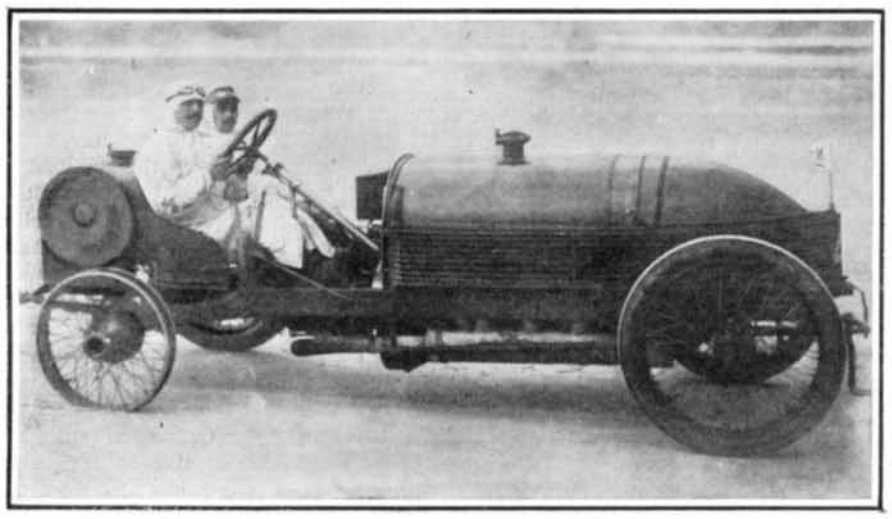
FINAL RACES AT THE ORMOND AUTOMOBILE MEET.

Subsequent to the writing of the report of the races at Ormond Beach, Fla., given in our last issue, a number of interesting races were held on January 27 and 29, the last two days of the meet.

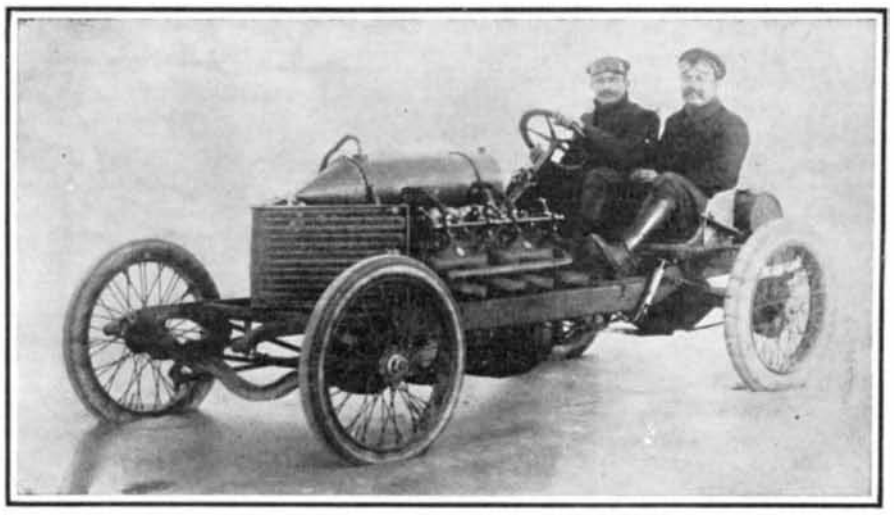
The event of the former day was the 100-mile race, which was run over a 15-mile course requiring six turns. Two English Napier machines—a 100-horse-power, 6-cylinder racer, and an 80-horse-power, 4-cylinder car—were the star performers in this event, as the former won the race after running 65 miles on the rim of one of its rear wheels, while the latter Earp on his 100-horse-power Napier at the end of 50 miles. At this point he lost a tire, and consumed 7 minutes in replacing it. Earp passed him, and gained sufficiently to stay in the lead during the second half of the race. His lead of 2½ minutes thus obtained was reduced to only 58 3/5 seconds, however, at the finish, although he was still 2 minutes and 26 seconds ahead at the 70-mile point. The right-hand rear tire of his machine came off after he had gone about 35 miles, and he ran the balance of the race on the rim without stopping. Our photograph, which was taken late in the afternoon just after the finish, shows the horse-power De Dietrich, and was an increase in speed of but 3¾ miles per hour. The Napier machine has the same engine that was used in the races last year. In fact, with some minor changes, it is the same machine which, in the 1905 meet, covered 10 miles in 6:15 at 96 miles per hour—a record which still remains unbroken. Its 80-horse-power mate was third in 1:20:05, while Cedrino's Fiat obtained second place in 1:16:39.

Among the races run on January 29 were a 10-mile open handicap and a 15-mile championship race, both of which were won by Lancia in 6:18 2/5 and 10 min-



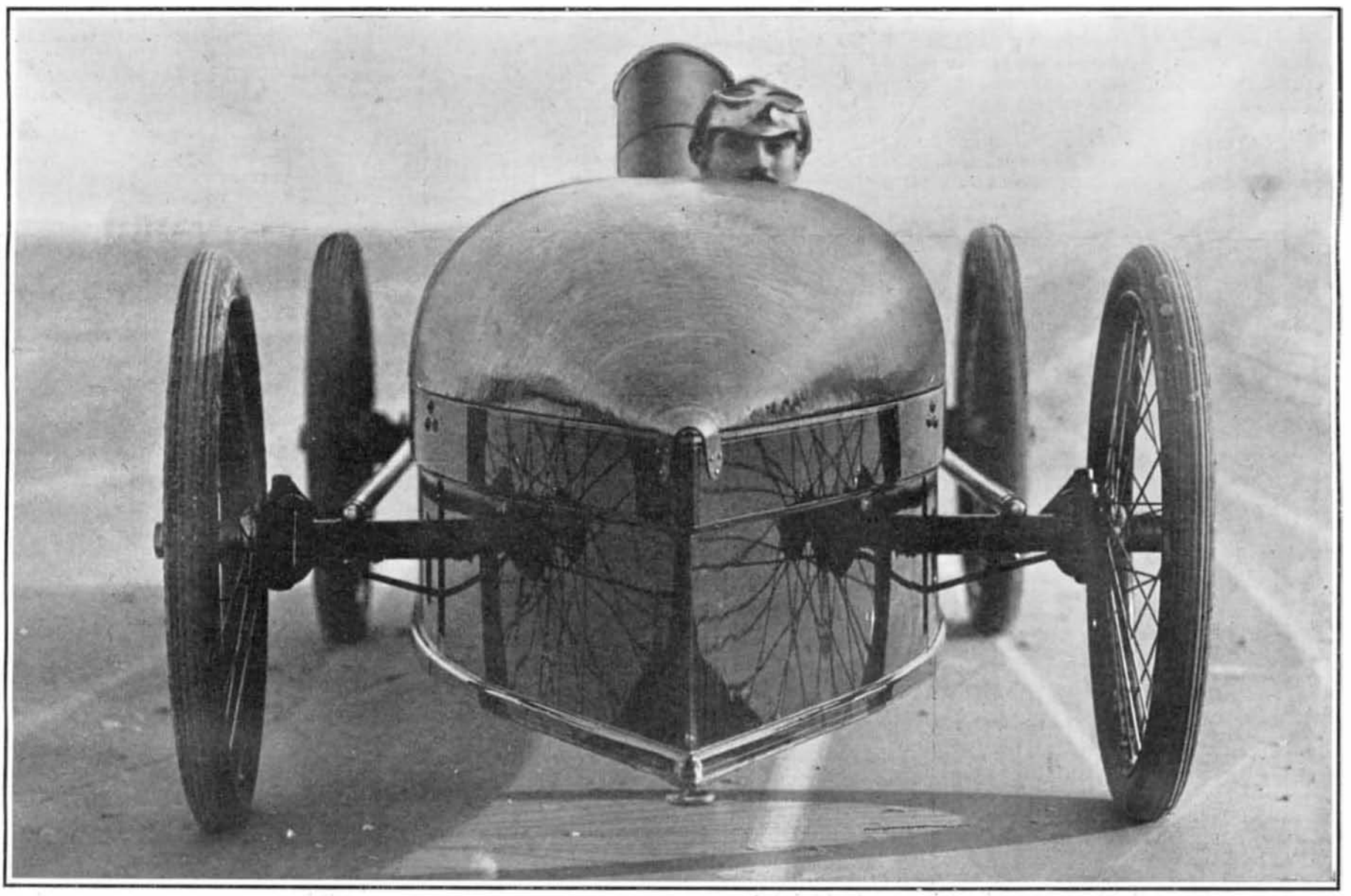
The 100-Horse Power, 6-Cylinder Napier Racer Driven by Earp, as It Appeared at the Finish of the 100-Mile Race. The Last 65 Miles Were Run Without a Tire, as Shown.

This machine covered 100 miles in 1 hour, 15 minutes, 40⅘ seconds, at a rate of speed of 79.28 miles an hour. It reduced the 100-mile record by 2 minutes and 44 seconds. An 80-h.p., 4-cylinder Napier was third in 1:20:05.



The 200-Horse-Power, 8-Cylinder Darracq Racer with Demogeot at the Wheel. This Car Was Specially Built for the "Two-Miles-a-Minute" Race, Which It Won.

After reducing the kilometer record 1 second in France last December, this car succeeded in covering two miles in 58⅘ seconds on the beach at Ormond. This is equivalent to a mile in 29⅘ seconds—a speed of 122.46 miles an hour—and is the fastest time ever made by a gasoline automobile.



The 50-Horse-Power, Light-Weight, Stanley Steam Racer—the Speediest Self-Propelled Vehicle Ever Built—Which Came Within 2¾ Miles an Hour of Equaling the Highest Speed Attained by an Electric Car Running on Rails—130.4 Miles an Hour.

In the mile speed trials this machine covered that distance in 28⅕ seconds—a rate of speed of 127.65 miles an hour—while in the "Two-Miles-a-Minute" race it consumed 59⅘ seconds, which is equivalent to a speed of 120.8 miles an hour. It also won the 30-mile race for American machines in 34 minutes, 18⅘ seconds.

RECORD-HOLDING RACERS AT THE ORMOND AUTOMOBILE MEET.

finished third only 4 minutes 24 3/5 seconds behind its mate. Besides these two cars the starters included two 110-horse-power Fiat machines driven by Lancia and Cedrino, Chevrolet on the 100-horse-power Christie, and Harding on a 45-horse-power English Daimler. The 80-horse-power Darracq Vanderbilt cup winner was ruled out because it had no differential gear. The Christie and Daimler machines quit the race before covering half the distance. Lancia lost a tire soon after covering 40 miles, and shortly after a leak developed in the radiator, which put him out of the race. Cedrino was 4½ minutes ahead of wheel minus its tire and the intrepid driver with his mechanic. Under the extremely unfavorable condition of running on the rim about half the distance, Earp covered 78 miles and made five turns in 52 minutes and 57 seconds, or at the rate of 88.48 miles an hour. Cedrino also broke a record by covering 40 miles in 25 minutes and 6 seconds, or at a rate of speed of 95.61 miles an hour.

The race was won by Earp in 1 hour, 15 minutes, 40 2/5 seconds, or at a rate of speed of 79.28 miles an hour. This was only 2 minutes and 44 seconds better time than was made last year by Fletcher on an 80-utes respectively, with Hilliard on the 80-horse-power Napier second in 8:03 4/5 and 11:36 3/5. The 30-mile race for American cars had but three competitors—the Stanley steam racer and the 100-horse-power Christie and Ford machines. The last-named car ran into the soft sand at the 15-mile turn and was stuck fast. The Christie car had trouble from overheating, and was obliged to renew its water supply at the club house within 4 miles of the finish. The Stanley steamer started 5 minutes and 40 seconds after the other cars. When passing the club house, Mariott slowed it down, thinking he was at the finish. He found out his error

and made a spurt, finishing in 34 minutes 18 2/5 seconds, with Christie some 3 minutes behind him in 37:24 3/5.

The final and most interesting event was the "two-miles-a-minute" race. The only competitors were the 8-cylinder, 200-horse-power Darracq, and the Stanley steamer. As recorded in this journal last week, the steamer had previously covered a mile in 28 1/5 seconds, at the rate of 127.65 miles per hour. In the "two-miles-a-minute" race both machines were obliged to make two trials. These attempts were made separately. The first one, which was made by the steamer, resulted in the comparatively slow time of 1:03. The Darracq did much better than this, although one or two of its cylinders were missing fire, and on its first trial it consumed only 3/5 of a second over a minute. The second attempt of the steamer resulted in 59 3/5, or 29 4/5 seconds to the mile, which was a rate of speed of only 120.8 miles per hour—7.85 miles per hour less than the steamer had previously done in the mile trials. A third attempt at the record was not allowed. The Darracq machine made a slightly faster showing. It covered the two miles in 58 4/5 seconds. This is equivalent to 29 2/5 seconds to the mile, or 122.46 miles per hour. This machine, like the Stanley, was especially constructed for the "two-miles-a-minute" race. Its engine is twice the size of that in the 80-horse-power racer which won the Vanderbilt Cup race last October. The eight cylinders are set at an angle of 90 deg., forming a V. They are 170 millimeters (6.692 inches) bore by 140 millimeters (5.511 inches) stroke, and they have a total piston displacement of 1,551.68 cubic inches. The present racer has the radiator arranged to form a sharp prow, and the cylindrical water tank is also pointed. While this may make some difference in the air resistance, the fact remains that, roughly speaking, it has required a doubling of the horse-power to make an increase of one-third in the speed. If the same ratio holds, to obtain a speed of 150 miles per hour with a gasoline machine, at least 350-horse-power would be required. How these figures compare with those of the steam racer may be seen from the following facts regarding the latter which have been sent us by the inventor, Mr. F. E. Stanley.

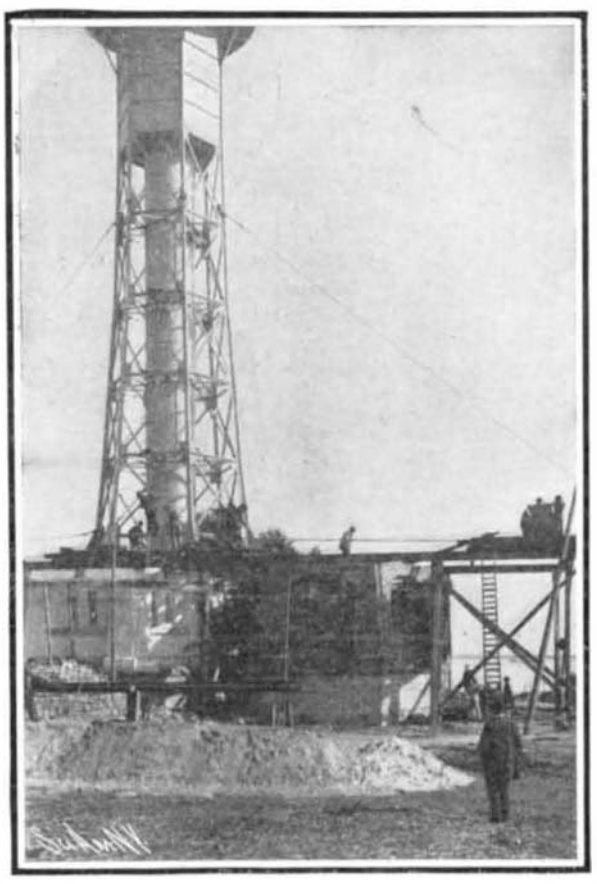
The wheel base of the racer is 100 inches and the tread 54 inches. The rear or driving wheels are fitted with 34 x 3½, and the front wheels with 34 x 3-inch standard G. & J. clincher tires. The wheels are of the wire spoke type, the tires being bolted to the rims with eight tire bolts and being so perfectly balanced with counter weights that there was no vibration when the wheels were making upward of 1,200 revolutions per minute. The running gear is the same as that used on the Stanley touring car with the exception of the wheels, which have wire instead of wooden spokes. The body of the car is built entirely of wood, and mounted on four full-elliptic springs. The springs are placed on the inside of the body, so as to reduce the air resistance to a minimum. Ball bearings of the two-point type, with ¾-inch balls, are used in the running gear.

The body is 16 feet long and 3 feet wide at the widest part. It is pointed in front, and terminates at the rear in a circle with 8-inch radius, tapering to 3-foot width and to the point in front with cycloidal curves, or curves with constantly diminishing radius. The bottom of the car is perfectly straight and smooth. It has a clearance of 10½ inches. The sides are vertical to a height of 18 inches, and from that line the removable top is oval, curving both transversely and longitudinally. The largest cross section, including the wheels, amounts to 9 square feet.

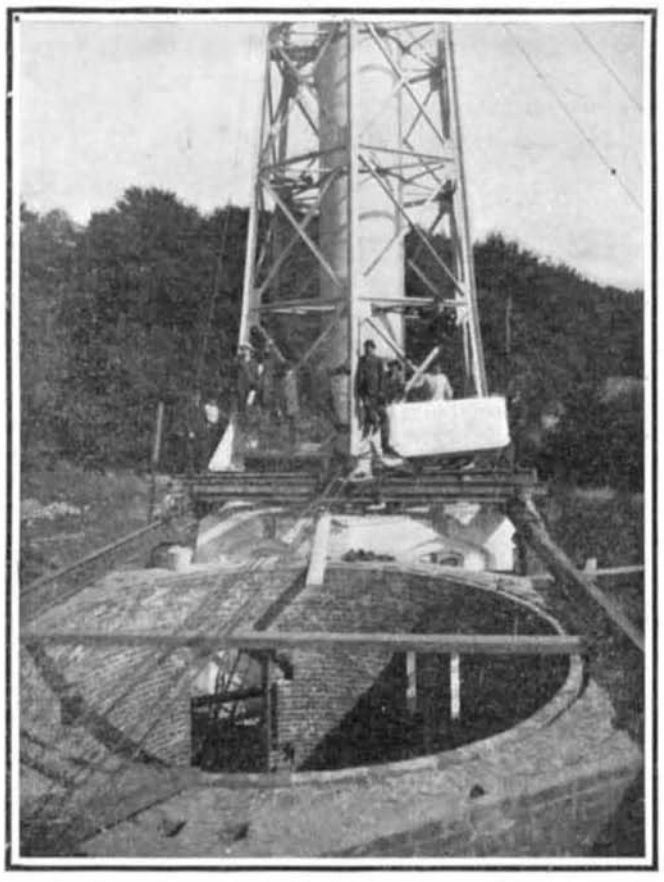
The power plant consists of a boiler 30 inches diameter and containing 1,476 tubes of 33-64 inch outside diameter and 18 inches long. The boiler contains 285 square feet of heating surface. The steam was superheated, by passing it through tubes surrounded by the contents of the boiler and through coils of pipe in the fire box, to a temperature of about 700 deg. F.

The engine is of the two-cylinder double-acting type, with cylinders 4½-inch bore by 6½-inch stroke. It is fitted with Stephenson link valve gear and D slide valves. The engine makes 350 revolutions to the mile, while the 34-inch driving wheels make 600 revolutions to the mile. Linked up as the engine was in forward gear, the cut-off was about one-third stroke, and the mean effective pressure about one-half the steam-chest pressure. The engine therefore develops 6 horse-power for each 100 revolutions per minute, and each 100 pounds steam chest pressure. The boiler will furnish steam for 50 horse-power continuously, and more than twice that amount for three minutes or more. About 275 pounds to the square inch steam pressure is carried.

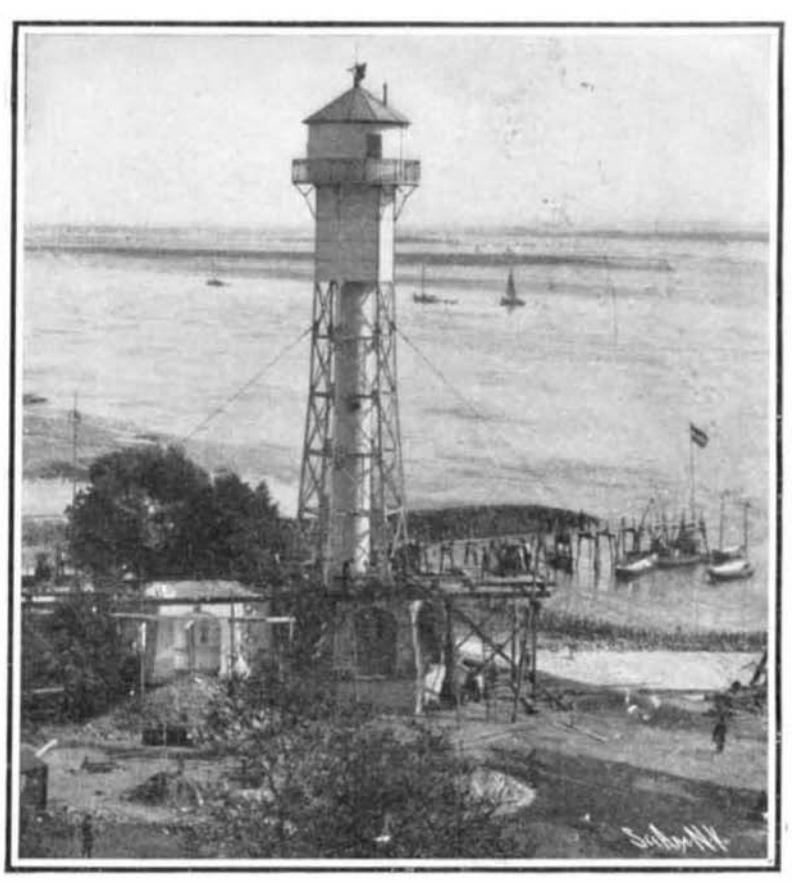
The arrangement of parts of the power plant is as follows: The boiler is placed just back of the center of the body, the water tank between that and the rear axle. The engine is geared to the driving axle by spur gears, and is placed horizontally at the rear of the axle, so that the driving force of the engine tends to lift the front axle and transfer the load to the rear axle, thus giving the greatest possible traction to the driving wheels.



Lighthouse During Removal.



The Lighthouse Before Removal, Showing the New Foundation.



Lighthouse After Removal.

REMARKABLE ENGINEERING FEAT—MOVING A GERMAN LIGHTHOUSE.

In making the record of 28 1-5 seconds for the mile, the power developed was probably about 120 horse-power. The engine made 750½ R. P. M. and the 34-inch driving wheels 1,286½ R. P. M.

The total weight of the machine was 1,675 pounds. The boiler weighed 525 pounds; engine, 185; burner and fire-box, 75; pumps, tanks, etc., 50 pounds; making the total power plant 835 pounds, or less than half the total weight of the machine.

MOVING A GERMAN LIGHTHOUSE.

BY DR. ALFRED GRADENWITZ.

Though the removal of buildings has long been a commonplace matter in American engineering practice, the readers of this journal will doubtless be interested in the following description of a removal work fraught with greater difficulties than the removal of even considerable masses, owing to the comparatively great height and small ground surface of the building, which was a lighthouse tower. In fact, even the slightest inaccuracies in preparing the slideway might result in considerable oscillations of the tower, while oscillations due to storms had to be prevented by lateral props. It should also be borne in mind that these lateral props had to uniformly follow the motion of the tower. This was effected by installing, in parallel to the sliding props, some girder constructions carrying crabs, and attaching to the latter the steel wire ropes propping the tower.

The Hamburg Department for Commerce and Navigation recently ordered the Wittenbergen lighthouse tower to be displaced with a view in future to avoid the continual dredging work necessitated by the alluvial sand. The width of the channel having to be increased from 142 to 200 meters, the Wittenbergen lighthouse was removed southward by about 9 meters. In order not to interrupt the operation of the lighthouse, arrangements had to be made that the tower might immediately find a solid foundation in its new position. The new foundation with all the necessary mooring, etc., was therefore made at a convenient location some 30 feet distance from the old place. The sliding way from the old to the new foundation was made of heavy ingot iron girders on which double coupled steel rollers moving the tower were allowed to run. The motion was effected with a strong hand-driven winch by means of a wire rope, while another winch was installed at the rear (with regard to the direction of motion) with a view to avoid any displacement of the tower in the case of storms. In addition there was a winch installed in front and another behind, the wire ropes from which were fixed on the top of the tower to avoid any oscillations. A special point was made of synchronism in the working of each of the winches. In order to protect the tower against oscillations due to lateral thrusts, two wire ropes connected to crabs were arranged on each side, these crabs running on girders mounted in parallel to the sliding way.

The whole of the removal work occupied 32 minutes. The lighthouse tower weighs about 60 tons, and is 115 feet high. The cost of the removal work proper, which was carried out by the contractors themselves, amounted to about 7,000 marks, exclusive of the masonry and carpentry work, executed by the Hamburg Hydraulic Engineering Department.

Liquid for Sanitary Spraying.

A liquid for sanitary spraying, for use in the chambers of the sick, is composed of 10 parts of eucalyptol, 3 parts of thyme oil, as much lemon oil, and the same quantity of lavender oil, in 110 parts of alcohol of 90 deg. To a pint of water add a teaspoon of this liquid. —Jour. Parf. et Sav.