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 of five feet of effective sailing length on "Shamrock II." when she was heeled; but the new boat when reaching will 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 deadrise 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 midsection, 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 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—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 Archæological Work" is the title of an article that will, no doubt, be of interest to our archæological 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.

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.

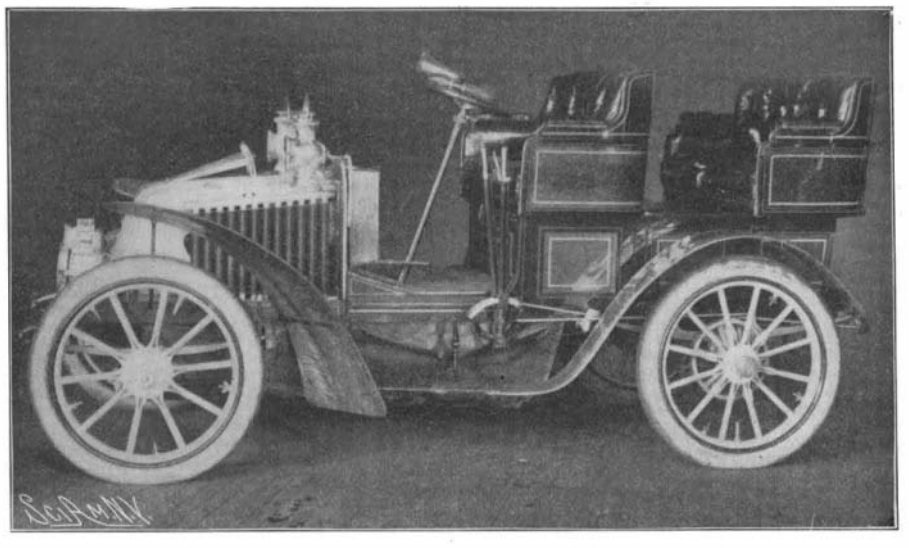
The huge machine just above it is the 45 horse power Mercedes touring car belonging to Mr. Harry Payne Whitney. It is a very commodious machine, capable of accommodating seven persons, and of traveling at as high a speed as 50 miles an hour. The machine is the product of the Daimler Company, of Cannstatt, 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 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.

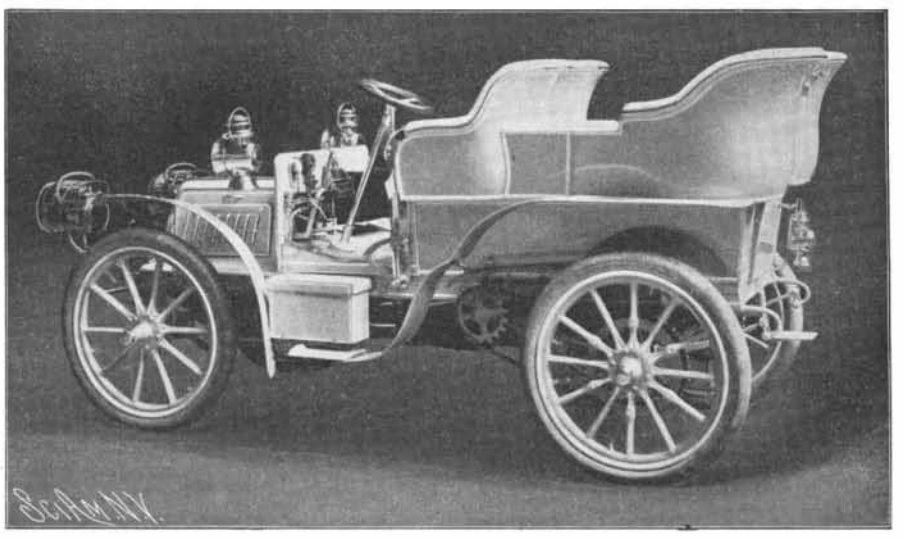
15 H. P. MERCEDES TOURING CAR.



16 H. P. RENAULT LIGHT CAR WITH DETACHABLE TONNEAU

Photographs made especially for the SCIENTIFIC AMERICAN.

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



15 H. P. PANHARD WITH ALUMINIUM BODY.