

seen upon a large schooner of this type. The model is one of the sweetest and fairest we have seen for a long time and there is no question that, with started sheets, the craft should be able to reel off the knots at a speed equal to that of the famous "Sappho" of former years.

As the schooner is intended mainly for cruising, it was considered desirable to carry her big sail plan upon three sticks, and while this will render her not quite so fast a boat in windward work, it will, of course, conduce greatly to ease of handling, especially in heavy weather. The foremast is 72 feet to the hounds, the mainmast 76 feet, and the mizzen 79 feet, while the respective topmasts measure 48 feet, 52 feet and 54 feet. The gaffs of the foremast and mainmast are both 33 feet in length, while the mizzen gaff is 49 feet. The booms measure respectively 34, 33 and 78 feet in length. The bowsprit has a length outboard of 27 feet and the spinnaker pole is about 70 feet

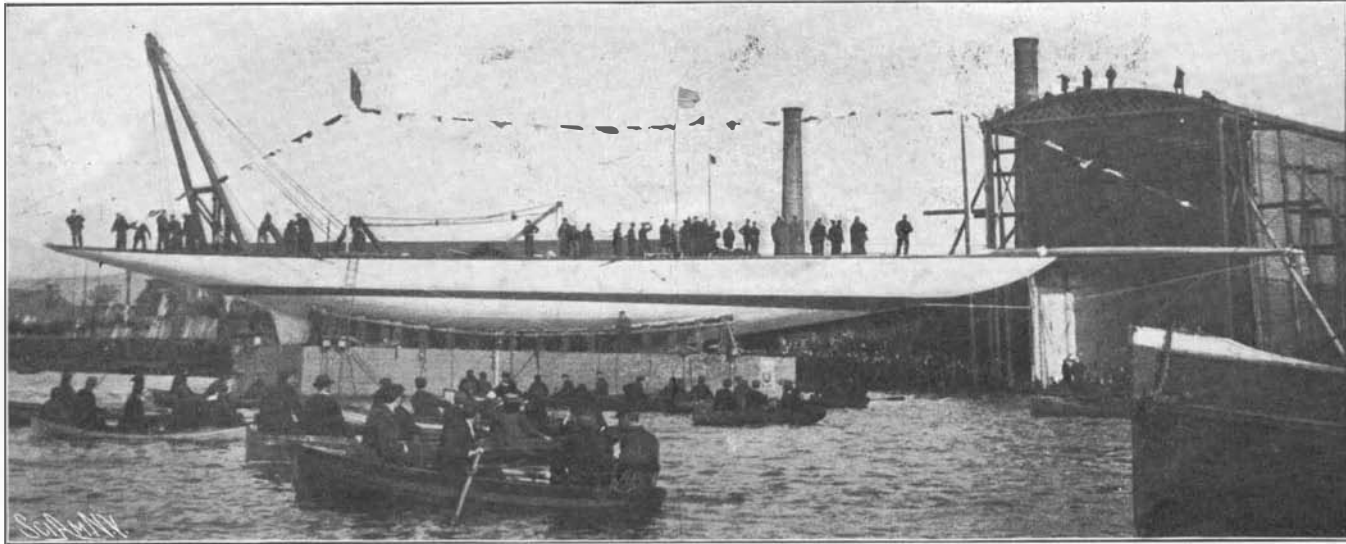
in length. The yacht carries a 350 horse power triple-expansion engine and two Almy water-tube boilers, the engine and boiler rooms being located between the fore and main masts. On the starboard side of the engine room are seven staterooms for the captain and officers, while the rest of the space forward of the mainmast is occupied by the pantry, galley, and accommodations for the crew, which latter include fourteen bunks. Just abaft of the mainmast is a bulkhead, abaft of which, on the port side, is the breakfast room and on the starboard side a stateroom. Abaft of these is the main saloon, which extends entirely across the yacht with a width of 28 feet. Then comes the second bulkhead, abaft of which, on the starboard side, are two state-

rooms and on the port side a stateroom and two separate bathrooms, while amidships in this compartment is located a lobby reached by the main companionway, which leads down from a deckhouse just abaft of the mizzenmast. Abaft of the companionway is the owner's stateroom, which, like the main saloon, extends entirely across the vessel.

Our drawing, which represents the yacht close-hauled on the port tack, serves to show the lofty bow and handsome sheer of the vessel, and the general beauty of the deck lines. Altogether, the new craft, which

of her predecessors were easily distinguishable. In the bold bid which "Shamrock II" made for success in her contest with "Columbia," Mr. William Fife had in his designing of "Shamrock III," strong temptation to follow the same lines, but an inspection of the new boat, opportunity for which was kindly given by Sir Thomas Lipton to our representative before the hour fixed for the launch, showed that he had chosen to return in some very essential features to the type of model of the "Britannia"—whose successful defeat of "Vigilant" led to the embodiment by Herreshoff of "Britannia's" lines, greatly refined, in "Defender." The result is that "Shamrock III," while having the outstanding features which have characterized all the recent Cup racers, possesses important developments which may, and probably will, make her the most formidable of the series of challengers. In waterline length there is little to distinguish "Shamrock III." from the other vessels built specially for Cup racing.

It has long been a conviction with designers that the time allowance given for lack of waterline length does not put the shorter boat on a level with the yacht of greater length, and their desire has therefore been to build as near the allowable limit of 90 feet as possible. "Shamrock III." comes within a few inches of this limit, how many inches will not be known even to those in charge until the official measurement is made, but in the matter of over-all length—which goes untaxed—the new challenger is more extreme than any cup yacht which has been built. Forward she has an overhang of 25 feet, and a similar length in the counter brings the total length from stemhead to taffrail to 140 feet. The beam also presents another peculiarity which is well worthy of



THE "SHAMROCK III." ON THE PONTOONS ON WHICH SHE WAS LAUNCHED.

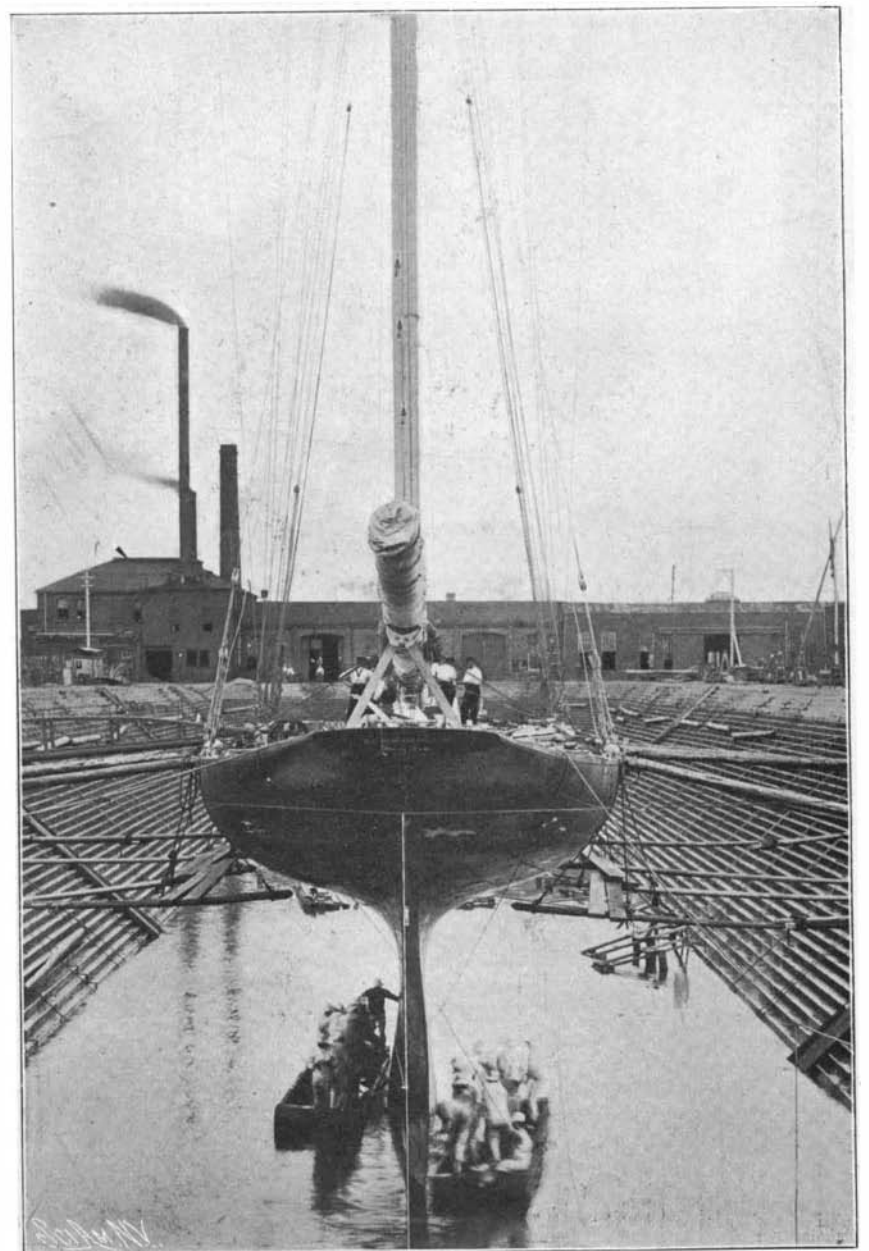
is being built for Mr. Wilson Marshall, the former owner of the schooner yacht "Atlantic," will be one of the most imposing and handsome sailing craft of the year

#### THE LAUNCH AND EARLY TRIALS OF "SHAMROCK III." BY OUR GLASGOW CORRESPONDENT.

In measurements alone the third Lipton challenger would stand out as distinct from any of the recent yachts which have crossed the Atlantic to do battle for the "America's" Cup. Hitherto the challengers, with the possible exception of "Valkyrie III.," designed by Mr. George L. Watson, have followed a distinct line of development. The progress from one to the other was easily traced, and the efforts made in each succeeding boat to make good the apparent weaknesses



STERN VIEW OF "SHAMROCK III." SHOWING HER BROAD AND POWERFUL QUARTERS.



"SHAMROCK II." IN DRYDOCK AT THE ERIE BASIN, SHOWING HER SHALLOW AFTERBODY AND NARROW STERN.

attention. The beam of the new yacht is less than that of either of her predecessors, for at her point of greatest breadth she measures only 22 feet 6 inches, as against 24 feet 5 inches in "Shamrock II.," and 25 feet 5 inches in "Shamrock I." In both the former Cup challengers, however, from the point of greatest beam the deck line ran off fore and aft in a rather flat curve. In "Shamrock III.," however, the beam has been carried well out fore and aft in such a manner as to give her, on the smaller measurement, a greater effective beam, and far sweeter sailing lines on the whole length of the boat. One of the most characteristic features of "Shamrock II." was the extreme fineness of the quarters; the after sections being reduced so greatly that she measured only six feet across the taffrail. The forward sections, on the other hand, were relatively full, with the result that the center of displacement lay unusually far forward. In the new boat, on the contrary, there is no such fining down of the quarters, and there is an indication of power in the boat right up to the taffrail. Watson lost four or five feet of effective sailing length on "Shamrock II." when she was heeled; but the new boat when reaching will

of 19 feet is less by from a foot to a foot and a half than that of her two namesakes. Her weight of hull, spars, etc., works out as the same as "Shamrock I.," but she carries more lead, and has a larger displacement. She has less wetted surface, larger sail area, a much sweeter form—a combination that should render her faster on every point of sailing under any possible conditions of wind or sea.

That these expectations were justified has been proved in the first sail-stretching trials. On the first day in light breezes she beat "Shamrock I." on every point of sailing, lying closer to the wind and footing faster with sheets well aboard, and fairly running away from her on a reach—the strongest point of sailing in the earlier vessel. On the second trial she allayed all anxiety as to her behavior in a blow, carrying a clubtopsail easily in the puffs, and again "sailing all round" the boat of 1899. Already, before she is tuned up, she appears to be several minutes faster, except perhaps in running under spinnaker, than "Shamrock II." or "Columbia," so that apparently it is now "up to" Mr. Herreshoff to make a big advance on any of his previous boats.

The contest this year will be truly international—

## Automobile Department

### THE FOREIGN AUTOMOBILES OF PROMINENT AMERICANS.

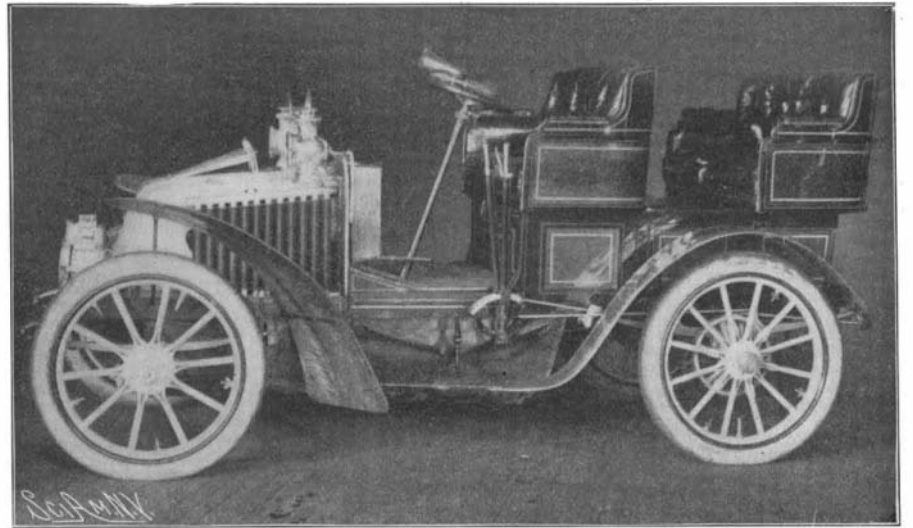
Our illustrations show three machines owned by well-known Americans, the fourth being one of the latest small Renault racers recently brought to this country by M. Klutz.

The huge machine just above it is the 45 horse power Mercedes touring car belonging to Mr. Harry Payne Whitney. It is a very commodious machine, capable of accommodating seven persons, and of traveling at as high a speed as 50 miles an hour. The machine is the product of the Daimler Company, of Cannstatt, Germany, and is fitted with beehive radiator, mechanical inlet valves and igniters, and all the appliances which have made that firm famous.

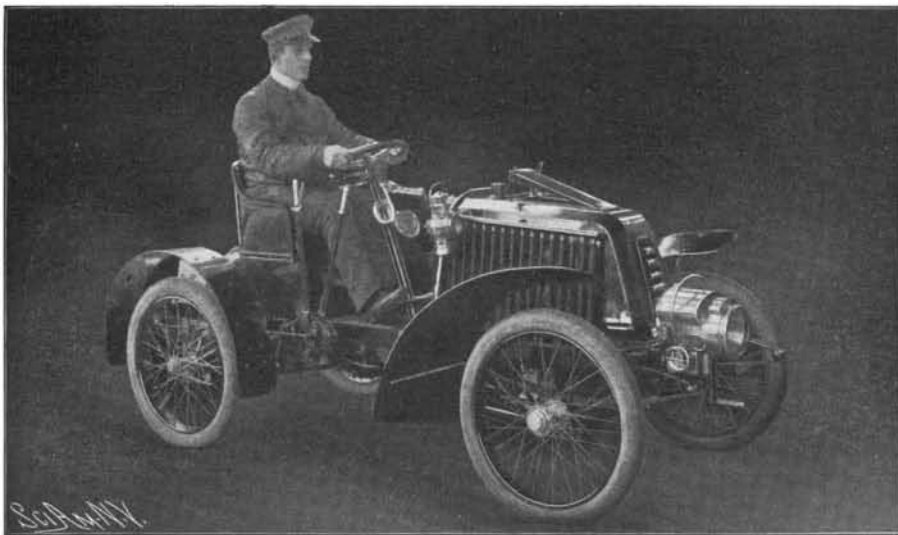
The natty car facing it is a 16 horse power, double-cylinder Renault, the property of Mr. J. Insley Blair. The 16 horse power, two-cylinder motor drives the rear axle direct through a change gear box giving four



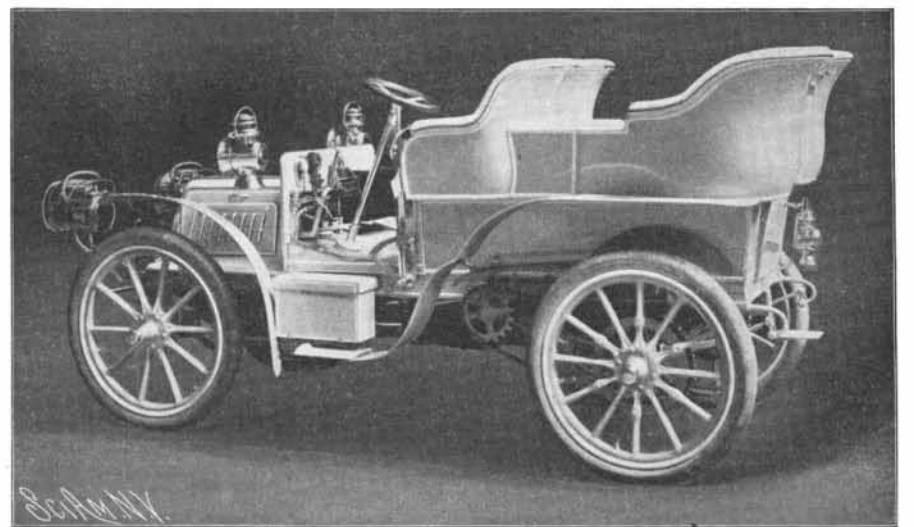
45 H. P. MERCEDES TOURING CAR.



16 H. P. RENAULT LIGHT CAR WITH DETACHABLE TONNEAU



12 H. P. RENAULT RACER, PARIS-VIENNA TYPE.



15 H. P. PANHARD WITH ALUMINIUM BODY.

Photographs made especially for the SCIENTIFIC AMERICAN.

probably carry her stern wave clear to the covering board, and gain all the increased length of waterline, and smoothness of wake that go with such a stern as she shows. By comparing the stern view of "Shamrock II.," side by side with a similar view of her successor, the greater power of the new boat will be readily seen. When it is also borne in mind that "Shamrock III." has about two feet less beam, one can understand that her diagonal lines must be easier, and that she should prove a much faster boat in reaching. That she is so appears to have been proved by the recent tests against "Shamrock I."

The stern view also serves to give a good idea of the midship section of the new boat, and it bears out the truth of our previous statement that Fife had made a considerable return to the easy low bilge, great dead-rise and full garboards of the moderate cutter type. At the same time she departs from the cutter type in the comparative fullness of her waterlines, especially aft (see the parallel flotation strips on the dark strip above the rudder post). It is something of a puzzle, indeed to understand how such full ends and long overhangs could be combined with such a deep mid-section, and the fair sweep of the lines be maintained; but that it has been successfully accomplished is proved by the photographs, no matter from what point of view the boat is seen.

Looked at from the broadside, "Shamrock III." is unquestionably a beautiful craft, with graceful overhangs, and just the right amount of sheer. Her draft

an improved "Vigilant," with that boat's beam and a flatter floor, but without her center board, being pitted against an improved "Britannia." The coming races should be the most exciting that have yet been sailed for the Cup.

#### The Current Supplement.

The current SUPPLEMENT, No. 1423, begins with an article on "Motors in Agriculture." The article is to be concluded in the next issue; the second installment will be illustrated with the motor plow, referred to in the article on "Automobiles in Warfare," published in this issue of the SCIENTIFIC AMERICAN. Prof. Franz Boas, well known as a student of ethnology, discourses on the mind of primitive man. Of technological interest is an article on the preservation of unfermented grape juice, very fully illustrated. That the idea of producing machines able to talk is by no means new with us, is shown by an entertaining account of the old speaking apparatus invented by Wolfgang von Kempelen. The new observation-kites invented by S. F. Cody are described. Gilbert T. Walker explains the theory and construction of the boomerang. "Recent English Archaeological Work" is the title of an article that will, no doubt, be of interest to our archaeological readers. Charles F. Holder tells something of the big things of the West. Dr. Alexander Johnson gives his personal experience in radiography, together with the technique of stereoscopic radiography.

speeds forward and one reverse. A bevel gear drive and live rear axle are used. One of the peculiar features of the Renault cars is the placing of the water-cooling coils on each side of the motor bonnet instead of in front. Another distinguishing point is the chassis of steel tubing. The Renault Frères are among the few constructors who still use this kind of frame. The machine in question weighs about 1,200 pounds, and is capable of speeds of between 30 and 40 miles an hour. A Renault racer built on similar lines to the machines here shown was the winner of the Paris-Vienna race last year.

The small racer has a 12 horse power, single-cylinder de Dion motor, with an air-cooled cylinder and water-cooled head. A three-speed gear is used, which makes the machine capable of attaining speeds of nearly 50 miles an hour. It is a very light car, its weight complete being considerably under 1,000 pounds.

The last car of the group is the beautiful blue Panhard, the graceful curves of whose "King of the Belgians" body were admired by visitors at the Automobile Show last January. The car is now the property of Mr. R. G. McCurdy. The body is of aluminium, and was built in this country. As it is now possible to get such bodies in this country, the importers of French machines frequently bring over only the chassis, and have a body built to fit it here. The Panhard shown has a 15 horse power, two-cylinder motor, together with a four-speed gear, and is capable of speeding up to about 40 miles an hour.