

THE VANDERBILT CUP ELIMINATION RACE.

The leading machines in the elimination race for the selection of the team which is to represent America in the Vanderbilt cup contest, were, as reported in our last issue, a Pope-Toledo 60-horse-power machine, a 120-horse-power Locomobile, a 40-horse-power Royal Tourist, a 50-horse-power Haynes, and a 60-horse-power Thomas. The two leaders and the last are racing machines, built specially for long-distance racing of the class to which the forthcoming race belongs; the other two are stock touring machines. Among those that failed to get placed were three racing machines—a 90-horse-power Pope-Toledo, a 40-horse-power White steamer, and a 60-horse-power Christie; the first two having been built specially for this race, and the Christie racer being the one that has this year done such good work in the Florida and Cape May races.

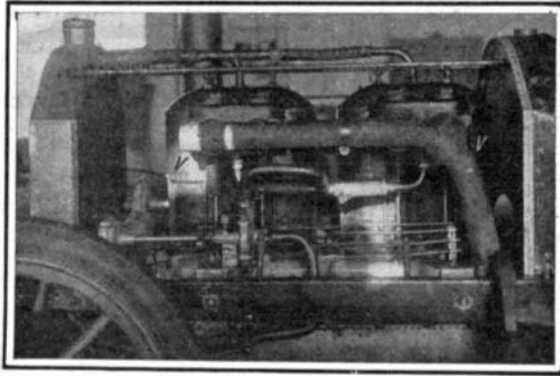
The Vanderbilt Cup Commission, before the race was held, announced that they reserved the right to select other cars than those which might win, should it appear to them that the American team would be strengthened thereby. In accordance with this policy, they decided to substitute the White and Christie machines in place of the touring cars, and the 90-horse-power Pope-Toledo in place of the 60-horse-power Thomas. The chairman of the committee explained that the members felt that the two touring cars which showed an average speed of less than fifty miles an hour, would have but little chance of winning in a race in which, because of the faster course, the average speed was likely to be between sixty and seventy miles an hour; while they considered that the 90-horse-power racer with a driver like Lytle, with experience in road racing, would be a better combination than that afforded by the lower-powered Thomas car and its less-experienced driver.

That the failure of the three winning cars to be selected for a place on the team should be a great disappointment to their owners and builders was inevitable; for it cannot be denied that, although their average speeds of 48.79, 47.44, and 46.26 miles per hour would not give much expectation of their winning against the fast and powerful foreign machines that are entered, the performance was an extremely creditable one for machines that were built merely for touring purposes.

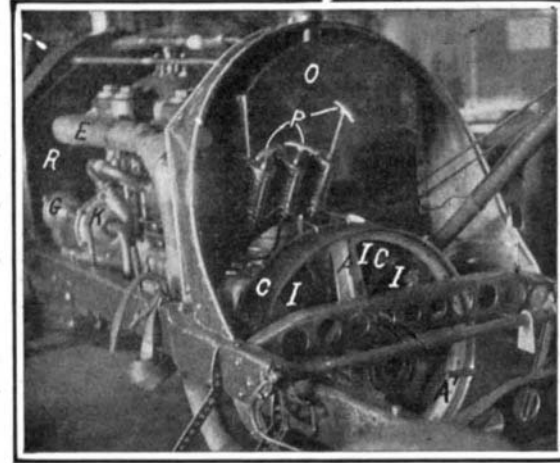
In any case, it is gratifying to note, as the result of the race, that America stands in a much stronger position this year than she did last; for there are at least eight machines that may be considered strong candidates for a place on the American team, namely, the five that finished first in the trials and the three which were subsequently selected by the cup commission.

Our illustrations show eight of the ten machines which competed on the 23d ultimo. The only two not shown are the 60-horse-power Franklin (whose lengthy eight-cylinder air-cooled engine, however, appears upon page 282) and the six-cylinder, 90-horse-power Pope-Toledo, which broke a transverse member of the sub-frame that supports the engine and transmission, during the second circuit. The winning Pope-Toledo No. 2, with Dingley at the wheel, is shown at the starting line, which it crossed at 5:32 A. M. This machine finished its first round at 5:59:58, thus covering the 28.3-mile circuit in 27:58, or better than a mile a minute. This was the fastest time made by any machine. The other circuits were made in 31:07, 33:35, and 28:10 respectively, and included two stops on the second and two on the third round. The first three stops were occasioned by broken vibrators and were of short duration, while the last one was caused by dirt in the carbureter, which it took about five minutes to clean out.

The first and last round were made without a stop. The four-cylinder engine of the Pope-Toledo car is also shown herewith. It has the same type of corrugated copper water jackets that have been used on the Pope-Toledo machines for the past several years. The explosion chambers on top of the cylinders are high and of small diameter. They contain the inlet and exhaust valves, the former of which is located above the latter and is automatic. The spark plug is seen in the head. A belt-driven, mechanical, force-feed oiler



Exhaust Side of the 7 1/2 x 7 1/2 4-Cylinder Locomobile Engine, Showing Copper Water Jackets at V V.



AA, clutch cone; III, blades of flywheel; CC, protective casing completely inclosing forward side and rim of flywheel; O, oil tank; P, oil pumps; E, exhaust pipe; R, radiator; G, incased half-speed gear on same shaft with water pump; K, centrifugal water circulating pump.

Rear of Dash of Locomobile Racer, Showing New Oiling Arrangements and Casing for Flywheel Clutch.

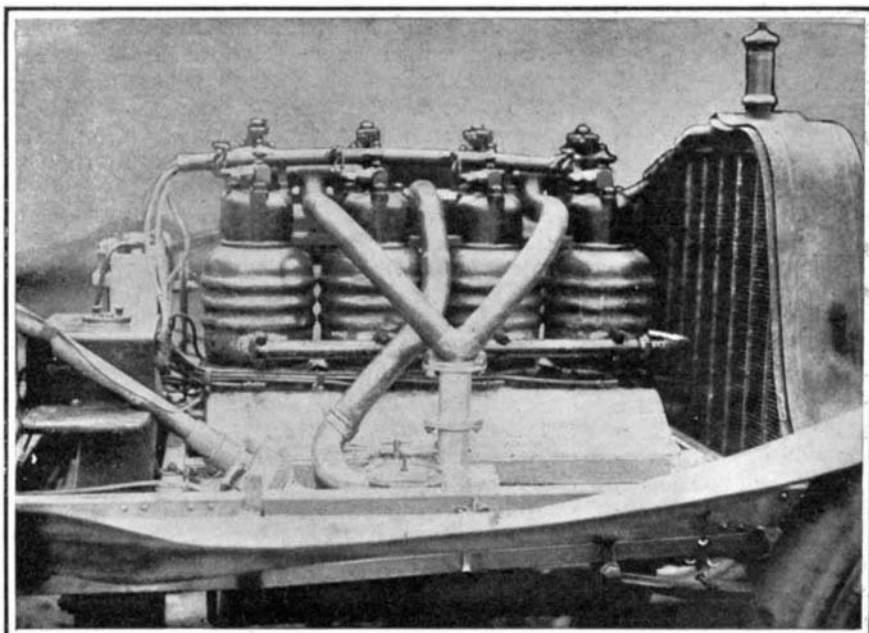
supplies oil to the engine cylinders and crank-case. A single carbureter, of the automatic float-feed type, supplies all four cylinders. The gasoline is pumped by hand from the main tank to an auxiliary tank just above the carbureter. A separate coil, high-tension ignition system with accumulators is used. The engine has 6 x 6-inch cylinders and it develops maximum power at 1,000 R. P. M., at which speed the car, which has a three-speed transmission, travels 78 miles an hour. The car differs from the regular model touring car chiefly in that the frame is shorter and that smaller tires are used on the front wheels. These are 3 1/2 x 34, while those on the rear wheels are 4 1/2 x 34. The wheel base is 96 inches, and the weight 2,198 pounds. The six-cylinder Pope-Toledo has cylinders of the same size as the other car, but two carbureters are used instead of one. This car is geared to make about 92 miles per hour at 1,000 R. P. M. of the engine. It has

a 100-inch wheel base and weighs 1,000 kilogrammes (2,204 pounds), which is the limit.

No. 1, the Haynes, made a very steady-running performance, and except for an oil can falling into the flywheel, had no troubles whatever. Its driver was sending it over the course faster every round when the race finished. This machine has several improvements, including an arrangement for passing from high to low-gear at once without releasing the clutch. It also has a special roller bevel-gear drive. The wheel base is 106 inches and the wheels 34 x 4 and 34 x 4 1/2. The car weighed 2,198 pounds.

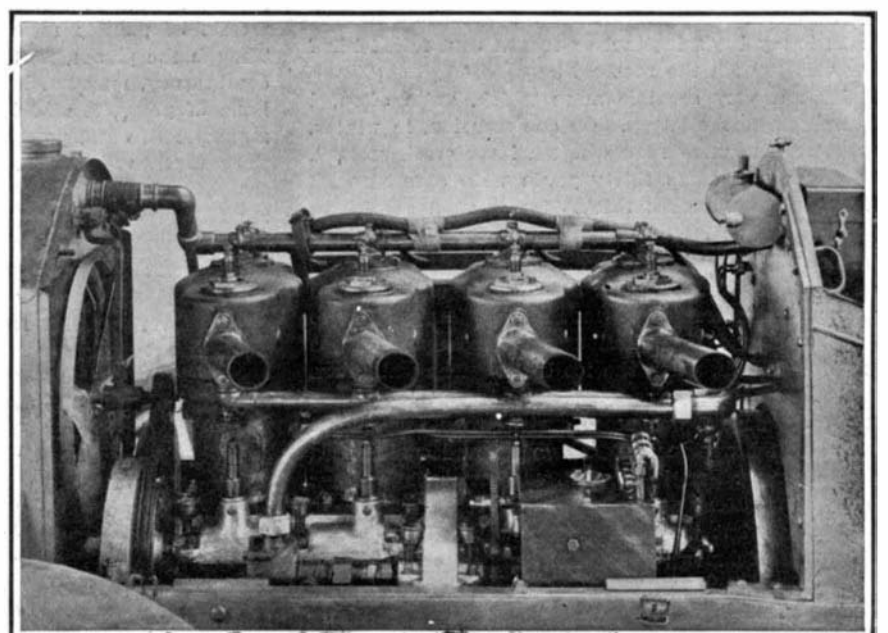
Car No. 3, a large Matheson touring car chassis of 40 horse-power, as well as the front end of No. 4—the White steamer—is shown at the starting line. No. 3 quit in the first round from a crank-shaft bearing seizing, and No. 4 did even worse, for Walter C. White, who was driving it, opened the throttle too suddenly, with the result that one of the universal joints of the longitudinal driving shaft broke as the car went over the line. The machine coasted down the slight grade a short distance and stopped at the side of the road. During the next half hour a universal joint was taken from a touring car which stood beside the road, and the racer was repaired. It reappeared at the start 1 hour, 7 minutes, and 52 seconds after it first crossed the line. On the second round it was put out of the race by the water tank breaking. The tank had been damaged in an accident which occurred the previous day.

The present White racer is built along somewhat the same lines as the former one with which Webb Jay set the world's track record for the mile at 48.35 seconds. The engine and generator in the new car are more powerful, and the machine is built heavier throughout in order to make it suitable for road racing work. It also has larger tanks for the storage of gasoline and water, and it is, furthermore, equipped with a condenser which extends along both sides almost half the length of the car. The car sets very close to the ground, the springs and frame being below the axles. In every respect it looks like a powerful racing machine. The wheel-base is 132 inches, the front wheels have 3 1/2 x 30-inch tires, and the rear wheels 4 1/2 x 34-inch. As in the touring car of the same make, the frame is of armored wood and there is a shaft drive with disconnecting clutch from engine to rear axle. In the extreme front of the car is the water tank; then comes the generator, similar in every respect, except size, to that used in the White touring car; set close behind this is the vertical, compound engine, which also differs only in size from a stock engine. There is a high, square dash, and the driver and his assistant sitting behind this are almost completely protected by it, only their heads being visible from the front of the machine. On the rear of the car are twin gasoline tanks, which, as well as the water tank, have a capacity of 30 gallons. The weight of this car is 2,184 pounds. No. 5, the Locomobile racer, probably was capable of the greatest speed of any machine entered, for its engine was by far the largest, and has developed under test well over 120-horse-power. Joseph Tracy, who drove the huge machine both here and in the last Bennett race in France, used every precaution in order to make a good showing. He traveled the 113 miles without a stop, and covered the circuit in two minutes less time the last two laps than he took for the first two. His times were 31:27, 31:13, 29:56, 29:13 for the four laps. A variation of but .14 seconds in going 28.3 miles certainly shows very skillful driving. Tracy tried to make the rounds in 30 minutes each, and how well he succeeded is shown by the above figures. This racer has had necessary changes made in it since the Bennett race. The chief of these is the complete



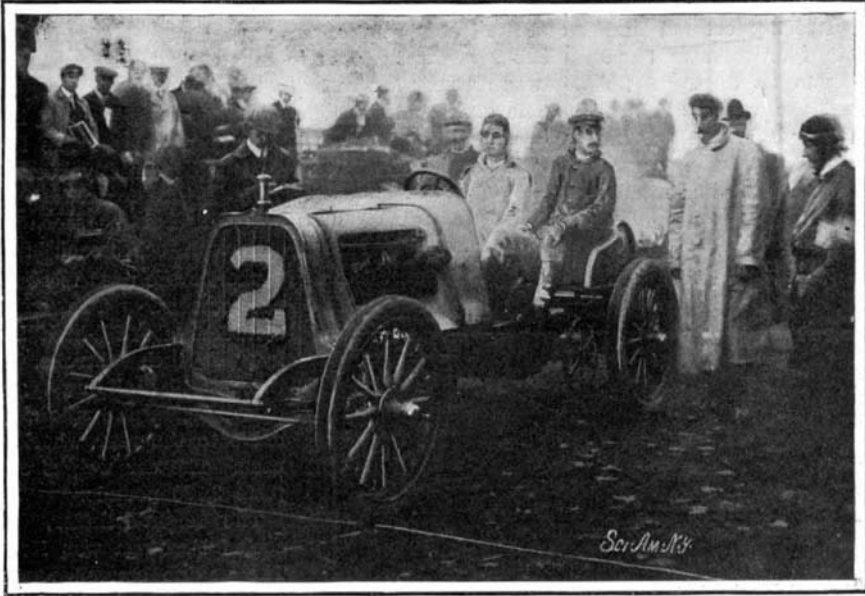
The 60-Horse-Power 6 x 6-Inch Engine of the Pope-Toledo Car.

This view shows the corrugated copper water jackets and the automatic carbureter, as well as the spark coil lying horizontally on a board just over the flywheel. Note also the special radiator of this car.

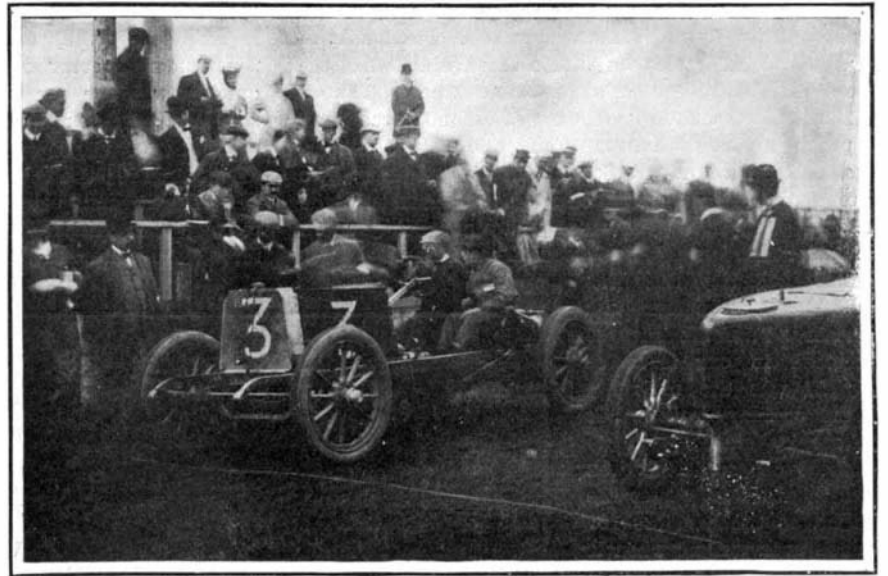


Exhaust Side of the 50-Horse-Power 5 x 6-Inch Haynes Engine.

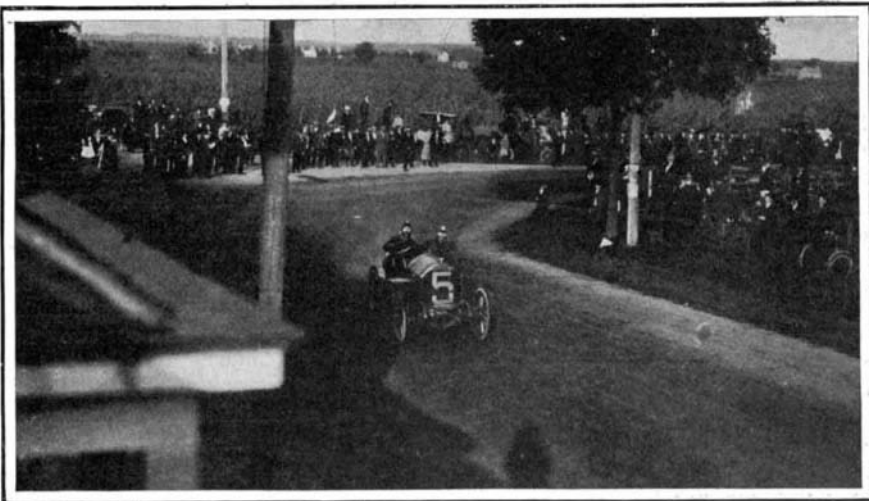
The gear-driven pump, mechanical oiler, and belt-driven fan are clearly shown. Also an auxiliary oil tank and spark coil on dash.



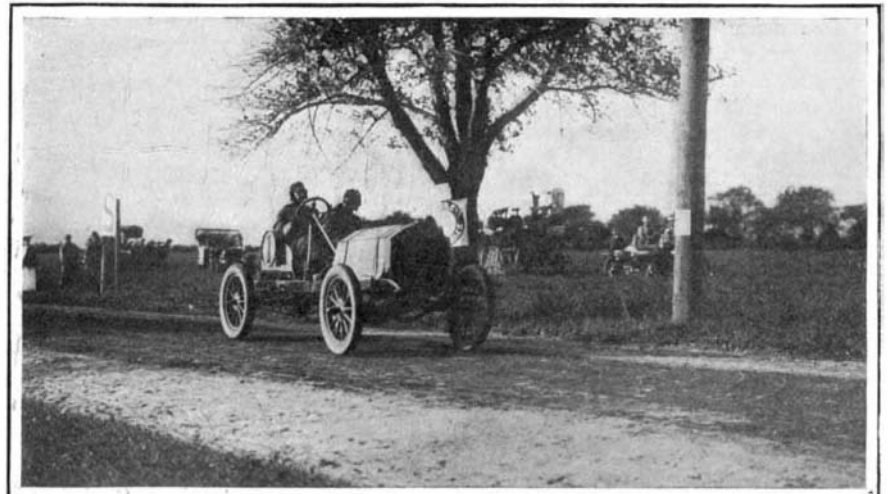
Start of the 60-H. P. Pope-Toledo, Which Won the Race in 2 Hours and 50 Seconds.



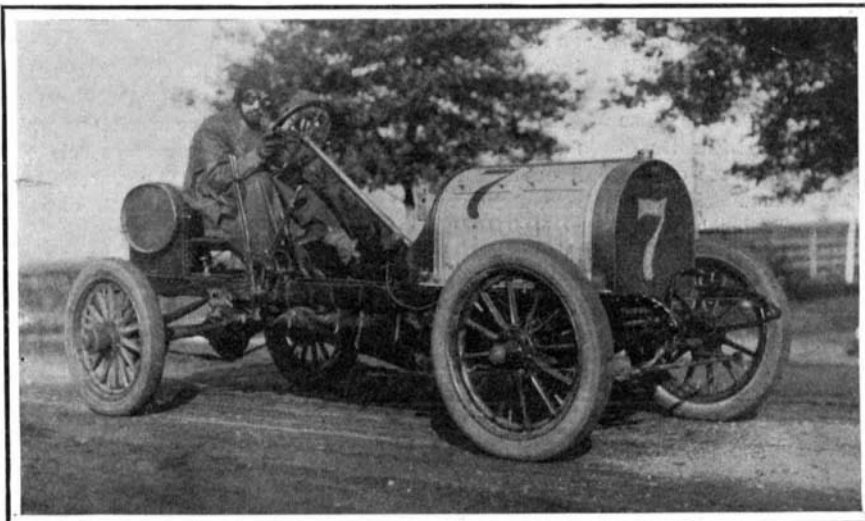
The 40-H. P. Matheson and White Steam Racers at the Starting Line. Neither Car Finished.



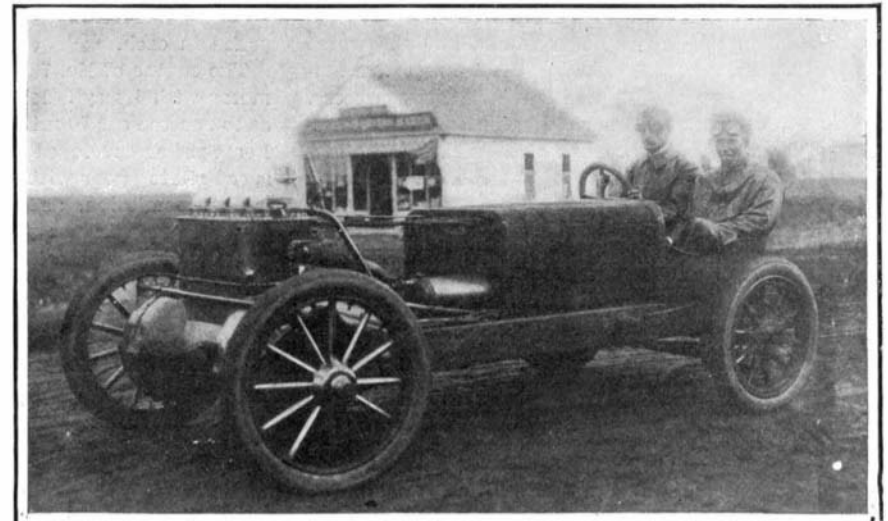
The 120-H. P. Locomobile Rounding the Hyde Park Turn. This Machine Made no Stops and Won Second Place in 2 Hours, 1 Minute, 49 Seconds.



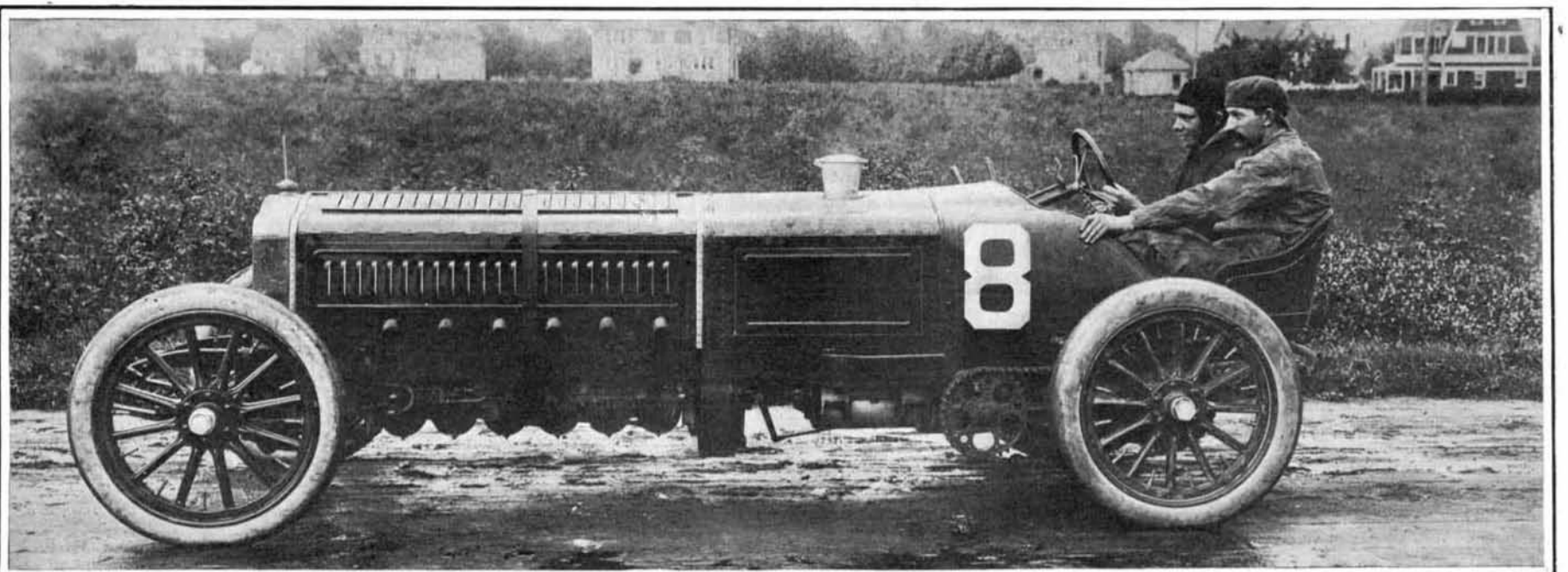
The 40-H. P. Haynes Speeding. This is an Improved American Touring Car Which Made a Very Consistent Performance and Obtained Fourth Place in 2 Hours, 23 Minutes, 32 Seconds.



The 40-H. P. Royal Tourist Which Overturned in the Third Round, was Righted Again, and Won Third Place in 2 Hours, 19 Minutes, 18 Seconds.



The 60-H. P. Front Drive Christie Machine Which did not Finish on Account of Tire Trouble, but Which has been Placed on the American Team.



The 60-H. P. Six-Cylinder Thomas Racer, Which Made Good Time on the First Round, but was Delayed by Battery Troubles Afterward. This Car was Fifth in 2 Hours, 29 Minutes, 40 Seconds; but it was not Put on the Team, Being Replaced by a More Powerful Pope-Toledo.

MACHINES WHICH COMPETED IN THE VANDERBILT CUP ELIMINATION TRIALS.

protection of the clutch from oil by incasing it and the flywheel, as shown in our illustration. The tight casing around the flywheel is shown at *CC*. The blades of the flywheel, *III*, are seen within this casing, while the clutch cone, *AA*, is seen within the flywheel. The oil tank is located on the dashboard at *O*, and three hand oil pumps are now used for forcing the oil to the bearings, cylinders, and crank case of the engine. The water pump is shown at *K* on the same shaft with the inclosed gear, *G*, which is driven by another gear on the motor shaft at half the speed of the latter.

Another change that was made before the car was sent abroad and since it was described in our issue of May 27 was the replacing of the ordinary cast water jackets by similar jackets of sheet copper. This was done in order to reduce the weight, as the car was 100 pounds over weight when it was completed. Nearly the whole 100 pounds were removed from the engine alone. Yet this made a perfect performance in both the Bennett race and the eliminating trial. In the view shown herewith, the reader will note the copper water jackets, *V V*, riveted to the engine. The engine is so geared that at 900 R. P. M. the car travels at a speed of 90 miles an hour on the high gear. It was the only engine fitted with low-tension ignition by magneto, and the car, too, was the only one to finish the race without a stop.

The Christie car, No. 6, has already been described at length in our last Automobile Number. It was driven by George Robertson, who had had scarcely any experience in driving it. As a consequence, the car swayed badly. The engine did not start easily at the starting line, and so it was set in motion by pushing the car and suddenly letting in the clutches. One of the front tires was not sufficiently inflated. It was ripped off at a turn in the first round, and the wheel was run on its rim 250 yards to the nearest tire station. Putting on the new tire was a lengthy process, as this car consumed 1 hour, 50 minutes, and 58 seconds on the first round because of the delay. The second round was made in 32:38; and the car appeared to have great speed as it passed the grand stand. In the Vanderbilt race it will be driven by Walter Christie, its designer and builder, and it will doubtless make a much better showing in view of what it has done in the past. The engine of this car is a $6\frac{1}{4} \times 6\frac{3}{4}$ four-cylinder, water-cooled motor, the cylinders being in one casting which has a copper water jacket around it. As is apparent from the photograph, the engine is placed transversely in front and drives the wheels direct through cone clutches in each of its two flywheels and short, universally-jointed shafts connecting with the hubs of the wheels, and permitting them to be turned for steering. With a similar motor on the rear of his car, Mr. Christie made a mile at Atlantic City beach in 38 seconds (94.73 miles an hour), but in a subsequent trial the rear cylinders broke off at the base, fortunately without hitting either Christie or his mechanic.

The driver and mechanic of No. 7—the "Royal Tourist"—deserve great credit for what was without a doubt the pluckiest performance of the day. The car ran splendidly and without mishap until it was half way around on the third round, when it overturned at the sharp turn about $2\frac{1}{2}$ miles northeast from the grandstand. Its driver, Robert Jardine (who also designed and built the car) took the turn at too high a speed. The road was soft at this point and the earth had been pushed up in a ridge at the edge of the turn. The car, as usual, tended to skid, but the moment the wheels struck the ridge (which held them from sliding further laterally) the terrific centrifugal force developed overturned it about its outer wheels as a pivot, and it fell upside down. Both men were thrown out but not

injured badly. With the aid of onlookers they righted the car, straightened the bent steering column and levers as best they could, and in four minutes from the time it overturned it was again on its way. So quickly was the car righted that the water did not spill out of the radiator to any great extent or the acid out of the ignition accumulators. The nervous driver finished the third round without a stop, but he was obliged to stop twice for water in the fourth. The top cap was knocked off the radiator and the pump forced the water out, while the radiator was leaking

other battery was put in circuit. This too ran down and the last few miles were run on the low gear at 20 miles per hour in order to keep the engine running, as it was missing fire so badly from the weak battery.

The six-cylinder Thomas motor is made up of individual cylinders bolted to the crank case. The inlet valves are automatic and are placed directly over the exhaust valves. The spark plugs are located in the valve chambers. A distributor directs the secondary current from a spark coil with vibrator, to each of the six plugs in turn. Storage batteries are used to supply the current. The engine cylinders are $5\frac{3}{8}$ -inch bore by $4\frac{1}{2}$ -inch stroke. A three-speed sliding gear transmission and side chain drive to the rear wheels is used. The car weighs complete 2,180 pounds.

The eight-cylinder, air-cooled Franklin was No. 9. The engine started readily and ran with the clock-like regularity of most of the Franklin motors; but the machine did not accelerate rapidly and did not appear to have much speed. It made one round in 36:46 and gave out in the second owing to the universally-jointed driving shaft coming apart. The engine of this car is rated at 60 horse-power and is probably the largest air-cooled motor which has ever been placed upon an automobile. It consists of two four-cylinder units joined together and driving a single crank shaft. The cylinders have a 5-inch bore and stroke. All the valves

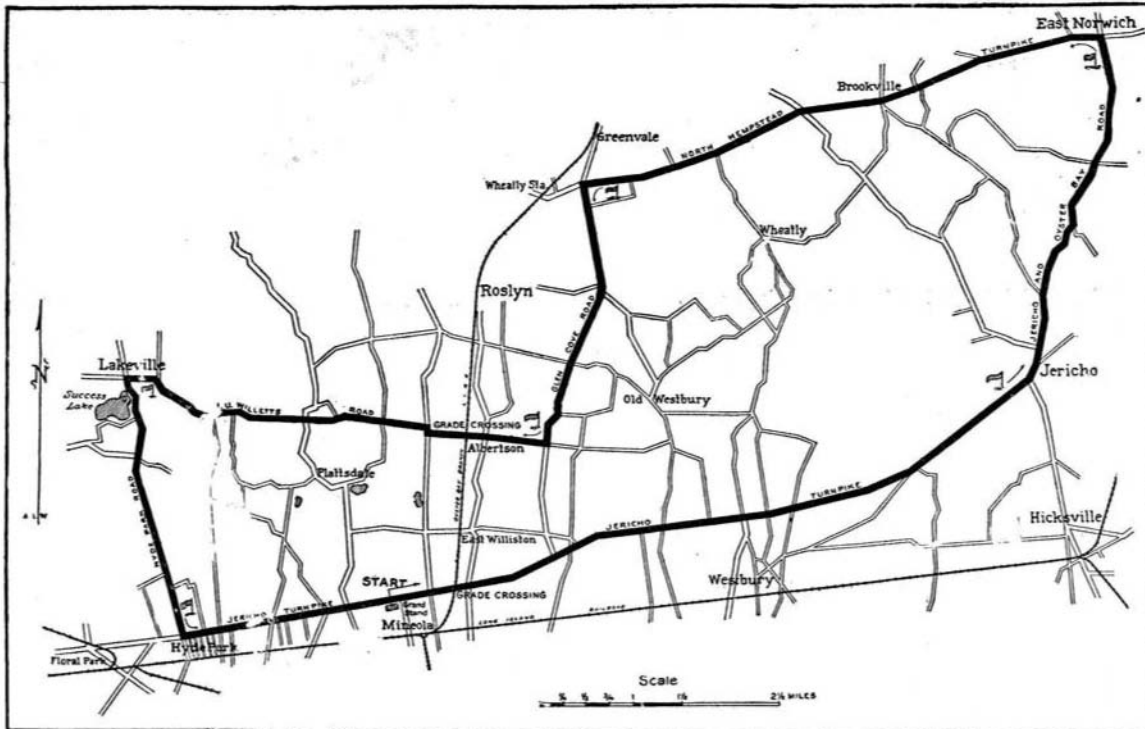
are in the cylinder heads and are mechanically operated. An auxiliary exhaust pipe is fitted and connects with ports at the base of the cylinders, as can be plainly seen in the illustration. On account of the length of the motor, the car itself has a very lengthy appearance, while the driver's seat is raised exceptionally high. The wheel base of the machine is 128 inches, and the wheels used are fitted with $3\frac{1}{2} \times 36$ and 4×36 inch tires in front and rear respectively. The weight of the machine is 2,180 pounds.

The total elapsed times of the five machines which finished were: No. 2, 60-horse-power Pope-Toledo, 2 hours and 50 seconds; No. 5, 120-horse-power Locomobile, 2 hours, 1 minute, 49 seconds; No. 7, 40-horse-power Royal, 2 hours, 19 minutes, 18 seconds; No. 1, 50-horse-power Haynes, 2 hours, 23 minutes, 32 seconds; No. 8, 60-horse-power Thomas, 2 hours, 29 minutes, 40 seconds. The average speeds of these cars in the order named were 56.54, 55.80, 48.79, 47.44, and 46.26 miles an hour. The first two of these times are a little better than the average time made by the winner, Heath, on his Panhard car last year. Although he traveled very much faster the first few rounds, he only succeeded in averaging 52.2 miles per hour on account of tire trouble. Thus it will be seen that only the first two cars made an average speed as great as that which will undoubtedly be averaged in the final race. The Thomas made 54.98 miles per hour in its first round, so that if its battery had been fastened so securely it would probably have made the third best average time. With the exception of the Christie none of the machines had tire trouble.

The race was hardly long enough to test thoroughly the endurance of tires and machines under high-speed conditions; but it is to be

hoped that the lessons to be learned from it will be taken to heart by the owners of the cars chosen, and that as a result the American cars will make a fast and steady performance in the final race.

If the team remains as selected, it will consist of the following five machines: 120-horse-power Locomobile, 90 and 60-horse-power Pope-Toledo machines, 60-horse-power Christie, and a 40-horse-power White steam racer. The last two of these machines are distinctly American types, and all are purely racing cars.

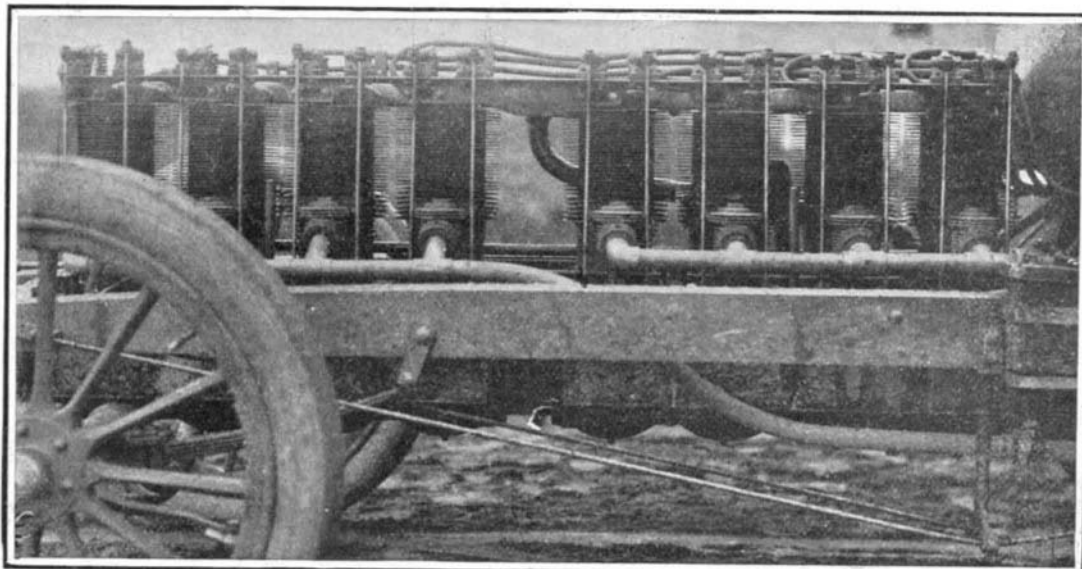


Map of the Course of the Vanderbilt Race.

The eliminating race was held over this course.

besides. Despite the accident, the machine was only two minutes slower on the third than on the second round, which was the fastest. It was during an effort to go still faster that the accident occurred. The time by rounds was as follows: 34:44, 33:21, 35:36, 35:37. The last two rounds within one second of each other is a curious coincidence in view of what happened in each.

The engine of No. 7 is a typical four-cylinder, $5 \times 5\frac{1}{2}$ motor with its cylinders cast in pairs. It is geared so as to run the car 60 miles an hour at 1,000 R. P. M. The horse-power developed is 32 to 38. The car has a three-speed sliding gear with universal joints between engine and transmission, and between the transmission and the rear axle in the propeller shaft. Roller bearings are used in the wheels and rear axle. The former are fitted with $34 \times 4\frac{1}{2}$ -inch tires. The wheel base of the car is 110 inches. This machine made an excellent showing and finished third, despite the fact that it overturned in the third round and that its driver



The 60-Horse-Power, 5 x 5-Inch, Air-Cooled, Franklin Engine.

Note the auxiliary exhaust pipe at the bottom of the cylinders.

THE VANDERBILT CUP ELIMINATION RACE.

and mechanic miraculously escaped serious injury. The six-cylinder Thomas racer was car No. 8. A good idea of the length of this machine (which has a 122-inch wheel base) is to be had from the illustration. This car would have made a far better showing had it not been for the breaking of the battery box which carried the two sets of accumulators. One of these upset and lost most of the acid as the car passed the grandstand at the beginning of the second round. Grant, the mechanic, held the battery between his feet until it was used up. Then a stop was made and the

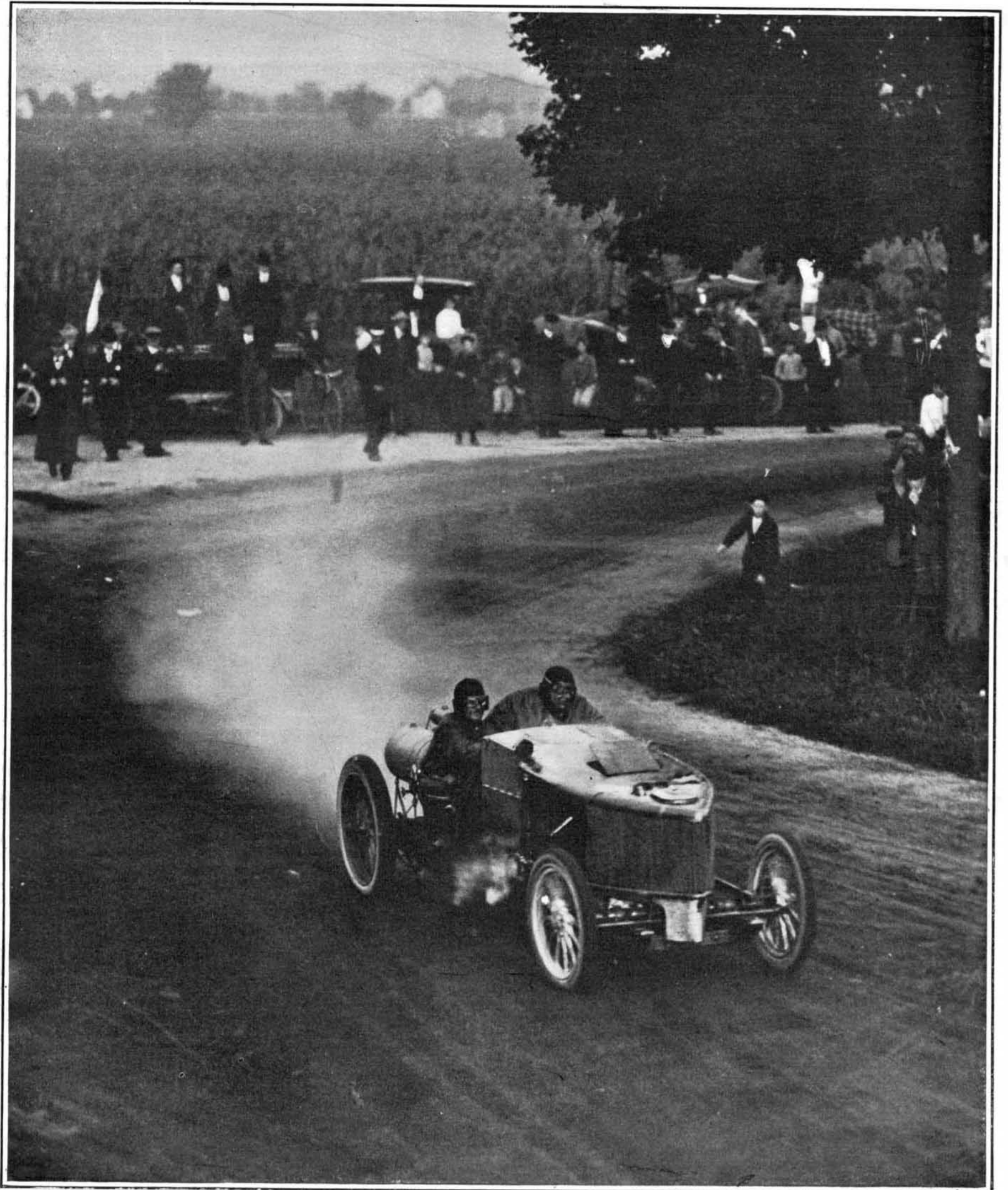
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THE 40-HORSE-POWER WHITE STEAM RACER MAKING THE TURN AT HYDE PARK IN THE ELIMINATION TRIAL RACE, TO SELECT CARS FOR THE VANDERBILT CUP RACE, WHICH TAKES PLACE OCTOBER 14, ON LONG ISLAND.—[See page 280.]