

The BRUSH RUNABOUT

LICENSED UNDER SELDEN PATENT

*The perfection
of an original
idea in Motor
Car construction*



"Everyman's Car"

A REPRINT

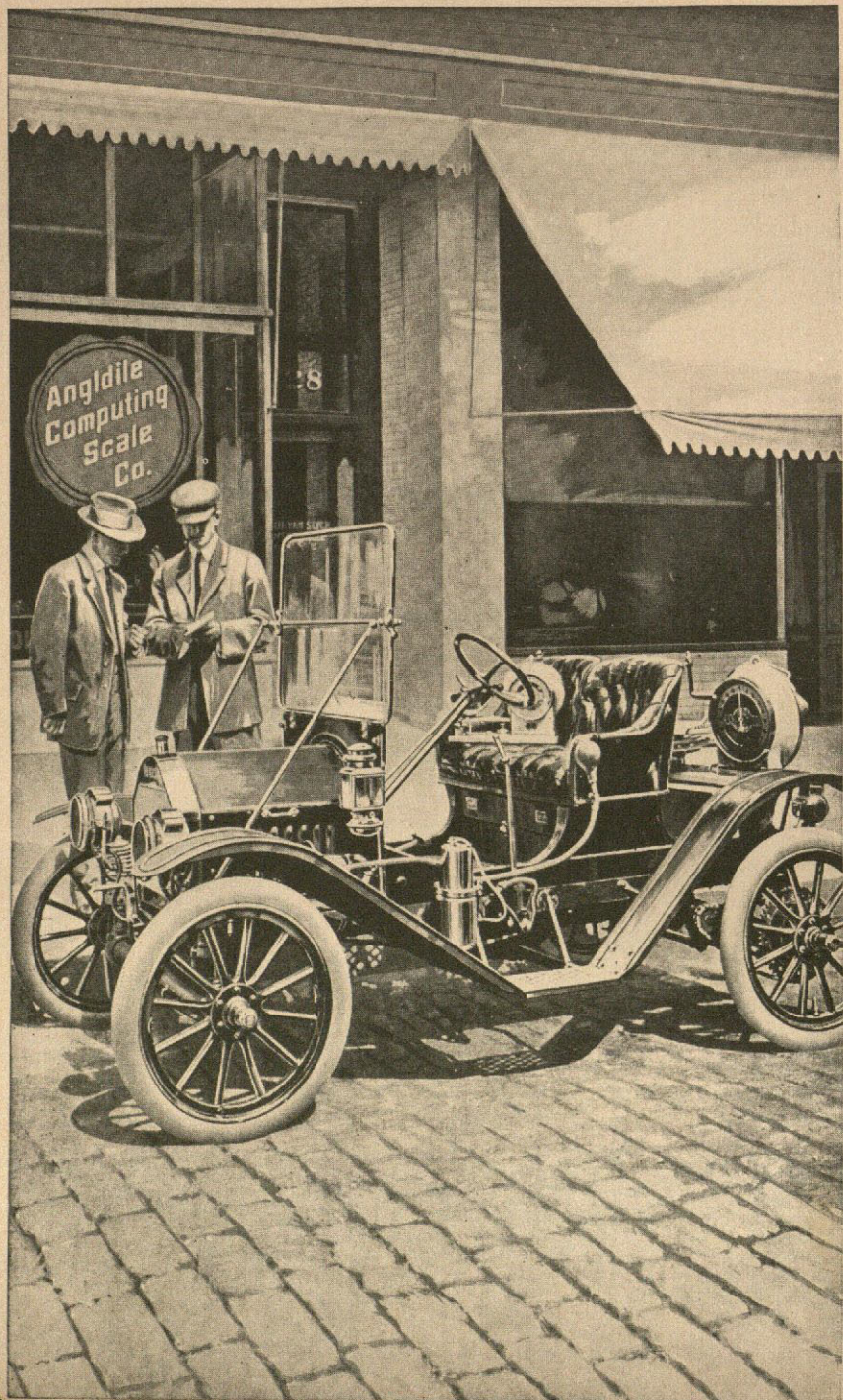
This reprint of original literature has been published in limited number for collectors of historical data on automobiles. Considerable other material on this and other early automobiles appears in FLOYD CLYMER'S HISTORICAL MOTOR SCRAPBOOK.

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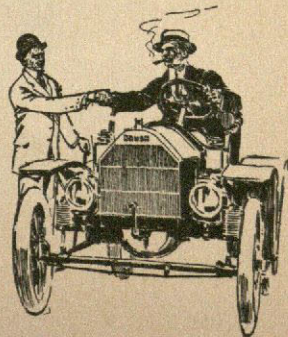
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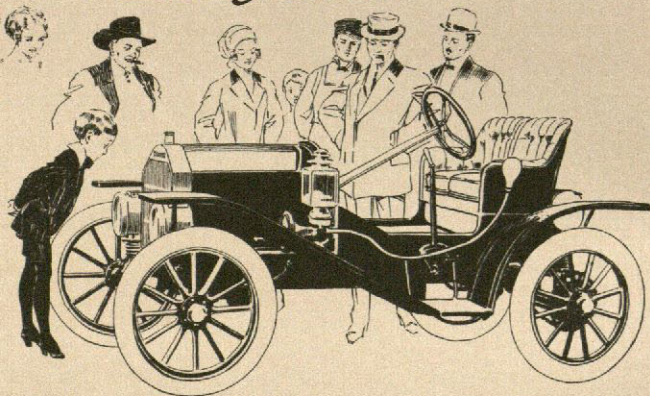
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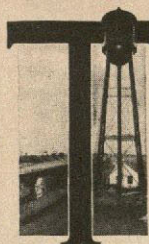
*Not an imitation
nor an adaptation
of any other Auto-
mobile - a car of
simple design built
well, not one of com-
plicated design built
cheaply*



The Brush Runabout
especially adapted to the use of
The Physician
The Merchant
The Salesman
The Farmer
The Commuter
The Contractor
The R.F.D. Carrier
The Artisan
The Young Folks
The Women Folks
Yourself
Everyman



THE BRUSH RUNABOUT - EVERYMAN'S CAR



THE Brush is the only motor car that is different from all others and still a proven success. It is not a miniature imitation of a large car, with the complications left in and the strength left out, but a runabout designed to give two people and baggage transportation at a reasonable rate of speed. The three fundamental principles which have guided its design and manufacture have been—first, that it shall be dependable in every way; second, that it shall be more economical to maintain and operate than a horse and buggy; third, that it shall have every possible comfort and convenience for driver and passenger.

When we designed and built the first Brush, we were not aiming to make a car that would sell because it was different and low in price. We foresaw the demand for a small, dependable automobile that would provide a quicker, easier and cheaper means of transportation for the thousands who are using horse-drawn vehicles and the street cars in the performance of their duties.

A few years ago, when the public was ignorant of many things about automobiles which it has now learned, we often met with the question, "Is 10 horsepower enough, or will a single cylinder give enough power, or is a single cylinder enough to climb a hill or pull through mud?"

For the benefit of those who do not yet realize that power in a motor is purely a comparative item to be considered only in relation to weight and speed, the following will be of interest.

The Brush is not a fast car, its limit of speed being a little over thirty miles an hour, excepting with special gearing. If it takes a certain power to drive a car sixty miles an hour, it takes considerably less than one-half that power to drive it thirty miles an hour.

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The Brush is the lightest proven car of any in the world. If it takes a certain power to haul 2,000 pounds a given distance at a given rate, it takes less than one-half that power to haul 1,000 pounds the same distance at the same rate.

Combine these two facts. By sacrificing high speed and eliminating unnecessary weight, we are able to use a low gearing; that is to say, the Brush motor explodes about twice as many times per mile as one cylinder in a car of the average gearing. If the Brush were geared the same as the average, we would, therefore, require a motor of twice the motor power, in order to give the same car the power we now have.

For example: Imagine that you are riding a bicycle. If you let another person ride on the mounting step behind, you at once feel the need of more strength. The same is true of the motor car. The less weight you have, the more effective is your power.

Again, think of the high-geared racing bicycle with the large front sprocket. Such a wheel goes fast on the level road, but the low-geared one with the smaller front sprocket is far better to climb a steep hill. This is exactly the case with the Brush.

If the foregoing technical and mechanical reasons are not clear, we can point to the fact that the Brush has ample power as proven by public and private performance. Turn to page 31 of this book on which is outlined some of the Brush records. Could a car lacking in power cross the continent, climb Pike's Peak, win in famous hill climbs, finish with perfect scores endurance runs in which many large cars failed to finish? Would ten thousand users continue to use it and advise their friends to buy the Brush?

If you have any doubt, call up the nearest dealer and he will show you some power stunts that will thoroughly convince you of the truth of our statements.

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To sum up, here are the reasons why the Brush has proven to be such a universal success.

The Brush is the most dependable motor car built.

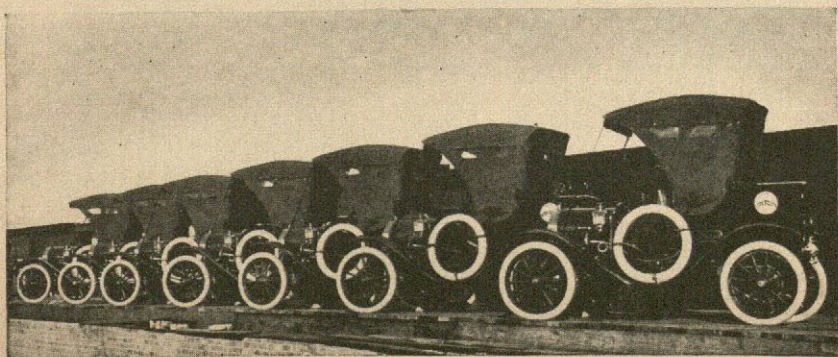
Besides being the lowest in original cost, the Brush is absolutely without rival in maintenance expense.

No car built in America can compare with the Brush in light weight, ease of control, and short turning radius. These features combined make it especially adapted to use in crowded streets and on bad roads.

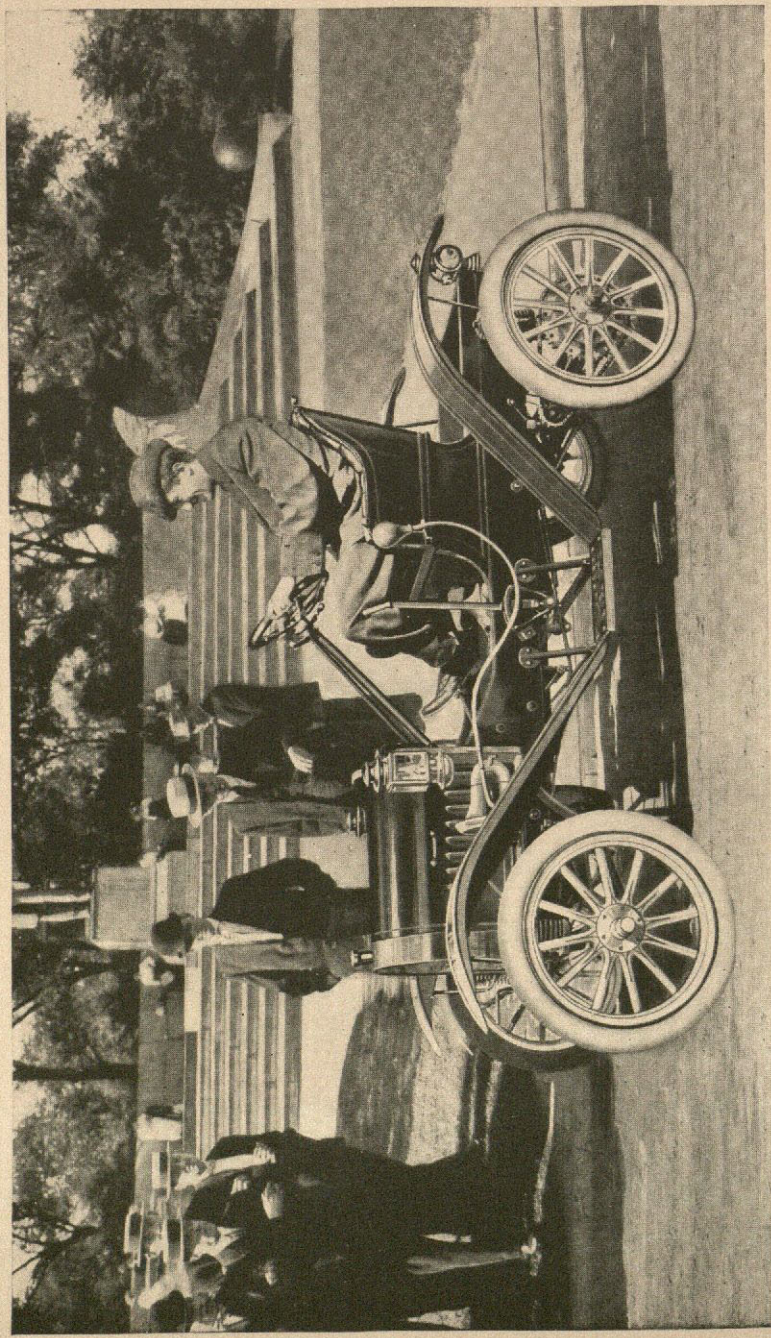
The Brush will do everything that the larger and more expensive cars will do, except go faster than about thirty miles an hour. It will do many things the big cars will not do.

In the Brush is combined as high a grade of material and workmanship as you will find in any other car sold within three or four times its price.

The Brush is the simplest car built, the least liable to trouble, the easiest to understand and learn to operate, the safest to run, the most economical to maintain, and, last but not least, the easiest-riding car in the world.



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MODEL E BRUSH RUNABOUT — \$450.00

THE BRUSH RUNABOUT - EVERYMAN'S CAR

THE MODEL "E" is our standard two-passenger car. It has an open carrying compartment in the rear which makes it suitable for city, suburban or country use.

This new Brush model is built on the same fundamental principles as former Brush cars—on the same fundamental principles that will underlie all future Brush cars—on the same fundamental principles that made the Brush EVERYMAN'S CAR.

We call it "Everyman's Car" because it is being used by men who make less than \$1,000 a year, by men whose annual income is more than \$25,000, and by companies whose annual profits are more than \$1,000,000. America's merchants, physicians, contractors, corporations, salesmen, farmers, R. F. D. carriers, suburbanites, young folks—in fact, people in all walks of life are using the Brush for both business and pleasure.

There are refinements and improvements in the Model E which will increase the efficiency of the car and make it more deserving than ever of the great reputation the Brush enjoys among 10,000 owners in the United States and many foreign countries.

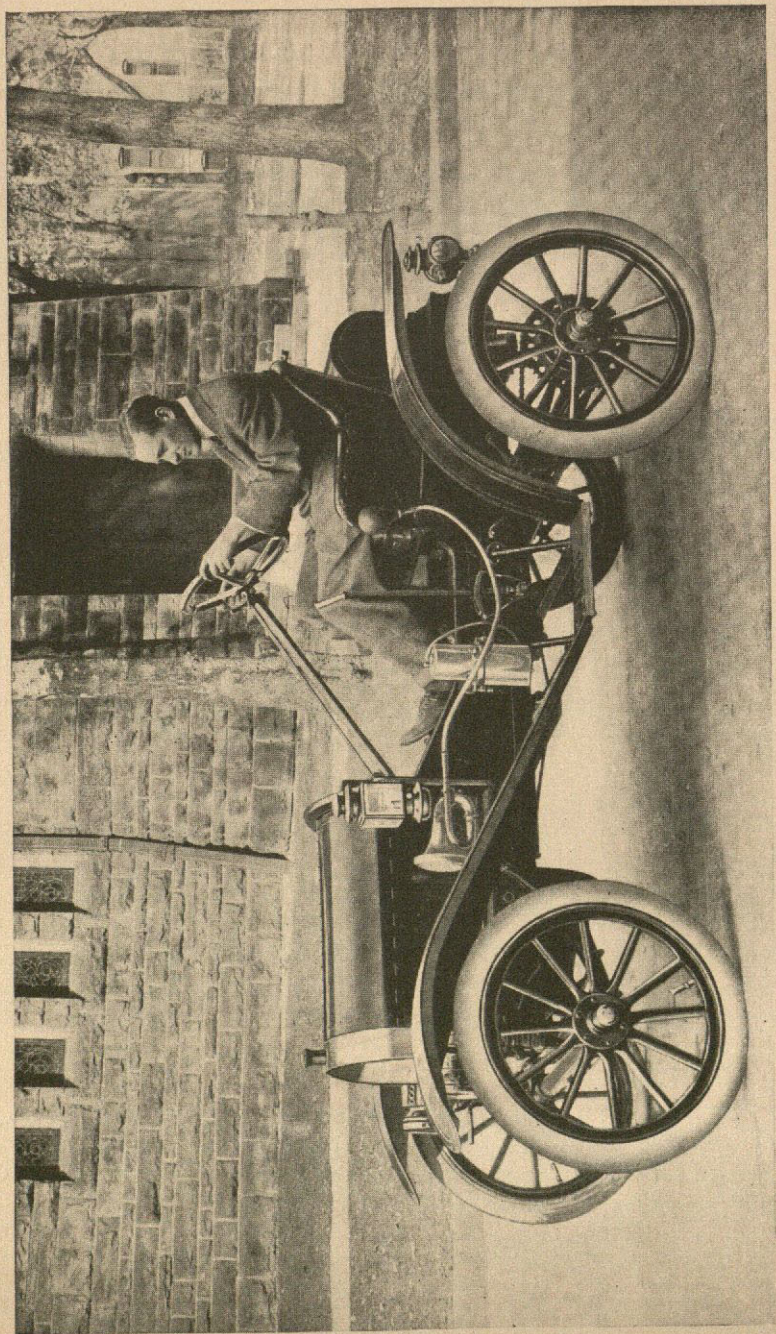
These improvements are few and not one of them is radical in any way. They are simply the result of a careful study of the car and of the user's requirements—another step toward perfection.

For example, several users of our cars have thrown the wheels of their cars out of true by accidents, such as running into a curb. The tie-rod on Brush cars previous to Model E was not adjustable, and an accident like the one mentioned, made it necessary for the owner to take his car to a repair shop to have the rod straightened. On the new model, we have provided an adjustable tie-rod which makes it a very simple matter for anyone to align the wheels by the turn of an adjusting nut.

There are also a few minor changes in the motor of the Model E that will make the power plant even more efficient than that of the Model D, which has been proven beyond doubt, the practicability of the balanced single-cylinder gas engine for use in an automobile.

All the refinements in this new model are in the little things, and in the present highly developed standard of the automobile, it is the little things that prove a car's value.

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MODEL E-20 — BRUSH ROADSTER — \$485.00 — EQUIPMENT SAME AS STANDARD RUNABOUT

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The development in motor-car construction in the United States has been so rapid during the past few years, that it is now only a question of perfecting a car which has been proven correct in general design.

Less than five years ago, the average owner of an automobile was never sure when he started out, whether his machine would run one mile or a hundred. So many of the little things, all vital to the successful operation of the car, were not quite right. At that time, automobiles were thought of only as pleasure vehicles—and most of them were used only in that capacity. Within a very few years all this has been changed. A majority of the thousands of motor cars built in the United States are being used for business as well as pleasure, and many of them for business alone.

Dependability has become one of the absolute essentials of a car. Of course, an automobile used only for pleasure should be dependable, but this quality is not so necessary as it is in the car used by the business or professional man.

Let us take, for example, the physician. Dependability is the first thing he must consider. A car might be a fine piece of mechanism, with the exception of one or two apparently minor points. If these features are vital to the successful operation of the car, it is of no value to the physician.

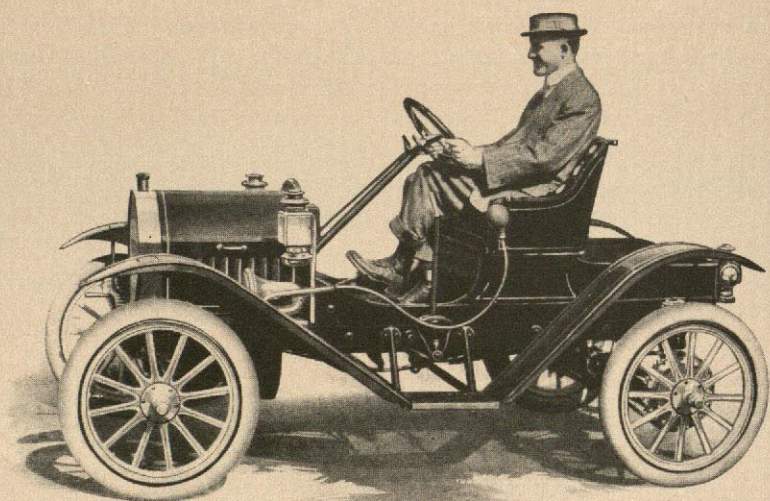
The Brush is especially adapted to the use of the medical profession, because of its proven dependability. This quality, combined with its wonderful simplicity and almost unbelievable economy, has had much to do with its popularity among all classes of people in all parts of the country.

When we brought out our Model D-26 roadster in the Fall of 1909, there was an immediate demand for more cars of this type than we planned to build in the entire 1910 season.

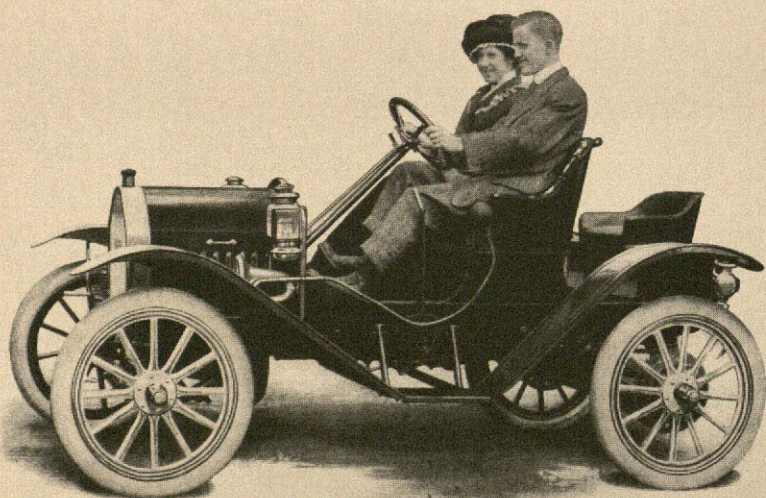
This model appealed to many because of its low, rakish lines, extremely comfortable driving position and reserve gasoline tank. No car at any price offers more comfort for both driver and passenger.

The Model E-26 illustrated on the opposite page is the successor to the Model D-26. This later model embodies all the refinements of our E series.

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BRUSH RUNABOUT — MODEL E-24 — \$465.00



BRUSH RUNABOUT — MODEL E-28 — \$470.00

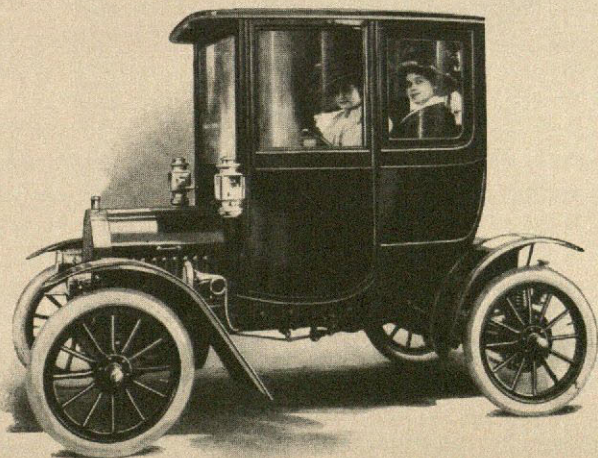
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Model E-24, shown at the top of the opposite page, is especially adapted to the use of those who carry material which must be protected from rain, snow and dirt. This type is built with extra large carrying compartment, which is securely covered with a removable steel deck. With this exception it is exactly like our standard Model E Runabout.

Model E-28, illustrated at the bottom of the opposite page, is built for those who want capacity for an extra passenger, extra inner tubes, tools or other paraphernalia. The rumble seat is mounted on a roomy compartment, which is fitted with a substantial lock.

The Model E Coupe, shown on this page, meets the demands of many professional men. Closed cars, selling at a moderate price, have been in great demand, but many of those offered to the public have not been a success, because of poorly constructed bodies, also because of the manner in which the bodies have been mounted on the chassis.

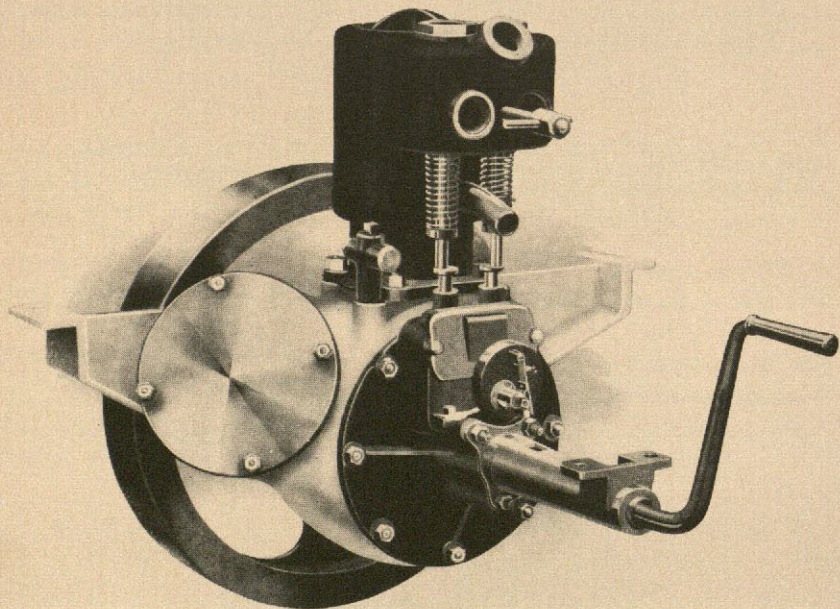
The body on the Brush Coupe is as fine as you will find on many high-priced limousines and landaulets. Special care is taken in the mounting as well as in the finishing. The outside is finished like a fine piano, and the inside is trimmed in a fine quality of broadcloth. The price of this classy inside-driven coupe is \$850.



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GENERAL CONSTRUCTION

ASIDE from the original and novel design, the simplicity of construction and the small number of parts used, the balanced motor has undoubtedly been one of the greatest factors in the phenomenal success of the Brush—has made it possible for the Brush to succeed where others have failed—has made the Brush the most talked-of car in the many public trials in which it has made such a remarkable record.



MOTOR

The Brush Motor is of the single-cylinder type, with auxiliary balancing device, which is fully described and illustrated on page 16. The bore of the cylinder is 4 inches and the stroke 5 inches.

The first automobiles built had single-cylinder motors and many of them were famous for their reliability and enduring qualities. As the average size of cars became larger, the additional power required was not feasible with a single cylinder, so that four-cylinder motors became the standard, and for large cars will probably always be the standard.

There were two positive defects in the old style of single-cylinder motors; the first was its vibration and lunging motion, and the second its inaccessibility and filthiness, due to its usual location under the

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body, where it not only collected all of the dirt, but was almost impossible to get at without practically tearing the car to pieces.

On the other hand, a four-cylinder motor in a small car designed to carry but two people is almost an absurdity, unless you regard the car purely in the light of a plaything.

Leaving for a moment the question of inaccessibility and vibration, the single-cylinder is ideal for the small car from every standpoint. It is a fact well known to gas-engine experts that a single cylinder will produce more power with less gasoline and oil, and with less mechanical weight, than a four-cylinder of equal displacement or rated power. A single cylinder is thus ideal from the standpoint of operating expense.

In a single-cylinder motor there are but one-fourth as many parts as in a four-cylinder, with a corresponding reduction in the chances for trouble. The four-cylinder motor of small size must be made of pieces so small, light and fragile that they are too delicate for a heavy strain, besides multiplying the labor cost of manufacture. It costs practically as much to machine a small connecting-rod, for example, as it does a larger one. In order, therefore, to reduce the cost on a four-cylinder motor, the tendency is to skimp the quality of the work.

A single cylinder being lighter in weight than multiple cylinders of the same power, it means less total weight with a consequent reduction in tire expense.

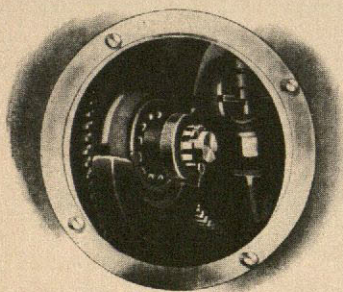
As for reliability, every automobile man admits that the single cylinder is far ahead of the multiple cylinder. In fact, everyone familiar with any kind of machinery will realize at once that the fewer parts there are in a working device, the less is its liability to derangement.

Salesmen who are at a loss for an argument sometimes advance the absurd claim that a multiple-cylinder motor is better, on the ground that if one cylinder stops working you still have the others to carry you home. This is, of course, ridiculous. For instance, if you have a two-horse team hauling a wagon, and one horse dies on the road, you might just as well consider the feasibility of using the remaining horse to haul home, not only your wagon and load, but the dead horse as well. If you can haul the load with one horse, you would not think of using two.

Coming down to the question of accessibility and vibration: in the Brush the motor is vertical, as every motor should be, and is placed in the front of the car, under the hood. Every connection is from above, and by merely removing the hood, you can easily get at every part of the motor. This feature is one of the most valuable ones on the Brush car. By removing a plate held by four nuts, you get into the crank-case, either for inspection or for adjusting the connecting-rod. This

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adjustment is necessary from time to time on every motor of every kind, but on most cars it is so difficult to get at that it will not be done when it should. The cylinder head unscrews, as do also the caps over the valves. The commutator is located directly in front and can be removed bodily in a few seconds. The valve stems are open to view and the timing mechanism is exposed by removing a lid held by two screws. The push-rods or the timing may be adjusted in this way in a few minutes.



Perhaps the most remarkable mechanical feature of the Brush is its auxiliary counter-balancing device, illustrated herewith. The vibration from a single-cylinder motor is due to two causes; the stopping and starting of the piston weight, and the side-thrust against the cylinder-wall.

The ordinary balancing of a single-cylinder motor consists of adding a counter-balance on the crank-shaft, which overcomes one-half of the up-and-down vibration, but in so doing puts in an equal amount of lateral vibration; in other words, does not take any out but merely splits it up.

In the Brush an additional rotary balance is provided, which is geared to the crank-shaft and takes out the remaining half of the up-and-down vibration. This extra balance rotates in an opposite direction from the crank-shaft balance. As a consequence, the two balance weights move up and down together, but as their sidewise motion is opposite, they neutralize each other as to side vibration. In combination they thus take out all of the vibration, due to the starting and stopping of the piston weight.

These balance weights are not placed at absolute right angles, and they, therefore, set up between themselves a torque or side thrust, which is at right angles to the piston stroke and thus neutralizes it.

In a four-cylinder motor, it is only the reciprocating vibration which is neutralized, while the torque vibration is not provided for in any way.

The result of this balancing system is to make the Brush motor run even more smoothly than a four-cylinder motor. It sweeps away all of your preconceived notions as to single-cylinder vibration and gives you, at the low expense of one cylinder, all of the sweet running qualities of the four-cylinder, which is the great advantage the four-cylinder has over the old style single-cylinder.

The parts of the Brush motor are strong. The crank-shaft is extra heavy. The bearings are unusually large; in fact, larger than in most four-cylinder cars of 50 per cent more weight and power.

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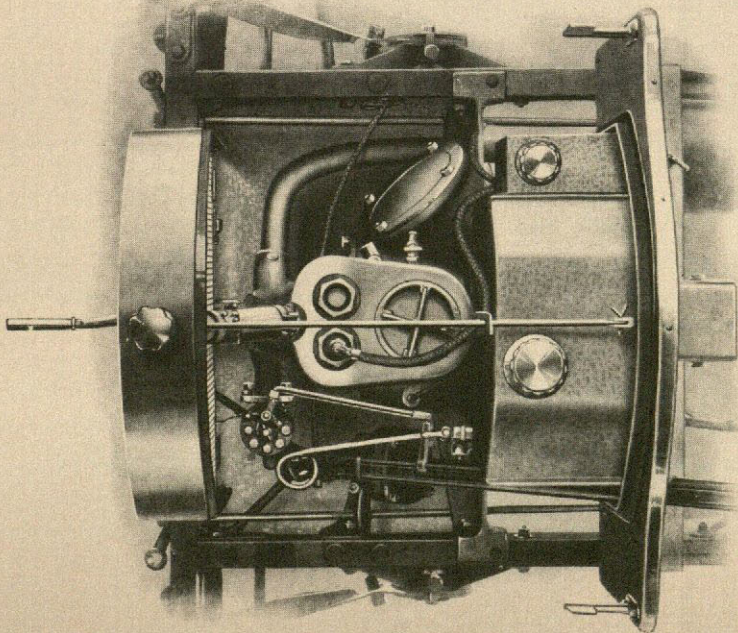
The castings are made by an allied concern, where we have control of the mixtures and processes, insuring the highest grade of material, which is not ordinarily obtained from the average foundry not familiar with the peculiar requirements of cylinder and piston castings.

The crank-case is aluminum for the sake of saving weight, whereas most cars selling at less than \$1,000 use an iron crank-case.

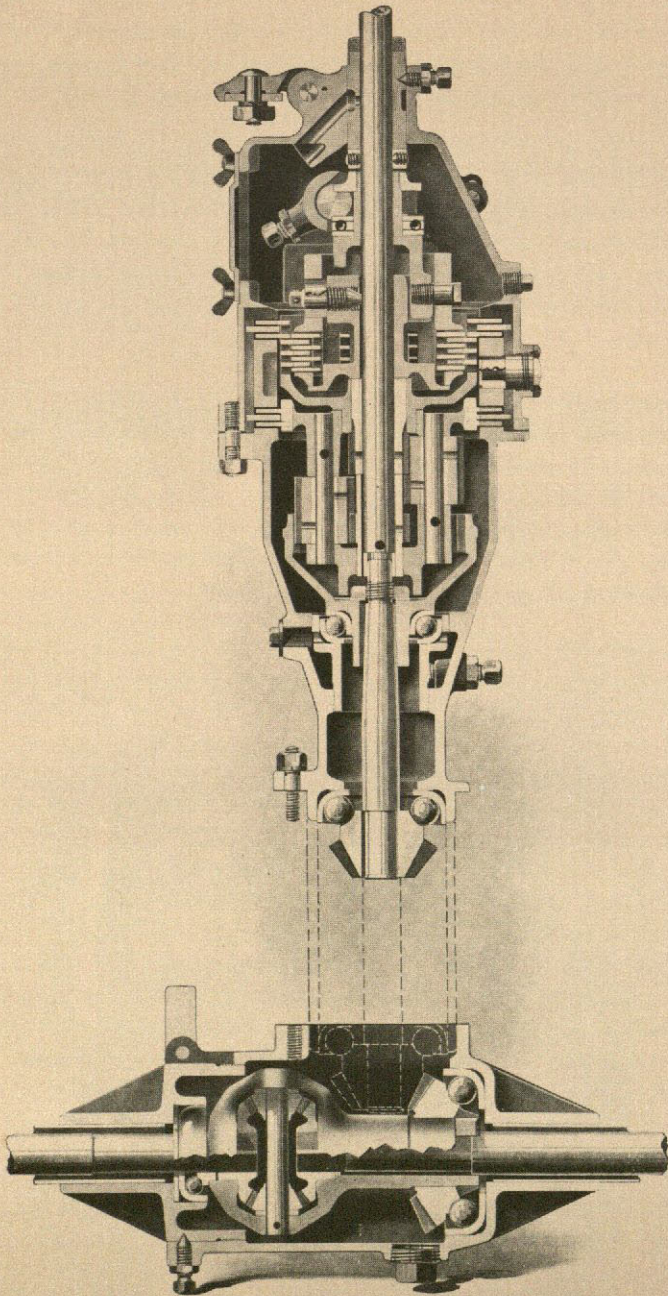
The lubrication is by gravity feed, the most positive system known, the oil dripping into grooves which conduct it to the main bearings and the timing mechanism, from which it overflows into the case. It is then fed to the connecting-rod and piston by the reliable splash system.

COOLING

The motor is cooled by the Briscoe Honeycomb Radiator on the Thermo-Syphon system. This is the only scientific cooling system, as it operates in proportion to the heat of the motor instead of the speed. Furthermore, it eliminates the pump, which is so frequently a source of trouble that some designers, in order to do away with it, have attempted air cooling which, generally speaking, is a failure, and introduces more complications than it eliminates.



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Transmission and Differential

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TRANSMISSION

The transmission and clutches are contained in a stationary oil-tight case. They require no adjustment, but the entire transmission mechanism, with case and shaft, can be removed if necessary, as a single unit.

The transmission is the well-known Brush gear-set used in several leading cars and generally acknowledged to be the most durable and satisfactory two-speed transmission in use. Combined with it are multiple-discs clutches with a simple self-setting arrangement eliminating the spring-and-thrust bearing generally used in clutches. The action of the clutches is sweet and soft, yet positive, and the gears are noiseless. A single lever of selective action, having two positions on the inside and one on the outside, controls the two speeds forward, the reverse and the emergency brake. The foot pedal releases the clutch before setting the brake, a feature making for convenience and safety not found in any other low-priced car.

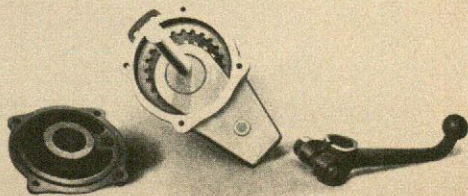
A great deal of study has been given to the clutch action in the Model E car. This study has resulted in the working out of just the right quality of material, form of surface, and strength of pressure for the clutches to have the best possible action and the longest possible life.

STEERING-GEAR

The steering-gear is slow, powerful and irreversible when driving straight ahead or nearly so. This means that when a bump or rut is unexpectedly encountered, it will not throw the wheel out of the driver's hand. At the same time the gear accelerates as the wheel turns, so that three-fourths of a revolution of the steering-wheel throws the front wheels hard over. The gear is oil-tight and dust-tight and almost free from wear, which produces lost motion or back-lash.

The sockets of the cross-rod from steering-gear arm to the steering-spindle are so constructed that any wear that takes place in them producing back-lash can be taken up.

As the life of those in the car may almost be said to depend upon the steering-gear, this feature has had the greatest of care and the gear and every part of it,



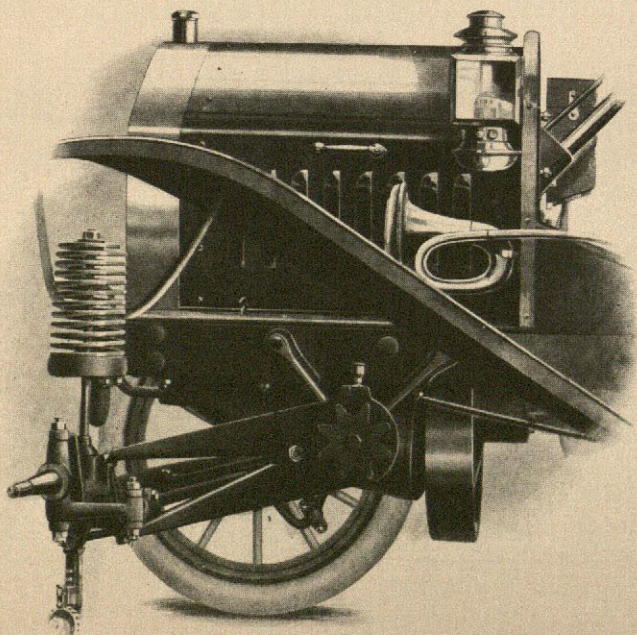
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from the steering-wheel down to the steering-knuckles, has been made stronger than either theory or practice shows to be necessary, in order to avoid any possibility of danger from this source.

RUNNING-GEAR

The axles are of selected maple, air-dried, then kiln-dried and oil-treated before painting. To their ends are attached malleable skeins into which the spindles are forced. The spindles turn on ball bearings of unusual size and of an accuracy limited by half-a-thousandth of an inch.

Wood axles have shown themselves to be one of the best features on the car, as they are stronger, lighter, and more durable than steel for the same purpose. Axle trouble in automobiles is one of the most frequent forms of complaint and one of the most expensive when it comes. It is due to crystallization, which is either a gradual weakening of the steel proper or a concealed progressive fracture caused by constant shocks. Constant pounding, no matter how light, will in time crystallize any piece of steel, no matter how strong. Wood is not subject to this weakening, known by steel experts as crystallization or fatigue. It is as strong at the end of ten years as it was at the beginning, whereas steel in the same place under constant shock gradually becomes weaker.



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Wood untreated will rot, check and shrink, but the oil treatment we give it effectually seals the wood for all time, so that rot or changing of shape is impossible.

Wood axles have always been standard on horse-drawn vehicles but are novel for automobiles. Their success with the Brush over four years' use and on ten thousand cars, in all parts of the world, gives this construction a definite place of proved value. Wood frames, on the other hand, are not an unusual automobile construction. The Brush frame receives the usual oil treatment and is lighter, stronger, more elastic and flexible than a steel frame for this type of car. The corners are joined by steel-tongued angle plates mortised into the wood, and the side members of the frame are trussed.

The coil springs have proved up marvelously. They give a wide spring base to take up vibration and do not interfere with the short turning-radius of the wheels.

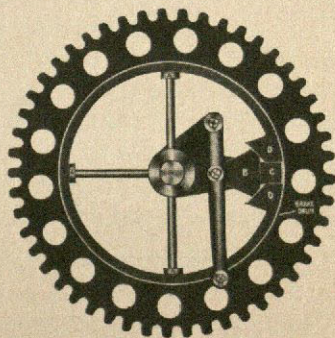
The frame hangs from the bottom of the springs, so that when the frame goes down, the springs open and on the rebound simply close together. It is thus impossible to break a spring. Breakage through road shock is of annoying frequency with the springs used on many other cars, but never occurs on the Brush.

The radius rod necessarily used in connection with each spring has a friction-joint which acts as a shock absorber.

BRAKE

The brake is internal expanding, in the drums of the large sprockets, equally efficient backward or forward, with unusually large surface and so constructed that only the initial pressure is required through the foot-pedal, the turning of the wheels furnishing the remainder of the power to set the brakes. The brake action is positive yet smooth.

It is a sad commentary on the length to which some of the designers have gone in endeavoring to offer what looks like a high-priced car at a low price, to note that on some of these imitation cars they have so sacrificed on brakes, that these very necessary features are of almost no use. Cars of double the horsepower and of much higher speed than the Brush, are actually being sold with a braking surface very much smaller than that on the



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Brush; so small in fact, that they will hardly stop the car on the level ground, to say nothing of a hill. This craze for making a car look like a remarkable value by adding in a shoddy, slipshod way all of the frills that go with a higher-priced car at the sacrifice of the important parts, is little less than a crime when it sacrifices the brakes, upon which the life of the passengers in the car may depend.

DRIVE

Most automobiles have what is called a live rear-axle. This means that the rear axle, in addition to carrying the weight of the car, also carries the equalizing mechanism, and must therefore be strongly bridged to prevent breaking down in the middle. This applies both to shaft-drive and to single-chain cars.

The Brush construction carries the equalizing gear on a jack-shaft, which is supported by the frame and carries no weight. The ends of the jack-shafts carry sprockets which, through two side-chains, drive the rear wheels. This construction is not only lighter, but is far stronger and less liable to derangement than the live rear axle.

The single-chain style of drive has been justly condemned both by engineers and public, as antiquated, dirty and troublesome. The shaft-drive has none of these objections, but it is heavy, expensive, troublesome and inefficient as compared with the chains.

The double side-chain drive, as on the Brush Runabout has all of the efficiency and lightness of the chain drive in general plus the cleanliness, safety of a shaft drive, and furthermore, possesses none of the faults of either the shaft or the single-chain type. It is used on many high-priced, high-powered cars.

Chain adjustment is by pressure-bolts on the rear skein sleeves and the operation takes but a few minutes.

CONTROL

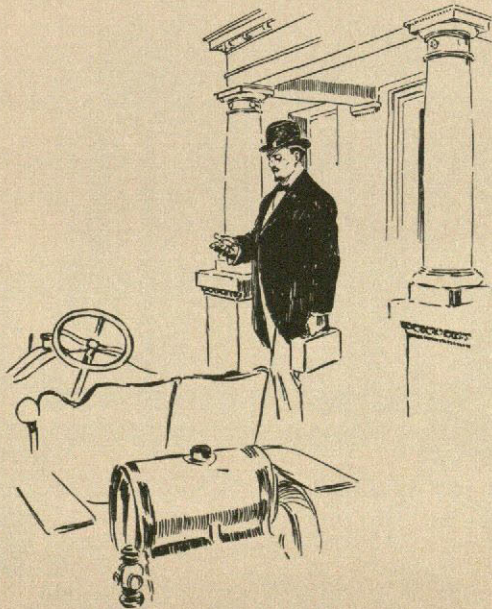
Steering-wheel is on the left-hand side of the car. The chief reason for this is that a car should stop on the right side of the street, and having the wheel on the left, the driver and passenger can step to the sidewalk without having to climb over the wheel and lever. It is noticeable that with the wheel on the right, those in the front seat of an automobile invariably step into the street and walk around the car rather than climb over the wheel and levers.

For all other exigencies of driving, such as passing a vehicle moving in the opposite direction or overtaking a vehicle moving in the same direction, the left side is more convenient.

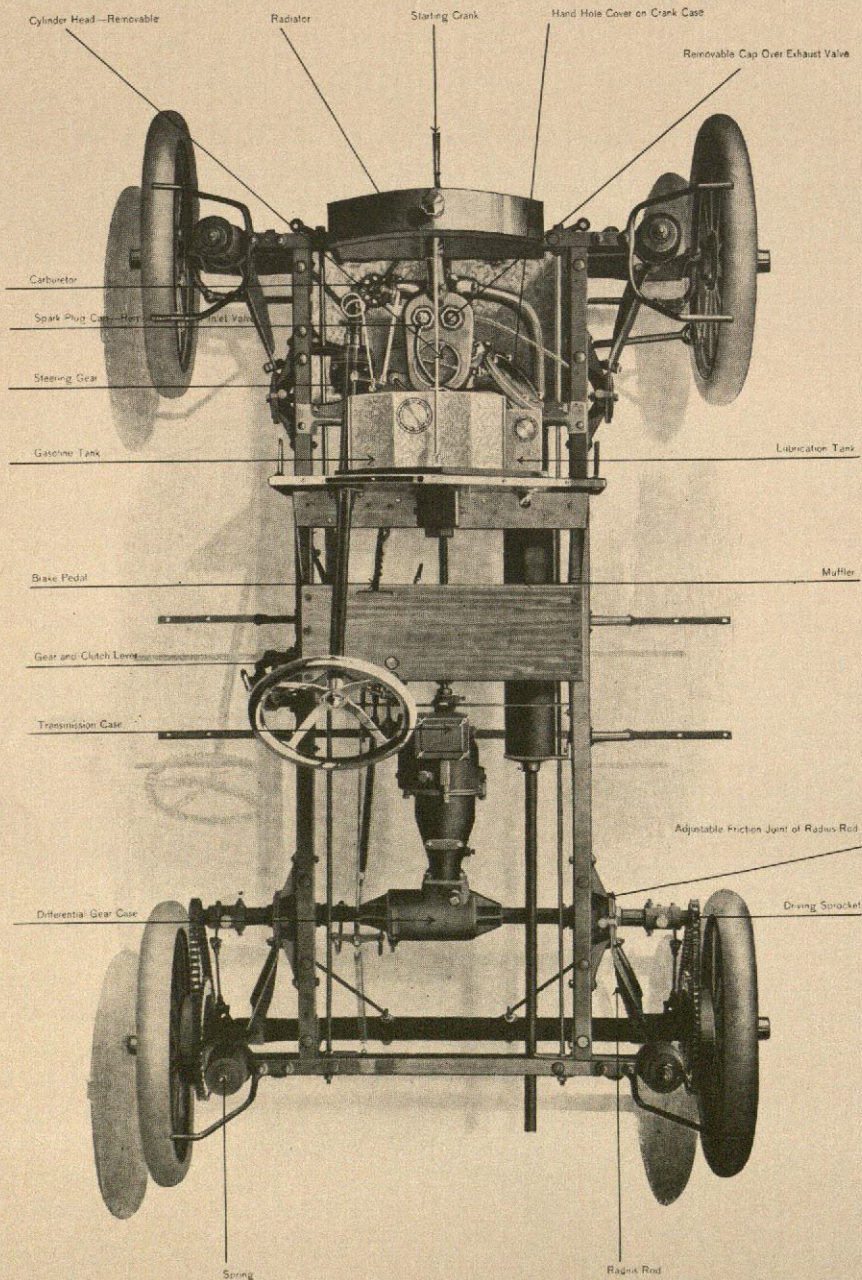
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This feature is being extensively imitated by other cars, for everyone admits it to be the proper thing, and in a few more years we do not believe there will be many American cars with the steering wheel on the right.

The brake pedal interconnects with the high-speed clutch so that both cannot be engaged at the same time. Pushing the pedal partly forward disengages the clutch before the brake is engaged, so that in driving through crowded traffic, the clutch can be slipped with the foot. In this case when the brake pedal is released, the clutch automatically takes hold again. Too much cannot be said in favor of this feature, in cases where the car is used by the business or professional man.



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The Brush Chassis

THE BRUSH RUNABOUT - EVERYMAN'S CAR

SPECIFICATIONS

MOTOR	Ten horsepower, balanced single cylinder, four-cycle, vertical, 4 x 5 inches, water-cooled; located in front, under hood; every part instantly accessible; three-point suspension.
TRANSMISSION	Internal gear type, perfectly quiet; multiple disc clutches for high, low and reverse; entirely enclosed and absolutely oil-tight; driven through universal coupling shaft.
COOLING	Mercedes type radiator, on Briscoe thermo-syphon system, eliminating pump.
DRIVE	Bevel gears 15-tooth and 24-tooth to countershaft, double side chains to rear wheels; 16-tooth sprockets on jackshaft, 50-tooth on rear hubs; bevel gear set and differential are located and run on four very ample ball bearings.
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 FRAME	Oil-treated, selected wood, oak, hickory and maple; wonderful for strength, durability, lightness and flexibility.
SPRINGS	Spiral, 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; larger than on most cars of twice its weight.
WHEELS	Artillery, with 28- x 3-inch pneumatic tires, except Model E-26, which is equipped with 30- x 3-inch pneumatic tires.
WHEEL BASE	80 inches.
TREAD	56 inches; for Southern trade 60 inches.
EQUIPMENT	Tools, tire kit, three oil lamps and horn.
COLOR	Models E, E-24, and E-28, dark green except wheels, which are light gray. Model E-26 is finished in solid royal blue. The coupe is black with royal blue panels.
SPEED	Thirty miles an hour with standard gearing.

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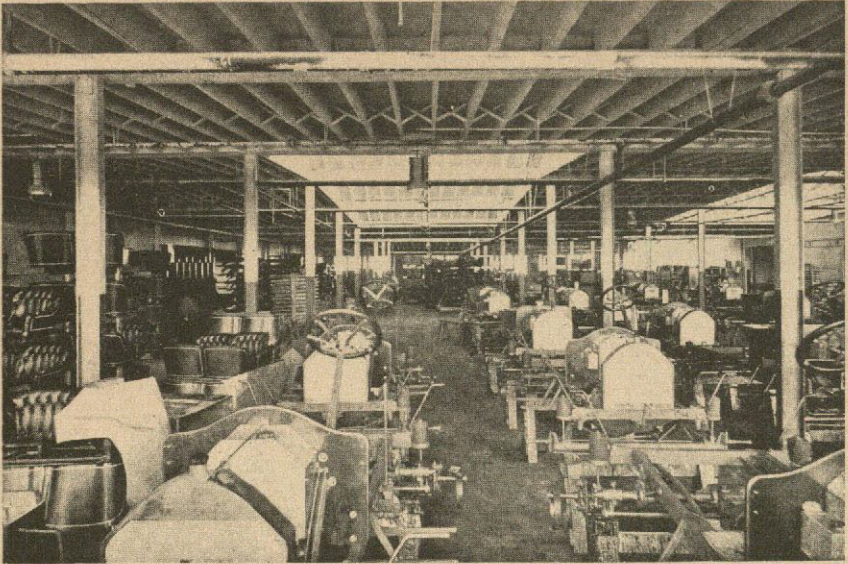
HOW THE BRUSH IS BUILT

THERE are two kinds of automobiles; one known as the "assembled car," where the motor is bought from one or two places, axles from others, transmissions from others, other parts wherever they can be obtained, and all finally put together in the automobile factory, often with file and hammer when they do not quite fit. The other kind is manufactured in one shop or set of shops under one management. The Brush is the latter kind.

Aside from the fact that selling it at the price we cannot afford parts makers' profits, there is the even greater consideration of having every part subject to our own inspection and up to the highest standard of quality. We buy tires, wheels, electrical equipment and some few minor pieces, but otherwise the Brush Runabout is built from the ground up in our own factory, which has a capacity of one hundred and fifty cars per day. The main building is over 900 feet long, grouped around which are the various other buildings, housing departments that are not suitable for the main building, such as foundry, pattern shop, testing room, and other minor buildings.

The raw material is received in carloads at the front end where it is subjected to its first inspection. Passing through the stock-room it then enters the machine shop, where it is again inspected, and goes on through the various machines until every individual operation is completed, after which it passes through the machine shop inspection room, where every individual piece is checked and measured with the finest of instruments. From the finished stock-room, it then goes to various sub-assemblies and testing rooms. Finally the complete chassis is erected, which is then tested, first on rollers and afterwards by an

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outside road test. It is then returned to the wash-room, where it is cleansed of all dirt and grease with hot water and steam. After drying, it goes into the chassis paint shop.

Meanwhile the bodies have been painted and trimmed in another place and in the finishing-room they come together with the stream of chassis, and here the complete car with body and equipment is prepared for shipment.

It is then given a short final running test on our cinder track, and after being drained is rolled on the loading platforms, 500 feet long, at the side of which are lined up the freight cars which will start them on their way to all parts of the civilized globe.

Our machine shop, which is the heart of an automobile factory, comprises a vast quantity of the most modern machine tools, so far ahead of old-fashioned machinery that those familiar with the ordinary machine shop are sometimes at a loss to understand the uses of this wonderful machinery.

Among them are automatic screw machines, which it takes a whole day or more to set up for the first piece, after which they work month by month, making a great variety of different small parts automatically, without attention or operator, beyond reloading them day by day with material.

There are huge turret lathes costing five times as much as an ordinary lathe and doing ten times the work; boring machines which do several operations at the same time entirely or partially automatic; drill presses which drill and ream sixteen holes as fast as the ordinary machine does one and far more accurately; grinding machines which will cut the tenth part of a thousandth of an inch off a piece of metal; huge presses which pull and tease heavy sheet metal into the form of

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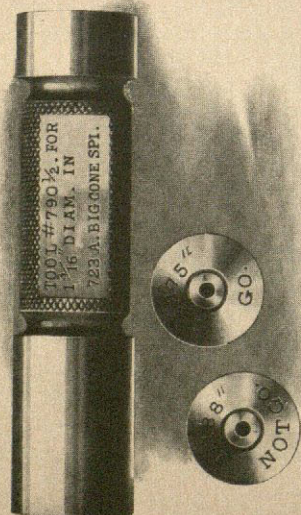
parts that would ordinarily be made out of the heavier but weaker castings; gear-cutting machines which by marvelous combinations of different motions form the teeth on a gear to exactly the contour that it naturally assumes when rolling together with its mate.

Every operator is furnished with a blue print, which gives, not an absolute size, as there is no such thing as an absolute size in fine mechanical work, but instead gives the high and low limit within which the work must come. The operator also has a gauge or test-tool with two ends, one to try the high limit and the other the low limit, to insure the dimensions being within the two.

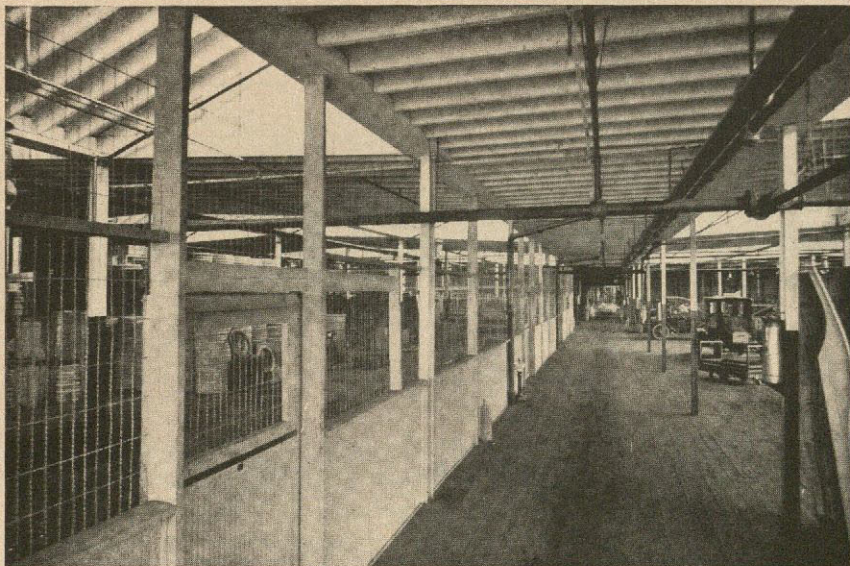
Before the work leaves the machine it is again tested with another gauge by the traveling shop inspector, after which it goes to the inspection-room, where it once more is checked with a third set of gauges.

There is one man with assistants who spend their whole time in checking up the gauges throughout the factory and ordering them replaced when they show signs of wear.

There is no car built, nor is it possible to build a car with the present machinery available, with any finer or more accurate dimensions than those used on the Brush. There are, for example, many places where the dimensions may not be more than half a thousandth of an inch



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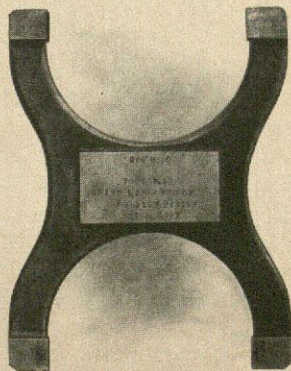


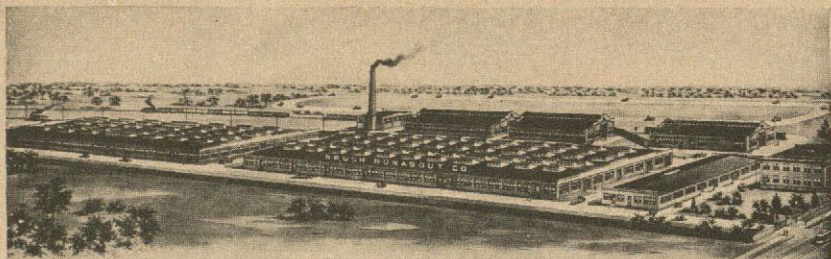
larger or smaller than a certain fixed size, and there are some places where a quarter of a thousandth is the limit of toleration.

One of the most remarkable developments of the past ten years, or commercially speaking of the past five years, has been the progress in the art of heat-treating steel. This is a very complicated and delicate process, which when bungled, may spoil the material, but when properly done will add, at a slight cost, from 25 per cent to 100 per cent to the value of a piece of steel, thus enabling the designer to obtain greater strength and less weight than ever before. This heat-treating system is practiced to the limit in our shops. Our equipment of furnaces, pyrometers and various other necessary tools is complete and is in charge of men who have made this particular class of work their life study.

There are two results, apparently contradictory, obtained by insisting on this extreme accuracy in machine work. One result is a well-running car which will not wear out rapidly, and the other, peculiarly enough, is economy in manufacture. In making 10,000 pieces of the same design, it is cheaper to make them all absolutely alike, and it is then far cheaper to assemble the car out of such pieces than to use slip-shod work and have to put the car together with file and sledge hammer.

This accuracy is furthermore a guarantee to the user that duplicate parts, if needed, will fit without trouble.





BRUSH QUALITY THE RESULT OF EXPERIENCE

THE public is strangely ignorant of the fact, well known to all automobile men, that the first season of any car of entirely new design is usually a season of experiment and adjustments, the brunt of which is borne by the unfortunate user. At the end of the season the manufacturer has collected information as to the little weaknesses (or sometimes great weaknesses) in his first design and proceeds to correct them in his next model.

As no human creation is perfect, the process of improvement is never finished, but the longer it is conducted the nearer perfect the car becomes.

Since 1906, when the Brush Runabout Company was started, we have stuck to the same general design, making corrections and improvements from time to time, as our own testing and experience of our users indicated their desirability.

In buying a Model E car, you have, therefore, behind you the accumulated experience of four years of manufacture, starting on a comparatively small scale and constantly growing greater and the lessons learned by us from the experiences of ten thousand users of Brush cars in every part of the world. Troubles, breakages and faults are sure to be reported to us. They are collected by our Service Department and studied by a corps of experts in our designing and experimental departments.

We have placed the Brush side by side with the biggest and most powerful cars built in gruelling contests, such as the Glidden Tour, Munsey Tour, and various others, not only for the purpose of showing the public what they are capable of, but just as much for the purpose of learning what they will and will not stand, and profiting by such results.

If any automobile can claim perfection, the Brush certainly can and it probably has a more remarkable record for achievement than any car built in America.

THE BRUSH RUNABOUT - EVERYMAN'S CAR



SOME PUBLIC ACHIEVEMENTS

In 1908 one of our early models crossed the continent. The same car climbed Pike's Peak in eight hours, every foot of the way under its own power. The Brush won the Algonquin Hill Climb in its class the same year.

In 1909 a Brush stock car successfully negotiated the Glidden Tour of 2,636 miles in fifteen days. Many of the large cars, for which this tour was designed, failed to finish.

In the little Glidden Tour at Minneapolis the following month, the Brush won the St. Paul Dispatch Trophy in open competition with more than twenty cars ranging in price from \$750 to \$5,000. This route was almost 600 miles, over sandy prairie trails.

The Brush also made a record of 40.6 miles on one gallon of gasoline in the Economy Fuel Contest run under the auspices of the New York Automobile Dealers' Association the same year.

In 1910, the "Abernathy kids," Louis and Temple, nine and six years old respectively, drove a Brush Runabout from New York City to their home in Oklahoma City. You probably remember these youngsters, who rode bronchos from their father's ranch in Oklahoma to New York to meet Colonel Roosevelt on his return from Africa.

The father of the boys chose a Brush for the trip, because it was the only car he could find which was simple enough for the youngsters to understand and handle.

No race, no tour, no endurance run ever meant so much to the prospective buyer of a motor-car, as the feat of these boys driving the Brush more than 2,500 miles.

In the Munsey Historic Tour, the principal endurance contest of the East in 1910, the Brush finished with a perfect score and won the trophy in its class. The route covered 1,550 miles over all kinds of roads from the boulevards of New Jersey to the rough mountain roads of Pennsylvania.

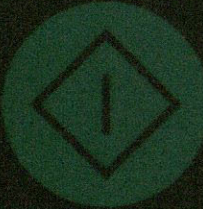
The same year, the Brush again won the Algonquin Hill Climb in its class.

To those who know the capabilities of the Brush, there is nothing unusual about its remarkable performances. The Brush has been performing seemingly impossible feats ever since it has been on the market. These public achievements are all of vital importance to the prospective motor-car buyer. They conclusively demonstrate the features which prove the value of a motor-car—simplicity, endurance, economy, dependability.

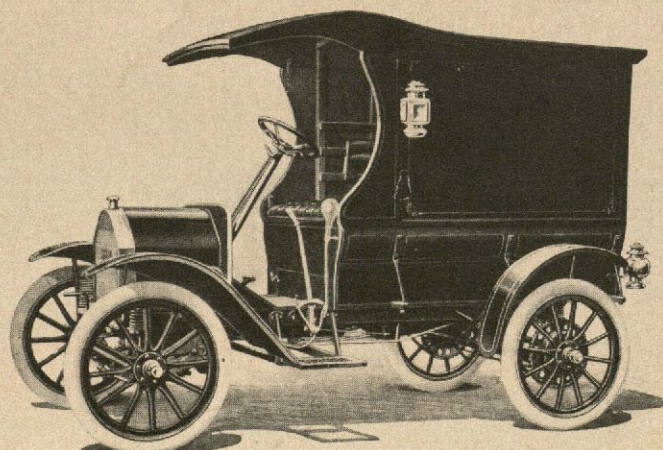
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LETTER



THE BRUSH RUNABOUT - EVERYMAN'S CAR



MODEL M

BRUSH DELIVERY CAR

LICENSED UNDER SELDEN PATENT

\$650⁰⁰

THIS car is the solution of the delivery problem for telephone, gas and electric light companies, merchants, grocers, bakers, butchers, laundrymen, florists, caterers, tailors—in fact, for every man who uses any kind of a small delivery vehicle in his business.

If this applies to you and your business, you cannot afford to overlook the opportunity we offer you to decrease your cost of delivery as well as increase your business.

This new Brush delivery car is built on the same fundamental principles that underlie all Brush cars—the principles that have enabled the Brush to make such a remarkable record for dependability, simplicity and economy. Special literature on this car will be forwarded upon request.

BRUSH RUNABOUT COMPANY
DIVISION UNITED STATES MOTOR COMPANY
DETROIT, MICH.

NO. BR-1.

L R

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L R A4
LETTER

← LETTER →

R A5
HALF LETTER

