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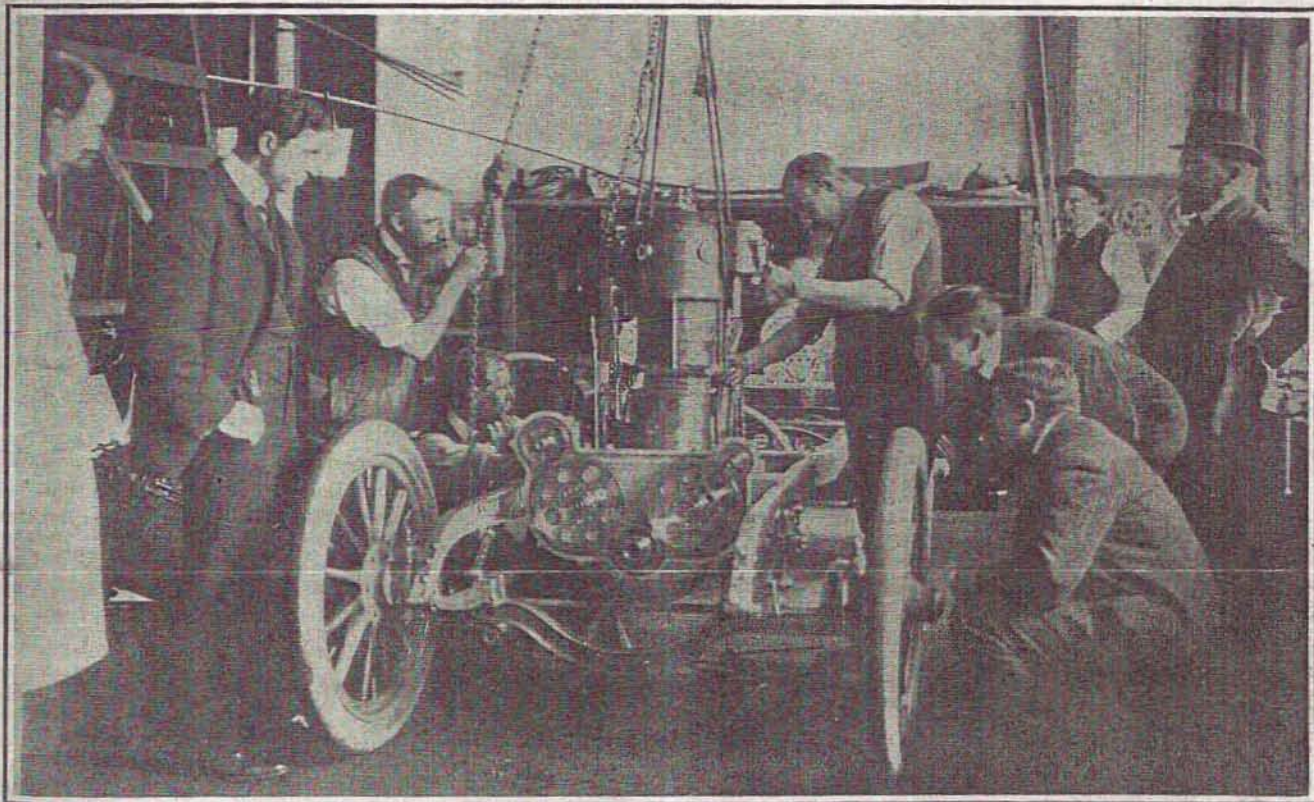
NO. 16

LOCOMOBILE GORDON BENNETT RACER.

IN the comparative quiet of the experimental room of the great Locomobile plant at Bridgeport, Conn., the work of completing the Gordon Bennett racer is being pushed by day and by night. This car, as our readers will recall, is under construction for Dr. Harold E. Thomas,

Though the car was in a very complete stage of construction when the photographs were made, it was not "finished," and therefore we show views that give an adequate idea of its motor dimensions rather than pictures of the complete car as it will appear on the day of the race.

modifications of design have been made, with a view to weight reduction. This is indeed the most difficult feature of a most difficult engineering problem, and its difficulty can be appreciated when one considers a car with a motor that will develop about 140 horsepower, and which must be



LOWERING IN PLACE THE CYLINDERS OF 140 HORSEPOWER LOCOMOBILE GORDON-BENNETT RACER, OWNED BY DR. H. E. THOMAS.

of Chicago, who has already entered it in the great classic. Through the courtesy of the Locomobile officials a private view of the car was obtained this week, and also permission to make the photographs which we have here reproduced.

In its general exterior lines, when completed, as in its interior construction, the car will very closely resemble the regular stock type of the builders. It is practically an enlarged edition of the standard Locomobile car, with the exception that certain

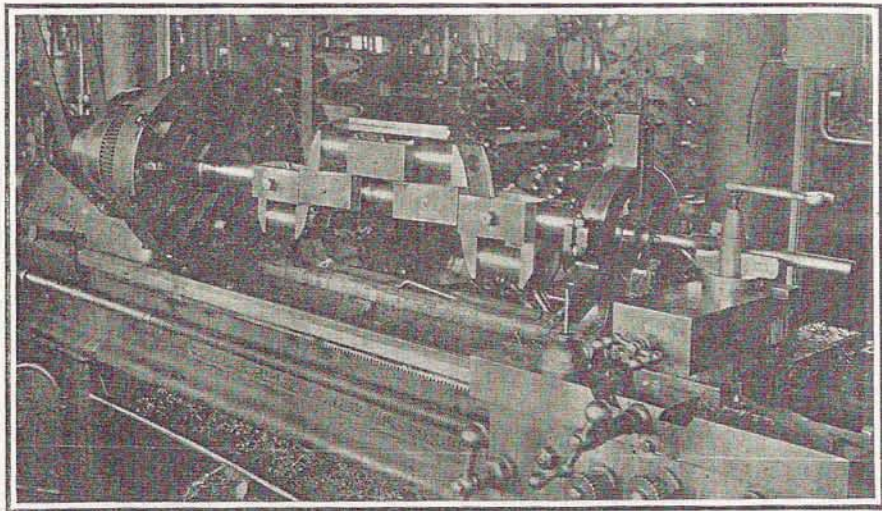
capable of resisting the enormous strains set up in road travel at mile-a-minute speed, and must weigh less than 2,204 pounds to come under the classification. It is, therefore, a matter worthy of immediate record that the Locomobile engineering

staff has been able to produce a car which has a liberal margin below the maximum weight without any mutilation of the component parts or the sacrifice of strength where strength is essential.

It has become somewhat the custom to over-praise effort, regardless of its quality, where such effort is toward a worthy ambition, and no automobile ambition is more commendable than to win the Gordon Bennett race. A close and critical inspection of the Locomobile car, however, will convince any disinterested person that here is an effort that is intrinsically worthy of praise. It is very doubtful, indeed, if at any time or place a more sincere effort has been made to build a racing car, with the available men and materials, that would represent the best that the country of its origin can produce. The design has been given the most patient study, the materials have been selected regardless of cost and subjected to exhaustive tests, and the workmanship put into the car is as fine as American mechanics know how. The result is a machine that is a splendid example of up-to-date practice, and that, win or lose, will be a credit to American mechanical skill.

Following the usual Locomobile model, the car has four vertical cylinders, each 7 inches by 7 inches, the largest with possibly a single exception that have ever been put in an automobile. This is really the feature of the car, for while the general overall dimensions are in no way exaggerated, the power plant is huge. Indeed, when the motor is housed under the regular stock shaped bonnet, the visible portions of the mechanism will not reveal the size of the power plant.

The general layout comprises pressed steel frame, cellular cooler in front, bonnet with straight sides and arched top, 4-cylin-



DRILLING OUT END OF HOLLOW CRANKSHAFT IN THE LOCOMOBILE FACTORY.

Note the I beam section of the crank webs, also the two-foot rule over the center of the crank which gives an idea of its dimensions. Clamps on the crankshaft are to prevent springing while the crank is machined.

der motor, cone clutch, long gear box, countershaft carrying side chain sprockets and fuel tank at the rear inside the frame.

The wheelbase is 109 inches and the tread 54 inches, with wheels 34 inches by 3 1/2 inches in front and 4 1/2 inches in the rear. Diamond tires of as good quality as the factory is capable of producing, and which "look" a fine job, are of the regular clincher type. For the specially built wheels, hickory wood, ordinarily used for making bows and arrows, of great toughness, had been selected. All are fitted with ball bearings.

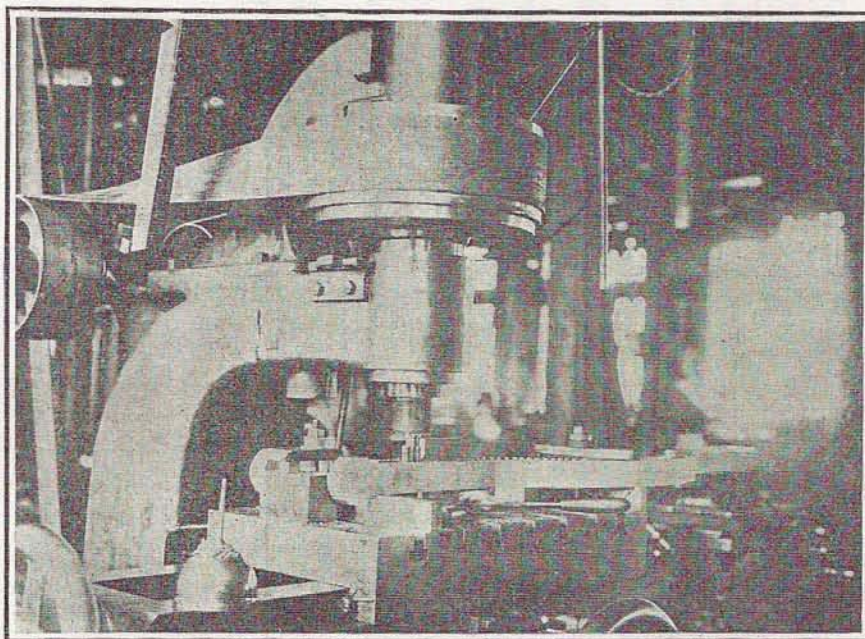
In the entire car the only cast iron used is in the motor cylinders. These are cast in pairs, with mechanical valves symmetrically placed on the sides, the exhaust on the left side. The jackets are cast integral. A special alloy is used for the crank case, which is fitted with four arms, bolted to

the main frame. The cam shafts are carried inside this case, and so it is free of all projecting bearing caps. In the front a very shallow vertical aluminum case encloses the 2 to 1 gears and the small gears in the same plane which drive the rotary pump and the magneto. The shafts for both extend rearwardly from the case, the pump being seated on the forward arm of the crank case on the left side of the motor, and the magneto in a similar location on the right side. The magneto is a Remy low tension, and is connected to a bus bar on the right side of the motor, from which the current is conducted to the igniters of the regular Locomobile make-and-break type.

The cylinders are held down on their seatings by six heavy hollow studs, the crankshaft having three long bearings, one at each end and one in the center. This shaft is a beautiful forging and is of fluid compressed special steel, bored hollow and machined all over. The webs are cut out to I-beam section, and the finished shaft recalls the very highest type of torpedo boat workmanship. In the rough it weighed 390 pounds, and finished to only 75 pounds. An I-beam section is also used for the connecting rods, with top and bottom through bolted brasses in the big ends, and long forged, steel bushed ends for the wrist pins. The bottom of the crank case is simply a receptacle for retaining the oil. To facilitate starting, the exhaust cam shaft is made to slide in its bearings, so that a toe on the back of each exhaust cam will engage the push rod to open the valve slightly, on the compression stroke, when the starter slides the shaft before cranking the motor.

The inlet valve cam shaft also carries the ignition cams, which are made spiral, so that the spark advance can be simply operated from the driver's seat.

There is no fan back of the cellular radiator, the flywheel and clutch being fitted with arms of fan blade type. The front ends of the frame extend a considerable



MILLING OUT THE FORGED NICKEL STEEL FRONT AXLE TO GIRDER SECTION. The axle is seen edgewise on the table under the vertical milling cutter

distance beyond the motor, the cooler being situated over the front axle. The flywheel is of large diameter, with the regular leather covered cone clutch little less in size, or about 24 inches. The clutch is of the Locomobile type, with self-contained thrust when engaged. Back of the clutch there are two cross members in the frame of channel section, drilled with holes for lightness, and yet with an ample amount of metal left for stiffness. To these the gear box is attached in what is practically a three-point suspension. The box proper is a bronze skeleton, with flat aluminum covers and dished bottom. Complete it is a really splendid bit of workmanship. The gears give three speeds forward and reverse, the sliding member being a solid nickel steel forging. Hess-Bright ball bearings are fitted in the box. The direct drive from the engine to the countershaft through the bevel gears is level. The outboard ends of the countershaft are carried in steel brackets, curved in sections, to which are also attached the adjustable distance rods from the rear axle. Gear drums on the rear wheel are of large diameter and carry the internal expanding emergency brakes.

The rear wheels are, of course, carried outside the frame, the spring hangers in the frame ends being strongly reinforced and the spring ends of the upper leaves forged solid and drilled—not simply turned over the pin. The same construction is also used on the front spring ends, and in both front and back the clips used on the springs are formed by side extensions of the second leaves turned over sidewise.

Truffault-Hartford shock absorbers are fitted on both front and back axles. Both of the axles are of girder section, machined out of the solid. Between the back ends of the frame the rivetted copper fuel tank of large capacity is hung. In this a low air pressure for raising the fuel to the level of the carbureter will be produced by the hand pump on the dash. A touch of smartness is given the car by the rake of the long steering post carried back to the driver's

seat, which latter is in line with the countershaft.

Simplification without sacrifice of efficiency has been kept in sight throughout all the features of design, and this is markedly shown in the control and connections. At the side of the driver there are the usual two levers, the outer one setting or releasing the emergency brake by wire rope connections, and the inner one of the customary progressive gear-changing type. To reduce the linkage connections to the gear box the gear-changing lever is arranged to be pulled backwards to go into the high. This idea is also carried out in the pedal arrangements. The clutch yoke is keyed direct to the pedal cross shaft and is operated by the right foot pedal. A working outside hand brake of large area is fitted on the countershaft and operated by the left foot pedal. As there is no governor on the engine there is no accelerator pedal, and control is by the throttle and spark levers, which are carried on the steering post, and not on top of the wheel.

In the great race the car will be driven by Joseph Tracy, who will have as his mechanic Al Poole, who was with him in the Royal car in the Vanderbilt Cup race last year. Mr. Tracy is a trained engineer and has a wide and deserved reputation as a skilled driver on the road. His work is familiar to our readers, not only in connection with racing events, but as the author of numerous practical and helpful articles that have appeared in these pages. The personal equation is a very important one in a race of this degree of strenuousness, and Dr. Harold E. Thomas is fortunate in securing the aid of Mr. Tracy, who has undertaken the task for the pure love of the sport.

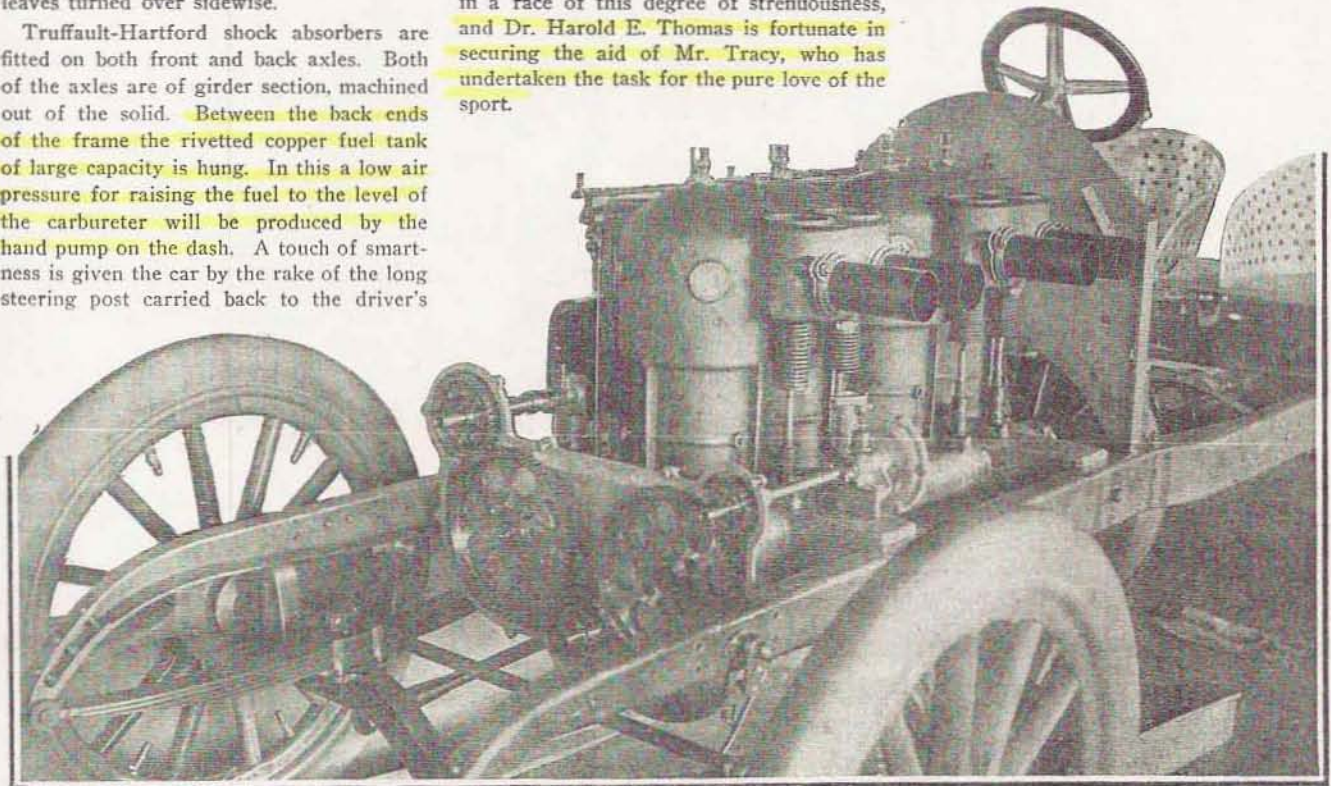
Mr. Tracy is now at the factory watching the assembling of the machine and in constant discussion of its points with A. L. Riker, the designer, and his skilled aides. The car will also be entered in the Vanderbilt Cup race.

In this issue we are glad also to be able to publish a photograph of another American candidate for Gordon Bennett honors—the Pope-Toledo racer, just completed at the works of the Pope Motor Car Co., in Toledo. This car will also compete in the Vanderbilt Cup race. In both events the driver will be Herbert H. Lyttle, who is seen at the wheel in the photograph with William Knipper, his mechanic, sitting beside him. It will be recalled that it was Lyttle who made such a remarkable performance with the little 24-horsepower Pope-Toledo car in the last Vanderbilt race. We regret very much that no particulars regarding the new Pope-Toledo racer are available for publication.

Another Pope-Toledo racer has been built for W. T. Muir, of Lexington, Ky., and entered by him in the Gordon Bennett race. The name of the driver has not been announced.

WILL ACCEPT FRENCH ENTRIES.

The five French cars that make the best showing in the Gordon Bennett elimination trials will represent France in the Vanderbilt Cup race, notwithstanding the objections of the American importers of French machines that this will shut out of our own big race any Americans who might want to



FRONT VIEW OF LOCOMOBILE GORDON BENNETT RACER WITH MONSTER 7 x 7 INCH MOTOR.—ENTERED BY DR. H. E. THOMAS. This photograph was taken before the car was assembled. The front of the two-to-one gear case is not in place nor the radiator. Note the distance the engine sets back from the front of the frame.