Correspondence.

The Gila Monster and Its Prey.

To the Editor of the Scientific American:

I read in the issue of your paper for September 15 an interesting account of the Gila monster, by D. A. Willey, in which he says: "The breath is very fetid, and its odor can be detected at some little distance from the lizard. It is supposed that this is one way in which the monster catches the insects and small animals which form a part of the food supply—the foul gas overcoming them."

Now, although I do not know much about the Gila monster, it seems to me that a more plausible explanation of the use of this "foul gas" is that it attracts insects to the lizard, by its resemblance to the odor of putrid meat. Sydney A. Wright.

Bangor, Me., September 16, 1906.

Relation of Speed to Automobile Dangers.

To the Editor of the Scientific American:

Many, if not most, of the automobile accidents are due to the fact that the drivers do not know or do not realize the relation which speed bears to danger. The danger in all cases increases as the square of the speed. Take three machines of the same make, one going five miles an hour, one twenty miles an hour, and one forty miles an hour. The second has stored up in it, due to its rapidity of motion, sixteen times as much energy as the first, and if it leaves the road and runs into an obstacle, such as a tree, a stone wall, or a ditch, it will strike with sixteen times as great force. In going around a curve or turning a corner, it is sixteen times as likely to upset, skid into the ditch, or strip a tire; when the power is shut off and the brakes applied, it will go sixteen times as far before it can be brought to a stop; if it comes upon a pedestrian suddenly, the latter will have to exert sixteen times as much energy to get out of the way in time, and if struck will be struck with sixteen times the force. The third machine will be sixty-four times as likely to get into trouble in going around a curve as the first; if it strikes an object, it will do so with sixty-four times the force; when the brakes are applied, it will go sixty-four times as far before stopping; and if it comes suddenly upon anyone on foot or driving, the latter will have sixty-four times as much difficulty in getting out of the way in time.

An object going five miles an hour is moving with the same speed as it would have attained in falling ten inches; in moving ten miles an hour it is going as fast as though it had fallen three and a half feet. As the first is the average, and the second generally the extreme speed of horses and carriages, it follows that drivers of the latter seldom need to take speed into account in this connection. With automobiles it is different. Twenty miles an hour is generally considered a very conservative speed. Now, twenty miles an hour is the same speed that would be obtained were the machine to fall thirteen feet through the air; thirty miles an hour is equivalent to a fall of thirty feet; forty miles an hour to a fall of fifty-two feet; sixty miles an hour to a fall of one hundred and twenty feet; and one hundred and twenty miles an hour, the speed developed by one or two machines in the Florida contest last winter, to a fall of four hundred and eighty feet. A person struck by an automobile going twenty-five miles an hour receives the same jar as though he himself had fallen from a height of twenty-one feet, or say from a second-story window; by one going forty miles an hour, as though he had fallen fifty-two feet, or say from the top of a lofty tree; by one going a hundred and twenty miles an hour, as though he himself had fallen from the top of the Washington monument.

A consideration of these facts should help both legislators and automobile drivers in placing limits on speed. Charles S. Adams.

Are Sun Spots Caused by Tidal Action?

To the Editor of the Scientific American:

Many theories have been advanced as to the cause of sun spots. I suggest one here that I have never seen published before; that is, that the bodies revolving around the sun are directly responsible for the periodic roiling up of his surface. It has, indeed, been suggested that Jupiter and Saturn might produce the stress necessary, but they having been found inadequate in themselves, this tentative theory has been abandoned. I began to look for the nearest fixed star as the probable cause, but gave that up for the time being, as I now think that there are doubtless other large bodies in the solar system besides Jupiter and Saturn. To be brief, I think there is a companion sun. Against the theory that the sun spots are caused by forces from within the sun, I suggest the following:

No celestial body has an inward mechanism, like a clock, for instance, to produce periodically outward manifestations like spots on the sun.

All periodic changes that we see are produced by a disturbance from without, by some other body.

The most regular and periodic agency in the universe that we know of is an orbit, or a body moving in an orbit. Its regularity is absolute.

The spots on the sun appear at regular intervals.

The phenomena of the sun spots are tidal phenomena produced by bodies revolving around the sun in orbits.

A large body, about one-third the diameter of the sun, situated at the outskirts of the solar system, acting in conjunction with Jupiter and Saturn, which are comparatively near, would produce the required tidal action to make spots. The large outer body, or companion sun, has such a slow motion in its orbit, that for the question we are now discussing, it is practically still. Once in about eleven years Jupiter comes round on the same side of the solar system as this large body, which we will call Olympia, and both pull on the sun. Saturn can be either with these two, or directly opposite, like the sun and a full moon, making the same tide on the earth.

I am led to believe that there are perhaps three large bodies belonging to the solar system, outside the orbit of Neptune. The two next outside of Neptune are planets, and the third one out is a companion sun, some 200,000 or 300,000 miles in diameter, and distant some 33 hours in light waves. Though it may be self-luminous, it is probably only of the 18th magnitude.

On the earth the tide consists simply of a wave of water, which quickly subsides, but on the sun the tidal stress breaks open an envelope, liberates enormous quantities of gas or even molten material, and leaves a scar or spot that takes weeks to heal up. The thrown-out matter does not fall back again vertically, but distributes itself around, and the scar has to heal as best it can, with whatever matter it can collect.

The visible result of the tidal stress on the sun is somewhat different from that on the earth. Here we have the wave of water going around the globe. On the sun the tidal influence of Olympia is so evenly balanced with the strength of the sun's crust, or overcoming power, that no apparent tide is produced, but when Jupiter or Saturn comes in line, the balance is disturbed, the crust breaks, and an eruption takes place producing a spot. Imagine the Atlantic and Pacific oceans covered with ice to such a depth that no visible tide takes place twice daily as at present, but only twice a month, when the moon is new or full. On those two occasions the ice cracks, and the water spurts up into the air for hundreds of feet, and falling, makes a great frozen mound of ice. Two observers on Mars, let us imagine, see the phenomenon. One lays it to a powerful volcanic force, the other to tidal action. There may be no actual crust on the sun, but the hot gases, being held down by gravitation, are relieved and allowed to rise on account of the tidal stress at periodic intervals.

William D. McPherson.

South Framingham, Mass., September 15, 1906.

[Our correspondent's ingenious theory has been submitted to Prof. Henry Norris Russell, of Princeton University, who gives his views as follows:

"The theory outlined fails to stand the test of simple mathematical analysis.

"Such a body as the hypothetical Olympia may perfectly well exist. With a diameter one-third that of the sun, and a distance of 33 light-hours, or 240 times the earth's distance from the sun, it would be of about the twelfth magnitude, if shining by reflected light, and might easily remain undiscovered. But such a body would not produce sensible tides on the sun. The tide-raising force varies inversely as the *cube* of the distance. Olympia being by hypothesis of about 30 times Jupiter's mass, and 45 times its distance from the sun, would have a tide-raising force of $30/45^3$, or 1/3,000 as much as Jupiter, which is less than that of any one of the principal planets of the solar system except Neptune.

"It has often been suggested that the periodicity of sun spots is caused by planetary tidal action, but this is rendered improbable by the fact that they are *roughly*, not accurately, periodic, the successive maxima being different in intensity and unequally spaced.

"The correspondent is wrong in assuming that no celestial body has an inward mechanism . . . to produce manifestations like spots. Certain variable stars are almost certainly of this character. For a terrestrial example take the "Old Faithful" geyser in the Yellowstone, which is almost as regular as the sun spots, though the periodicity is certainly due to internal forces."]

The Current Supplement.

"The Tortosa Astronomical Observatory" is the title of the opening article of the current Supplement, No. 1606. Good illustrations accompany the text. Hector Macpherson writes on the construction of the Heavens. Prof. Sir James Dewar contributes a most instructive article on some new low-temperature phenomena which he has observed. The fourth installment of the article on Tinning is published. This installment deals with the tinning of copper and brass, blanching, stannic chloride, tinning of lead and zinc, extraction of tin from scrap tin, and tinning with tin amalgam. Some very old Greek jewelry which has been acquired by the Metropolitan Museum of Art is described and illustrated. Prof. Max Standfuss has for years been propagating butterflies and moths under artificial temperature conditions. He has taken the eggs of middle European moths, for example, and bred them at very low temperatures, and obtained varieties of that same middle European moth found only in Arctic regions. Similarly, eggs of the middle European moths, hatched at very high temperatures, produce varieties that are to be found only in tropical countries. Furthermore, by changing the temperatures he has obtained varieties which have existed but are now extinct, and varieties that will exist thousands of years hence. These experiments have a most important bearing on the old problem of the origin of species. Dr. Standfuss writes exhaustively of his experiments in the current Supplement. Prof. Crocker, of Columbia University, writes on some tests made with a new primary battery, which he considers a marked improvement in the making of batteries.

New Method of Photographing Colors.

Mons. Lippmann, to whom we owe all the progress made up to the present time in the difficult problem of the direct photography of colors, has just proposed a new solution. The principle of it is based upon the decomposition of white light by the prism. The colored object chosen as a model is placed before a glass plate bearing longitudinal striæ or flutings to the number of five to the millimeter. These flutings act like very small prisms which decompose the luminous sheaves proceeding from the image at their passage into the camera obscura. After the proof is obtained, developed and dried, it is placed in its position behind the fluted plate. If then it be illumined with the white light, it is seen through this plate to appear with the colors of the object photographed. The dispersive system of the fluted plate has decomposed the light into its elementary rays, and the colored radiations have been distributed upon the sensitive plate.—From L'Illustration.

THE WINNING FOREIGN MACHINES IN THE THIRD INTERNATIONAL RACE FOR THE VANDERBILT CUP.

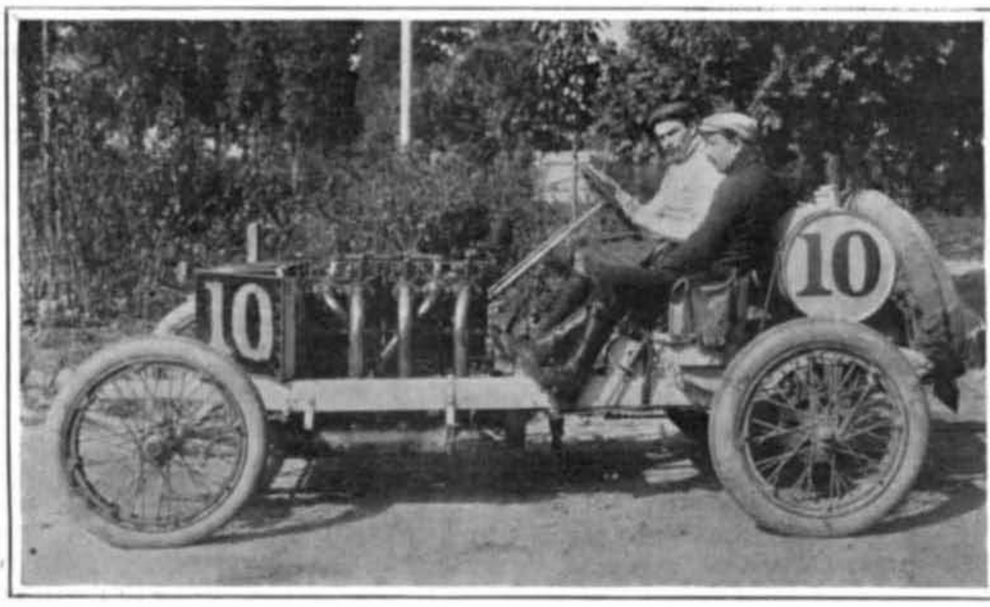
The photographs which we reproduce on the following pages show seven of the eight foreign makes which ran in the third Vanderbilt cup race last Saturday, and one of the most novel American cars—the Christie. The other car of distinctively American design—the 110-horse-power air-cooled Frayer-Miller racer—we have already illustrated in the issue of September 29.

The Vanderbilt race last year was won by a four-cylinder Darracq light-weight racer of 80 horse-power. A car of similar type, but of 100 horse-power, was one of the representatives of France this year. Our illustration shows this machine mounted by its driver, Wagner, who recently won with it the 100-kilometer (62-mile) Ardennes race in France at an average speed of 72 miles an hour. This car differs from the other racers chiefly in two respects, viz., its short wheel base of but 96 inches, and its tangent, wire-spoked, suspension wheels. Much ingenuity has been used in fitting these wheels with detachable rims, so that the tires can be changed as readily and quickly as can those on any of the wood-wheeled racers, all of which are likewise provided with practically the same form of detachable rim, whereby, by removing eight or ten nuts, rim and tire can be quickly removed and replaced. The Darracq engine, as heretofore, is an extremely neat, clean-cut affair. The inlet and exhaust valves are placed in the cylinder heads, and are operated by light tappets on top. All the valve mechanism is worked from a single camshaft. The make-and-break igniters, and the low-tension magneto which supplies them, are on the opposite side of the engine to that shown. The peculiar plow-shaped radiator shown keeps the cooling water for the engine jackets below the boiling point without any fan to increase the draft. The water is circulated by a centrifugal pump. By pushing a button on the dash the driver can relieve the water-circulating system of any steam or air pockets that might form. The 1905 Darracq racer had no differential, and the transmission was suspended from the frame in the usual manner. The new racer, however, has the transmission combined with the differential on the rear axle—a most unusual place for it on a racing car. This transmission furnishes three speeds and reverse, as usual. The second speed is as high as 65 miles an hour. A propeller shaft with universal joints connects the leather-faced cone clutch in the motor flywheel with the transmission on the rear axle. The brake pedal operates a hinged band brake on the transmission shaft, while the emergency brake lever operates expanding-ring brakes in the rear wheels. The round tank behind the seats has a fuel capacity of 30 gallons, and supplies the carbureter by gravity. The water tank is built around the seats, and holds 6 gallons of water. The 3-gallon oil tank is placed on the floor directly in front of the driver's seat, and is fitted with a hand pump for forcing oil into the engine crankcase. The frame of the racer is of pressed steel, stamped from a single piece. The car, while extremely speedy and powerful, is in no sense a freak, as it is built along the same lines as most Darracq touring cars, albeit it contains several new features that will doubtless be incorporated in them in the near future. The bore and stroke of the engine of this car are 180 and 140 millimeters (7.086 and 5.511 inches) respectively. The wheels are equipped with 880 x 120 millimeter (34.64 x 4.72-inch) tires. The tread is narrow, being but 52 inches. The car weighs 2,213 pounds, which shows it to be heavy despite the appearance of lightness.

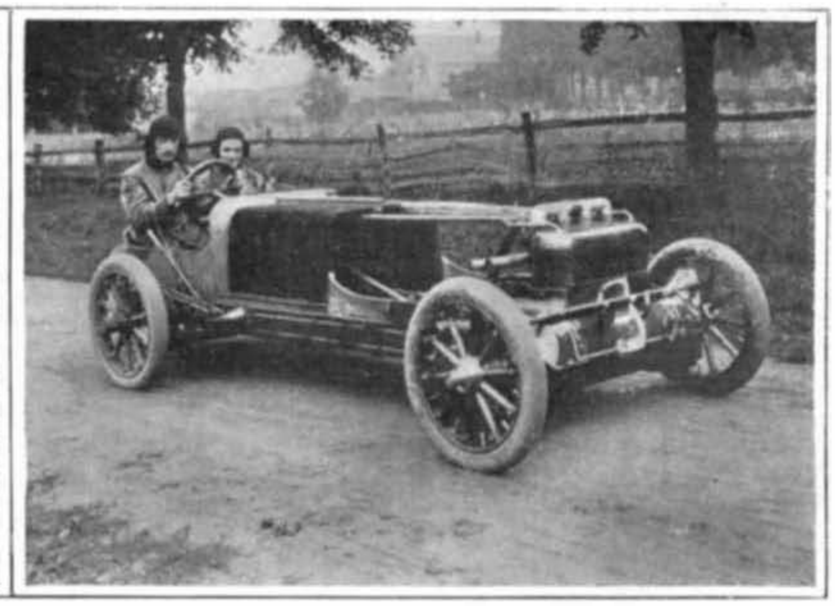
The only really light car of the entire seventeen is the Christie direct-drive racer. This machine weighs only 1,780 pounds and is provided with a 50-horse-power, 5⅜ x 7-inch, 4-cylinder engine, the crankcase of which forms the front axle, as shown in the photograph. The drive is direct to the front wheels through cone clutches in the flywheels of the engine. A low speed, which is thrown in by means of a small multiple-disk clutch, is also provided. The Christie and the Frayer-Miller cars are each provided with a two-circulated by a gear pump, gear-driven. The hub and spokes of each wheel of Christie's car are a single manganese-bronze casting. The rims are attached to the spokes by bolts. A special brace is used to remove the nuts, and it is possible to change a rim and tire in less than two minutes. The wheel base of the car is 101 inches. The tread is slightly wider than usual.

The Panhard car, as usual, was driven by Mr. George Heath. This car had no particular innovations. The 120-horse-power engine consists of four individual steel cylinders of 180 x 185 millimeters (7.086 x 7.283 inches) bore and stroke. The cylinders are fitted with corrugated copper water jackets and integrally-cast heads having inlet and exhaust valve chambers placed symmetrically, one on each side. The spark plugs, fed from a gear-driven high-tension magneto, are located in the side of the inlet-valve chambers. The water is circulated through a honeycomb radiator by means of a centrifugal pump. No fan is used. An hydraulically-regulated Krebs automatic carbureter is employed. A steel multiple-disk clutch is placed between the engine and transmission, which is of the selective type giving four speeds ahead. The fuel tank has a capacity of 30 gallons. The car has a racer has separately cast cylinders with inlet and exhaust valve chambers located symmetrically on each side. The bore and stroke are about 6½ x 6½ inches. The cylinders are fitted with copper water jackets. A multiple-disk clutch, consisting of 56 steel rings having an 8-inch hole in the center and an outside diameter of 9 inches, is used. A 4-speed selective-type transmission is used. Ball bearings are employed throughout, except in the engine. A 40-gallon gasoline tank is fitted. The wheel base is 114 inches, and the tread 52. Like all the other foreign machines, this car has detachable rims.

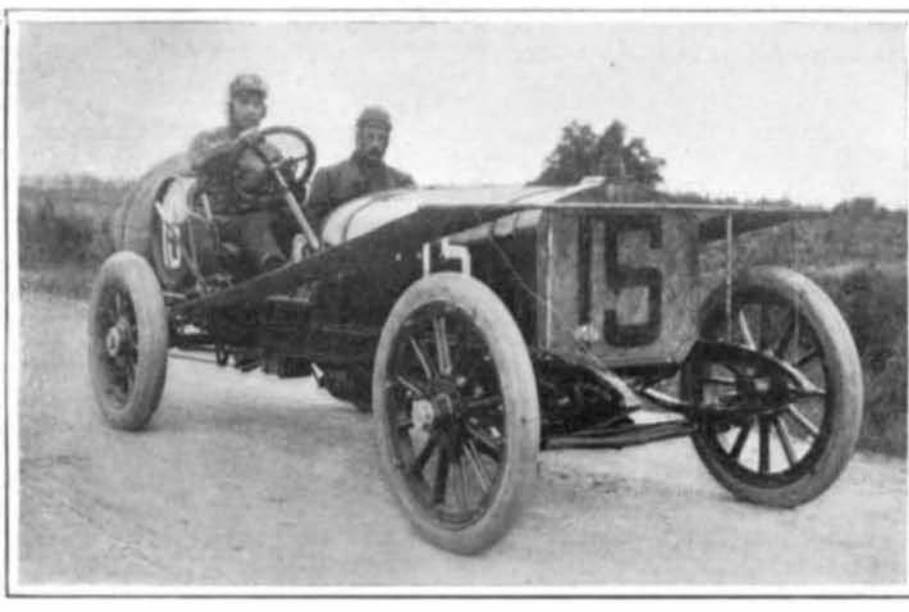
The 130-horse-power Hotchkiss racer is one of the most refined French machines. Ball bearings are used throughout, even in the engine crankshaft. The cylinders of 160 x 180 millimeters (6.299 x 7.086 inches) bore and stroke, are cast integrally in pairs. They are fed from a double-spray carbureter with perpendicular air currents, the carbureter being supplied with fuel by gravity from a 33-gallon tank. A centrifugal pump circulates the cooling water through a tubular radiator. No fan is provided. A pressure-feed oiler is employed. An Eisemann high-tension magneto supplies the ignition current to the spark plugs. The spark



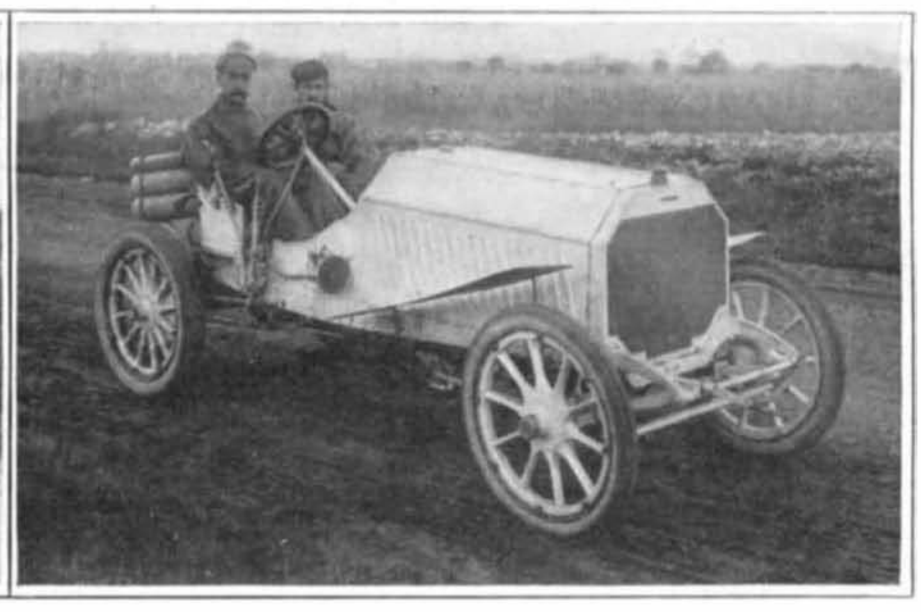
Wagner on His 100-Horse-Power Darracq Racer, Which Won in 4 Hours, 50 Minutes, 10⅗ Seconds—an Average Speed of 61.43 Miles an Hour.



Walter Christie on His Direct-Drive 50-Horse-Power Racer, Which, at the End of the 3rd Round, was Running in 7th Place.



Clement on His 100-Horse-Power Racer, Who Finished Fourth in 5 Hours, 1 Minute, 59⅘ Seconds.



Heath on His 120-Horse-Power Panhard, Which Was in 9th Place at the End of the 8th Round.

THE WINNING FOREIGN MACHINES IN THE THIRD INTERNATIONAL RACE FOR THE VANDERBILT CUP.

speed transmission merely, instead of one giving three or four speeds. Owing to the demolishment of his 120-horse-power racer from a collision with a telegraph pole when practising, Mr. Christie was obliged to fall back upon his first touring car, which had just been completed but never run. He transformed it into a racer in time to enter the elimination race, in which he was running in fifth place at the finish, and thus was placed on the American team. His "touring-car racer" is of the same horse-power as the Haynes machine, which was the only other low-powered car on the American team; but on account of its light weight and extremely efficient drive, it was able to make much faster time than the latter, and consequently to stand a chance of winning. At 1,000 R. P. M. of the engine and wheels (which are shod with 28 x 3½-inch Diamond tires) Christie's car makes 83 miles an hour. The novel features of this machine are the engine, which has copper water jackets, with a large exhaust valve in the center of each cylinder head surrounded by four small, flat-seated, automatic inlet valves; and the radiator, which, as can be seen in the photograph, is made up of a large number of finned tubes placed lengthwise in front of the dashboard. The water is wheel base of 2.4 meters (94.48 inches) and a tread of 1.2 meters (47.24 inches). It is fitted with 870 x 90-millimeter (34¼ x 3½-inch) tires on the front wheels and 935 x 135-millimeter (36.8 x 5.3-inch) tires on the rear. It weighs complete 1,000 kilogrammes (2,204 pounds) plus the 15 pounds extra allowed for the magneto, which makes a total weight of 2,219 pounds. It was one of the smallest and highest-powered cars that competed.

The 120-horse-power De Dietrich racer, driven by Duray, was one of the most formidable-appearing of the foreign cars. It has a 4-cylinder, 7.28 x 6.28-inch engine having the cylinders cast in pairs. Unlike its mate the Panhard, this car has the older form of double side-chain drive to the rear wheels instead of a shaft drive. The engine has a cone clutch, centrifugal water pump, make-and-break magneto ignition, and a special form of carbureter designed for perpendicular air currents. The wheel base and tread of this car are 116 and 55 inches respectively. Its weight is 2,204 pounds. This car is fitted with a 4-speed transmission, and it is geared to make extremely high speed.

The engine of the Clement-Bayard 125-horse-power is set at 90 millimeters (3½ inches) advance (measured on the flywheel), and the entire control of the engine is had by throttling it. This car is fitted with shaft drive. No shock absorbers are required, on account of the suppleness of the springs. A leather-covered cone clutch is fitted in the motor flywheel. The transmission gives four speeds. Detachable rims fitted with 870 x 90-millimeter and 935 x 135-millimeter tires front and rear are employed. The wheel base and tread of this car are 104 and 57 inches respectively.

The German team consisted of but two 120-horse-power Mercedes racers, as Mr. Foxhall Keene's machine, which otherwise would have run, was disabled by cracking a cylinder during practice. These two cars are similar in most respects to the 1905 Mercedes racers. A new form of spiral clutch known as the Lindsay is employed, however. The cylinders, of 7-inch bore by 6-inch stroke (approximately), are cast in pairs. The well-known honeycomb radiator and centrifugal water pump, together with the low-tension magneto ignition, are retained. The wheel base of these cars is 115 inches, and the tread 53½.

The Italian team consisted of three 120-horse-power Fiat racers and two 120-horse-power Italas. Both of these makes have integral cylinders cast in pairs, the cylinder dimensions of the former being 7¼ x 6½, and those of the latter 7¼ x 5¾ inches. Both makes have a final drive by chains to the rear wheels. Both are provided with multiple-disk clutches, four-speed transmissions, etc. The wheel bases and treads are respectively 112 x 52 and 116 x 55 inches.

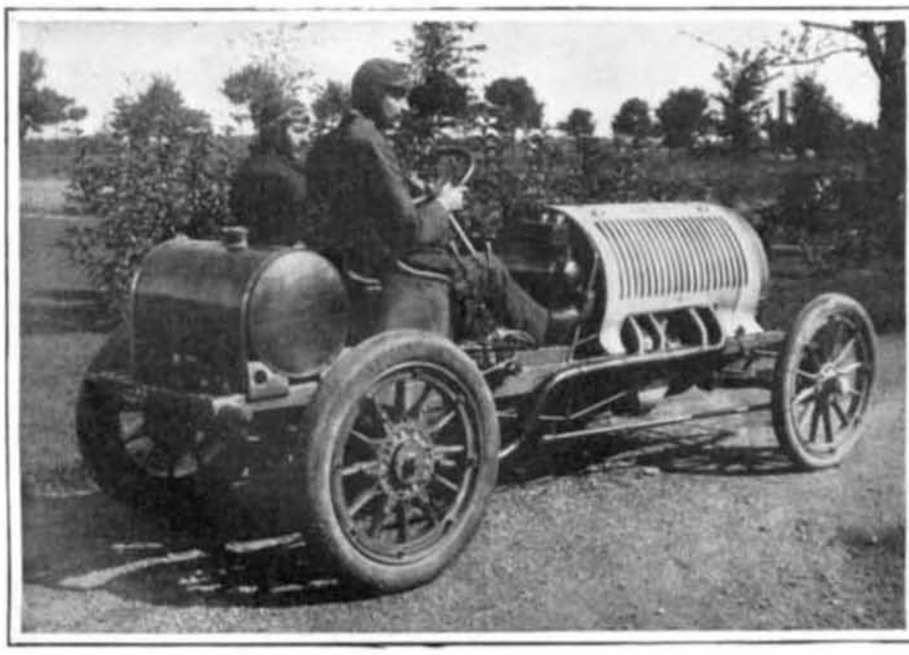
The third Vanderbilt race was run on Saturday, October 6, under threatening weather conditions. There was a delay of fifteen minutes in starting the cars, the first car to get away being the 115-horse-power Thomas racer, driven by Le Blon. This car represented America, it having finished second in the elimination trial. Car No. 2, Mr. George Heath's Panhard, started one minute later. The third car was the German Mercedes, driven by Jenatzy. Lancia's Italian Fiat was fourth, and was followed by the remaining machines in the following order: Fifth, the Frayer-Miller racer, representing America; sixth, the French Hotchkiss machine, driven by Shepard; seventh, the second Mercedes, driven by Luttgen; eighth, Nazzaro's Fiat; ninth, Tracy's Locomobile; tenth, Wagner's Darracq; eleventh, car No. 12, the Italian Itala, driven by Cagno; twelfth, No. 14, the Haynes; thirteenth, No. 15, the French Clement-Bayard, driven by A. Clement; fourteenth, No. 16, Dr. Weilschott's Fiat; fifteenth, No. 17, Walter Christie's 50-horse-power Christie; sixteenth, No. 18, Duray's 120-horse-power De Dietrich; seventeenth, No. 19, Fabry's 120-horse-power Itala.

The fastest car in the first round appeared to be Wagner's Darracq, which covered the 29.71 mile circuit in 28 minutes and 26 seconds. Jenatzy's Mercedes was second in 30 minutes and 2 seconds; Duray, on the De Dietrich, being third in 30:18, and Lancia fourth in 30:27. The second round saw Duray pass both Lancia and Jenatzy and move into second place, while Lancia was 17 seconds ahead of Jenatzy at the end of this round. The Locomobile, America's chief hope, held twelfth place. The third round found the Darracq still in the lead with Duray, Lancia, and Jenatzy a close second, third, and fourth. The Clement-Bayard moved up from sixth to fifth place at the end of this round, while Christie, who stood seventh some 8 minutes behind the sixth machine (the Hotchkiss) was the foremost American car. The fourth round witnessed the passing of Duray by Lancia, who now held second place, with Jenatzy third and Duray fourth. When the race was half over the same order prevailed save that Duray was third, Jenatzy fourth, and Clement fifth. The Locomobile held tenth place, and the Thomas twelfth. The Haynes held fourteenth place and the Christie fifteenth. Clement, who had been running in fifth place since the second round, still held this position. In the eighth round Jenatzy changed places with Duray once more, taking third place instead of fourth. In the ninth round he crept up to fourth place, while Duray obtained third, and Jenatzy fell back to fifth. This order was maintained throughout the tenth round. This round was completed by Wagner in 4 hours, 50 minutes, 10 2-5 seconds, or at an average speed of 61.43 miles an hour, as against 61.49 made by the winning 80-horse-power Darracq machine last year. Lancia, with his 120-horse-power Fiat, was second in 4 hours, 53 minutes, 28 4-5 seconds, which corresponds to an average speed of 60.74 miles an hour, while Duray was third in 4 hours, 53 minutes, 44 2-5 seconds, or 16 2-5 seconds later. Clement was fourth in 5 hours, 1 minute, 59 4-5 seconds. Jenatzy, on his 120-horse-power Mercedes, was fifth in 5 hours, 4 minutes, 38 seconds, corresponding to an average speed of 58.51 miles an hour.

The race was witnessed by some 200,000 people, and the drivers experienced great difficulty in making fast speed on account of the crowds of people which flocked upon the course. At some of the turns in the straight-away stretches the crowd was so dense that the road was completely obscured, and the drivers were obliged to shut off power and slacken speed while the people moved slowly aside. This detracted considerably from the speed that would otherwise have been made. Tracy, the American driver, protested to Mr. Vanderbilt about this crowding of the course, and at one time the Referee threatened to call off the race on account of it. Although Tracy made very slow time on his first round because of the crowds he subsequently, on his fifth round, made a record of 26 minutes 21 seconds, which was an average speed of 67.65 miles an hour—a remarkable performance in view of the ten dangerous turns.

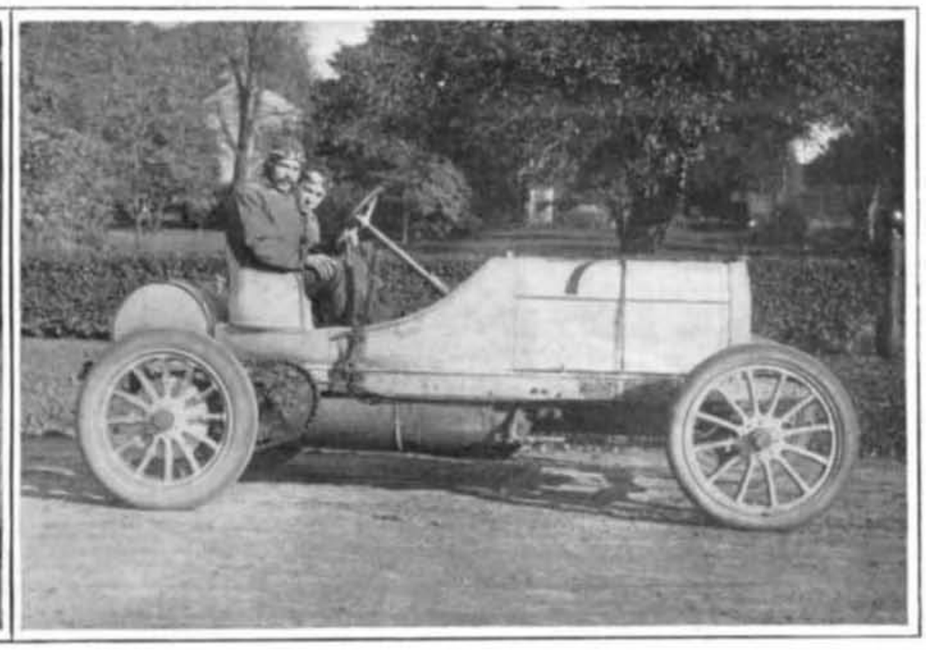
The race was a close one among the leaders from start to finish, but at no time during it did the American cars appear to have any chance of winning. Tire and other troubles were given as the cause of their falling behind. Not all of the American cars were fitted with detachable rims, so that tire trouble, no doubt, figured largely in the performances of some of them. Although the Locomobile showed the fastest speed, it did not make as even speed on the various rounds as it did last year. The Christie machine had the honor of being the American car to win a place nearest the front. At the end of the third round it had moved forward from the ninth to the seventh place. The showing of the two Mercedes machines was a good one, and was quite different from that made by these cars in previous years. Two of the Italian Fiat racers also made a fine performance; the third one, driven by Dr. Weilschott, broke its steering gear at the turn and hill near Manhasset, and ran through the wire fence into the crowd. A boy was killed, and two bicyclists had a very narrow escape. The driver and mechanic were thrown out and injured, although not seriously. Shepard's Hotchkiss also struck and killed a man shortly after making the turn at Mineola. These were the only fatalities so far as can be learned at the time we go to press. The wonder is that there are not many more on account of the crowding of spectators on the course If the race is run another year in this country, the course should be thoroughly protected by a large number of soldiers, as is done in France.

The result of this race seems to show that France, Italy, and Germany are still a considerable distance ahead of America in the building of racing cars. When it comes to a touring car for pleasure purposes, however, there is but little to choose between a foreign machine a. 1 one built at home. As far as the perfecting of the touring car is concerned, the hard endurance tests which some makers give their cars are far preferable to a 300-mile speed contest like that held last Saturday. If these races must be held in the interest of sport, by all means let those conducting them protect the thousands of spectators who flock to see them, and who appear to be utterly unaware of the great dangers they are running in standing near to the racers as they flash by.



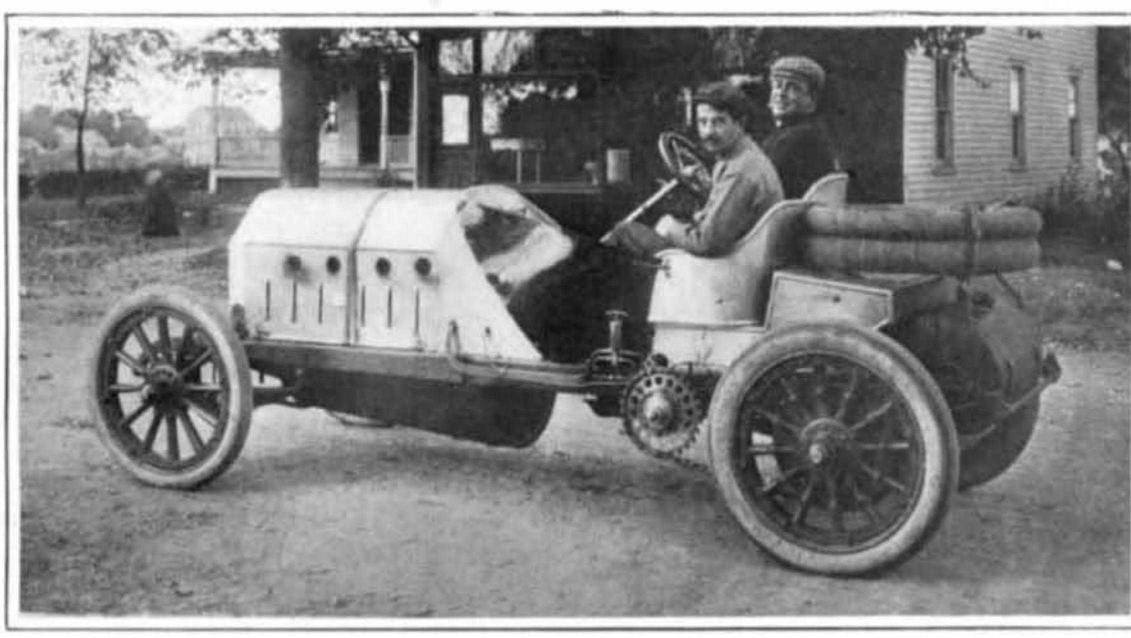
Shepard on His 130-Horse-Power Hotchkiss Racer.

This car struck and killed a man during the race. It was running 6th at the end of the 6th round, but in the following round it broke its crankshaft.



Luttgen on His 120-Horse-Power Mercedes Racer.

A duplicate Mercedes, driven by Jenatzy, was 4th in 5 hours, 4 minutes, 38 seconds—an average speed of 58.51 miles an hour. Luttgen was 12th at the end of the 7th round.



Lancia at the Wheel of His 120-Horse-Power Fiat Racer, Which Finished Second in 4 Hours, 53 Minutes, 28⅘ Seconds—an Average Speed of 60.74 Miles an Hour.

Duray on the 120-Horse-Power De Dietrich. He Finished 16⅖ Seconds Behind Lancia and Obtained 3rd Place.

THE WINNING FOREIGN MACHINES IN THE THIRD INTERNATIONAL RACE FOR THE VANDERBILT CUP.