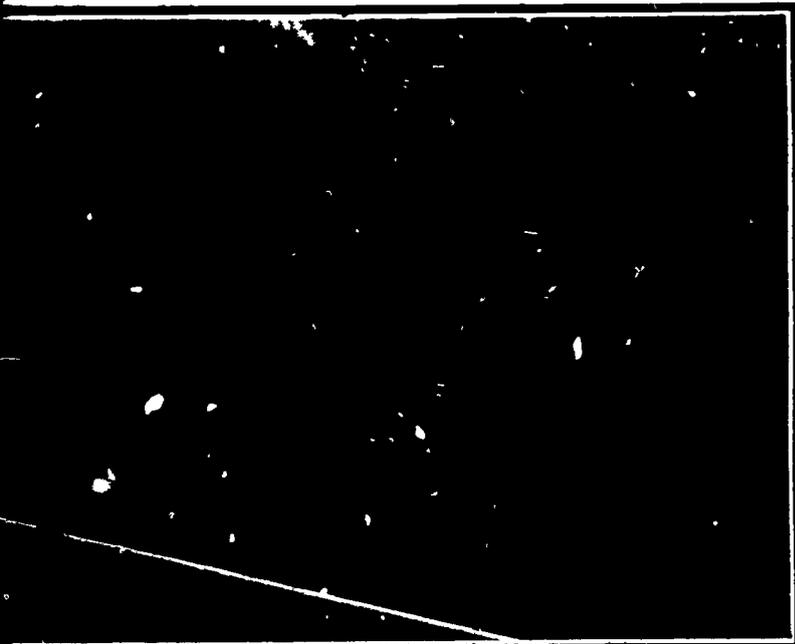
The New 12-Horse-Power Franklin Light Runabout.

Engine: 4-cylinder, air-cooled. Transmission: 3-speed progressive type. Clutch: Multiple disk in gear. Weight: 1,300 pounds. Wheel base: 80 inches. Tires: Front, 30 x 8; rear, 30 x 3 1/2.



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

Engine: 4 1/2 x 4 1/2, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Reverse cone. Drive: Shaft. Weight: 2,600 pounds. Wheel base: 108 inches. Tires: Front, 34 x 3 1/2; rear, 34 x 4.



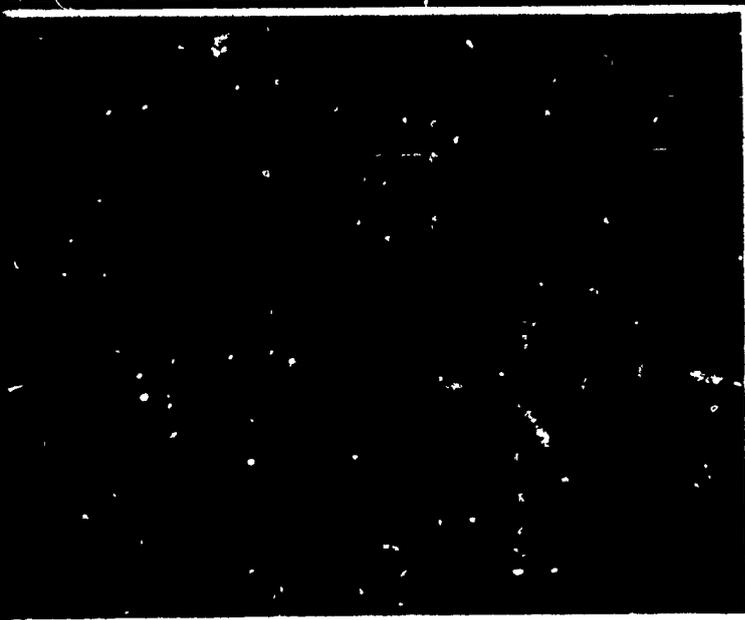
—93 Years of Age—in a 40-Horse-Power American Mercedes.

Drive from New York to Boston pleasantly and without fatigue in two days. Engine: 130 x 130 (in.), 4-cylinder, water-cooled. Transmission: 4-speed selective type. Clutch: Metallic. Drive: Double side chain. Weight: 2,440 pounds. Wheel base: 127 inches. Tires: 36 x 4.



The New 24-32-Horse-Power Model of the American Mors Touring Car.

Engine: 4.9 x 5.9, 4-cylinder, water-cooled. Transmission: 4-speed progressive type. Clutch: Cone. Drive: Double side chain. Weight: 2,800 pounds. Wheel base: 108 inches. Tires: 36 x 4 1/2.



35-Horse-Power, 7-Passenger Pierce Touring Car.

Engine: 4-cylinder, water-cooled, with two separate high-tension ignition systems by hot-tension system. Transmission: 3-speed progressive type operated by lever on steering column. Clutch: Metallic. Drive: Double side chain. Weight: 2,700 pounds. Wheel base: 124 inches.

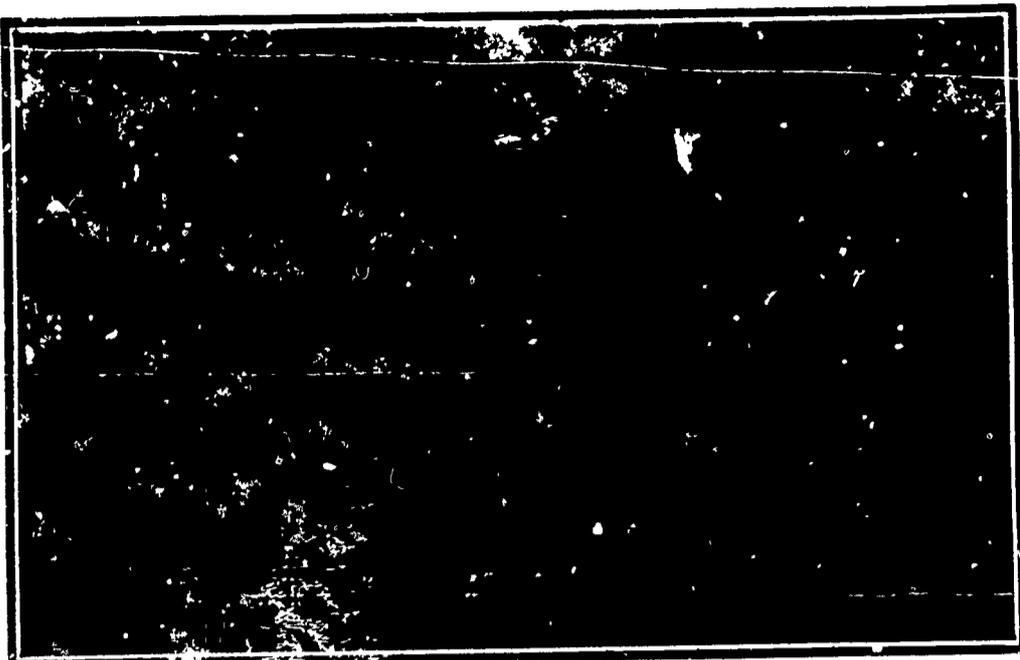


The Pepp-Toledo 40-Horse-Power, 7-Passenger Pullman Touring Car.

Engine: 4 1/2 x 6 1/2, 4-cylinder, water-cooled, with valves in heads. Transmission: 4-speed selective type, direct drive on third speed. Clutch: Multiple-disk in gear box. Drive: Double side chain from separate countershaft. Weight: 2,800 pounds. Wheel base: 112 inches. Tires: Front, 36 x 3 1/2; rear, 36 x 4 1/2.

The 1917 12-Horse-Power Franklin Light Runabout.

Engine: 2 1/4 x 3 1/4, 4-cylinder, air-cooled. Transmission: 3-speed progressive type. Clutch: Multiple disk in 3-wheel. Drive: Shaft. Weight: 1,300 pounds. Wheel base: 80 inches. Tires: Front, 20 x 8; rear, 20 x 8 1/2.



The Oldsmobile 35-Horse-Power Runabout With Rumble Seat

Engine: 4 1/4 x 4 1/2, 4-cylinder, water-cooled. Transmission: 3-speed selective type. Clutch: Multiple disk in 3-wheel. Drive: Shaft. Weight: 2,000 pounds. Wheel base: 106 inches. Tires: Front, 24 x 8 1/2; rear, 24 x 8 1/2.

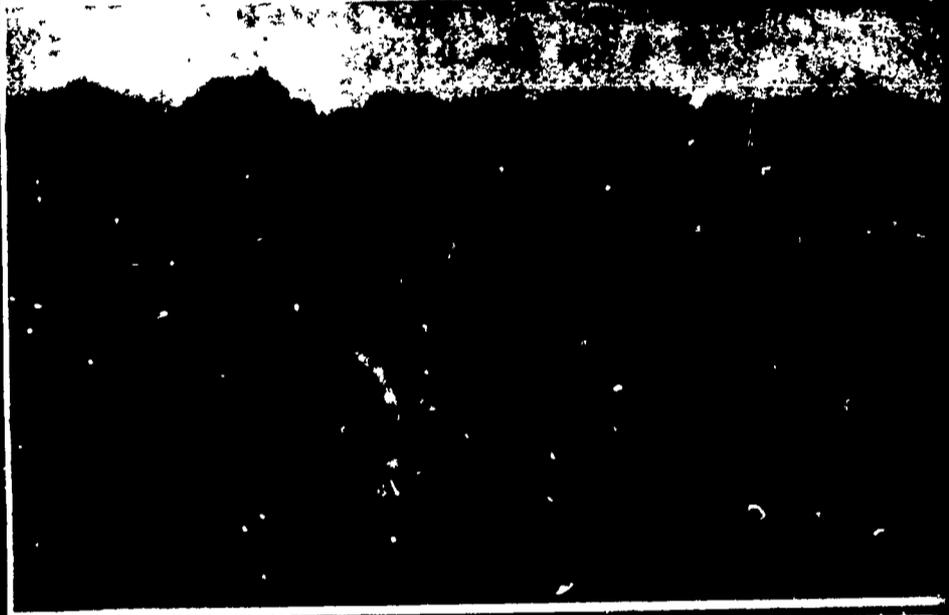


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Mrs. Cottle made trip from New York to Boston pleasantly and without fatigue in two days. Engine: 120 x 180 mm. (4.724 x 7.086 in.), 6-cylinder, water-cooled. Transmission: 4-speed selective type. Clutch: Metallic expanding ring. Drive: Double side chain. Weight: 3,440 pounds. Wheel base: 137 inches. Tires: 28 x 4.

The New 24-32-Horse-Power Model of the American Mors Touring

Engine: 4.9 x 5.9, 4-cylinder, water-cooled. Transmission: 4-speed progressive type. Clutch: Metallic expanding ring. Drive: Double side chain. Weight: 3,000 pounds. Wheel base: 106 inches. Tires: 28 x 4.

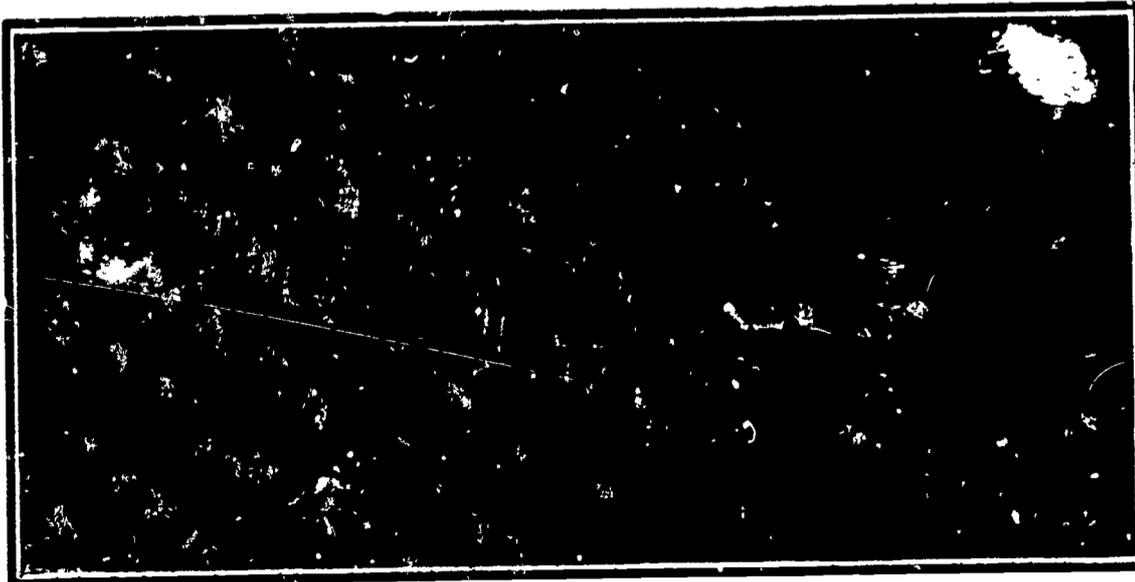


The 45-Horse-Power, 7-Passenger Pierce Touring Car.

Engine: 5 x 5 1/4, 4-cylinder, water-cooled, with two separate high-tension ignition systems by battery and high-tension magnets. Transmission: 3-speed progressive type operated by lever on steering column. Clutch: Cone. Drive: Shaft. Weight: 3,100 pounds. Wheel base: 124 inches. Tires: Front, 28 x 4; rear, 28 x 5.

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

Engine: 4 1/4 x 5 1/4, 4-cylinder, water-cooled, with valves in heads. Transmission: 4-speed selective type. Clutch: Multiple-disk in gear box. Drive: Double side chain from separate shaft. Weight: 3,300 pounds. Wheel base: 115 inches. Tires: Front, 28 x 5 1/4; rear, 28 x 4 1/4.



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

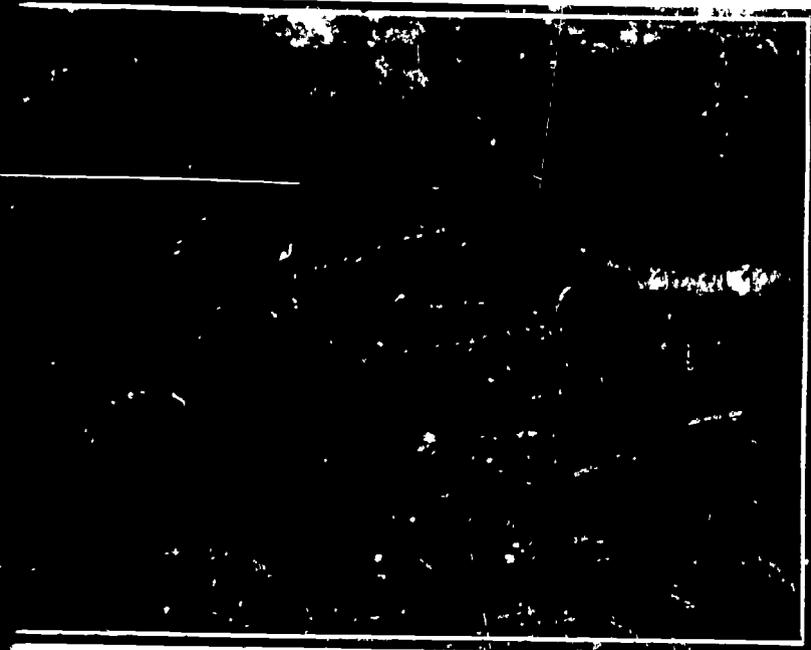
Engine: 4 1/4 x 5, 4-cylinder, water-cooled. Transmission: 3-speed selective type fitted with roller bearings. Clutch: Cone; interlocked with beak. Drive: Shaft. Weight: 2,500 pounds. Wheel base: 115 inches. Tires: Front, 24 x 8 1/2; rear, 24 x 4.

Electric Touring Runabout Capable of Making 75 Miles

Battery: 24 100 A. H. cells weighing 975 pounds. Motor: S. E. P. D. Speeds 10, 12, 14, 16, 18, and 20. Weight: 2,000 lb. Tires: 24 x 6 1/2. For full current SUPPLEMENT.

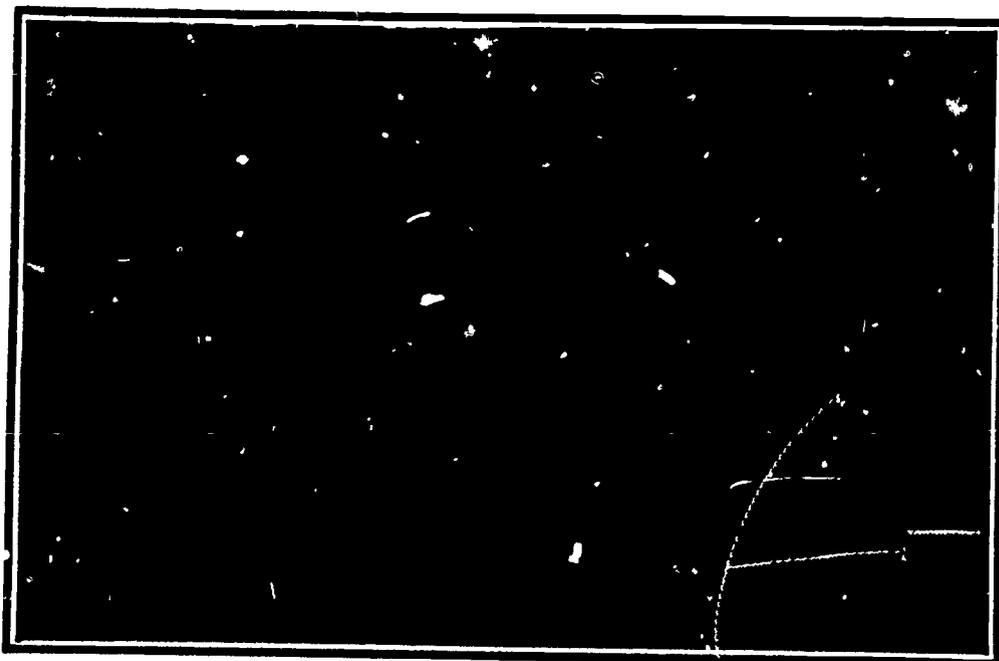
The New 12-Horse-Power Franklin Light Runabout.

3-cylinder, air-cooled. Transmission: 2-speed progressive type. Clutch: Multiple disk. Drive: Shaft. Weight: 1,200 pounds. Wheel base: 80 inches. Tires: Front, 20 x 8; rear, 20 x 8 1/2.



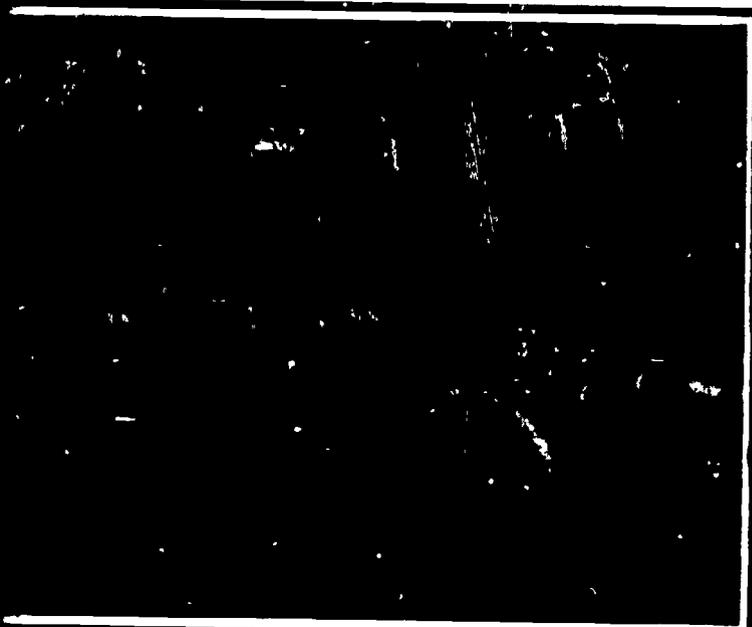
The Oldsmobile 85 Horse-Power Runabout With Rumble Seat.

Engine: 6 1/2 x 4 1/2, 4-cylinder, water-cooled. Transmission: 2-speed selective type. Clutch: Reverse cone. Drive: Shaft. Weight: 2,200 pounds. Wheel base: 108 inches. Tires: Front, 24 x 8 1/2; rear, 24 x 4.



98 Years of Age—in a 40-Horse-Power American Mercedes.

From New York to Boston pleasantly and without fatigue in two days. Engine: 130 x 130 (in.), 4-cylinder, water-cooled. Transmission: 4-speed selective type. Clutch: Metallic. Drive: Double side chain. Weight: 3,440 pounds. Wheel base: 127 inches. Tires: 28 x 4.



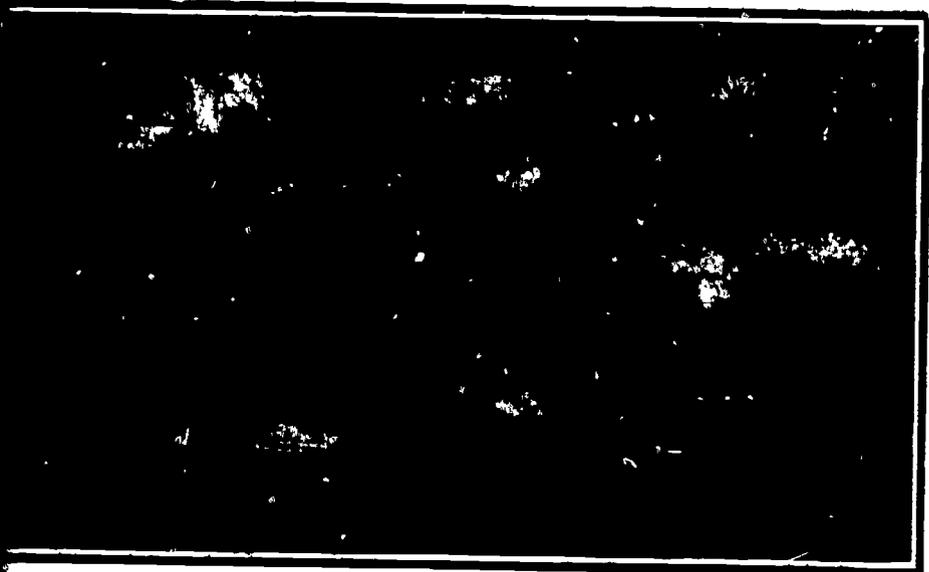
The New 24-32-Horse-Power Model of the American Mors Touring Car.

Engine: 4.9 x 5.9, 4-cylinder, water-cooled. Transmission: 4-speed progressive type. Clutch: Cone. Drive: Double side chain. Weight: 3,300 pounds. Wheel base: 108 inches. Tires: 28 x 4 1/2.



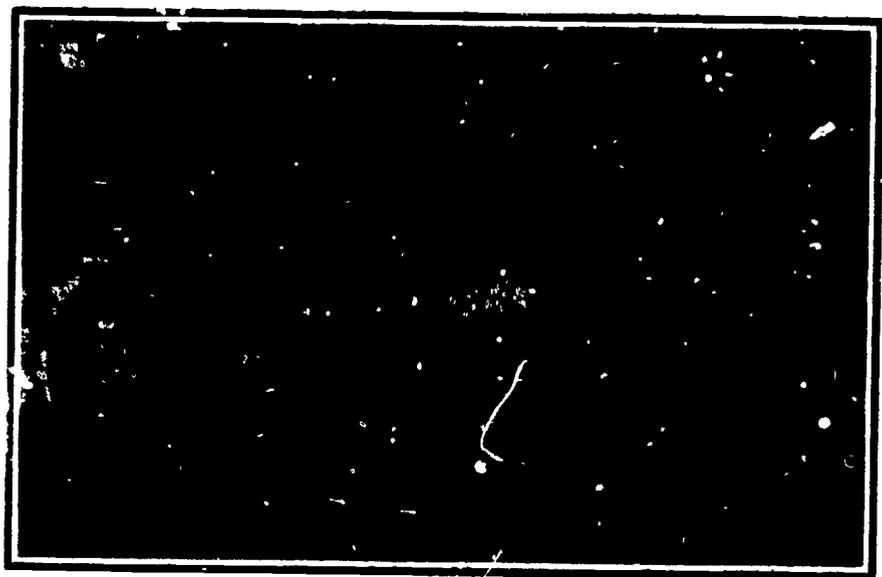
40-Horse-Power, 7-Passenger Pierce Touring Car.

4-cylinder, water-cooled, with two separate high-tension ignition systems by battery magneto. Transmission: 2-speed progressive type operated by lever on steering column. Drive: Shaft. Weight: 3,700 pounds. Wheel base: 124 inches. Tires: Front, 24 x 8; rear, 24 x 8.



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

Engine: 4 1/4 x 5 1/4, 4-cylinder, water-cooled, with valves in heads. Transmission: 4-speed selective type, direct drive on third speed. Clutch: Multiple disk in gear box. Drive: Double side chain from separate countershaft. Weight: 3,300 pounds. Wheel base: 115 inches. Tires: Front, 26 x 8 1/2; rear, 28 x 4 1/2.



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

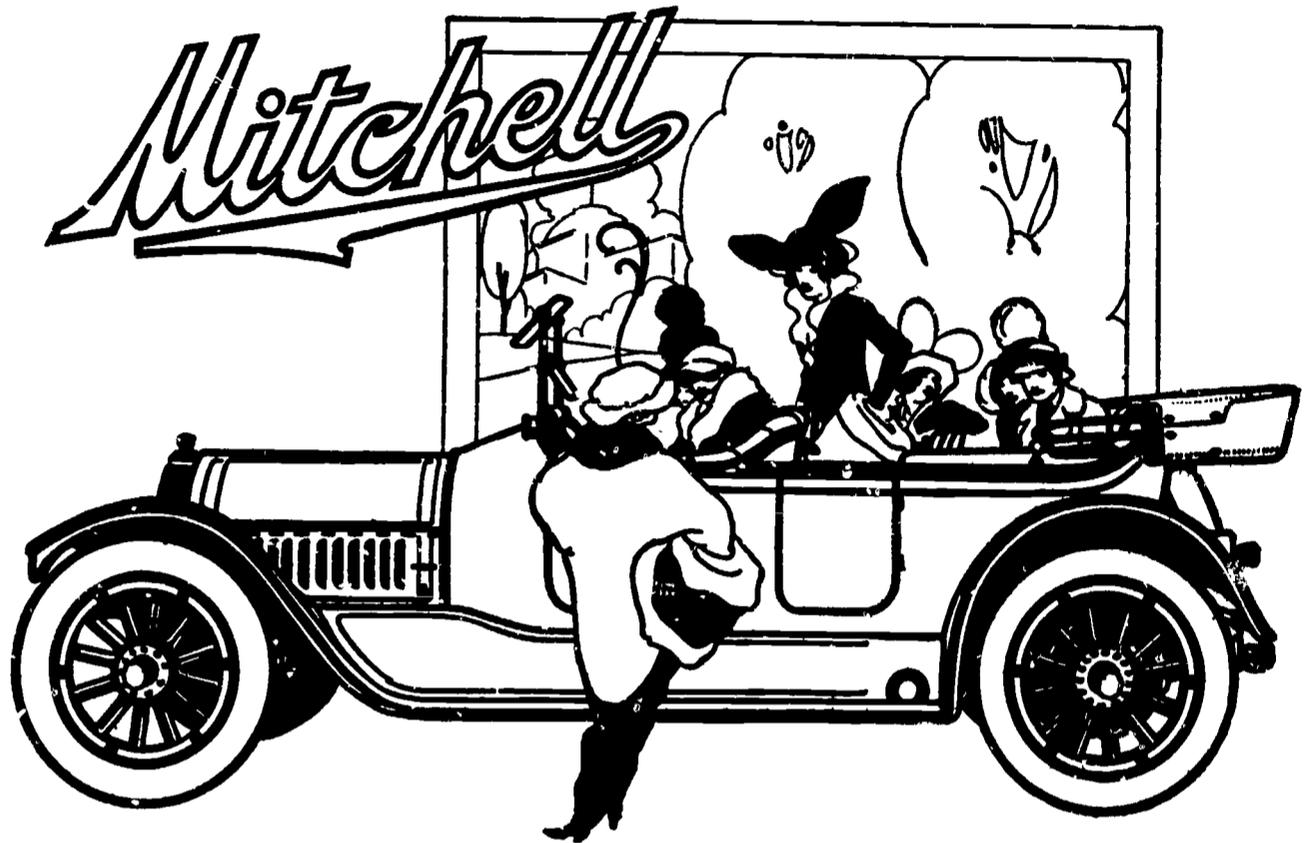
4-cylinder, water-cooled. Transmission: 2-speed selective type fitted with roller bearings. Clutch: Cone. Drive: Shaft. Weight: 2,500 pounds. Wheel base: 112 inches. Tires: Front, 24 x 8 1/2; rear, 24 x 4.

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

Battery: 24 120 A. H. cells weighing 975 pounds. Motor: 2 H. P. Drive: Double chain. Speeds 10, 12, 14, 24, and 30. Weight: 2,600 lbs. Tires: 24 x 4 1/2. For further particulars see current SUPPLEMENT.

SOME LEADING TYPES OF 1907 AUTOMOBILES.

ADVERTISEMENT



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 compromise between big and little power and passenger capacity, but it has everything that any high-priced car can offer.

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 own in any company and look classy and work perfectly for several years to come. Its equipment and details thereof sterling in character. The price, \$1,895, brings this smart car to you ready for 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 wheelbase and 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. There is nothing as good for less than \$3,500 or \$4,000. The price of the Mitchell Big Six is only \$3,500.

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 demands of persons who still like a four-cylinder car of class at a popular price. It has the same equipment as the Sixes and sells for \$1,595. We want you to look this car over minutely and then ask yourself if there is any other 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 :

Electric self-starter and generator—electric lights—electric horn—electric magnetic exploring lamp—mahair top and dust cover—Tungsten valves—Jiffy quick-action side curtains—quick-action two-piece rain vision wind shield—detachable rims with one-piece wheels—double extra tire carrier—Bair boy holders—license plate bracket—mud flaps—and complete set of tools.



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.

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 persons who still like a four-cylinder car of class at a popular price. It has the same equipment as the other two cars 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:

Electric self-starter and generator—electric lights—electric horn—electric magnetic exploring lamp—mahair top and dust cover—Tungsten valves—Jiffy-quick-action side curtains—quick-action two-piece rain vision wind shield—dismountable rims with one extra—speedometer—double extra tire carrier—Bair bow holders—license plate bracket—pump—jack—and complete set of first-class tools

Specifications of the Three Great Mitchell Models:

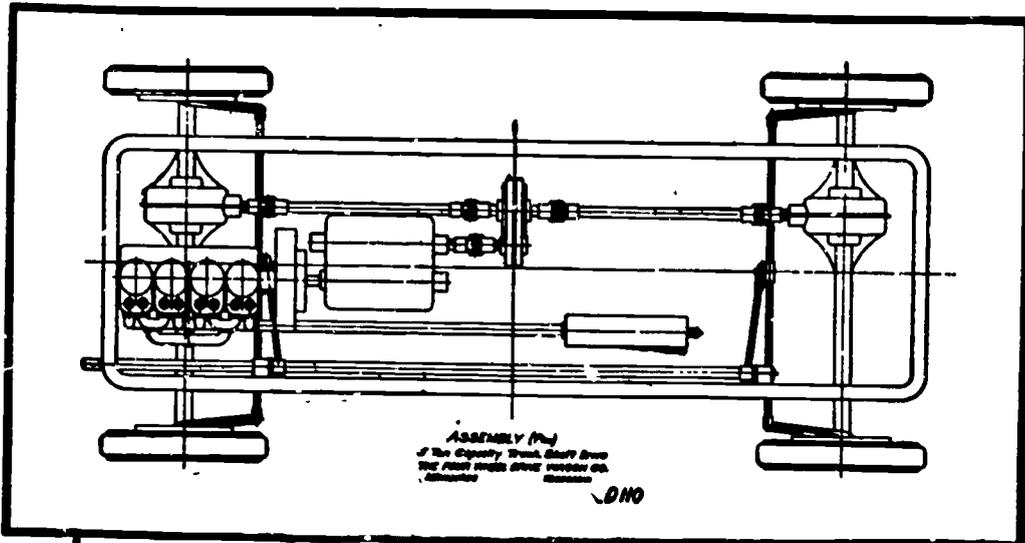
MITCHELL LITTLE SIX—Fifty horse-power—132-inch wheel base—36x4½-in. tires—two or five passenger capacity	\$1,895
MITCHELL BIG SIX—Sixty horse-power—144-inch wheel base—37x5-in. tires—seven passenger capacity	\$2,350
MITCHELL FOUR—Forty horse-power—120-inch wheel base—4 cylinders—36x4½ in. tires—2 or 5 passenger capacity	\$1,595

ALL PRICES F. O. B. RACINE, WIS.

Mitchell-Lewis Motor Co.
Racine, Wis, U.S.A.

Eighty Years of Faithful Service to the American Public

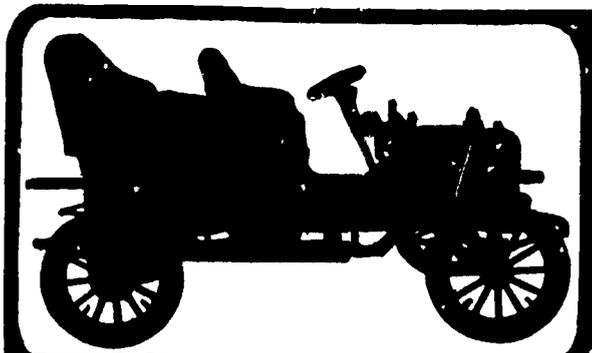
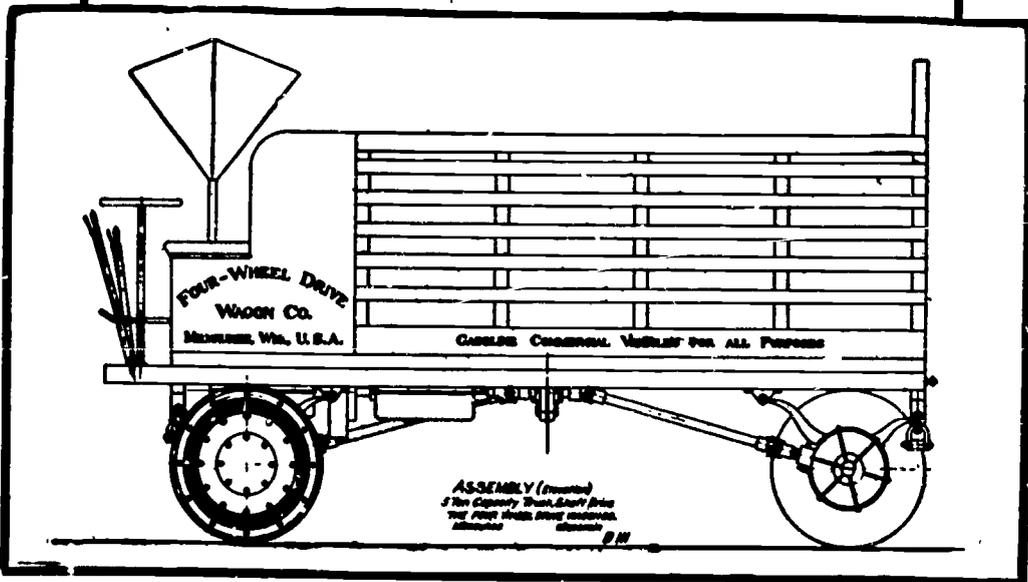
ADVERTISEMENT



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.



16 h. p.
passenger
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Inventor
Inventor
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designer
cars in

The REO

is
thoroughly r

Designed on right principles by a man who has applied these principles in every kind of motor engineering for a life.

Correctly applied as he has applied them for twenty years with conspicuous success.

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

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

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

Design, mechanics, construction, finish, price—

Reo Runabout

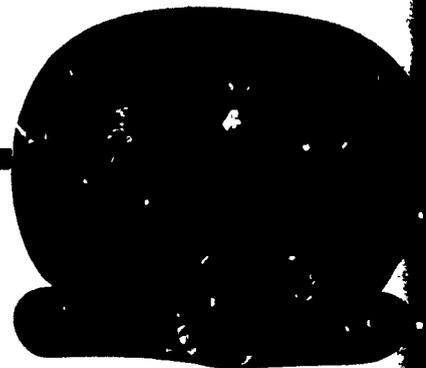
8 H. P., 850 lbs., 25 miles per hour.

The Reo Motor Car

R. M. Owens, Sales Manager

Factory: LANSING, MICH. Sales Office: 138 West

Agents Throughout the United States



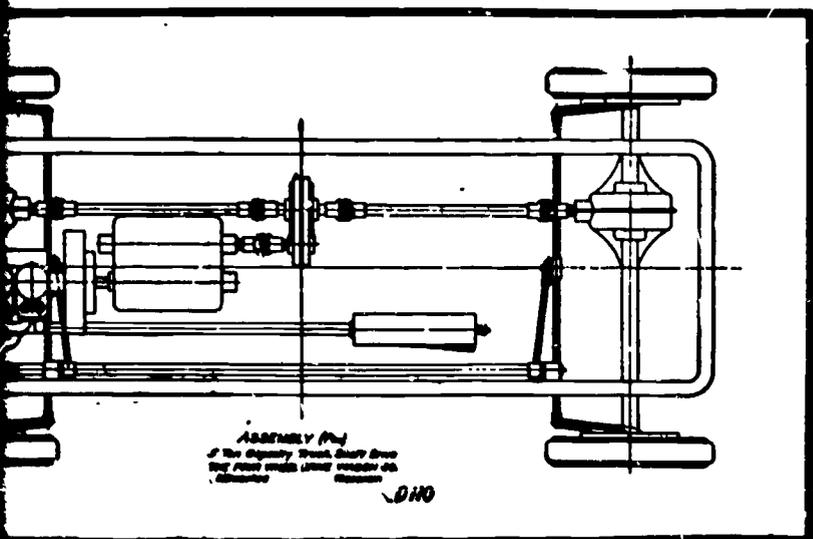
THE VALUE OF PURE M

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 and 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.

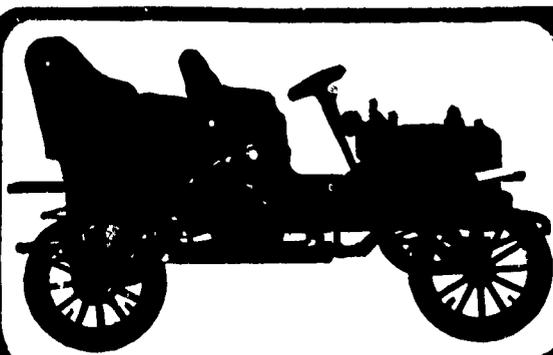
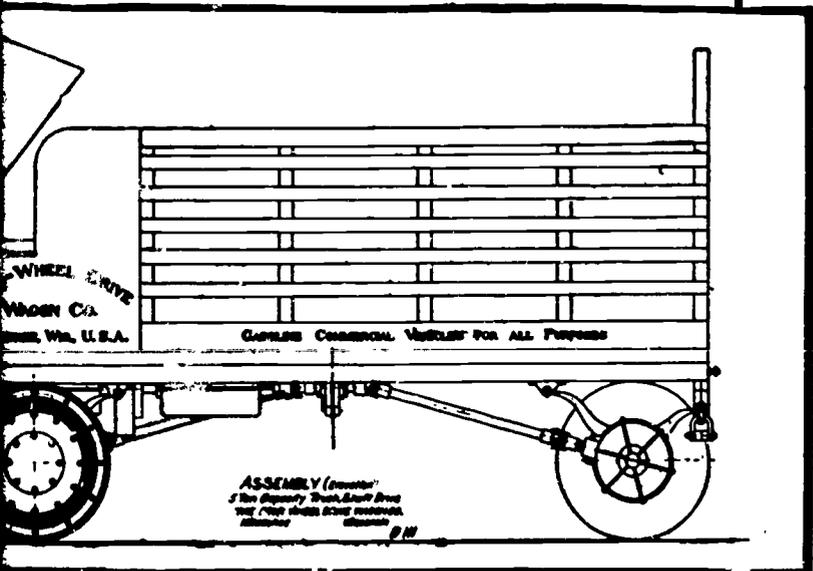
ADVERTISEMENT



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.



REO

Reo Touring Car
16 h. p., 1,500 lbs., seating five passengers, detachable side-door tonneau, 35 miles per hour, price \$1,250. Invented and built by R. E. Olds. Inventor of the first practical gasoline runabout; and the foremost designer and builder of gasoline motor cars in the United States.

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 life-time.

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.

Design, mechanics, construction, finish, price—all thoroughly right.

Reo Runabout

8 H. P., 850 lbs., 25 miles per hour, price \$650

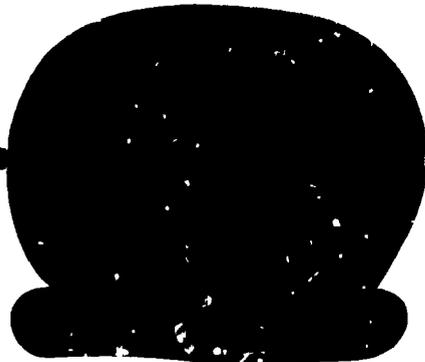
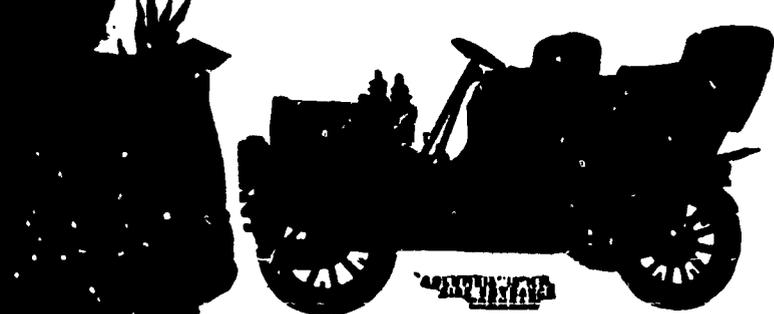
The Reo Motor Car Co

R. M. Owens, Sales Manager

Factory: LANSING, MICH. Sales Office: 138 West 38th St., NEW YORK

Agents Throughout the United States

Columbia



Cross-Section Morgan & Wright Clincher Tire for Automobiles

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.

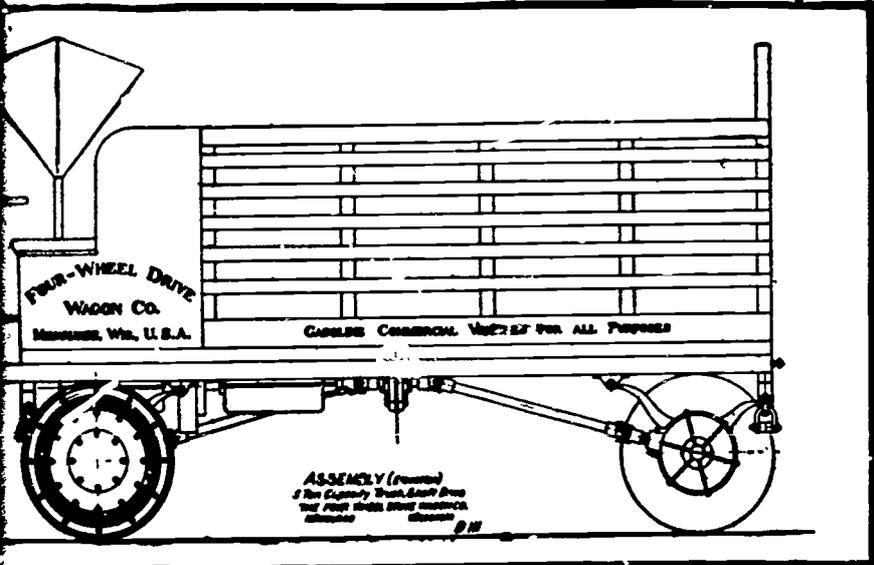
The resiliency of a tire depends greatly on the material of which it is made.

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

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



COLUMBIA automobiles are wholly made in our own works, insuring that uniformity of excellence in design, materials, and workmanship which has built up the Columbia name and reputation. The COLUMBIA line for 1905 includes 35-40 H. P. 4-cylinder Gasoline Cars with Side Entrance Tonneau, Royal Victoria, Landaulet, or Limousine bodies, \$4,000 to \$5,500; 18 H. P. 2-cylinder Gasoline Side Entrance Tonneau, \$1,750; 12-14 H. P. 2-cylinder Gasoline Tonneau, \$1,500; Electric Victoria-phaeton with hood and "de luxe" features throughout, the handsomest and most efficient light electric carriage ever offered to the public, \$1,350; light Electric Runabout, \$900; Electric Town Carriages of the coach class and Commercial Vehicles.

We issue three catalogues describing respectively Columbia Gasoline Cars, Columbia Electric Carriages, and Columbia Electric Delivery Wagons and Trucks. Both in print and in illustration these are the most artistic automobile books ever distributed. In writing please state which Catalogue is desired.

is thoroughly right

Designed on right principles by a man who has studied those principles in every kind of motor engineering for a life-time.

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.

Design, mechanics, construction, finish, price—all thoroughly right.

Reo Runabout

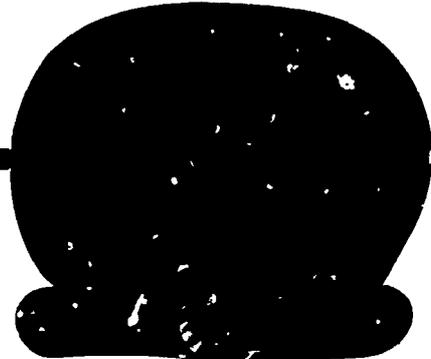
8 H. P., 850 lbs., 25 miles per hour, price \$650

The Reo Motor Car Co

R. M. Owens, Sales Manager

Factory: LANSING, MICH. Sales Office: 138 West 38th St., NEW YORK

Agents Throughout the United States



Cross-Section MORGAN & WRIGHT CLINCHER TIRE for Automobiles.

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 chopped 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 realize its untimely demise!

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 iron.

All the fabric in this tire is "frictioned" 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 tread (see diagram), which will not soften, split, crack, or scale.

MORGAN & WRIGHT, Chicago

NEW YORK DAYTON DETROIT ATLANTA ST. LOUIS SAN FRANCISCO

ADVERTISEMENT

The
Hudson

**Touring
Car**



\$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.

Strength—Room

Beauty—Refinement

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 mean you get relatively more for your money than any other car.

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

The Hudson has those features. Other cars who show you the same features, at a higher price; it is lower than their's. To get a car below \$1150, we point to our high-grade car; they do not have them.

From one class we are set off 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 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 body; how the fenders throughout are absolutely mud-proof. Inset fenders are a feature of very high-priced cars.

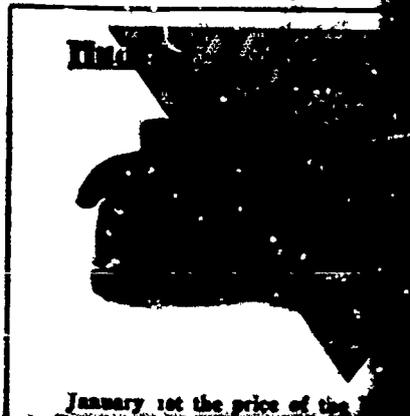
The unusual leg room and big 18 inch steering wheel mean *comfort*. No standard touring car at any prices provides as much leg room as the Hudson.

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

The Toe boards, spring steps and running boards are beautiful 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 heels rest and this part is reinforced

See this car—ride in it—and you will say that no matter what the fact remains that we do give you

This also holds true of Special Equipment of a Bosch Magneto, Special Radio Rack, all fitted on the car for



January 1st the price of the

ADVERTISEMENT

The
Hudson

**Touring
Car**



\$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.

Strength—Room

Beauty—Refinement

What this car is—110 inch wheel base; four cylinder motor; 32 inch wheels; 3½ inch tires all around; larger capacity—and the price \$1150.

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

You will find these features in other cars, but they will sell for at least \$100 or \$200 more. You will find 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, 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 those features. To those makers who show you the same features, we point to our price; it is lower than their's. 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.

is strong, because the careful plans never have been expressed by the best money can buy.

of room—many cars are big and being roomy. The Hudson is big and being too heavy.

has beauty—not merely the beauty of beauty of balance, of perfect proportion. Touring cars look "bunched." In all length, hood, body, wheels, having a whole effect that pleases the eye. A touring car at or near the price has so many refinements in common with the cars.

Standard Hudson Features

is the Renault Type, patterned after Renault motors of France. It is the motor as used in the Hudson Roadster; vertical, water cooled, long stroke, only at low engine speeds. tire, sliding seat, 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 body; how the fenders throughout are absolutely mud-proof. Inset fenders are a feature of very high-priced cars.

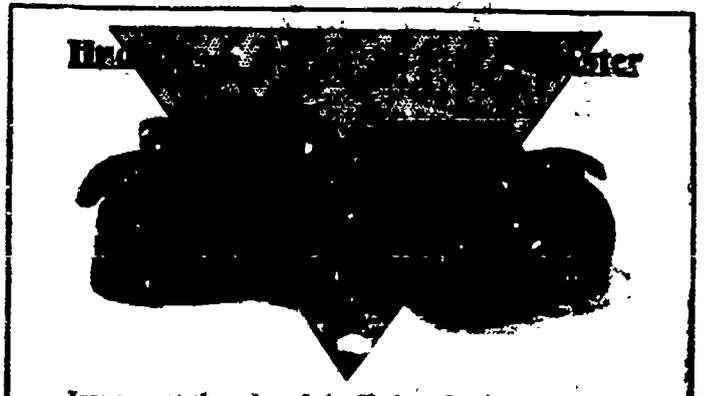
The unusual leg room and big 18 inch steering wheel mean comfort. No standard touring car at any price provides as much leg room as the Hudson.

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

The Toe boards, spring steps and running boards are beautiful 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 it is reinforced.

See this car—ride in it—compare it with other cars and you will say that no matter just how we do it, the fact remains that we do give the most at the price.

This also holds true of Special equipment. Think of a Bosch Magneto, Special Brookfield Top, and Trunk Rack, all fitted on the car for \$225 Extra.



ERIC

\$1150

"Look for the Triangle on the Rad'ator"

This price includes three oil lamps, two gas lamps, generator, horn, tire repair outfit, tools and jack.

Strength—Room

Beauty—Refinement

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.

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offered by any automobile manufacturer. By this, mean you get relatively more for your money than 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 those features. To those men 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.

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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 speeds forward and one reverse—the same transmission as found on the highest priced cars.

The spring suspension is the same as used on cars costing up to \$6000. Semi-elliptic front and ¾ elliptic rear, unusually long, mounted with heavy, strong fittings. Clutch is leather faced cone type; rear axle 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 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 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 heels 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.

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 know how. Two engineers could undertake each to build a railroad from New York to Chicago—roads to be of equal length; one man would build a better road for the same money than the other, or the same road for less money than the other. It is so in the automobile business; one 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 Shows.

See this car—ride in it—compare it with other and you will say that no matter just how we do, fact remains that we do give the most at the price.

This also holds true of Special equipment. of a Bosch Magneto, Special Brookfield Top, and Rack, all fitted on the car for \$125 Extra.



January 1st the price of the Hudson Roadster was increased to \$1000. This includes 32x3½ tires front and rear, oil lamps, two gas lamps, generator, tire repair kit, tool jack.

The Hudson Roadster is America's biggest, best and best built low-priced car. Several thousand of them in the hands of owners and giving complete satisfaction.

Th. Hudson won a 24-hour race in Seattle in September defeating many high-priced cars. This was his 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 gas and without making a repair.

Mr. Geo. D. Smith drove a Hudson Roadster from Island, N. Y., to Pleasant City, Fla., without touching nut, spark plug or making a mechanical adjustment.

Three important facts are brought out in hundreds of testimonial letters received from Hudson owners: "Low and oil consumption"—"Wonderful mechanical efficiency rides as easy as the most expensive cars."

Remember the Hudson Roadster is not an imitation big car—it is a big car. It is big in design, in material, in general all-around value. Look at our price on extra equipment: Bosch magneto, Arden top, Presto-Eze tank and rack for \$125 extra.

Mailing this coupon to-day will bring you our catalogue and complete information about both the Hudson Touring Car and Hudson Roadster.

CUT OUT AND MAIL S. 1.

Hudson Motor Car Co.,
Detroit, Mich.
Mail New Hudson catalog to

Hudson Motor Car Company, Detroit, Michigan

Members A. L. A. M. Licensed under Selden Patent

\$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.

Strength—Room

Beauty—Refinement

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 has there been offered such a car at this price. This is not just a hasty statement of fact. Can you think yourself, of any other four-cylinder, 110 inch wheel base, five passenger car at \$1150?

You will find these features in other cars, but they will sell for at least \$100 or \$200 more. You will find 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, 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 those features. To those makers who show you the same features, we point to our price; it is lower than their's. 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.

It is strong, because the careful plans that have been expressed by the best engineers money can buy.

It has room—many cars are big and heavy, but being roomy. The Hudson is big and heavy, but being too heavy.

It has beauty—not merely the beauty of the body, but the beauty of balance, of perfect proportion. Touring cars look "bunched." In the Hudson, all length, hood, body, wheels, have a whole effect that pleases the eye. No touring car at or near the price has so many refinements in common with the Hudson.

Standard Hudson Features

Like the Renault Type, patterned after the best Renault motors of France. It is the motor as used in the Hudson Roadster; "vertical, water cooled, long stroke, H. P. Due to its long stroke this motor is evenly at low engine speeds. It has selective, sliding gear; three forward and one reverse—the same transmission as the highest priced cars.

The suspension is the same as used on the Hudson to \$6000. Semi-elliptic front and ¾ inch rear springs, mounted with heavy, heavy-duty clutches, shaft-driven. Front axle is drop forged, of carefully selected, drop forged, of carefully selected, drop forged, of carefully selected,

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to-day will bring you our complete information about both the Hudson and Hudson Roadster.

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Hudson Motor Car Co., Detroit, Mich. Send me a catalog to

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Members A. L. A. M. Licensed under Selden Patent

ADVERTISEMENT

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 international 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 long 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.

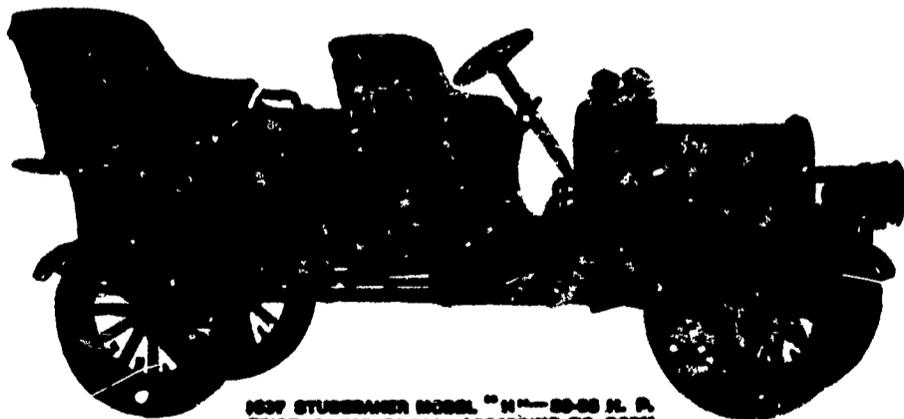
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1907 STUDEBAKER MODEL "H"—25-28 H. P.
 PRICE \$2,700-\$2,800, ACCORDING TO BODY

The Car De Luxe



Power 50-60 H. P. Carries Seven.

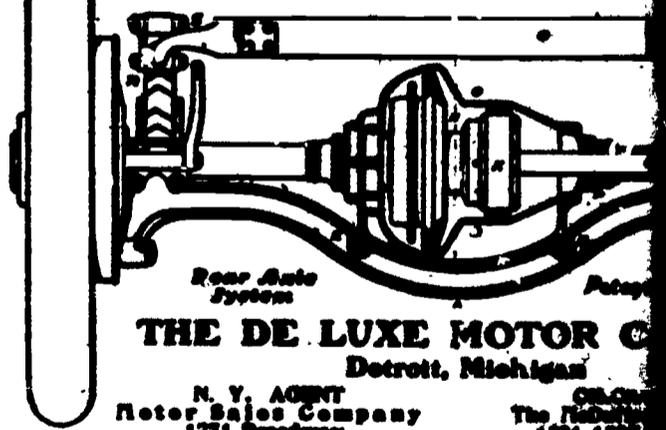
IT would only be dealing with absolute facts to pronounce a combination of those features which usage and success standard in automobile design, with which have been incorporated modern methods and devices as applied to mechanics, in addition and accessories as find place only in a car of this exclusive class.

And doubtless one of the best examples of this high class patented rear axle system. Here is provided all the standard Rear Axle such as used on high powered cars with double chain of shaft drive as well. It is, in fact, a unique combination of systems—strength, rigidity, closeness, smoothness and positive numerous disadvantages of the Chain drive are entirely overcome on axles (a comparatively common occurrence with shaft-driven cars by users of THE CAR DE LUXE.

There can be no question as to the absolute superiority of this car. It stands out pre-eminently as one of the greatest improvements of the modern era. It has solved the problem of direct system of final drive. It is to be had only on

The Car De Luxe

Complete information for the asking.



THE DE LUXE MOTOR CAR
 Detroit, Michigan
 N. Y. AGENT
 Motor Sales Company
 1771 Broadway

Moline

"MECHANICAL PERFECTION"

Dealers endorse the car they represent.
 We stand by the car we make—
 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

- Quietness and Power of Motor.
- Ease and convenience of control.
- Absolute freedom from troublesome complications.
- Easy riding qualities, the result of correct design and proportion of springs.
- Luxuriance of finish and upholstery.

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\$2,000 Accident Insurance
 Absolutely

MOTOR

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Advantages of Low Tension Make-and-Break System Employed on the Model H STUDEBAKER

"The Automobile with a reputation behind it."

Simply demonstrated, the past season, that the low tension system as employed on our new Model H Car is simple and effective.

The Bosch low tension system we use to furnish our make-and-break system is extremely large and accessible.

The identical type of system employed on the winning Vanderbilt inter-city races, and when gear change on the Studebaker car, is its service to be exact.

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.

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See our exhibit at the New York and Chicago shows.

STUDEBAKER AUTOMOBILE CO., South Bend, Ind.

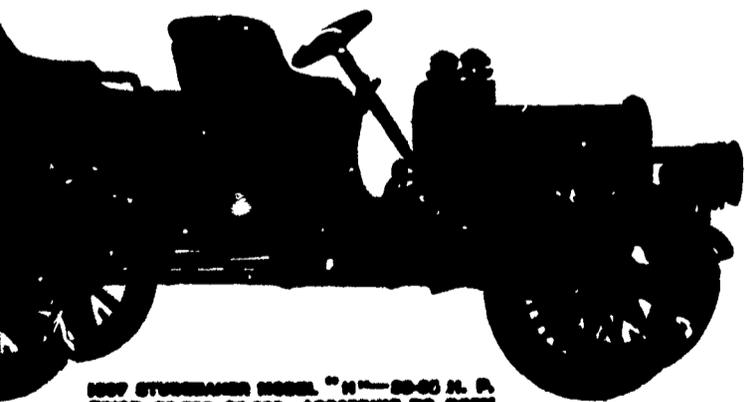
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SALT LAKE CITY, UTAH: Studebaker Bros. Co. of Utah.
DENVER, COLO.: Studebaker Bros. Mfg. Co.
DALLAS, TEXAS: Studebaker Bros. Mfg. Co.



1907 STUDEBAKER MODEL "H" 50-60 H. P.
PRICE \$2,750-31,000, ACCORDING TO BODY

The Car De Luxe



Power 50-60 H. P. Carries Seven. Price \$4750

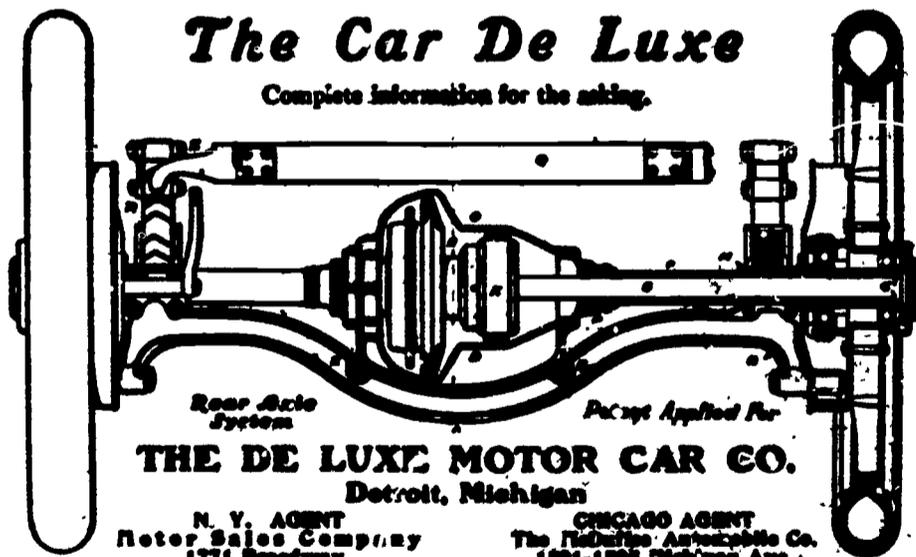
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And doubtless one of the best examples of this high order of excellence is that patented rear axle system. Here is provided all the strength of the Solid I-Beam Rear Axle such as used on high powered cars with double chain drive, and the advantages of shaft drive as well. It is, in fact, a unique combination of the best features of both systems—strength, rigidity, cleanliness, smoothness 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-eminently 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 only on

The Car De Luxe

Complete information for the asking.



Rear Axle System

Patent Applied For

THE DE LUXE MOTOR CAR CO.

Detroit, Michigan

N. Y. AGENT
Motor Sales Company
1771 Broadway

CHICAGO AGENT
The Madison Automobile Co.
1801-1805 Michigan Ave.

Moline

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Power of Motor.
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troublesome complications.
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DYNAMO AND MOTOR COMBINED.—Fully described and illustrated in SCIENTIFIC AMERICAN SUPPLEMENTS 544 and 585. The machines can be run either as dynamo or motor. Price in case sent by mail. Huan & Company, 311 Broadway, New York City, and all newsdealers.

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\$2,000 Accident Policy Absolutely Free

MOTOR AGE

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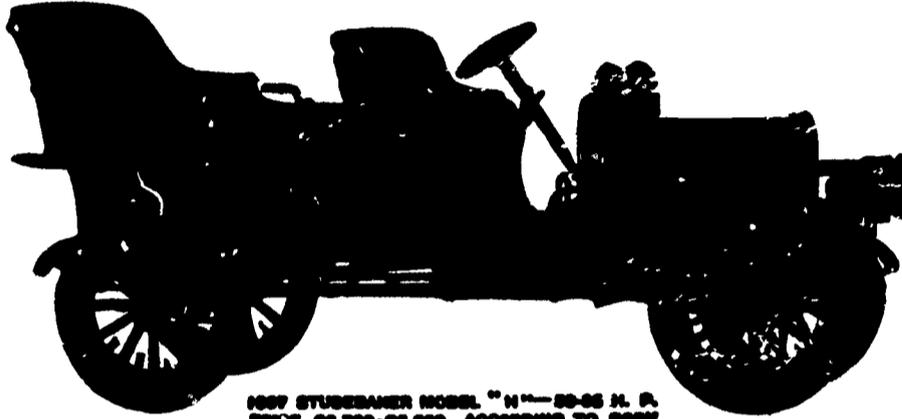
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1907 STUDEBAKER MODEL "H"—50-65 H. P.
 PRICE \$8,700-\$9,500, ACCORDING TO BODY

Power 50-60 H. P. Carries Seven. Price \$47

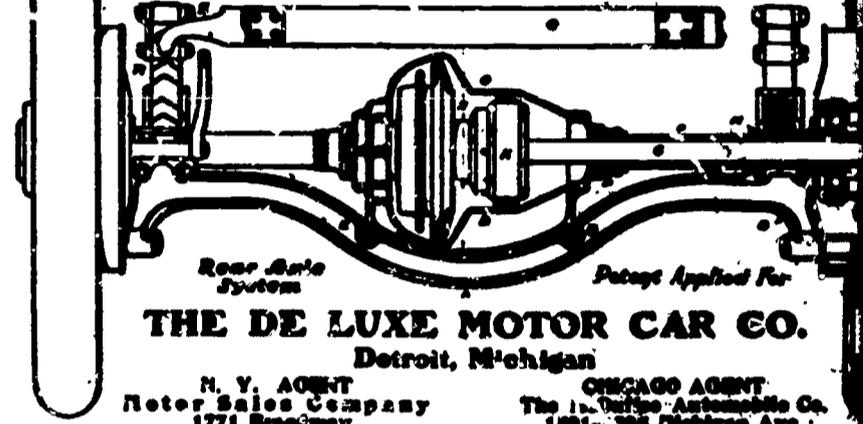
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Complete information for the asking.



THE DE LUXE MOTOR CAR CO.

Detroit, Michigan

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 Motor Sales Company
 1771 Broadway

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- Luxuriousness of finish and upholstery.
- Good lines of body.
- Equipment includes Gas Lamp and Tools in canvas case.

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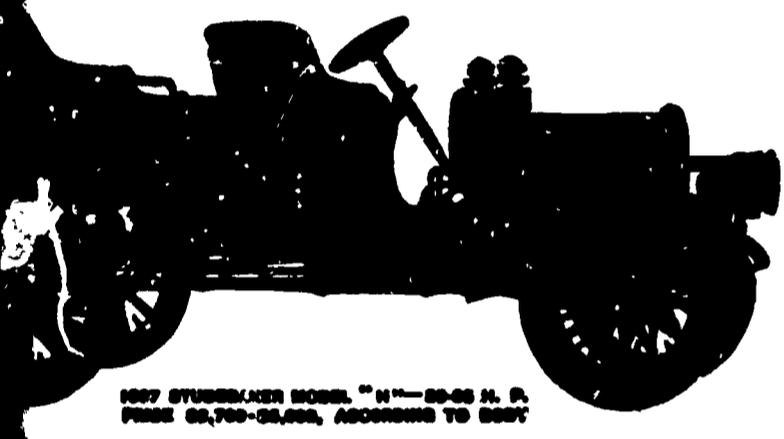
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2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3019, 3020, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039, 3040, 3041, 3042, 3043, 3044, 3045, 3046, 3047, 3048, 3049, 3050, 3051, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 3061, 3062, 3063, 3064, 3065, 3066, 3067, 3068, 3069, 3070, 3071, 3072, 3073, 3074, 3075, 3076, 3077, 3078, 3079, 3080, 3081, 3082, 3083, 3084, 3085, 3086, 3087, 3088, 3089, 3090, 3091, 3092, 3093, 3094, 3095, 3096, 3097, 3098, 3099, 3100, 3101, 3102, 3103, 3104, 3105, 3106, 3107, 3108, 3109, 3110, 3111, 3112, 3113, 3114, 3115, 3116, 3117, 3118, 3119, 3120, 3121, 3122, 3123, 3124, 3125, 3126, 3127, 3128, 3129, 3130, 3131, 3132, 3133, 3134, 3135, 3136, 3137, 3138, 3139, 3140, 3141, 3142, 3143, 3144, 3145, 3146, 3147, 3148, 3149, 3150, 3151, 3152, 3153, 3154, 3155, 3156, 3157, 3158, 3159, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3167, 3168, 3169, 3170, 3171, 3172, 3173, 3174, 3175, 3176, 3177, 3178, 3179, 3180, 3181, 3182, 3183, 3184, 3185, 3186, 3187, 3188, 3189, 3190, 3191, 3192, 3193, 3194, 3195, 3196, 3197, 3198, 3199, 3200, 3201, 3202, 3203, 3204, 3205, 3206, 3207, 3208, 3209, 3210, 3211, 3212, 3213, 3214, 3215, 3216, 3217, 3218, 3219, 3220, 3221, 3222, 3223, 3224, 3225, 3226, 3227, 3228, 3229, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245,

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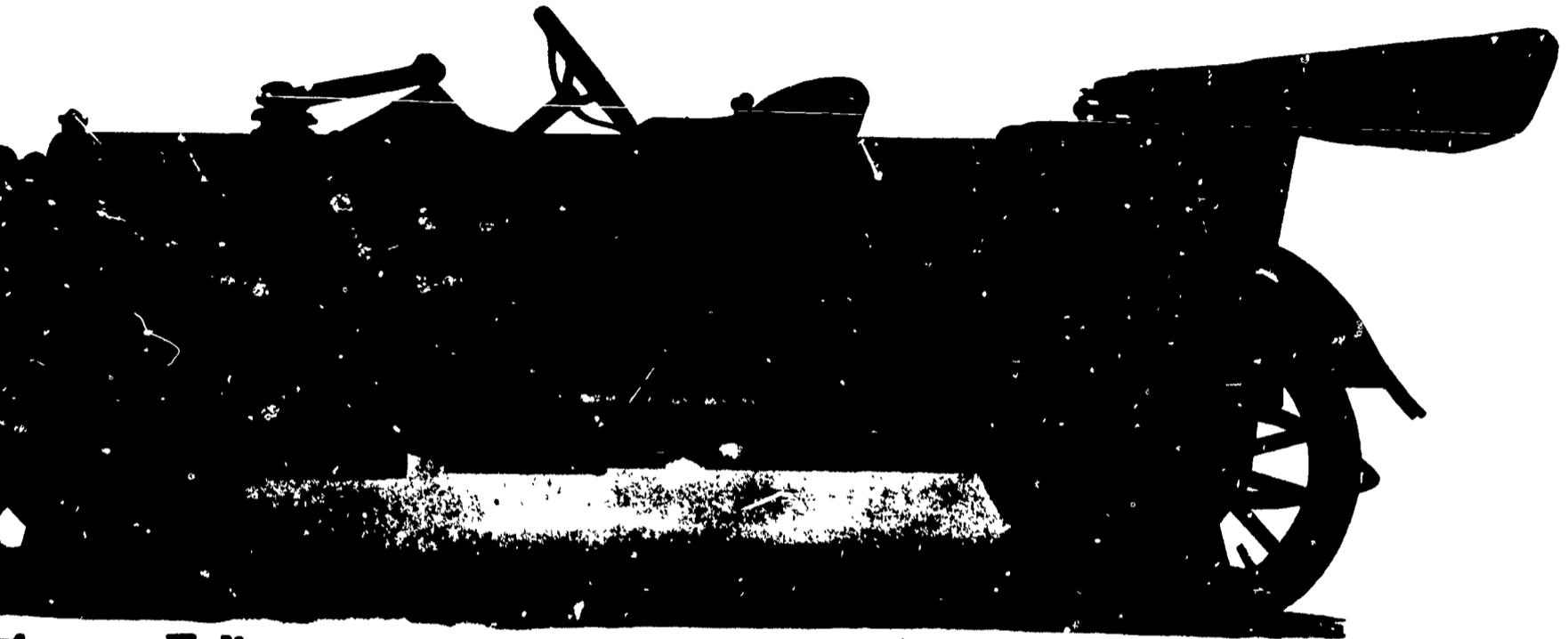
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Fully equipped with top, side-curtains, windshield, 2 gas lamps, oil lamps, horn, tools and tire repair kit---long stroke motor 3 speeds---enclosed valves---Bosch magneto.

Seven R-C-H Features—and Their Cash Value on a Car

We want to place the wonderful value of the R-C-H before you in concrete form—we want you to know, as we do, that nothing approaching ever before been offered to motor-car buyers---that it is in a class of its

So we've listed below seven of the special features of the R-C-H which are found in no other car at near the price. And we've placed after each feature a sum which represents an estimate of the amount which it adds to the value of a car—or the amount which its absence should deduct from the cost

of a car. You'll say that these features are worth more than they are; but we have made the figures low so as to show manufacturers every possible advantage in the competition. Note the astounding totals—and use these figures as a test and a guide in your choice of a car for 1912:

- | | |
|--|---------------------|
| 1. Full five-passenger body with the latest European ideas in design and finish (not used in any other American car costing less than \$4,000) | \$200 |
| 2. Really long-stroke motor—that is, with stroke long in relation to bore—3 1-4 x 5—powerful, efficient (used on high-grade European cars costing up to \$5,000) | 200 |
| 3. The use of 130 drop forgings (more than on any other car in the world irrespective of price), both forgings and other materials of the highest grade of mechanical workmanship. Accessibility and complete interchangeability of all parts. (These features are found only in other cars costing \$1,800 or more) | 200 |
| 4. Three speeds forward, one reverse, with sliding gears (found in no other car under \$900) | 50 |
| 5. Long wheelbase and special spring suspension, insuring easy riding qualities found on no other car under \$1,100 | 100 |
| 6. Full equipment of top, windshield, lamps, etc., with 3 1-2 inch tires (found in no other car under \$900) | 50 |
| 7. Highest grade magneto made—perfect magneto satisfaction on any car is easily worth | 50 |
| | <u>\$850</u> |

Now then. Each one of these features, by reason of its greater ease, greater efficiency or greater durability, is well worth on any car the sum we have set opposite it by all accepted standards of value. Ninety-nine motorists out of a hundred would cheerfully say in each case: "Yes, I'd sooner pay the difference and have that." Yet the sum of these fair valuations just equals the price of the R-C-H.

Very well. Then you're offered any car, find out if it lacks any or all of these special features. If it does, deduct their value from the price asked. But be fair. Add a reasonable sum for any features of value—if you find any—that the R-C-H hasn't got. Then compare the respective prices of the R-C-H and the other.

That's the way we want to sell the car.

Write for folder, or call at nearest branch.

Dealers: Write—or better still, wire. We still have a little territory.

See these wonderful cars at Booth B—first floor, Grand Central Show, January 10th to 17th.

Canadian Prices: R-C-H 2-passenger roadster, \$850; equipped for 5 passengers, \$925. R-C-H 5-passenger touring car, \$1,050. R-C-H coupe, \$1,300. All prices F. O. B. Windsor, Ont., duty paid.

R. C. HUPP, Manufacturer, 132 Lycaete St., Detroit, Mich.

Distinct from and having no connection whatever with Hupp Motor Car Co.

Branches:

BOSTON, 343 Boylston St.
BUFFALO, 1225 Main St.
CLEVELAND, 7122 Euclid Ave.

CHICAGO, 2615 Michigan Ave.
DENVER, 1520 Broadway
DETROIT, Woodward and Warren Aves.

KANSAS CITY, 3001 Main St.
LOS ANGELES, 816 So. Olive St.
MINNEAPOLIS, 1334 Nicollet St.

NEW YORK, 1909 Broadway
PHILADELPHIA, 330 No. 5th St.
ATLANTA, 548 Peachtree



50 Fully equipped with top, side-curtains, windshield, 2 gas lamps, 3 oil lamps, horn, tools and tire repair kit---long stroke motor---3 speeds---enclosed valves---Bosch magneto.

Detroit

Seven R-C-H Features—and Their Cash Value on a Car

We want to place the wonderful value of the R-C-H before you in comparison—we want you to know, as we do, that nothing approaching it has before been offered to motor-car buyers---that it is in a class of its own.

We listed below seven of the special features of the R-C-H which are found in no other car at near the price. After each feature a sum which represents the amount which it adds to the value of a car—amount which its absence should deduct from the cost

of a car. You'll say that these features are worth more—and they are; but we have made the figures low so as to give other manufacturers every possible advantage in the comparison.

Note the astounding totals—and use these figures as a test and a guide in your choice of a car for 1912:

- | | |
|--|--------------|
| 1. Full five-passenger body with the latest European ideas in design and finish (not used in any other American car costing less than \$4,000) | \$200 |
| 2. Really long-stroke motor—that is, with stroke long in relation to bore—3 1-4 x 5—powerful, efficient (used on high-grade European cars costing up to \$5,000) | 200 |
| 3. The use of 130 drop forgings (more than on any other car in the world irrespective of price), both forgings and other materials of the highest grade of mechanical workmanship. Accessibility and complete interchangeability of all parts. (These features are found only in other cars costing \$1,800 or more) | 200 |
| 4. Three speeds forward, one reverse, with sliding gears (found in no other car under \$900) | 50 |
| 5. Long wheelbase and special spring suspension, insuring easy riding qualities found on no other car under \$1,100 | 100 |
| 6. Full equipment of top, windshield, lamps, etc., with 3 1-2 inch tires (found in no other car under \$900) | 50 |
| 7. Highest grade magneto made—perfect magneto satisfaction on any car is easily worth | 50 |
| | \$850 |

Each one of these features, by reason of its greater ease, safety or greater durability, is well worth on any car the sum we place it by all accepted standards of value. Ninety-nine motorists would cheerfully say in each case: "Yes, I'd sooner pay the price than have that." Yet the sum of these fair valuations just equals the value of the R-C-H.

When you're offered any car, find out if it lacks any or all of these features. If it does, deduct their value from the price asked. But place a reasonable sum for any features of value—if you find any—features which the other car hasn't got. Then compare the respective prices of the two cars.

That's the way we want to sell the car.

Write for folder, or call at nearest branch.

Dealers: Write—or better still, wire. We still have a little unalotted territory.

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This is an experimental booklet intended to help young people learn basic principles and concepts of mechanics and technology.

It is hoped that this booklet will be useful to teachers to stimulate interest in reading and in related mechanical subject matter areas.

This booklet is part of the curriculum and materials for teaching basic vocational talents being prepared under Contract No. OE-5-85-023 with the United States Office of Education.

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