

OIL DILUTION RAISES COST

Water Formed in Combustion of Unburned Gasoline Cause Trouble

Lack of proper lubrication is the principal reason why many motor cars must either be scrapped or given expensive service attention after only two or three years of operation, according to Oakland Motor Car company automotive engineers.

The most common cause of faulty lubrication is found in dilution of the oil in the crankcase. As dilution reduces the viscosity of the oil, the rate of wear on moving parts rapidly increases.

Two principal sources combine to cause this oil dilution. The first source of dilution is the water formed during combustion through the chemical combination of hydrogen in the gasoline and oxygen in the air. Almost a gallon of water is formed for every gallon of gasoline consumed. The second source of dilution is found in unburned or imperfectly burned gasoline which remains in the cylinders especially when the choke is used to start the engine.

Oil Protected

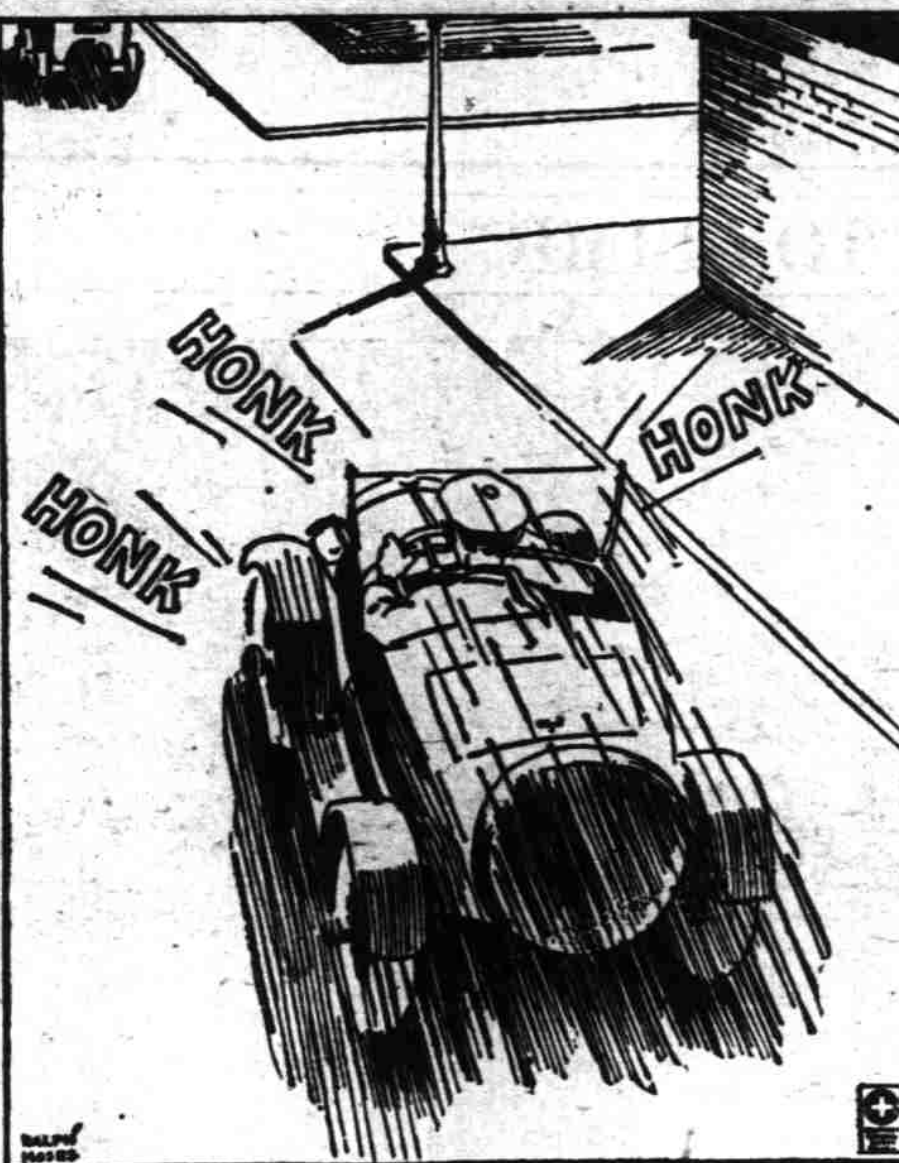
In motor cars of modern design such as the Oakland and Pontiac sixes, the crankcase oil is protected in two ways from this two-fold dilution—first by thermostatic control of engine temperature and second by crankcase ventilation.

In a cold automobile engine only a small portion of the gasoline becomes vaporized. And only vaporized gasoline will burn. The normal mixture ratio is a warm engine is approximately 13 parts of air to one part of vaporized gasoline. But when the chill of a cold engine permits only a fraction of the gasoline to vaporize, the mixture ratio becomes so disturbed that the engine must be choked. The choke cuts off part of the air supply to the carburetor with the result that the engine receives 10 or 12 times the normal amount of gasoline. This is necessary in order to provide that one part of vaporized gasoline required to produce combustion.

Engine Warms Quickly

The remaining portion of liquid gasoline has insufficient time to burn during the brief period of the explosion. A small amount of this liquid gasoline may partially burn, leaving the kerosene "low

Horn Guarantees Noise—That's All!



DON'T depend too much on your horn. Sure, it's a good old trumpet—loud, terrifying and all that—but it won't necessarily keep you out of the hospital. Often there's another fellow speeding along just around the corner. He may be deaf as a post or he may be pounding his own noise-maker for all its worth. Figuring, like yourself, that the right-of-way belongs to the horn-tooter who toots the loudest and longest.

The National Safety Council points out that the auto horn guarantees nothing except noise. Drive slowly—and then you won't have to depend on your tooter.

ends." The kerosene and unburned liquid gasoline works down past the piston rings and drops into the crankcase, diluting the oil.

The thermostat which prevents circulation of water in the cooling system until engine heat reaches 140 degrees, reduces the period of imperfect vaporization and naturally shortens the time during which this type of dilution may occur. Engines not so protected warm up slowly and suffer a consequent increase in dilution by gasoline.

Another important advantage of rapid warming up through thermostatic control is the reduction of the time during which the water vapor of combustion may condense into liquid through contact with cold cylinder walls. This water vapor may work past the piston rings into the crankcase although part of it usually is expelled through the exhaust.

Tractor Development is Traced by Expert; Fifty Years Sees Great Advance

Development of plowing on the farm from the stage of earliest and crudest boards and iron plows to modern machinery, methods was discussed before the power farming conference held at Corvallis this month. Speaking on the subject "Tractor Farming," J. A. McDonald said in part:

"One hundred years ago, a man by working hard all day, could care for the crops on 12 acres of land. At that time, it required three men, four to six oxen, and a tremendous amount of physical labor to plow from one to two acres in a day.

Today, one man—sitting on a tractor pulling a 2-bottom plow—plows ten acres in the same number of hours, and 17 to 18 acres with a 5-bottom plow, thus accomplishing from 25 to 30 times as much as his great, great, grandfather.

Advance Now Rapid

The year 1850 marks the beginning of modern agricultural machinery; previous to that time, the harrow and the plow were practically our only agricultural implements, although a few crude types of grain drills, mowers, reapers, rakes, etc., had been worked on from about 1800. From 1850 to 1928, the farmers' efficiency, due to improved implements, has increased many times more than during the previous 2,000 years.

The whole development of machinery has been a very gradual one; for example, it required more than 2000 years to change the shaped wooden plow, shod with iron, into a plow that had a curved moldboard and that really turned over the dirt instead of merely stirring it. The Dutch people, in 1700, perfected moldboard plows, some of which were exported to England in 1730.

Chilled Plows in 1908

From then on, development came more rapidly; within half a century, the cast-iron plowshares made its appearance, and by 1803, the first chilled plows were put on the market. In 1833, John Lane, and in 1837, John Deere, made the first two steel plows, which were not put on the market until about 1850.

First honors go to a certain Aaron Palmer, who, in 1837, realized the limitations of wheels and took out a patent on a kind of tread-mill affair. This was followed by patents on track-laying boats, road carriages and railway trains.

The work of R. J. Nunn, in 1867—is particularly outstanding for he was a technician who tackled this problem with a full appre-

ciation of its many angles. Mr. Nunn's patent specifications and claims are a work of art.

From 1866 on, interest increased, due partially to the development of the steam engine as a source of mobile agricultural power. In the late 80's and all through the 90's, we find many patents on track-laying attachments for traction engines, most of which proved incapable of operation when built, but many contributing some small usable item.

This brings us up to the time when the problem was attacked by the men who were eventually successful, namely, C. L. Best of San Leandro and Benjamin Holt of Stockton. From this time on, development was much more rapid.

BIG BUSINESS IS GOING INTO HONEY

Honey and Preserves, Inc., a subsidiary of Lapsed Oil, and capitalized at \$5,000,000 has bought Best Clymer Co. for \$1,500,000. Best Clymer is the largest packer of preserves, jams and jelly in the world.

The new organization is carrying on an extensive campaign for advertising honey, which will benefit beekeepers everywhere in this country, by increasing the demand for their product.

OPEN AIR MARKETS FAVOR MOTORISTS

Motoring and shopping are beginning to go together in Los Angeles and Hollywood as naturally as flowers and May.

Open air markets, that are dotting the principal thoroughfares of the southern California metropolis, are the reason. These markets, offering every conceivable household commodity, are a striking innovation in convenience, busy shoppers have found.

On a recent tour of such markets made by Mary Brian, Paramount screen star, in a Silver Anniversary Buick, practically everything from pins to cabbages was purchased. The range of commodities offered by those unique markets was found truly amazing. There are fruit and vegetable sections, the grocery area, the meat divisions, the delicatessen counter, hot lunch stands and even drug stores. Florists are taking space in many of them.

Starting with open fruit and grocery stands facing busy streets and boulevards, they have developed into sumptuous trading centers. Many of them have driveways or parking stations. There the motorist may park while shopping, or if preferred, sit in the car and order whatever is wanted.

Common carrier buses pay in special taxes 24 times as much per unit as the private automobile.

Six-sevenths of the railroad taxes allocated to highways are used for local roads over which goods are moved to rail terminals. Automotive exports have advanced from third to second place in American shipments abroad during the past year.

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Charles Chaplin Much Improved

LOS ANGELES, Mar. 2—(AP)—Charles Chaplin, who was stricken Monday with pneumonia, has improved today to the extent that a lounge was moved into his room and he sat up for several hours, his physician, Dr. Cecil Reynolds announced. The motion picture comedian had been critically ill Tuesday night with an added attack of intestinal influenza but now is rapidly recovering.

Modernistic art in one of its most dazzling forms is portrayed in a body by Fleetwood on the Cadillac chassis which has attracted unusual attention at the national automobile salons. The colors are a strong combination of polished metal and sable.

SALES 100% AHEAD OF LAST YEAR!

NEW SUPERIOR Whippet FOURS SIXES

January and February sales more than double those for same two months of 1928

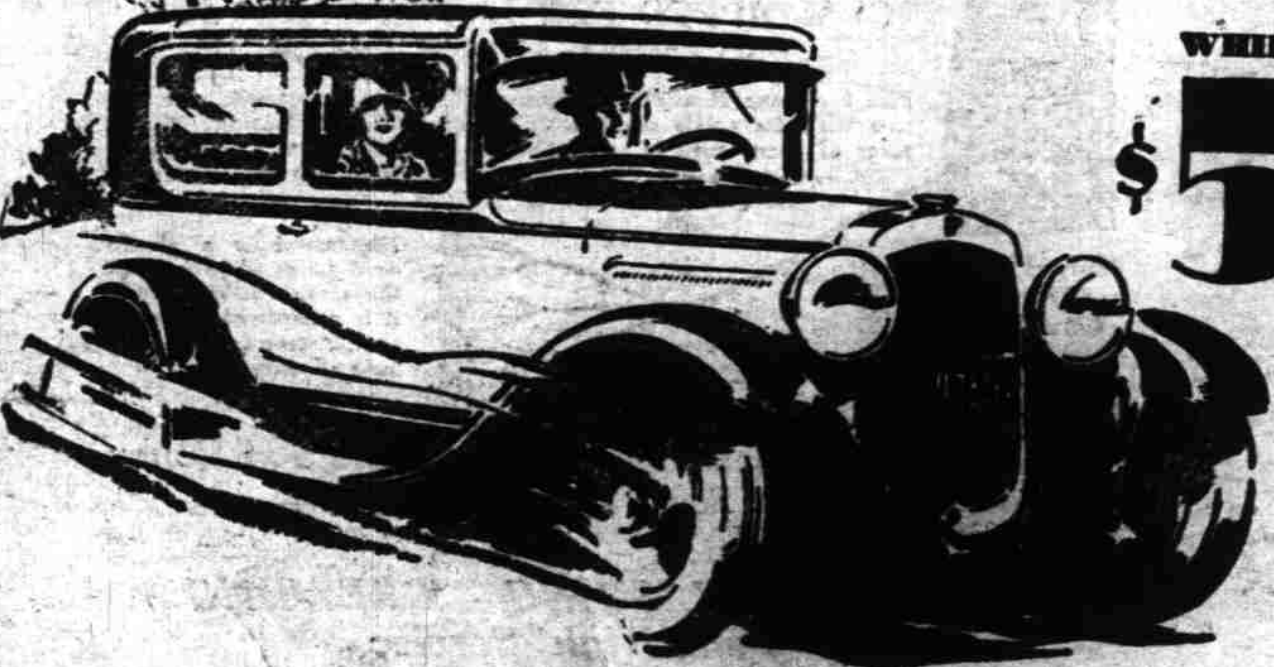
The new Superior Whippet is off to a flying start! Its greater beauty and larger bodies are winning instant success and nation-wide popularity, as thousands of new owners respond to the appeal of the unprecedented value offered by this finest of Fours and Light Sixes. Sales for January and February showed a gain of more than 100% over sales for the same two months of last year!

great success. Graceful lines, smart colors, longer bodies, higher radiator and hood, sweeping one-piece full-crown fenders, make it the style authority in its class.

Drive the Superior Whippet, and note the faster speed and pick-up of its new higher compression engine, which gives more than 20% added horsepower. And the new car is well qualified to carry on Whippet's unsurpassed reputation for dependability and minimum service costs.

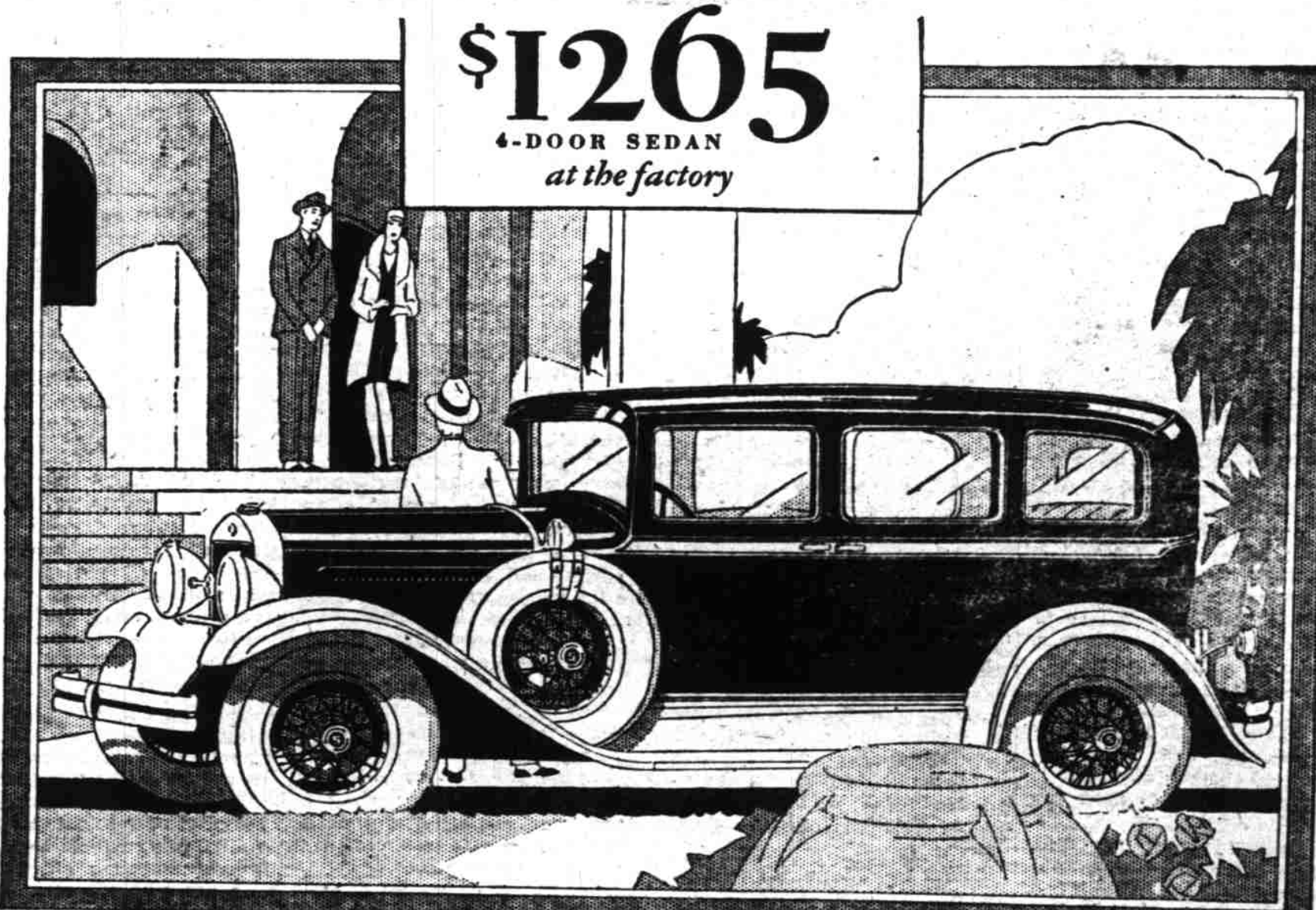
See the new Superior Whippet, and you readily understand its

WILLYS-OVERLAND, INC., Toledo, Ohio



WHIPPET FOUR COACH \$535

Other models: Sedan \$595; Roadster \$645; Touring \$715; Closed Coach \$845; Whippet Special \$895; Whippet Coach \$945; Whippet Sedan \$995; Whippet Roadster \$1045; Whippet Touring \$1095; Whippet Closed Coach \$1145; Whippet Special \$1195; Whippet Coach \$1245; Whippet Sedan \$1295; Whippet Roadster \$1345; Whippet Touring \$1395; Whippet Closed Coach \$1445; Whippet Special \$1495; Whippet Coach \$1545; Whippet Sedan \$1595; Whippet Roadster \$1645; Whippet Touring \$1695; Whippet Closed Coach \$1745; Whippet Special \$1795; Whippet Coach \$1845; Whippet Sedan \$1895; Whippet Roadster \$1945; Whippet Touring \$1995; Whippet Closed Coach \$2045; Whippet Special \$2095; Whippet Coach \$2145; Whippet Sedan \$2195; Whippet Roadster \$2245; Whippet Touring \$2295; Whippet Closed Coach \$2345; Whippet Special \$2395; Whippet Coach \$2445; Whippet Sedan \$2495; Whippet Roadster \$2545; Whippet Touring \$2595; Whippet Closed Coach \$2645; Whippet Special \$2695; Whippet Coach \$2745; Whippet Sedan \$2795; Whippet Roadster \$2845; Whippet Touring \$2895; Whippet Closed Coach \$2945; Whippet Special \$2995; Whippet Coach \$3045; Whippet Sedan \$3095; Whippet Roadster \$3145; Whippet Touring \$3195; Whippet Closed Coach \$3245; Whippet Special \$3295; Whippet Coach \$3345; Whippet Sedan \$3395; Whippet Roadster \$3445; Whippet Touring \$3495; Whippet Closed Coach \$3545; Whippet Special \$3595; Whippet Coach \$3645; Whippet Sedan \$3695; Whippet Roadster \$3745; Whippet Touring \$3795; Whippet Closed Coach \$3845; Whippet Special \$3895; Whippet Coach \$3945; Whippet Sedan \$3995; Whippet Roadster \$4045; Whippet Touring \$4095; Whippet Closed Coach \$4145; Whippet Special \$4195; Whippet Coach \$4245; Whippet Sedan \$4295; Whippet Roadster \$4345; Whippet Touring \$4395; Whippet Closed Coach \$4445; Whippet Special \$4495; Whippet Coach \$4545; Whippet Sedan \$4595; Whippet Roadster \$4645; Whippet Touring \$4695; Whippet Closed Coach \$4745; Whippet Special \$4795; Whippet Coach \$4845; Whippet Sedan \$4895; Whippet Roadster \$4945; Whippet Touring \$4995; Whippet Closed Coach \$5045; Whippet Special \$5095; Whippet Coach \$5145; Whippet Sedan \$5195; Whippet Roadster \$5245; Whippet Touring \$5295; Whippet Closed Coach \$5345; Whippet Special \$5395; Whippet Coach \$5445; Whippet Sedan \$5495; Whippet Roadster \$5545; Whippet Touring \$5595; Whippet Closed Coach \$5645; Whippet Special \$5695; Whippet Coach \$5745; Whippet Sedan \$5795; Whippet Roadster \$5845; Whippet Touring \$5895; Whippet Closed Coach \$5945; Whippet Special \$5995; Whippet Coach \$6045; Whippet Sedan \$6095; Whippet Roadster \$6145; Whippet Touring \$6195; Whippet Closed Coach \$6245; Whippet Special \$6295; Whippet Coach \$6345; Whippet Sedan \$6395; Whippet Roadster \$6445; Whippet Touring \$6495; Whippet Closed Coach \$6545; Whippet Special \$6595; Whippet Coach \$6645; Whippet Sedan \$6695; Whippet Roadster \$6745; Whippet Touring \$6795; Whippet Closed Coach \$6845; Whippet Special \$6895; Whippet Coach \$6945; Whippet Sedan \$6995; Whippet Roadster \$7045; Whippet Touring \$7095; Whippet Closed Coach \$7145; Whippet Special \$7195; Whippet Coach \$7245; Whippet Sedan \$7295; Whippet Roadster \$7345; Whippet Touring \$7395; Whippet Closed Coach \$7445; Whippet Special \$7495; Whippet Coach \$7545; Whippet Sedan \$7595; Whippet Roadster \$7645; Whippet Touring \$7695; Whippet Closed Coach \$7745; Whippet Special \$7795; Whippet Coach \$7845; Whippet Sedan \$7895; Whippet Roadster \$7945; Whippet Touring \$7995; Whippet Closed Coach \$8045; Whippet Special \$8095; Whippet Coach \$8145; Whippet Sedan \$8195; Whippet Roadster \$8245; Whippet Touring \$8295; Whippet Closed Coach \$8345; Whippet Special \$8395; Whippet Coach \$8445; Whippet Sedan \$8495; Whippet Roadster \$8545; Whippet Touring \$8595; Whippet Closed Coach \$8645; Whippet Special \$8695; Whippet Coach \$8745; Whippet Sedan \$8795; Whippet Roadster \$8845; Whippet Touring \$8895; Whippet Closed Coach \$8945; Whippet Special \$8995; Whippet Coach \$9045; Whippet Sedan \$9095; Whippet Roadster \$9145; Whippet Touring \$9195; Whippet Closed Coach \$9245; Whippet Special \$9295; Whippet Coach \$9345; Whippet Sedan \$9395; Whippet Roadster \$9445; Whippet Touring \$9495; Whippet Closed Coach \$9545; Whippet Special \$9595; Whippet Coach \$9645; Whippet Sedan \$9695; Whippet Roadster \$9745; Whippet Touring \$9795; Whippet Closed Coach \$9845; Whippet Special \$9895; Whippet Coach \$9945; Whippet Sedan \$9995; Whippet Roadster \$10045; Whippet Touring \$10095.



THE DICTATOR ROYAL SEDAN—Six wire wheels and trunk rack standard equipment, \$1395.
 THE DICTATOR REGULAR SEDAN, \$1265. Prices at the factory. Bumpers and spare tires extra.

STUDEBAKER's Dictator, by its remarkable stock-car record of 5000 miles in 4751 minutes, has certified the fleetness and staying power you may confidently expect from this great Six. Its 28 records for speed and endurance are not matched by any car at its One-Profit price.

The low-swung grace characteristic of the new Studebakers expresses beautifully The Dictator's champion performance. You sense at a glance the swiftness, the dauntless spirit of the car. You know it is fast, and sure, and capable, for it looks the part. And the world knows it too—just as it knows the 77-year-old name of Studebaker that stands four-square to back your judgment.

The Dictator provides too, that matchless comfort—assurance pioneered by Studebaker—ball bearing spring shackles. These, with The Dictator's new hydraulic shock absorbers, long, pliant springs and deep-sprung cushions, achieve travel ease unknown before Studebaker pioneered it.

STUDEBAKER MODELS AND PRICES

The President Eight	\$1785 to \$2575
The Commander Six or Eight	1350 to 1675
The Dictator	1265 to 1395
The Erskine Six	850 to 1045

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