

to the vertical position of the cylinder it is thoroughly lubricated, since the piston rings wipe uniformly the entire circumference, and thus prevent any oil getting into the firing chamber, which does away with obnoxious odors and keeps the spark plugs clean. Both grease cups and force feed lubricators are used throughout the machine, and all are situated on the dashboard before the driver. The mufflers used produce very little back pressure and yet almost eliminate the noise of the exhaust.

Ignition is by the jump spark system, the make and break of the circuit being accomplished by means of a mechanically operated vibrator of unique and entirely original design, which requires no adjustment for months. Heavy insulated cable is used in all the wiring.

A circulation of water through all the engine jackets is obtained by means of a centrifugal pump operated by a friction disk against the flywheel. The water is pumped through a very effective system of radiating coils at the front of the car, and only two or three gallons are used.

An atomizing float feed carbureter of improved design, requiring absolutely no adjustment to the varying speeds of the motor, is used to furnish gas for the latter. The motor is started by a half turn of the crank, which is placed at the front of the car. The speed gear is connected with the driving gear by a flexible shaft and with the motor by a universal coupling, which protects the bearings, gears, and clutch from any strain due to an inequality of the road. The gears are inclosed in an aluminium case and run in an oil bath which automatically lubricates all bearings. The speed changes are obtained by means of a single lever at the right, which gives three speeds forward and one reverse, while the speed of the motor is regulated by varying the time of the spark.

The changes of speed are made by friction clutches that go in without clatter or vibration, and the gears operate without noise. A powerful band brake on each rear wheel is operated by a lever at the right and held by a ratchet until released. A foot brake operates on a drum on the change gear shaft between the motor and the compensating gear.

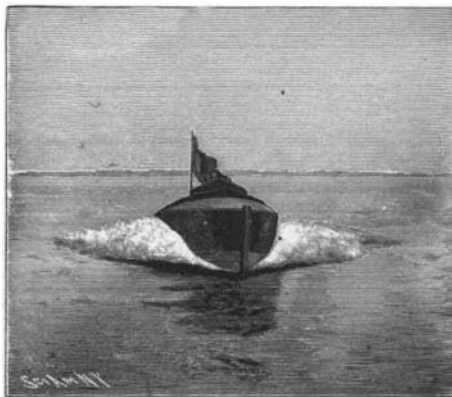
All two-passenger cars have a rear platform which may be used for luggage, rumble seat, or two-passenger tonneau. The driver's seat is either double or divided into individual seats. The cars are geared to make 30 miles an hour at a speed of 1,200 R. P. M. of the engine, but are capable of being speeded up to 40 miles an hour. They are equipped with two kerosene side-lights and a very powerful acetylene headlight, or with two side-lights and two acetylene headlights having a combined power about equal to the single headlight which is offered as an option. The mudguards are of aluminium with front guards flared out, protecting both occupants and the car from mud when the wheels are at an angle.

**HIGH SPEED TWIN-SCREW YACHT "VIXEN."**

There are few cities in the world that are so advantageously situated as New York city for the running of a system of suburban transportation by water, and we venture to think there is no city where these natural advantages are so little taken advantage of. It is true there has been some talk recently of running a line of high-speed passenger steamers between New York city and suburban towns on the Hudson River, which was to be capable of making a speed of 30 knots an hour, and competing with the railroad service; but the scheme seems to be in abeyance, if it has not altogether fallen through. Practically the only travel of this kind that is done is due to the owners of private yachts, many of whom make the journey every day by water between their residences on the Hudson and along the Sound and New York city. The convenience and pleasure of this method of travel are obvious.

We present illustrations of a high-speed yacht which has been built by the Gas Engine and Power Company, Morris Heights, New York, for Mr. Archbold, who will make use of it principally for the run between his home in Tarrytown and his business in New York city. The dimensions of the

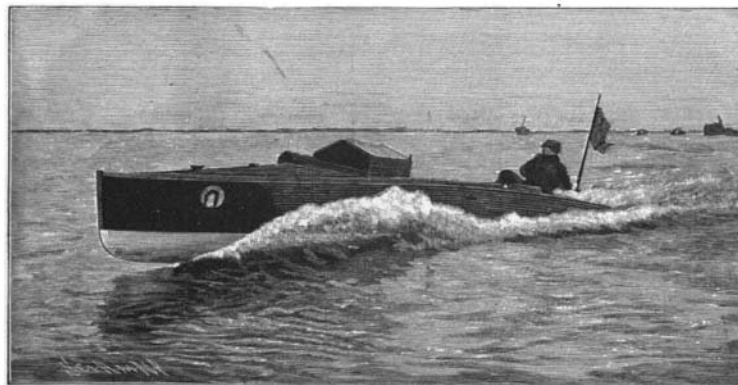
vessel are: Length over all 100 feet, load waterline length 96 feet, beam 12 feet, and draft 4 feet. The "Vixen" has been modeled for high speed, and she has the fineness and sweetness of lines which are seen on the fast torpedo craft. The framing and planking are of wood, the boat being double-planked and copper fastened; the sheer strake, deck stringers, floors and keelsons are of steel, as are also the bulkheads. The vessel is driven by twin-screw engines which, when running at a speed of 450 revolutions per minute, will, together, indicate 500 horse power. The guaranteed



BOW VIEW.

speed is 20 miles per hour, and the builders expect to get between 21 and 22 knots an hour on the trial trip.

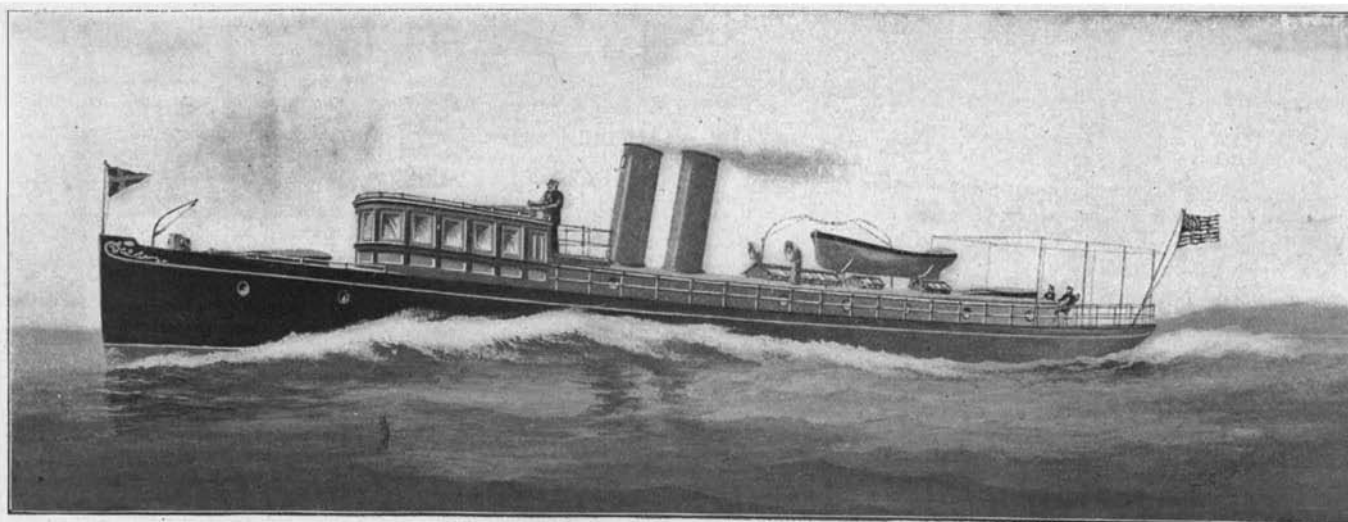
A steel trunk-house extends for about two-thirds of the length of the vessel amidships, and forward of this is a deck-house or pilot-house of red mahogany, paneled, which will be utilized as a dining room, for which purpose it can accommodate six persons. Im-



Length, 39 feet 3 inches. Beam, 4 feet 3 inches. Horse power, 25.  
"ROLLO" AT EIGHTEEN KNOTS AN HOUR.

mediately abaft of this structure comes the trunk-house, which extends from the deck-house to the after end of the owner's quarters. The accommodations below deck are as follows: In the forecabin are the quarters for the crew. Aft of these is a large galley in which a dinner can be prepared and served by connection to the dining saloon above. Aft of the galley are the boiler room and coal bunkers. Then follows the engine room, and aft of this is a large stateroom for the owner, which extends to the full beam of the vessel and is fitted with two berths, a dresser, lockers, etc., and has a toilet adjoining. Aft of this, again, is a large saloon. The stateroom and saloon are finished in white enamel and gold.

The motive power is of what might be called the torpedo-boat type; that is to say, it consists of water-tube boilers and triple-expansion, fast-running engines. The object aimed at in the motive power is the reduction of dead weight by securing a high average indicated horse power per pound of weight. The boilers are of the well-known Seabury safety water-tube type.



Length, 100 feet. Beam, 12 feet. Speed, 20 knots.

NEW HIGH-SPEED TWIN-SCREW YACHT "VIXEN," NOW BEING BUILT FOR MR. ARCHBOLD,

Particular attention is given in the design to the circulation of water. By using the outer water-tubes for returning the water to the bottom of the boiler a much larger area is secured for the return water than could be obtained by using large return pipes. The furnace is surrounded by water-tubes that have the same opening between them as the diameter of the tubes, and ample room is thus left for the gases to pass freely among all the tubes for their entire length. The firebrick baffle-plate between the tubes above the furnace absorbs a part of the heat when the fire is very hot, which is given off again when fresh fuel is put in the furnace, a certain amount of reverberatory effect being thus secured. There are a series of horizontal tubes on each side of the steam drum for the purpose of superheating the steam. The triple-expansion engines have cylinders 7 inches, 11¼ inches and 17½ inches diameter by 10 inches stroke. Care has been taken to remove all superfluous metal from the revolving parts, and it is thus possible to secure a high rotative speed with a minimum of vibration.

The yacht is finished with a stern of the torpedo-boat type; and with her twin funnels, low trunk, and single deck-house forward, she has a decidedly smart and rakish appearance.

**THE MARINE AUTOMOBILE.**

THE RECENT FRENCH INVENTION OF THE AUTOMOBILE LAUNCH.

Automobiling on water has now become an accomplished fact. French engineering skill has turned the features common to the racing automobile into use for propelling the long, slim body of the automobile launch through the water at a furious rate of speed. The machinery is the same as in a high-power automobile, the manner of transmitting power is the same, the fuel, the motive power and the manipulating devices are practically identical. The only actual differences are that the motive power instead of being carried on wheels is incased in a smooth wooden canoe skin, offering a minimum of resistance to the water, and that the device steers by rudder instead of by mechanism acting on the front axle. In all other essential respects the automobile launch and the automobile carriage are virtually alike. A competent chauffeur can handle either type, and it would not be impossible to build a motor vehicle out of the machine parts belonging to a motor launch—so closely identified are these otherwise apparently dissimilar means of travel.

It is quite natural that the sport of automobile launch racing should receive its baptism in France, the native home of automobilism, for the French, though poor at yachting as a nation, enjoy a well-merited reputation in the line of light craft for pleasure boating.

The motor as well as the hull herewith shown were specially designed for racing, and it was found that the motor worked perfectly under all conditions, starting with a half turn of the handle and maintaining its speed smoothly and regularly. The type of motor adopted was that made famous by the Panhard & Levasseur establishment, makers of the Panhard automobiles. The superintendent of the factory, M. Krebs, selected a 24 horse power gasoline motor and made some minor changes in it to fit the marine equipment of the launch. After considerable experimenting it was found that the motor under favoring circumstances actually developed more horse power than its indicated rating, and then the idea of racing this new and strangely unfamiliar craft occurred to M. Giraud. He applied to the Helix Club of France for a series of trials over measured distances of salt water, entering his craft under the name of "Rollo"—an automobile canoe measuring 39 feet 3 inches in length, with a beam of 4 feet 3 inches and 24 indicated horse power. The first race took place at a course near Argenteuil, in which "Rollo" was entered among a number of high-power launches of her class. She finished a winner of the 24-kilometer (14.90 statute miles) course in 1 h. 17 m. 31 s., a speed of 11.53 statute miles. In a subsequent race at the Cercle de la Voile de Paris at Meulan the course was 52 kilometers (32.30 miles) and

her time 2 h. 41 m. 28 s., or a trifle over 12 miles. In the Helix Club de France races the course was 48 kilometers (29.80 miles), and "Rollo's" time was 2 h. 8 m. 3 s.; equal to a speed of 14 miles. In a 24-kilometer brush under H. C. de F. rules she made the distance in 55 m. 25 s., a speed of 15.67 miles, or a gain of 22 minutes 6 seconds over her initial showing. This progressive improvement reflects much credit on M. Telliér, who had charge of the motor in these races. In order to try her on the deep seas M. Giraud had her transported by rail from Paris to Lorient, on the Bay of Biscay, and under his management and the assistance of an engineer "Rollo" was safely sped down this dangerous coast to the fashionable watering place Arcachón, a distance of some 200 miles, making an average speed of 13 knots, mostly in the open sea. This is probably the finest achievement by any power-propelled launch or canoe of like measurement and capacity, and won for M. Giraud a leading place in the development of the new sport. On a certain occasion, the tide favoring, "Rollo" slid over a measured mile on the Seine River at a clip that would have placed 25 miles to her credit within the hour had she continued for that time. It was on this occasion that the photographs herewith shown were taken by M. Giraud. One picture represents the start, when the craft cleaving the water at stop speed comes tearing down on the mark. M. Telliér is seen at the rudder sitting sideways in the cock-pit so as to better manipulate the engine and the steering simultaneously. It will be seen that the force with which the craft is urged is sufficient to lift its nose well out of the water. The other view shows "Rollo's" looks as she comes tearing through the brine head on for the stake.

Automobile launching or "canoeing"

as the French call it, is not only now recognized as a distinct development in light craft engineering, but as a sport with rules and tenets of its own. A great many wealthy French sportsmen have had auto canoes constructed on the lines of "Rollo," the pioneer, and on the other side of the Channel the fever has caught on to the extent of putting several such craft into commission for racing the French during the coming season. That most energetic of launch-owner organizations, the Helix Club of France, is about to organize a technical committee composed of engineers and other specialists, under the presidency of Count Récopé, in order to gather reports regarding new developments in pleasure and racing navigation with light draught power craft. The club, which is one of the most influential in France, seems to realize that the industry of automobile launch building is still in its infancy despite the wonderful performances of M. Giraud's "Rollo," and its members have settled down to the task of perfecting the sport with much enthusiasm.

When the British and French automobile launch fleets meet early in the spring to decide the proposed international launch championship, interest will not only center in the spectacular feature of the speed performances, but also in the comparative test of the

English system of power propulsion against the French.

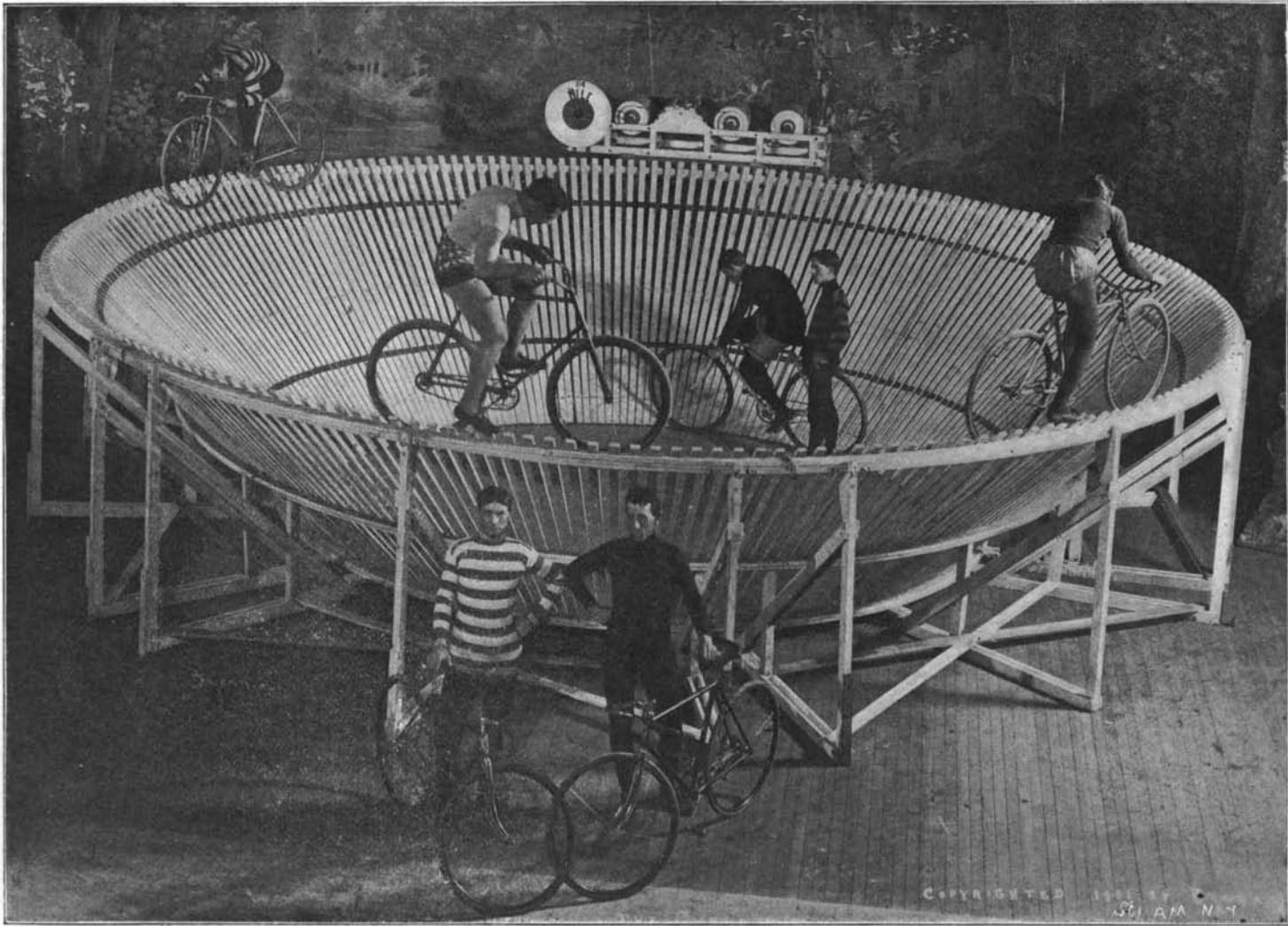
The races, which are scheduled to include a brush across the Channel from Dover to Calais, may, nevertheless, be close enough to excite an interest vying in popularity with that surrounding international yacht races. We are indebted for our particulars to Le Sport d'Automobile Canot.

#### THE CYCLE WHIRL.

Some two months ago there was on exhibition at Proctor's 23d Street vaudeville theater, in this city, an indoor racing track, on which expert bicycle riders daily performed. This track, instead of being made oval in shape, with the ends banked, as is usual in outdoor practice, had necessarily to be circular in or-



SCHREYER ON HIS STATIONARY PACING MACHINE.



THE CYCLE WHIRL.

der to fit on the stage. It forms, as a glance at the illustration will show, an inverted, truncated cone of slats with diameters across the top and bottom of 25½ and 14½ feet respectively. The slats of the cone are set at an angle of 45 degrees with the stage and are 8 feet in length. Within this miniature race track, upon the rising of the curtain, are seen several bicyclists with their machines. Starting at the bottom of the cone slowly and carefully, they circle around it with increasing speed, climbing higher and higher toward its upper edge while their bodies lean more and more toward the inside and finally reach a position where rider and wheel seem nearly horizontal as they go spinning over the clattering slats. The pacer, Schreyer, on his stationary trainer, increases the pace, and the pointer of the

indicating dial plainly shows to the audience this increase as the quarters and halves are run off. Faster and faster go the racers till they are circling around the track in one mad whirl. A pistol report sounds. The riders plunge to the stage, drop their wheels, and make a dash for the top of the slats. The one who reaches the top first is considered the winner.

The trick rider, Schreyer, next performs on the inclined track, riding around it and plunging from top to bottom and vice versa till it seems as if he must surely run off the upper edge or be dashed onto the stage at the bottom. He also uses an electrical bicycle, which is arranged with insulated copper wire brushes that rub on the spokes of the front and rear wheels. Flexible wires from above are connected, one to the brushes and one to the frame of the wheel. As he circles around the track in semi-darkness myriads of brilliant sparks are showered from the two wheels, producing a very pretty and dazzling effect. Next he rides around the circle with hands off, and then repeats this feat with a boy on his shoulders.

The Cycle Whirl was so named by Manager Proctor, who imported the act from London, where it was originally produced last summer by an Australian trick cyclist, Charles Jones. It proved to be a startling and interesting feature of the usual vaudeville performance, and was soon copied by other of the vaudeville theaters. After the six-day bicycle race in Madison Square Garden the champions were seen daily in races on this miniature track.

The advantages of the gasoline engine are forcing themselves on the officials of several of the larger Western railroads. Experiments with gasoline "hand" cars have demon-

strated the entire practicality of such vehicles for inspection and repair purposes. Not only is it possible to travel much more rapidly and with the expenditure of a minimum of muscular energy — sufficient only to start the motor — but the vehicle equipped for service is so light as to be easily handled by the crew. Besides, if necessary, a small flat car containing additional tools and men can be attached to the motor car and hurried to the spot where quick repairs may be necessary. So entirely successful have these experiments been, indeed, that it is

quite possible that another year may see the majority of the larger railroads throughout the country supplied with self-propelled "hand" cars.

An automobile exposition will be held by the Automobile Club of Great Britain and Ireland from April 19 to 26 next in the Royal Agricultural Hall in London. The exhibits will be divided into sections as follows: Automobiles; detachable parts and pneumatics; motors and generators; accessories and carriages; material and machine tools; covering clothing, etc. The exhibition will be a very important one, and inquiries for space and further information should be addressed to Mr. Cordingly, 39 and 40 Shoe Lane, London, E. C.