

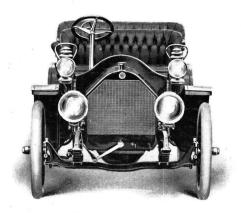
CHALMERS-DETROIT --- \$1,500 CHALMERS-DETROIT FORTY \$2,750



CHALMERS-DETROIT MOTOR CO.,
FORMERLY E. R. THOMAS DETROIT CO.
DETROIT, U.S.A.

The 1909 Models

Chalmers - Detroit \$1,500 Chalmers-Detroit Forty \$2,750



Chalmers-Detroit
"It's a Good Car"

DIRECTORS

HUGH CHALMERS, PRESIDENT R. D. CHAPIN, TREAS, AND GEN. MGR H. E. COFFIN, 1ST VICE PRES. J. J. BRADY, 2ND VICE PRES. F. O. BEZNER, SECRETARY EDWIN ROSS THOMAS PRESIDENT E. R. THOMAS MOTOR CO.. BUFFALO, N. Y.

Chalmers-Detroit Motor Co.

Formerly E. R. Thomas-Detroit Co. Detroit, U.S.A.

Chalmers-Detroit Touring Car. Price \$1,500

Four cylinders, 24-50 horse power. Five passengers, Selective sliding-gear transmission. Three speeds and reverse. Disc clutch. Annular ball bearings throughout. 110 inch wheel base. Three-quarter elliptic rear springs. 40-50 miles per hour. 2,000 pounds. Ironed for top. Equipment—2 side lamps, rear lamp, horn, tools. (Complete specifications on page 23.)

The Chalmers-Detroit Policy for 1909

HE E. R. THOMAS-DETROIT CO. will hereafter be known as the Chalmers-Detroit Motor Co. This change in name involves no change in ownership, personnel or management. Mr. Thomas still remains a large stockholder. The change is made to avoid the confusion certain to arise if two Thomas concerns should operate on different lines of policy.

The car which has become famous as the Thomas-Detroit Forty will hereafter be known as the Chalmers-Detroit Forty. The price remains the same, and the car the same, save for the 1909 improvements which we mention in this book.

All the men responsible for our splendid cars, and for our agreeable policies, remain as before. There is no change whatever save in the name of the company.

Chalmers-Detroit, Four Cylinders, \$1,500

This sensation of the year is not really a new car. Our Engineering Department has worked for two years to perfect it. Our Vice-President, H. E. Coffin, has made two trips to Europe for the purpose of studying foreign development, so that he might embody in this car the best ideas of the world. Everything in the car has been designed in our own drafting rooms and tested in our own laboratory and shops. And at this writing—June, 1908—of the three cars that have been in the hands of our operators, one has covered more than 7,000 miles and the others more than 3,000 miles.

But the novelty lies in the idea of a high grade, four-cylinder, five-passenger car at \$1,500. The fact of such a car, at such a price, is as astounding to us as to others. We did not dream when we started, two years ago, that a car of this class could ever be sold at this price. And it never could have been, save for the slump of last fall. That gave us material for a two years' production at prices inconceivable a few months before.

Nor could it be done save for our present enormous manufacturing facilities. If we build but 1,000 of these new cars this season we shall lose money. If we build 2,000, we shall make a little. Not until we pass the 2,500 mark this season will our profits be commensurate with our investment.

Page three

We are staking our profits, therefore, on the belief that the world is waiting for a car like this. There have always been cars at this price and lower. There will be cars this season—four cylinder cars—to sell at this price or less. But there will be no car within \$500 of our price, which compares for a moment with the Chalmers-Detroit.

Our theory is this: There are fifty people who want a low-priced light car to one who wants a high-priced heavy car. Not so much for the saving in price as for the saving in up-keep. Some of these people have bought heavy cars, and they now want to be more economical. Some have bought one- and two-cylinder cars, and lost three-fourths of the pleasure of motoring. Most of them have bought no car at all. They have waited for a car which they could take pride in at a price which they could pay.

All of these people are now our possible customers. We have no competition. Not a four-cylinder car, at anywhere near our price, can stand for a moment in actual comparison—either for looks or service. We bank on this fact when we look for our profit to an output of at least 2,500 cars.

Chalmers-Detroit Forty, \$2,750

Our 1908 Forty cannot be improved mechanically. Our advance for 1909 has all been in the line of confort and beauty. The Forty will remain, as it has been, the leader in medium-priced cars. It gives, at \$2,750, all the appearance, finish, power and speed that anyone wants in a car.

There will be fewer people hereafter who take pride in mere extravagance. Not a car at any price looks better, does more, or proves more satisfactory than the Chalmers-Detroit Forty. One may add thousands to the price, but not an iota to appearance, performance or mechanism.

More than one thousand users of this car now know this. For two years our output has been sold by June 1st. In 1908 we made 100 more than intended, yet we could easily have sold 200 more.

It will be the same for 1909. The demand for the "Forty" will far exceed the supply. So our advertising efforts will be devoted largely to our innovation—to the \$1,500 Chalmers-Detroit.

CHALMERS-DETROIT MOTOR COMPANY, (Formerly E. R. Thomas Detroit Co.)

Hyph Chalmers

General Outline of the \$1,500 Chalmers-Detroit

FOUR-CYLINDER touring car, roadster or tourabout at \$1500. Designed by H. E. Coffin, Vice-President of the Chalmers-Detroit Motor Co. Mr. Coffin is, beyond all question, the leading designer of automobiles in America.

This car is modeled on those conservative lines long adopted by the best foreign designers, and now being accepted by the leading American makers.

A five passenger car, roomy and elegant. The wheel base is 110 inches—only two inches shorter than on our "Forty". Painting and upholstering as good as a car can have. We added 15 per cent. arbitrarily to the estimated cost of finish to make certain that no restricted factory cost should lessen the superb appearance. No skimping anywhere.

Weight 2000 pounds, which means a very low cost of up-keep. Power 24-30 h. p.—sufficient for any requirement. Speed 40 to 50 miles per hour.

Ball-bearings—of the annular type, the most approved kind—are used throughout the car. These bearings are equal in every way to those on the most expensive cars on the market.

Three-quarter elliptic springs—used on the best foreign cars—give perfect comfort in riding.

The brakes are larger than are used on nine-tenths of American cars. We mention these few facts to indicate the extreme of care expended on this car throughout. On the following pages, where we give details, you will note our comparisons are all with high-priced cars—mostly with foreign cars. There is nothing in this car to compare with the ordinary low-priced car.

There will be others who will follow us with four-cylinder cars at \$1500 or less. There are numerous automobile industries whose very life will depend on it. But we are two years ahead of them, because we started this new car two years ago. It will take two years, even for equal facilities and equal ability, to gain the point we have reached.

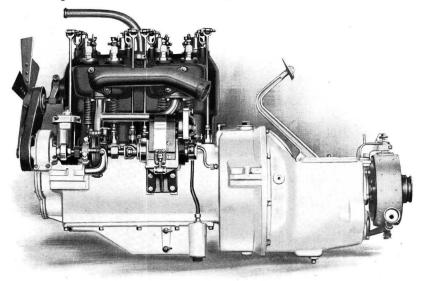
Today we have no real competition. No other low-priced car will give such pride of ownership. No other will meet the requirements of the fastidious. In no other car can one obtain all the reliability, all the satisfaction of the high-priced car, at a price approaching this.

And this car alone, in this class, has met the test of service.

On the following pages, please note the details carefully. For it is in these hundred little perfections that we excel the makers who will *claim* as much as we do.

Page five

Description of the 1909 Chalmers-Detroit



Unit Power Plant-Exhaust Side

Motor, clutch and transmission enclosed in oil-tight, aluminum easing, keeping out dust and preventing working parts from getting out of line. Cut shows arrangement of exhaust valves, timer, waterpump, magneto, and the oil reservoir at bottom of motor,

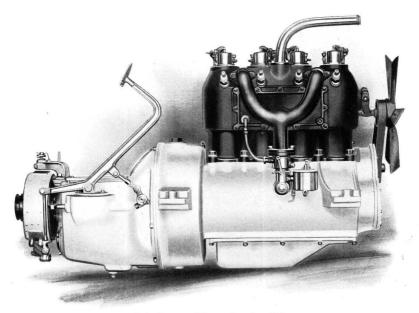
Unit Power Plant

NEW departure which will appeal to any purchaser who intends to care for his own car is the "unit power plant" of the Chalmers-Detroit. Motor, clutch and transmission form a single unit. Working parts are all enclosed in a single case flooded in oil and thoroughly protected from dust. This construction is used on many foreign cars such as the Motobloc, Decauville, and others. We consider it the best and most up-to-date for a small power plant. It eliminates all possibility of parts getting out of line through road shocks. The transmission case and clutch are attached directly to the fly-wheel casing and do not depend for their alignment upon any attachment to the frame of the car. The entire power plant may be removed if desired, by simply taking out six bolts. Crank case is a single aluminum casting—a simple, strong construction much used on the best foreign cars.

Motor

The four-cylinder motor is built and tested with all the care that could be put upon the motor of a high-priced car. It is rated at

Page six



Unit Power Plant-Intake Side

Compact and simple, following latest foreign practice. Single pedal operates both clutch and the drive-shaft brake at rear end of power plant. Carburetor and water-lacketed littake are shown. Unit power plant is the best possible construction for a car of this size.

24 h. p., according to the A. L. A. M. formula, a very conservative rating. This motor will carry the car with five passengers anywhere that an automobile will go. The driver of the Chalmers-Detroit need fear neither sand, mud nor hills, and may easily make from 40 to 50 miles per hour.

Bearings

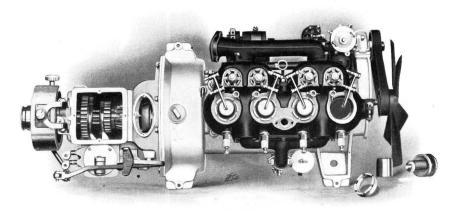
Throughout the motor and transmission, as well as throughout the

running gear, annular ball bearings of extremely large size are used. These are duplicates in every way of the bearings used for similar purposes upon the Isotta Fraschini, Fiat, Mercedes and other \$5000 and \$6000 cars. We have purpose-



Crank shaft is carried on two large annular ball bearings, in accordance with best foreign design.

Page seven



Top View of Unit Power Plant

Large intake valves are placed in cylinder heads, exhaust valves at side. Removal of intake valve exposes entire combustion chamber for cleaning. Double sets of spark plugs are shown.

ly installed bearings of greater size than those recommended by the bearing manufacturers, in order that we might be able to stand behind an absolute insurance against wear, breakage or other defects.

The crank shaft, which is short and stubby, of heat-treated steel, is carried upon large annular ball bearings, a construction used in the Delahaye, De Dietrich and other foreign cars. In America such bearings are not found in any cars selling for less than \$3000. Crank pin bearings are of die cast tin babbit with exceptionally large surface.

Cylinders and Valves

The cylinder construction and valve arrangements follow the most advanced designs. All four cylinders are in a single casting, securing lightness, compactness and more satisfactory water jacketing. This



Casting the four cylinders in one piece secures lightness, compactness and better water jacketing. Spaces between cylinders permit water to circulate freely around each cylinder.

construction is very largely used both in England and France on such motors as the Hotchkiss, Aster and Argyll, and the Darracq, Unic, Mors and others.

Intake valves are placed in the head of the cylinder and exhaust valves at the side. This arrangement makes it possible to use very large valves. The 2 1/4"

Page eight

intake valve insures easy and quick admission of a large charge of gas.

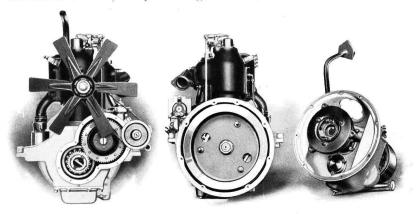
Following the latest practice, both intake and exhaust valves have flat seats, giving the largest possible opening with the minimum lifting of the valve. The position of the exhaust valve is such that we can employ the usual direct method of opening it and can closely water-jacket its seat. This keeps the valve cool [and prevents warping. The intake valve is operated through a rocker arm on the top of the cylinder. The work of operating the intake valve being very light there is no wear on the rocker arm mechanism and hence no noise.

The cam shaft is a single drop forging, the cams being in one piece with the shaft.

Transmission

The transmission is of the selective sliding gear type, giving three speeds forward and reverse. This is the accepted modern practice in Europe and on high-priced American cars. The Chalmers-Detroit transmission is strong and very simple, making gear changing easy and noiseless, even for the novice. Changes from one speed to another are made direct without stopping in neutral.

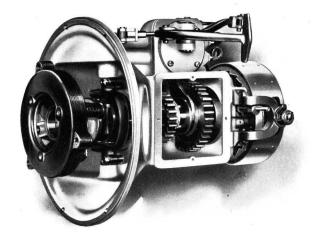
All shafts, gears and pinions are of alloy steel, thoroughly heattreated and accurately assembled under the most rigid inspection. Transmission trouble has been noticeably absent from the "Forty", and the factors of safety are just as high on the \$1500 Chalmers-Detroit.



Front and Rear Views of Motor

Transmission case and clutch are shown detached from fly-wheel casing. The clutch engages the three study shown on fly-wheel. Front view shows ball bearing on crank shaft. Exceptionally strong fan construction is fillustrated.

Page nine



Clutch and Transmission

Clutch is shown at the left of the picture, illustrating how it is built up of metal discs. Sliding gear transmission shown in center. Anti-backing ratchet is seen inside drive-shaft brake drum at the right of the cut.

Clutch

The clutch is of the multiple disc type, used on the Isotta, Fiat, Argyll, Westinghouse and other foreign cars. It consists of alternating discs of hard bronze and steel. The former are connected with the fly-wheel, the later keyed on the main driving shaft of the transmission, all of them running in a bath of oil.

When the clutch is thrown out, these discs are allowed to separate, the bronze plates rotating with the fly-wheel and the steel plates remaining still. When the clutch is "let in" the springs jam both sets of discs together, gradually squeezing out of the oil until the plates are in contact and the whole combination rotates. On account of the film of oil between the discs this form of clutch takes hold easily. It requires no adjustment and will not wear out. Both clutch and foot brake are operated by one pedal, as will be described later. With this clutch no end-thrust is at any time imposed upon the crank-shaft by the clutch whether it is engaged or disengaged.

Lubrication

The wonderfully simple oiling system, originated by Mr. Coffin, which has been one of the strong features of our "Thomas-Detroit Forty", is used on the Chalmers-Detroit. This system is known as the "constant level splash system". It is being rapidly adopted on the best known cars in the world.

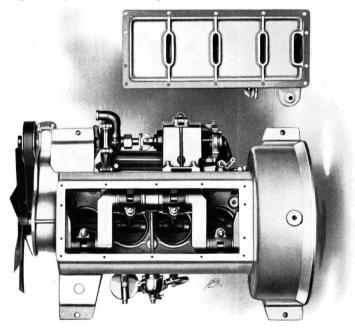
Page ten

The bottom of the engine base is filled with oil. When the crank-shaft revolves, the ends of the connecting rods dip into this oil, splashing it all over the interior of the motor, lubricating every part. The level of the oil is regulated by over-flow holes which open into the oil reservoir below. Fresh oil is continually supplied from this reservoir to the engine base by a gear-driven pump. Partitions in the engine base prevent an excess of oil at either end when the car is on a steep hill. The continuous flow of oil is observed through a single sight-feed on the dash, as on the "Forty". The lubricating system will require no attention other than occasional replenishment of oil. A single filling should be ample for 500 miles' run.

Throughout the car, oil cups and grease cups have been provided wherever needed instead of the common oil holes found hitherto on lowpriced cars. These provisions for lubrication illustrate the care which has been given to details throughout the car.

Cooling

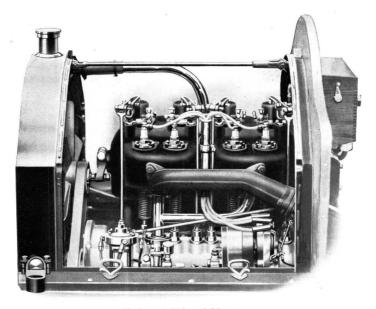
Cooling is by means of water circulated by a centrifugal pump through the jackets of the cylinders and thence to the vertical tube



Chalmers-Detroit Motor from Below

Showing crank-shaft, large connecting rod bearings and pistons. Oil reservoir shown detached. Oil is kept at constant level in the four compartments on top of this reservoir, overflowing through the oblong holes into well below.

Page eleven



Exhaust Side of Motor

Showing arrangement of valves, intake valves in cylinder heads, exhaust valves at side; water connections; timer; magneto and magneto wiring. Flexible support of radiator also shown.

radiator. This radiator is of the same construction as that used so satisfactorily upon the 1908 "Forty" and other cars of the highest grade, and is even considerably larger in proportion to the size of the motor. Proper cooling is an absolute certainty.

The method of supporting the radiator is another of the many special features which mark the Chalmers-Detroit. Its entire weight is carried upon flexible supports at either side in such a way that twisting strains on the frame of the car cannot possibly cause leakage of the radiator.

The water piping is of brass solidly brazed with no soldered joints. The fan runs on ball bearings and has hub and spider of one piece, a practical insurance against bending or breakage.

Ignition

Double ignition system makes it possible to run the motor either by storage battery and coil or by magneto. Both ignition systems are of the high tension type and employ independent sets of spark plugs.

The wiring is very simple and compact. Wires from the coil to the spark plugs are carried along the top of the motor on insulated brackets. Wires from the magneto are led through a vertical brass tube, giving a very neat appearance.

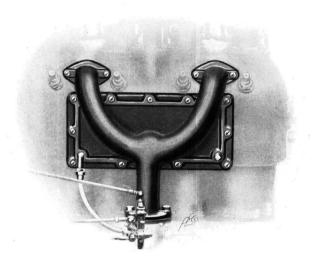
Page twelve

Carburetor

The difference between satisfaction and trouble in motoring often lies in the carburetor. On the Chalmers-Detroit, the same design of carburetor is used that has given such satisfaction in the past on the "Forty". The even temperature, so necessary for perfect operation of the carburetor, is maintained by jacketing it with warm water. The carburetor is automatic in its action and provides a good and economical mixture for varying motor speeds. Clean gasoline, strained before leaving the tank, is delivered to the carburetor through large seamless copper tubing.

Water-Jacketed Intake

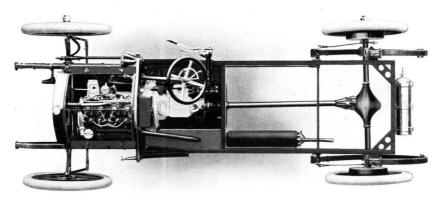
A distinct improvement has been introduced in the design of the gas intake. Instead of the usual intake pipe, gas passages have been cast in the water-jacket-cover of the cylinders. Thus these passages are jacketed with warm water all the way from the carburetor to the combustion space of the engine. This renders it impossible for gasoline to condense and "load up" the passage, stalling the engine.



Water-Jacketed Intake for Gas

Valuable feature not found on other cars at any price. Jacketing the gas lurake with warm water prevents gasoline vapor from "loading up" gas passage and stalling the engine.

Page thirteen



Chalmers-Detroit Chassis from Above

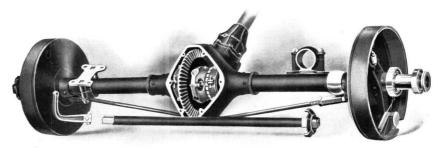
Illustrating simple arrangement of power plant. Control and running gear; three-quarter elliptic springs; sleeved propeller shaft, takes all driving and braking strain and does away with need for torsion rolds.

Propeller Shaft

Power is transmitted to the rear axle by a heat-treated nickel steel propeller shaft. The shaft runs through a long tube or sleeve attached rigidly to the differential casing of the rear axle. This sleeve, which is fitted with an annular ball bearing at the forward end, renders unnecessary the usual torque tube or torsion rod. It takes both the driving and braking strain and insures at all times a proper alignment of the rear axle. This construction permits the use of a single universal joint on the propeller shaft, just behind the transmission.

Rear Axle

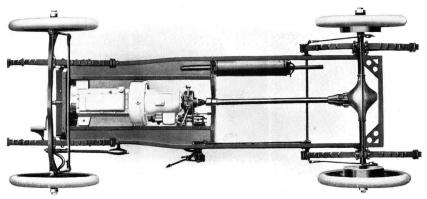
From the propeller shaft the power is transmitted through the rear axle by means of bevel gears, the usual differential (to allow one rear wheel to run faster on a curve) and two live axle shafts which drive the rear wheels. The weight of the car is not carried on these



Rear Axle Construction

"Full doating" type of axle used by leading foreign designers. Live axle shaft is seen removed from axle tube on which car weight is carried. Swivefled spring sears prevent twisting of springs—an entirely new feature.

Page fourteen



Chalmers-Detroit Chassis from Below

Unit power plant is supported at four points on sub frame. Oil reservoir shown in place on bottom of motor. The cleanness of outline of this chassis is noteworthy,

driving axle shafts but upon the heavy axle tube, inside of which the live axles run. The wheels run upon large annular ball bearings carried upon the axle tube. The live axle shafts and gears are of 3½ per cent. nickel steel heat-treated. This entire rear construction, known as the "full floating" type of axle, is of the very latest and best design and is similar in every way to that employed on the most expensive cars.

Some rear axle details worthy of mention are: large annular ball bearings at every point; spring seats swivelled spherically upon the axle tubing to avoid twisting the springs in striking bumps; accessibility of every part for inspection, adjustment or lubrication.

Front Axle

The front axle is a single-piece heat-treated drop forging of new design, I-beam section. (Low-priced cars generally have the tubular front axle.) Spring seats are forged in one piece with the rest of the axle. The center of the axle, which is dropped slightly to protect the mechanism, is the lowest part of the car. It has 9 inches ground clearance.

The steering knuckles, connections and steering arms are forgings of a weight and strength not found upon any other light automobile. Steering cross-rod is placed behind the front axle, out of harm's way. Upon the right

Steering Connections Simple mechanism makes steering easy. All parts of steering gear are of unusual weight and strength.

Page fifteen

hand steering arm bosses have been added for attachment of speedometers. Even such details have been given careful attention.

The front wheels are fitted with annular ball bearings of extremely large size for the weight of the car.

Control

Ten minutes in the driver's seat of the Chalmers-Detroit will enable a novice to master the car, so simple is the control. Spark and throttle levers are located upon the top of the steering wheel. The steering gear mechanism is of the adjustable worm and gear type, such as is used upon 90 per cent. of the foreign cars.

The clutch and transmission brake are both operated by a single pedal. Pressure on this pedal first throws out the disc clutch. Continued movement of the pedal applies the brake on the drive shaft. This arrangement leaves the right foot free to operate the throttle.

The foot throttle is a decided improvement over the usual practice. Instead of a button or lever on which the foot must be held for varying

throttle movem permits

Chalmers-Detroit Control

Single polal operates both clutch and brake. New swinging foot throule easy to operate, prevents tiring of operator's auxle. Hand levers conveniently located. Oil sight feed on slash.

throttle openings, a swinging movement has been adopted, permitting the foot to rest squarely upon the toe-board. This

toe-board. This change will mean less fatigue for the operator's ankle.

Emergency brake lever and gear shifting lever remain the same as upon the 1908 "Forty". The muffler cut-out and "sprag" attachment (to prevent backing on hills) are located conveniently upon the floor and heel boards.

Page sixteen

Brakes

Special attention has been given to the matter of brakes. No other feature of a motor car is so important from the standpoint of safety, and no point has been more slighted by American designers. Rear wheels are equipped with metal to metal internal expanding brakes, operated by the hand lever. They are of unusual size, 14" diameter x 2" face. The foot brake is on the drive shaft immediately behind the transmission. It is of the contracting type and is large and powerful. The steel brake band is lined with "Thermoid", a lining guaranteed not to burn out under service.

This general arrangement, giving very efficient emergency brakes on the rear wheels, with the foot or service brake upon the drive shaft, is the most logical brake construction and is the one employed on every foreign car of prominence.

In addition to the brake equipment, a safety device or rachet "sprag" is furnished, which prevents the car from backing down hill should the motor be stalled, or the operator become confused in shifting gears during the ascent. This rachet is on the inside of the drive shaft brake drum. It can be thrown into engagement at will. A similar device is found on many foreign cars.

Wheels and Tires

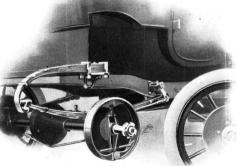
Wheels are of the usual artillery type, 32 inches in diameter, fully two inches larger than the wheels generally employed on cars of this size. Hub flanges are of extra large diameter and the spokes are much heavier than those ordinarily used on a light car.

The ear is fitted with 312 inch tires, of a carrying capacity considerably in excess of the size necessary under the tire makers' guarantee. Ample tire equipment is the most certain insurance that the manufacturer can give the purchaser against aggravating

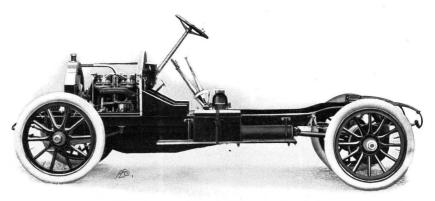
Springs

delays on the road.

One of the newest and most distinctive features of the Chalmers-Detroit is the use of three-quarter elliptic



Three-Quarter Elliptic Rear Springs Used on leading toreign cars. Gives greatest riding comfort, combin-ing advantages of all other forms of springs without their dis-advantages. Cut shows also expanding brake.



Side View of Chalmers-Detroit Chassis

The long lines of the chassis, compact power plant, suspension of weight between axles, and generally clean-cut design, follow the best foreign practice. Wheel base 110 inches,

rear springs. This type is the highest development of the European spring makers' art. It is used on such foreign cars as the Renault, Brasier, Mors, Rolls-Royce and others, and will soon become the accepted form of spring construction in America. The three-quarter elliptic springs give the greatest possible comfort in riding, without the disagreeable side sway of the full elliptic or platform spring construction.

The front eye of the rear spring, where it is anchored rigidly to the frame, is fitted with a rubber bushing, which cushions the road

shocks. Spherically swivelled spring seats upon the rear axle absolutely prevent twisting of the spring leaves. This is another new feature, and one which will increase the easy riding qualities of the car.



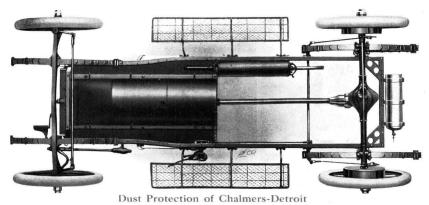
The front spring is of the conventional half-elliptic type, of ample length

and width. Both front and rear springs are secured in place by 9-16 inch spring clips with special nuts and lock washers. Satisfactory experience with these heavy clips in the past proves that they are the best insurance against spring breakage.

Frame

The dropped frame permits of carrying the car close to the ground, giving that low, long, rakish appearance so much desired in up-to-date construction. Pressed steel frame of the same weight and design as has been so successfully used for two seasons on the "Forty", is

Page eighteen



Our patented dust-pan thoroughly protects all the machinery from dust and mud. It is held in place by spring fasteners and can be quickly removed and replaced.

One of many exclusive features.

employed on the Chalmers-Detroit, as well as on the 1909 "Forty." As we have never had a single instance of frame trouble, further comment is unnecessary.

Dust Protection

Protection against dust is secured by the simple and effective device which has been one of the strong features of the Thomas-Detroit "Forty". Our patented dust shield or "sod-pan", which can be removed or attached in a few seconds, will appeal instantly to the garage man or the owner who takes care of his own car. This dust protection is the best to be found on any car in Europe or America, regardless of price.

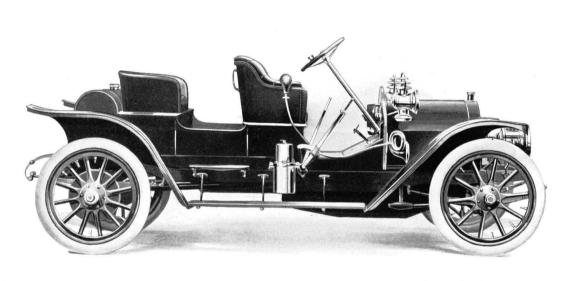
Body

The Chalmers-Detroit is built as a touring car, runabout or tourabout. Arrangements for closed bodies will be made upon special order.

The touring car body is carried entirely between the front and rear axles, thereby insuring the best of riding qualities for the rear seat as well as the front. Anyone who has ever ridden in cars such as the Mercedes, employing this form of body suspension, will appreciate the easy riding qualities it gives. At least one leading American car, selling at \$5,000, has already been equipped with this body suspension for 1909.

The tonneau is unusually roomy and the rear seat gives ample space for three passengers. Wide doors give easy access.

Page nineteen



Chalmers-Detroit Runabout. Price \$1,500

Four cylinders. 24-30 horse power. 3 or 4 passengers. Single or double rumble seat optional. Selective sliding-gear transmission. Three speeds and reverse. Disc clutch. Annular ball bearings throughout. 110-inch wheel base. Three-quarter elliptic rear springs. 40-50 miles per hour. 1900 pounds. Equipment—2 side lamps, rear lamp, horn, tools. (Complete specifications on page 23.)

The runabout is built with either single or double rumble seat.

The tourabout is fitted with a high backed, detachable, double rear seat.

Matters of painting, upholstery and equipment are fully in keeping with the general excellence of the mechanical features of the car. The standard color for the touring car, runabout and tourabout is the beautiful red which we have used on 90 per cent. of the Thomas-Detroit Forties. Optional finish is royal blue body with red running gear. Closed bodies are all special orders.

Special Equipment

Every facility has been provided on the Chalmers-Detroit for the attachment of such accessories as are frequently desired upon the car by the purchaser.

A list of these items is given herewith:

Top.

Glass Front.

Tire Irons.

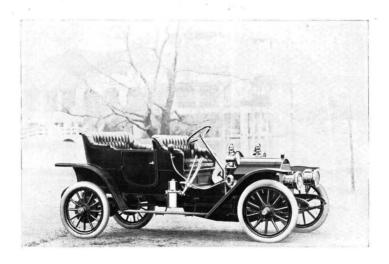
Magneto.

Tire Cases.

Prest-o-lite Tank.

Gas Lamps and Generator.

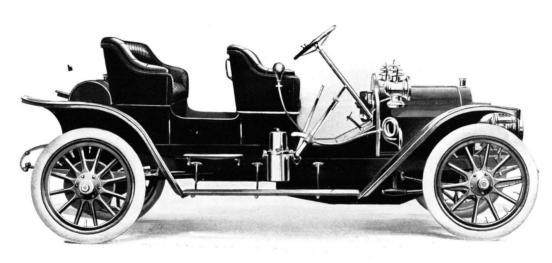
We have standardized these parts for our own use and can furnish only the goods of the manufacturer whose parts we have decided upon and designed to fit our car.



Chalmers-Detroit, \$1500

A millionaire's car brought down, by quantity production, within the reach of the many

Fage twenty-one



Chalmers-Detroit Tourabout. Price \$1,500

Four cylinders. 24-30 horse power. 4 passengers. Selective sliding-gear transmission. Three speeds and reverse. Disc clutch. Annular ball bearings throughout. 110-inch wheel base. Three-quarter elliptic rear springs. 40-50 miles per hour. 1900 pounds. Equipment—2 side lamps, rear lamp, horn, tools. (Complete specifications on page 23.)

Specifications for Chalmers-Detroit, \$1,500

Axle (Front)

Single piece drop forging, I-beam section. Large annular ball bearings.

Axle (Rear)

Full floating type, heat treated nickel steel shafts, large annular ball bearings.

Brakes

Drive shaft brake, contracting band, 8" diameter, 3" face, Thermoid lined. Rear wheel brakes, 14" internal expanding, 2" face, cast iron on steel. All brakes double acting.

Body

TOURING CAR—Wood with metal doors. 5 passengers.

Tourabout-Aluminized sheet steel and wood. 4 passengers.

RUNABOUT—Aluminized sheet steel and wood. Single or double rumble seat.

Bearings

Full type annular ball bearings throughout running gear. Silent type annular ball bearings in transmission and on motor crank shaft.

Carburetor

Float feed, automatic type, hot water jacketed.

Clutch

Multiple disc running in oil.

Color

Body, red or royal blue. Running gear, red.

Drive

Bevel gear, single universal joint, drive shaft in tube.

Equipment

2 oil side-lamps, 1 rear lamp. Horn. Complete set of tools.

Frame

Pressed steel, channel section.

Gear Ratio

Standard, 3½ to 1. Special, 3 to 1, and 4 to 1.

Horse Power

24, A. L. A. M. rating

Ignition

Storage battery and coil. Special equipment for double ignition—magneto with separate set of spark plugs.

Page twenty-three

Lubrication

Constant level splash system operated by gear pump. Sight feed on dash.

Motor

4 cylinders, 378" bore, 41/2" stroke.

Price

Touring car, tourabout and runabout, \$1,500, f. o. b. Detroit.

Speed

5 to 50 miles per hour, on high gear.

Springs

Front. Half elliptic, 38" long, 2" wide. Rear. Three-quarter elliptic, 2" wide.

Steering Gear

Worm and gear type.

Tank Capacity

15 gallons gasoline. 8 pints lubricating oil,

Tread

55 inches.

Tires

32" x 3½" all around, on touring car, tourabout and runabout.

Transmission

Selective, 3 speeds forward and reverse. Annular ball bearings.

Valves

Nickel steel, large diameter. Exhaust valves at side, inlet valves at top of cylinders. Flat seats.

Wheels

32" diameter, wood, artillery type, large hub flanges. Heavy spokes.

Wheel Base

110 inches.

Weight (Tanks Empty)

Touring Car Tourabout 1900 lbs. Runabout 1900 lbs.



Four cylinders. 40 horse power, A. L. A. M. rating. Five passengers. Selective sliding-gear transmission. Three speeds and reverse. 112-inch wheel base. Three-quarter elliptic rear springs 2530 pounds. 55-60 miles per hour. Ironed for top. Full lamp equipment with acetylene generator, horn, tools. (Complete specifications on page 29.)

Automotive Research Library

1909 Chalmers-Detroit Forty Motor Cars

T HAS been predicted that automobile development would soon result in standard models and that radical changes from year to year would cease. We believe that we have reached this stage with the Chalmers-Detroit Forty.

What is the use of making changes merely to be able to say that you have done so, or to make purchasers think there is a big difference between a 1909 and a 1908 model? Such practice is a thing of the past with reputable motor car builders.

We could not improve the mechanism of the 1908 Thomas-Detroit Forty (now the Chalmers-Detroit Forty). Its wonderful series of victories (printed elsewhere in the book), proved that it had all the speed and power anyone could ask. The experience of 500 owners of our 1908 cars—our complete output for the season—demonstrated their lasting qualities. We are not going to make changes merely for the purpose of trying to get some 1908 owners to trade in their cars for 1909 models.

Improved Spring Construction

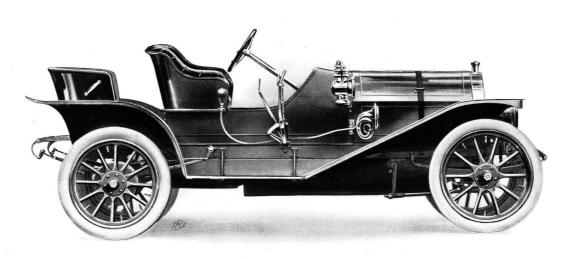
Practically the only change we have made in the Forty for 1909 is in the spring construction to make the car ride more easily. We have adopted the three-quarter elliptic rear springs used on nearly every foreign ear of prominence. These springs are long and very flexible, giving the greatest comfort in riding without the disagreeable side sway of the full elliptic or platform springs. This improvement in spring construction, coupled with the light weight of our car, makes the 1909 Chalmers-Detroit Forty the easiest riding car made, no matter what the price. (Three-quarter elliptic spring is illustrated on p. 17.)

For 1909 the same strong, light, four-cylinder, 40 h. p. motor is used as on the 1908 Forty. This engine will carry the car with five passengers anywhere that you can require an automobile to go, through mud, sand, snow, or over the steepest hills. On good roads, the Chalmers-Detroit Forty will develop from 55 to 60 miles per hour or will throttle down to five miles on high speed. The hardest kind of service in the past has failed to develop a single weakness in this motor.

No Change in Mechanism

Such important features as transmission, clutch, ignition system, frame, control and running gear, remain practically unchanged. Heattreated alloy steel is used exclusively throughout the driving mechanism and in the axles. All brakes have been materially increased in size and efficiency. The brakes are lined with "Thermoid", a lining guaranteed not to burn out in service.

Page twenty five



Chalmers-Detroit Forty Runabout. Price \$2,750

Four cylinders. 40 horse power. 3 or 4 passengers. Single or double rumble seat optional. Selective sliding-gear transmission. Three speeds and reverse. 112-inch wheel base. Three-quarter clliptic rear springs. 2260 pounds. 60 miles per hour. Full lamp equipment with acetylene generator. (Complete specifications on page 29.)

The "constant level splash" oiling system devised by Mr. Coffin and now widely recognized as the simplest and most effective means of lubricating is used, as in the past.

In painting and upholstery and other details, the same high standard that has marked the Thomas-Detroit cars will be adhered to.

In the 1909 Chalmers-Detroit Forty touring car slight changes have been made in the form of mud guards, the rear seat and the paneling of the tonneau door.

In the runabout a new option is offered in the shape of an auxiliary gasoline tank at the rear, with tool box and holders for extra tires. This arrangement gives a roadster of unusually racy and attractive appearance, together with the necessary extra gasoline capacity for long distance touring or racing. The standard single and double runble seats are still furnished.

The Chalmers-Detroit Forty chassis can be equipped with closed bodies upon special order.

\$2,750 All You Ought to Pay

\$2,750 is all that any one ought to pay for an automobile unless he really requires a seven-passenger car to carry his own family. If you pay more than this you simply do not get any additional return for the extra money. What more can a motor car do than the Chalmers-Detroit Forty does? What more can you get in the way of service, speed, hill climbing ability, comfort and endurance?

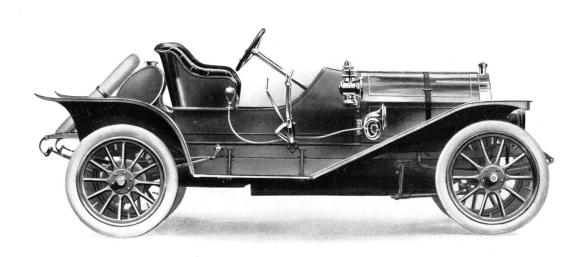
Mere extravagance in automobile buying is a thing of the past. The wise buyer won't pay from \$4,000 to \$5,000 merely for the purpose of showing his friends that he can afford to pay such a price for a car. Common sense has entered into the purchase of an automobile, as it has into everything else, and people are not going to throw money away deliberately when they can save the money and get just as good a car.

Compare the Chalmers-Detroit Forty, point for point, with any five-passenger car built, regardless of the price, and we are perfectly willing to allow the decision to rest with you.

Chalmers-Detroit Forty the Leader

The Chalmers-Detroit Forty is not only the sensation and the talk of men in the automobile business, but it is known among the public outside. Go where you will and ask about the "Forty" and the invariable answer will be "It's a good car." Our victories in motor contests and our remarkable record of sales within the last few months have not merely put it among the leaders, but have made the Chalmers-Detroit Forty the leader in medium priced, light weight cars.

Page twenty-seven



Chalmers-Detroit Forty Special Speed Roadster

Four cylinders. 45-50 horse power. Two passengers. Selective sliding gear transmission. Three speeds and reverse. 112-inch wheel base. Three-quarter elliptic rear springs.

2260 pounds. Large reserve gasoline and oil tank behind seat. Extra tire carrier at rear.

Specifications for Chalmers-Detroit Forty, \$2,750

Axle (Front)

Single piece drop forging, I-beam section. Timken bearings.

Axle (Rear)

Semi-floating, heat treated alloy steel shafts. Timken bearings.

Brakes

Drive shaft brake, contracting band, 10" diameter, 3" face, Thermoid lined. Rear wheel brakes, 14" internal expanding, 2½" face, lined with Thermoid. All brakes double acting.

Body

TOURING CAR—Aluminized sheet steel and wood. 5 passengers. RUNABOUT—Aluminized sheet steel and wood. Single or double rumble seat.

Bearings

Timken roller bearings throughout running gear and transmission. Annular ball and die-cast tin babbitt in motor.

Carburetor

Float feed, automatic type, hot water jacketed.

Clutch

Cone clutch, leather-faced.

Color

Body, red or royal blue. Running gear, red.

Drive

Bevel gear, two universal joints.

Equipment

2 oil side-lamps, 1 rear lamp, 2 acetylene head lights with generator. Horn. Complete set of tools.

Frame

Pressed steel, channel section.

Gear Ratio

Standard, 3 to 1. Special, $2\frac{1}{2}$ to 1, and $3\frac{1}{2}$ to 1.

Horse Power

40, A. L. A. M. rating.

Ignition

Storage battery and coil. Special equipment for double ignition—magneto with separate set of spark plugs.

Lubrication

Constant level splash system, operated by gear pump. Sight feed on dash.

Motor

4 cylinders cast in pairs. 5" bore, 43,1" stroke.

Price

Touring car, and runabout, with standard equipment, \$2,750, f. o. b. Detroit,

Speed

5 to 60 miles per hour, on high gear.

Springs

Front. Half elliptic, 40" long, 214" wide. Rear. Three-quarter elliptic, 214" wide.

Steering Gear

Worm, nut and segment type.

Tank Capacity

18 gallons gasoline. 10 pints lubricating oil.

Tread

55 inches.

Tires

Touring Car, 34" x 4" all around. Runabout, 34" x 3½" front, 34" x 4" rear.

Transmission

Selective, 3 speeds forward and reverse. Timken bearings.

Valves

Nickel steel, large diameter, placed at one side of cylinders. Flat seats.

Wheels

34" diameter, wood, artillery type, large hub flanges. Extra heavy spokes.

Wheel Base

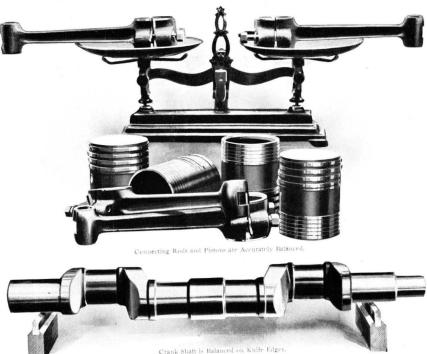
112 inches.

Weight (Tanks Empty)

Touring Car 2530 lbs. Runabout 2260 lbs.

Page twenty-nine

Chalmers-Detroit—The Balanced Car



All Chalmers-Detroit cars—both the \$1,500 and the \$2,750 models—are noted for the smoothness and quietness with which they run.

There is a reason for this. It is due to the fact that the moving parts throughout the motor are all accurately balanced, one against the other.

Each of the four pistons is carefully weighed and they must all be of the same weight, within a fraction of an ounce, before they are put into the motor. The same is true of the four connecting rods, which connect the pistons with the crank shaft.

The crank shaft is balanced upon knife edges to make sure that when it revolves at high speed there will be no danger of vibration due to any excess weight in any part of it. After the flywheel is attached, crank shaft and flywheel together are balanced on knife edges.

All this insures that these rapidly moving parts exactly balance each other. When the motor runs there is no vibration, jerk or pound, but a steady, even, noiseless pull.

The Balanced Car is the Satisfying Car to ride in or to drive

Fage thirty



Clean Sweep for Chalmers-Detroit Forty Cars in Detroit Endurance Run

Some of the More Important Victories Won by Our Chalmers-Detroit Forty Cars

(Formerly Thomas-Detroit Forty).

Colorado Endurance Run, Denver, Colo., June 1, 1907

Detroit Endurance Run, 450 Miles, April 29-May 1, 1908

Baltimore-Hagerstown Endurance Run, May 5, 1908

Kansas City Endurance Run, May 18, 1908

Hartford, Conn., Endurance Run, 174 Miles, May 18, 1908

Cincinnati Hill Climb, May 23, 1908

Albany, N. Y., Hill Climb, May 23, 1908 Made a new world's record for stock touring cars, of 55 minutes, 43 3-5 seconds, for 50 miles on a one-mile circular track.

Perfect score for all three Thomas-Detroit Forty entries. No other make had as many perfect scores. Thomas-Detroit "'Snow Bird'' also made the run on high gear with perfect score.

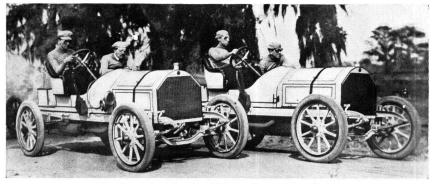
Perfect score.

Perfect score.

Perfect score.

Won in \$2000—\$3500 class, against all the cars usually considered prominent in this class. Beat the time of some of the highest powered cars on the market.

Won in \$2000—\$3000 class. Also beat the time of every four-cylinder car entered, regardless of price.



Two Chalmers-Detroit Forty Cars Which Won Honors in Many Contests

Page thirty-one



Chalmers-Detroit Forty, Victor in Rocky Mountain Cup Race

Yale Automobile Club Hill Climb, New Haven, Conn., May 27, 1908

Minneapolis Endurance Run, 262 Miles, May 28-29, 1908

Giant's Despair Hill Climb, Wilkesbarre, Pa., May 30, 1908

Rocky Mountain Cup Race, 320 Miles, Denver, May 30, 1908

Dead Horse Hill Climb, Worcester, Mass., June 6, 1908

Washington Times Reliability Run, Washington, D. C., June 6, 1908

Bay State Race Meet, Readville, Mass., June 7, 1908

Sealed Bonnet Contest, 192 Miles, Atlanta, Ga., June 18, 1908 Won in class for fully equipped touring cars with cylinder capacity less than 550 cubic inches.

Won the Minneapolis Tribune Trophy. Only perfect road score among 19 starters. Perfect technical examination.

Won in \$2000-\$3000 class.

Won in 8 hrs. 25 min. 39 sec. Only car among 7 entries that finished. Averaged 38 miles an hour over treacherous roads. Defeated cars of much higher price and horsepower. Not an adjustment made on entire run, except tire repairs.

Two Thomas-Detroit Forty cars won 4 firsts and 3 seconds. Defeated cars of much higher price and horsepower.

Best score in touring car class.

Won in special 20-mile race for cars of 40 h.p. or under. Time, 21 minutes 56 2-5 seconds. Also made mile in 59 2-5 seconds, beating time of many higher priced cars. Remarkably fast time for circular track.

Perfect score. Only car that went through without breaking seal.



Chalmers-Detroit Forty Winning in Dead Horse Hill Climb

Page thirty-two



Chalmers-Detroit Forty (formerly Thomas-Detroit Forty) "Snow Bird"

3,000 Miles on High Gear

One of the most remarkable feats ever performed by a motor car was the 3,000 mile trip on high gear made over winter roads, through blizzards and thaws, by the Thomas-Detroit Forty, "Snow Bird" (now Chalmers-Detroit Forty.)

This car, from which the intermediate, low and reverse gears were all removed, started out from Detroit last winter in the midst of a blinding snowstorm, to demonstrate what a Chalmers-Detroit Forty can do under the most adverse circumstances. It was driven to Toledo, O., through deep snow and over the roughest roads while trolley cars and railway trains all over the state were being dug out of drifts.

From Toledo to Cincinnati, the roads were covered with snow and ice almost the entire distance. At Cincinnati the car astonished the local motorists by climbing Indian Hlll, the steepest incline in southern Ohio, on high gear.

Through central Indiana, the mud roads seemed almost bottomless. Near South Bend, another blizzard came on and the deepest snow of the trip was encountered. From South Bend the car was driven to Chicago and thence back to Detroit.

In the Detroit Endurance Run, the "Snow Bird," still running on high gear, accompanied the contestants around the 450 mile course, finishing with "perfect score."

The fact that this car could be successfully driven, on high gear alone, over hundreds of miles of rough winter roads, through snow drifts, up and down hills, through congested traffic, is a proof of the wonderful power and flexibility of the Chalmers-Detroit motor.

Later, the "Snow Bird" with gears replaced, took prominent part in a number of automobile contests in the west, showing that the severe high-gear test had done the car no injury.



Chalmers-Detroit Forty Winning in Giant's Despair Hill Climb

Page thirty-three

What Some of Our Users Say:

Commends Car and Company

Mr. H. F. Behrens, Jr., Wheeling, W. Va., says:

"I never appreciated the true pleasure of motoring until I drove a Chalmers-Detroit Forty. I wish to express my appreciation of the courtesy and very fair treatment I have received at the hands of your Company. I can recommend any prospective purchaser to buy your car even without a demonstration."

Thankful That He Bought "Forty"

Mr. J. W. Walton, Fairbury, Ills., says:

"I am very thankful to your representative for persuading me to buy a Chalmers-Detroit "Forty". Before I purchased, I came very near buying another car at about your price, but am very glad now that I decided on the "Forty". I have owned and driven motor cars for five years, and can truthfully say that the "Forty" is the best car, all things considered, that I have ever owned."

Best Car at the Price

Mr. George M. Van Evera, 415 Locust St., Des Moines, Ia., writes:

"I have been receiving excellent service from my Chalmers-Detroit Forty. I am satisfied that you have one of the best cars for the price now on the market."

10,000 Miles-No Trouble

Mr. W. L. Sergeant, of George La Monte & Son, 35 Nassau St., New York, says:

"My Chalmers-Detroit Forty runabout has proved an unqualified success. It is by far the best car I have ever owned, and I have had four others. I have used it continually, running it probably 10,000 miles and have never made an adjustment, or had one particle of trouble. This may seem a rather broad statement, but it is a fact. I do not hesitate to recommend your car to anyone who may call on me for information."

6,000 Miles in 1908 Car

Mr. J. L. Prewitt, of Newark, N. J., says:

"Since last November I have driven a 1908 Chalmers-Detroit Forty 6,000 miles over winter roads through snow and ice, and it is running today as sweetly and as nicely as it did on the first day I received it."

Appreciates Our Continued Interest :

Mr. Otto tum Suden, Attorney, 34 Ellis Street, San Francisco, Cal., says:

"My Chalmers-Detroit Forty runs as quietly and smoothly and also as swiftly as when I first got it from the factory. The "Forty" is the third car I have owned, but it is the first one in which the manufacturers took any interest after they had obtained the purchase money. I certainly wish you much success."

Never Touched Wrench to Car

Mr. J. G. Vincent, Superintendent of Inventions, The Burroughs Adding Machine Co., Detroit, says:

"No matter what the condition of the road, I have enough power in my Chalmers-Detroit Forty to go through without any inconvenience whatever. The car is a great hill-climber and gets over the road as fast as anybody would want to ride. I have driven it 2,000 miles in a little over two months and have not touched a wrench to it. The oiling system is the most effective I have ever seen. The change gear system is so simple and effective that my wife was able to handle the car in city streets with very little instruction."

Page thirty-four

Car Works Like a Clock

Mr. George Sutton, 199 Broad Street, Red Bank, N. J., says:

"The Chalmers-Detroit Forty which was delivered to me works just like a clock. Have used it every day since getting it."

1907 Car Satisfactory, Buys 1908

Mr. Chas. E. Gregory, president of the Guarantee Electric Co., 153-159 South Clinton St., Chicago, says:

"The 1908 Chalmers Forty bought of you is all right, and its ownership affords me all the pleasure obtainable in motoring. Your 1907 car was a good one and I ran it for ten months without missing a ride. I expect to repeat this good record this year. It is a first class, honestly made car, and you are always in touch with your patrons, ready to oblige them in any way possible."

8,100 Miles-\$10 for Repairs

Mr. William Bittles, of the Wagner Pastry Company, 22 Johnson Street, Newark, N. J., says:

"Up to April 1 the speedometer on my Chalmers-Detroit Forty registered 8,100 miles. I still have the two original front tires on the car. Ten dollars will cover all the expense to which I have been put for replacing or repairing the mechanism. We have never stopped once on the road for any repairs or adjustments. The engine and transmission are as good as the day I got the car. Its consumption of gas is exceedingly small, and I think it is the best car on wheels."

Buys "Forty" on Friends' Advice-No Mistake.

Mr. J. G. Peppard, seed merchant, 1101 W. 8th St., Kansas City, Mo., says: "I am more than pleased with the operation, easy riding and the apparently little effort of my Chalmers-Detroit Forty in climbing our hills. For over a year I have been making inquiries about automobiles from friends and others who had them,

and decided that if the Chalmers-Detroit should prove what had been claimed for it, I would buy one. I believe I made no mistake in my choice and think this sale may result in orders from two or perhaps three of my friends."

Used on Mountain Roads-Never Found Wanting

Mr. P. C. Thede, Assistant Manager, Madera Sugar Pine Co., Madera, Cal., says:

"Our Chalmers-Detroit Forty car has been put through some very hard stunts, and not in a single instance has it been found wanting. The writer formerly drove a steam car four years and was very skeptical about finding a machine that would perform as well on mountain roads. Our Chalmers-Detroit Forty, however, has given results so far superior to those obtained from the steam car that it is unnecessary to make comparison.

3,000 Miles in Porto Rico: \$3 for Parts

Mr. T. P. Lippott, San Juan, Porto Rico, writes:

"My Chalmers-Detroit car has been driven over 3000 miles and up to the present time I have spent less than \$3 for repair parts."

Chalmers-Detroit Great Hill Climber

Mr. C. N. Hatch, Bridgewater, Conn., says:

"I wish to thank you for delivering to me such a powerful hill climbing car, with speed of over 50 miles an hour on a level stretch, which my Chalmers-Detroit easily does. I drove this car with four people in it, from Milford to Bridgewater taking all the grades on high gear. I have been over this road in much higher priced cars but have never seen or heard of a driver who did not have to come down from high gear. Many cars of this grade have to take the worst turns and grades on lowest gear, but my car took them very easily on high. You have all the cars in your class and many of the higher priced ones beaten for hill climbing qualities."

Page thirty-five

Repairs and Up-keep \$4.85 on 1907 Car

Mr. E. Ray Speare, Treasurer and General Manager of The Alden Speare's Sons Co., of Boston, says:

"I have been importuned by numerous agents, whose cars I have owned in years past, to get a 1908 model of their car. They couldn't deny the small up-keep cost of my Thomas-Detroit for 1907, but said the second year's use of a car always meant increased expenses for repairs. The car was running so well, however—being in constant service day and night, winter and summer—that I determined to give it another year's run. I find that from the first of January to the first of June, 1908, my expenses for repairs and up-keep have amounted to \$4.85. I drive this car every day, and average 1000 miles a month."

From the Dealer's Standpoint

Our Los Angeles dealer writes:

"In marked contrast to so many other cars, the Chalmers-Detroits are not coming into the shop for adjustment all the time. After we sell one of these to a customer, we are not afraid of having him come back for free work on his car."

Gets There and Comes Back

Mr. G. Allen Hawkins, of Putnam, Conn., says:

"Owners of other cars are forced to sit up and take notice that none of them has anything on me when it comes to getting somewhere and back."

Five Dollars Average Yearly Cost for Parts

The following quotation from a letter from our Washington dealer is significant:

"If you will refer to our parts account for the last twelve months I think that you will find that it does not exceed \$50 including accidents, etc., which are liable to happen to any car. And if you will figure this out, as we have, you will find that the Chalmers-Detroit cars we have sold are costing their owners less than \$5 per year for parts, not including tires."

"Forty" Preferred to High Priced Cars

Mr. Geo. L. Fordyce, Youngstown, Ohio, says:

"My car has attracted a great deal of attention and so far as comment goes, it is generally favored in preference to \$4000 and \$5000 roadsters that others have here in the city.

Not a Single Replacement

Our New Haven dealer writes:

"I ran my demonstrating car continuously all winter in heavy snow storms which caused delays in traffic. I found that I could invariably get around all the time with four passengers without causing the motor to develop its maximum of power, there being a reserve at all times. I have not yet had to make a single replacement on any cars which I have sold this year."

1400 Mile Tour Without a Stop for Adjustment

Mr. R. L. Holt, President of the Glencoe Mills, Burlington, N. C., writes:

"I congratulate myself on buying the Chalmers-Detroit Forty—Have just reached home after a 1400 mile tour, part of it over North Carolina roads so bad that it seemed impossible for an automobile to get over them. We did not make a single stop for repairs or adjustments on the car. One puncture was the extent of our trouble. The car came through in fine shape. I do not think there is a better automobile made."

These are only a few out of hundreds of similar letters which we have received from owners of Chalmers-Detroit (formerly Thomas-Detroit) cars. Nothing but real merit could win such strong endorsements.

Page thirty-si