

Correspondence.

LIST OF COMPETING MACHINES.

Effect of the Sun's Rays on the Black Race.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of August 20, Prof. Edwin Grant Dexter claims that nature made a mistake in putting the black race in the hot portions of the earth, because black is a better absorber of heat than white.

Let us look at the facts. In the white man the epidermis is a nearly colorless, translucent membrane, while in the black man it is made opaque by the deposit of pigment granules in its lowest layer of cells. Then practically the difference between the two kinds of epidermis is the same as that between a sheet of clear, colorless glass and a sheet of smoked glass; that is, a sheet of glass one side of which has a coating of lampblack. Compared with clear glass, smoked glass is impervious to the sun's rays.

It is to protect the delicate tissue cells of the body from the destructive influences of the heat and chemical rays of the sun that nature has blackened the epidermis of the inhabitant of the tropics.

When we add that the radiating power of the blackened epidermis is relatively as high as its absorbing power, we think that we have proved that nature can be rightly read.

JAMES S. MAHER,

Health Commissioner of New Haven, Conn.

September 3, 1904.

FIRST COMPETITION FOR THE VANDERBILT INTERNATIONAL AUTOMOBILE CUP.

The one-thousand-dollar international cup, which was recently presented by Mr. William K. Vanderbilt, Jr., to the American Automobile Association for annual competition, was the subject of a most interesting and successful contest, which came off on October 8, on a specially-selected course on Long Island. The donor of the cup was one of the first to import an automobile into this country; he has raced in important international contests abroad, and his object in the presentation of the cup was to promote long-distance road races of this kind, under the conviction that by this means, more than by any other, the development of the very finest design and workmanship can be promoted in the automobile industry in this country. The cup, which is a handsome silver trophy, stands, with its base, about 31 inches in height, and contains 481 ounces of sterling silver. The deed of gift requires that the contests during 1904 and 1905 must be held on American soil; and the competitions of 1906 and subsequent years may be held in the country whose representative club shall have won the cup during the preceding year.

The course is in the form of an isocetes triangle, with two long sides and a short base, the base measuring about 5 miles, and the two sides about 12½ miles each in length, making the total length of the course 30.24 miles. The apex of the triangle is at the western end of the course, at the town of Queens, and the angles of the base are at the village of Jericho and where the Jericho road makes a right-angled turn into the road to Hempstead. There was no limit placed upon the speed of the contestants except at two controls, one at the town of Hicksville, where the course crosses the Long Island Railroad, and another through the village of Hempstead. The first control was 0.4 mile in length, and the automobiles were required to take three minutes in passing through the same. The other control was 1.4 miles in length, and the time of passing through it was to be six minutes. The starting point and finish of the race were on the northern leg of the triangle, at a point about 3 miles from the town of Jericho. Following the direction of the course there was, first, a run of 3 miles at high speed to this turn, which had to be taken at a speed of from 10 to 15 miles an hour; then a stretch of about 2 miles to the Hicksville control, followed by a run of three miles to the turn from the Hicksville into the Hempstead road, after which there was an uninterrupted high-speed run of about 6 miles to the Hempstead control, followed by a fast 5-mile stretch to the sharp turn at the apex of the triangle at Queens. After leaving Queens there was nothing materially to check the speed, except for some rather rough surface, until the turn at Jericho was reached. The actual distance of the course, exclusive of the controls, was therefore 28.44 miles, and as this had to be covered ten times, it made the actual racing distance 284.4 miles in length.

The roads thus traversed are typical macadam roads of that part of Long Island, level for the most part, with some slight undulations, and because of the comparatively dry weather were rather heavily coated with dust. In the preparations for the race, however, \$5,000 had been expended in oiling the roads, with the result that there was a 10-foot racing track in the center of the road that was free from dust, hard, and fairly smooth. Some work had been done in smoothing the roads and fixing up the bad spots at turns and grade crossings; but on that portion of the course outside of the controls, that is on the actual race track,

ORDER OF START.	MACHINE.	HORSE POWER.	OWNED BY	DRIVEN BY
1	Mercedes Simplex	60	S. B. Stevens	A. L. Campbell
2	De Dietrich	80	De Dietrich et Cie.	F. Gabriel
3	Royal Tourist	35	Royal Motor Car Co.	J. Tracy
4	Pope Toledo	60	Pope Motor Car Co.	A. C. Webb
5	Mercedes	60	Geo. Arents, Jr.	G. Arents, Jr.
6	Pope Toledo	24	Pope Motor Car Co.	H. H. Lytle
7	Panhard & Levassor	90	Panhard & Levassor	George Heath
8	Mercedes	60	E. R. Thomas	E. E. Hawley
9	Mercedes Simplex	90	C. Gray Dinsmore	W. Werner
10	Fiat	90	A. G. Vanderbilt	P. Sartori
11	Renault	90	W. G. Brokaw	M. Bernin
12	Clement Bayard	90	A. Clement	A. Clement, Jr.
13	Panhard & Levassor	90	Panhard & Levassor	H. Tart
14		90		G. Teste
15		90		C. Schmidt
16	Packard Gray Wolf	24	Packard Motor Car Co.	F. Croker
17	S. & M. Simplex	75	F. Croker	J. Luttgen
18	Mercedes	60	I. Wormser, Jr.	W. Wallace
19	Fiat	90	W. Wallace	

there were, in addition to the three sharp turns at the corners of the triangle, two railroad grade crossings and one or two turns and difficult places that required a slackening of the speed. Moreover, with its customary temerity and willingness to take a chance where any excitement is to be had for the risk, the American public crowded on to the course, and in walking from spot to spot to obtain different points of vantage, did not hesitate to use the oiled center of the road for their perambulations. The course was patrolled by motor bicyclists bearing the official badge, each patrol covering a mile and a half of the course. Flagmen were also stationed at the cross roads, and it was to these that the public seemed content to trust for warning that a car was coming, when they would scatter, often only a few seconds before a machine would thunder by at from 60 to 85 miles an hour. This condition of things was the fault of the public and not of the promoters of the race, who had presented verbal and written warning to the public to remain at the fence line and not, under any circumstances, come upon the road.

The race was started promptly at 6 o'clock, and the eighteen contestants were sent off at two-minute intervals, with a standing start. It was expected that a speed of between 50 and 60 miles an hour would be realized, and consequently the cars started at 6 o'clock would be due about 6.35, or close upon the heels of the last machine to start—a 90-horse-power Fiat which was dispatched at 6.32, the other Fiat, owned by A. G. Vanderbilt, having failed to start because of machinery troubles. The first of the racers to complete the circuit was Gabriel, on his 80-horse-power De Dietrich. Then came No. 4, a 60-horse-power Pope-Toledo, followed by the first starter, a 60-horse-power Mercedes. The fourth machine was a 90-horse-power Panhard driven by Heath, who had made up 10½ minutes on the leader in the first round, thus giving early evidence that, barring accidents, he would be well up among the leaders at the finish. The fastest time for the first round, and the fastest for the whole race, was made by Teste on another 90-horse-power Panhard, the circuit being made in 24 minutes and 4 seconds, a speed of 70.9 miles per hour for the whole of the racing course, the controls being omitted. When we remember that speed had to be slowed down below 15 miles an hour for the turns, and that considerable time was lost in getting up speed in leaving the two controls, it can easily be understood that on the long stretches of straightaway track, a rate of between 80 and 85 miles an hour must have been reached. Teste continued to maintain his terrific pace for three rounds, but on the fourth round the clutch broke and he was out of the race. Evidently, he was the most daring driver of the eighteen, his speed for the ninety miles averaging about 68 miles an hour. The second best time in the first round was made by Gabriel in 26 minutes, 57 seconds; and the third fastest by young Frank Croker, driving a 75-horse-power Smith & Mabley Simplex, his time being 27 minutes and 35 seconds. Clement, on a 90-horse-power machine of the same name, made the round in 27 minutes, 51 seconds; and Heath, who was destined to win the race, in 28 minutes and 52 seconds. The trouble to tires and mechanism began with the very first round. Wallace, on a 90-horse-power Fiat, broke his clutch and never completed the round; Tracy, on his 35-horse-power Royal, with a bevel gear drive, broke the driving shaft, made temporary repairs, and completed the round in 2 hours, 29 minutes, 45 seconds. The second round was prolific of disaster. The first to complete it was Gabriel, who made the distance in 27 minutes, 14 seconds; and he was followed by Heath in 28 minutes, 18 seconds; Campbell, driving Thomas' 60-horse-power Mercedes, in 28 minutes, 17 seconds; and Teste in 26 minutes, 37 seconds. It was in this round that the first American machine dropped out of the race, the Royal being hopelessly disabled by a cracked cylinder. It was in this round also that the only fatality of the race occurred. The car driven by George Arents, Jr., a 60-horse-power Mercedes, overturned, killing the mechanic and rendering Arents himself unconscious. Early in the first round, in stopping rather suddenly on entering a control, his car swung and hit a tree.

On the second round, the tire on the wheel which hit the tree flattened and ultimately flew off. Arents seems to have used the brake again too suddenly, with the result that the car skidded badly, and the combined wrench of the brake and the skidding seems to have torn the rim entirely from the wheel, overturning the car, with the fatal results stated. Outside of this there were no serious accidents throughout the whole race.

In this same round the Mercedes car No. 9 was put out by a cracked cylinder, and the 90-horse-power Renault was disabled by the breaking of the main shaft of the bevel drive. In the third round the fastest time was again made by Teste in 25 minutes and 48 seconds, followed by Heath in 26 minutes, 19 seconds; and Gabriel in 27 minutes, 36 seconds. This round was not marked by any withdrawals. The fourth round saw the collapse of Teste, who was leading by a large margin, his failure being due to a broken clutch. The fastest time was that of Heath (27 minutes, 23 seconds) followed by Hawley in 31 minutes and Gabriel in 33 minutes and 30 seconds as the fastest for the round. By this time Heath had a comfortable lead over Gabriel, who was beginning to experience tire troubles. The fifth round found Heath not only keeping up his fine pace, but gradually increasing it, the round being made in 25 minutes and 13 seconds; the next fastest time was made by Teste in another 90-horse-power Panhard in 25 minutes and 40 seconds. Clement, who before the race had been picked as the winner, a young man of twenty-one years, who was driving a machine made by his father's company, had been having tire troubles earlier in the race, but now was beginning to pick up. He made this fifth round in 29 minutes and 33 seconds.

Meanwhile, during the first half of the race, the more moderately-powered American machines had been meeting with varying fortunes. The 60-horse-power Pope-Toledo had trouble chiefly with tires, which threw it hopelessly behind. It did not, however, suffer any permanent breakdown. The little 24-horse-power Pope-Toledo had maintained a remarkably even rate of speed, making the rounds in from 37 to 38 minutes, and with the dropping out of its big foreign opponents, matters began to look promising for its chances. The 24-horse-power Packard machine was doing almost as well; while Croker, in his 75-horse-power Smith & Mabley Simplex, who had made the first two rounds a minute faster than Heath, was making a plucky fight against continually-recurring tire troubles. The fastest time of the sixth round, 31 minutes, was made by Clement who, as the result of a loss of twenty-five minutes by Heath in putting on a new tire, was coming up fast on the leader. In the seventh round, made by Heath in 30 minutes and 5 seconds and by Clement in 30 minutes and 12 seconds, Gabriel, who had been dropping behind in the last two rounds, retired with a broken pump chain. In the eighth round, made by Clement in 33 minutes and 5 seconds, Heath was again delayed by his tires, and took 57 minutes and 27 seconds for the round, thus placing Clement in the lead. From here to the end the race lay between Clement and Heath. At the end of the eighth round, Clement, four minutes ahead of Heath, looked likely to be the winner; but in the ninth and tenth rounds, Heath, in a fine burst of speed, made the circuit in 28 minutes and 52 seconds and 27 minutes and 5 seconds, and managed to come in with a scant margin of 1 minute and 28 seconds, having ridden the whole distance of 284.4 miles at an average speed of 52.22 miles an hour.

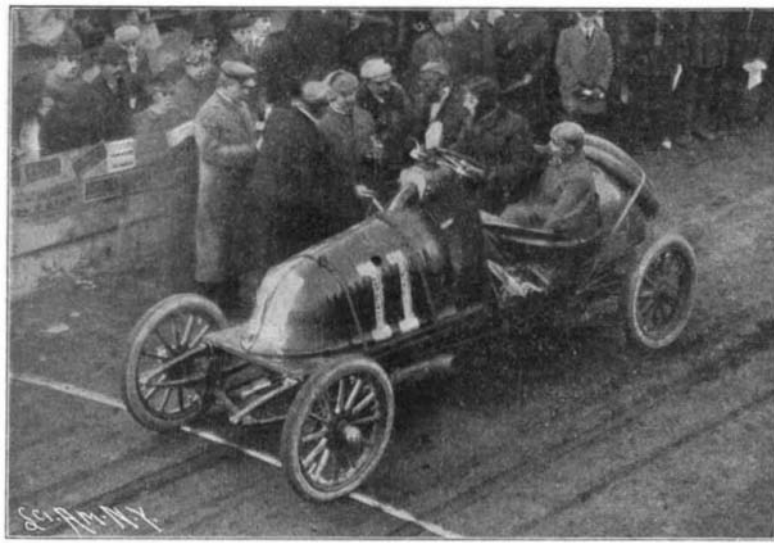
The result was decidedly popular, the winner being an American and the car one of the well-known Panhard make. The race was stopped as soon as Clement had passed the line, because of the crowding of the course; but had the race been run out, there is no doubt that the 24-horse-power Pope-Toledo machine would have been third and the 24-horse-power Packard fourth.

Analyzing the race in respect of the nationality of the contestants, we find that of five American cars that started, three finished; of five German Mercedes machines, two finished; of six French machines, two finished, taking first and second place; and of the two Italian machines, one started but did not finish. On

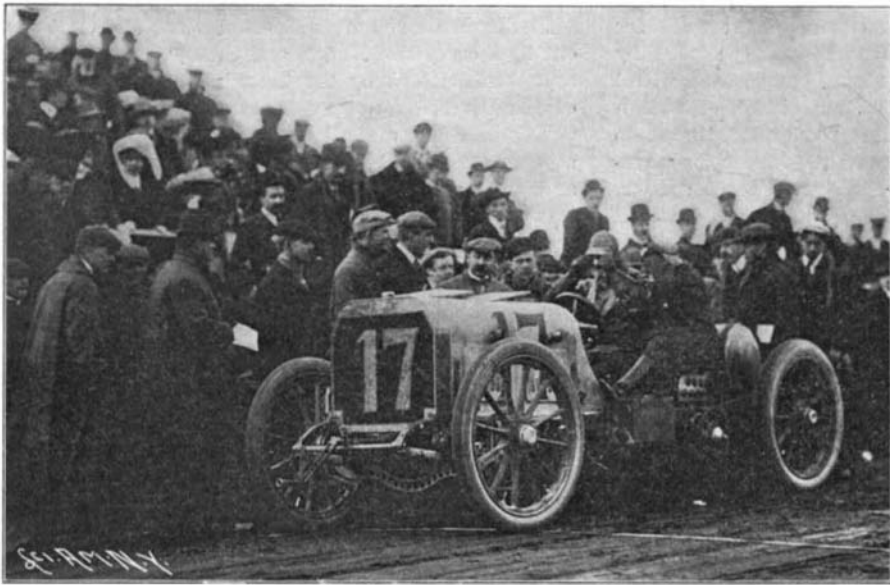
this record, the honors evidently go to the French machines as winners, but on the score of endurance and position, we candidly think that second place is held by America, her machines having taken third and fourth place, and having the highest proportion of machines that finished to those that entered. It is also greatly to their credit that two of the machines that took second and third place were of light weight and moderate horse-power, the Pope-Toledo and Packard machines having only 24 horse-power, while the Smith & Mabley Simplex driven by Croker was still running when the race was called off and would probably have finished.

The study of the causes of partial or permanent breakdown is a very instructive one and valuable to the manufacturer. Of the French machines the 90-horse-power De Dietrich broke its pump chain; the 90-horse-power Renault broke its bevel drive shaft; another Panhard was put out of the running

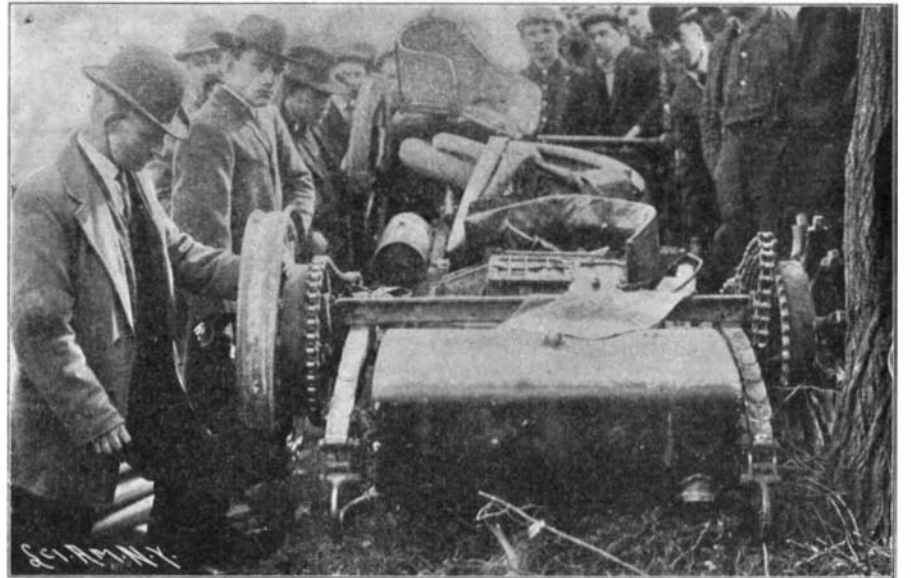
by tire troubles, and another broke its clutch. Of the American machines, one broke its bevel drive shaft, being finally disabled by cracked cylinders; another its steering gear; and the other three had tire troubles. The Simplex machine was found to be over the specified weight, and in order to bring it within requirements, every part of the machine that would stand it, and, as the event proved, some parts that would not stand it, were drilled full of holes. The frame was thereby weakened too much, and sagged so badly that the gear was in danger of striking the ground. Of the five German Mercedes machines, one was wrecked through the collapse of a rear tire, due probably to collision with a tree; another, driven by Hawley, smashed its front springs while turning out of the oiled path in order to pass another machine; the third, a 90-horse-power Mercedes, cracked its cylinders. The one Italian machine in the race broke its clutch.



Broke bevel drive shaft in second round.  
Start of 90-Horse-Power Renault, Driven by M. Bernin.



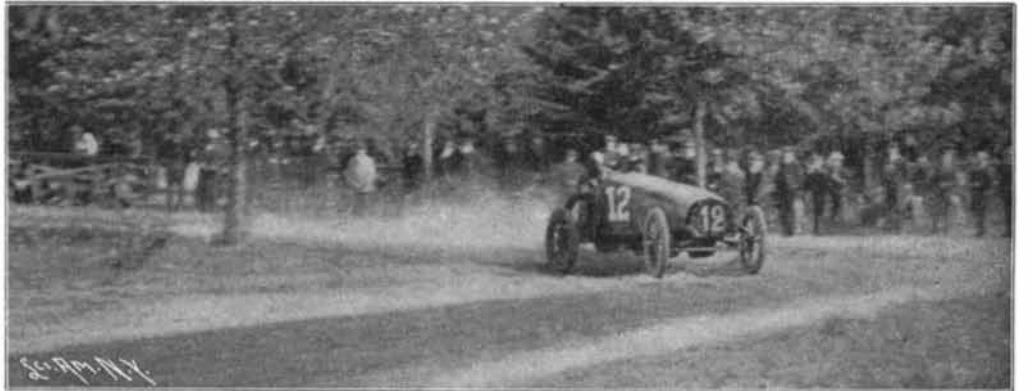
Note the drilling out of axle and other parts to lighten machine.  
Frank Croker in 75-Horse-Power Simplex.



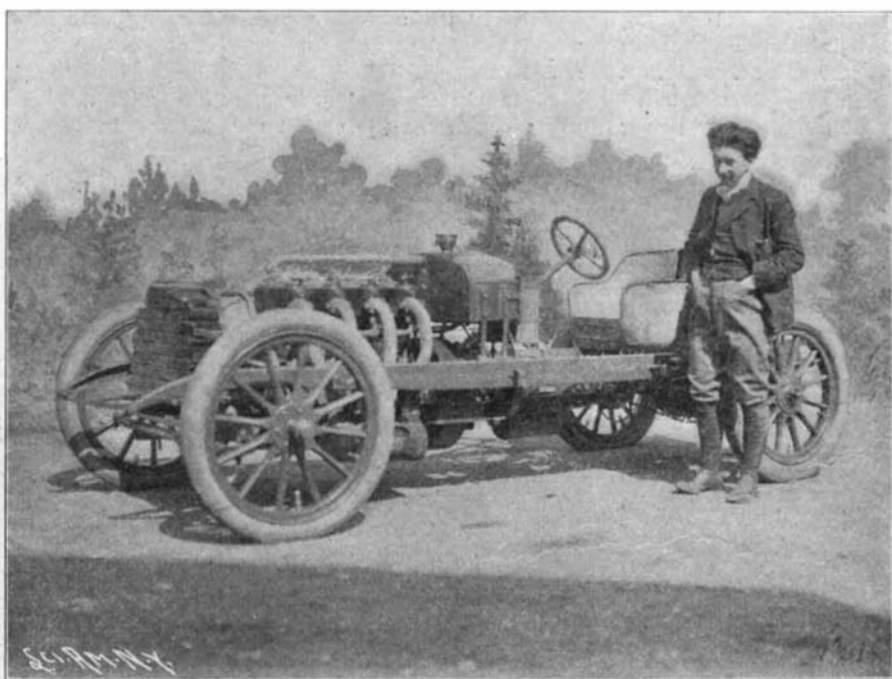
Overturned; machinist killed and Arents injured.  
Wreck of Arents' 60-Horse-Power Mercedes.



In fourth place at finish.  
24-Horse-Power Packard, Driven by C. Schmidt.



Some of these turns were over 90 degrees.  
Clement Taking One of the Sharp Turns.



The youngest of the contestants, 21 years old.  
Clement-Bayard Machine with Housing Removed, and its Driver, A. Clement, Jr.



Before the start.  
The Winner and His Mechanic.