

THE INTERNATIONAL MOTOR BOAT RACE FOR THE HARMSWORTH TROPHY.

After a postponement of two days owing to rough weather, the International Motor Boat Race for the Harmsworth trophy was held in Huntington Bay on Long Island Sound, August 3. There were but two English boats sent to America to challenge for the trophy, which was brought here last year by the "Dixie" of Mr. E. J. Schroeder, while America was

cient power to drive her at the speed of the leaders. The "Den" was the smallest boat in the race. She is equipped with a 4-cylinder engine of 80 horse-power. The hull of this boat was designed by Charles Hershoff. When traveling at full speed, the first half of the boat was entirely out of water.

The photographs which we reproduce show the excellent running qualities of the "Dixie's" hull, which throws much less spray than that of the "Wolseley-

tained in the soil. To determine whether this power, like that of forming starch from atmospheric carbonic acid, is dependent upon the action of light on chlorophyll, Lefevre exposed one glass-enclosed pot of cress to bright diffused daylight and covered another with a thick black cloth. The plants in the second pot not only withered, but suffered a slight loss in dry weight, while the plants in the first pot grew rapidly. In one of the experiments the average dry weight of a seedling, in milligrammes, was 13.5 before the air was excluded, 30 after three weeks' exposure to light under the bell glass and only 10 after eight days of darkness under glass. Hence it is evident that the synthesis of protoplasm from amides contained in the soil is performed only in light, apparently through the agency of chlorophyll.—*La Science au XXme Siècle.*

Aeronautical Notes.

TESTS OF OUR NEW GOVERNMENT DIRIGIBLE.

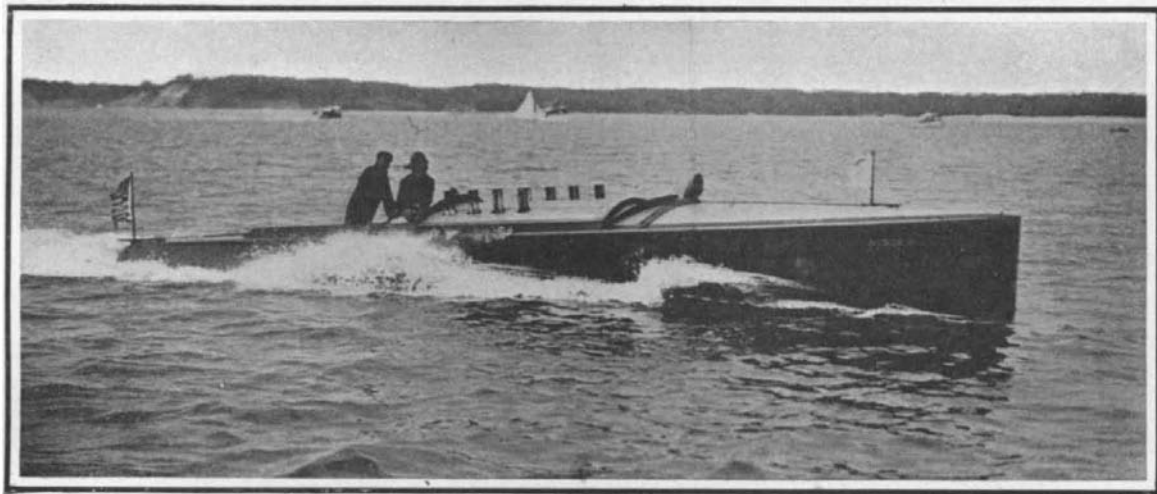
Last week, at Fort Myer, near Washington, D. C., Capt. Thomas A. Baldwin began experiments with the new dirigible which he has constructed for the Signal Corps of our army. The preliminary tests were quite successful, the combined horizontal and vertical plane rudder at the rear, and the superimposed aeroplanes at the forward end for controlling the vertical movements of the dirigible, all being found to work satisfactorily. The only change found necessary was the increasing of the surface of the vertical rudder by about 30 per cent. The new airship carries two men, one of whom attends to the motor and operates the aeroplanes for the control of elevation, while the other toward the rear of the framework, steers. The motor is placed toward the forward end of the framework, and drives a single propeller located at that end. As the new dirigible, in a test made on August 7, showed its capability of traveling 20 miles an hour, Capt. Baldwin expected to make the first official trial flight the next day.

THE WRIGHT BROTHERS' EXPERIMENTS.

As we go to press, word comes from France that Wilbur Wright has his aeroplane at the race track near Le Mans, and that he expects to make a flight of 50 kilometers or more, almost any day. Orville Wright, we understand, will arrive at Fort Myer by the 15th instant, and begin his trials with the aeroplane which he has built for our government.

CONTEST FOR THE SCIENTIFIC AMERICAN TROPHY.

The contest committee of the Aero Club of America have decided to hold a contest for the SCIENTIFIC AMERICAN Trophy in the vicinity of New York city on Labor Day (September 7). The distance to be covered is 25 kilometers (15½ miles) in a closed circuit. If there are several competitors, the one that makes the longest flight of over 25 kilometers will probably be declared the winner. The test will not be for distance alone, however, as stability, speed, and ease of control will also be considered. It is hoped that Mr. Farman will be able to meet the Wright brothers in open competition upon this occasion, as it will give him an opportunity to show what his machine is capable of doing, which was by no means the case in the recent short flights he made at Brighton Beach race track.



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"Dixie II," the American Winner of the International Motor Boat Race for the Harmsworth Trophy. The "Dixie" Covered the 10-Mile Triangular Course Three Times in 1 Hour, 4 Minutes, and 57 Seconds at an Average Speed of 27.71 Knots.

represented by a trio consisting of the "Dixie II," the "U. S. A.," and the "Den." These three boats had been selected out of eight or more that were entered, as they were the only boats to put in an appearance or to demonstrate their ability to race in the preliminary trials, only one of which was held.

The race was started at 3 P. M. under splendid weather conditions. The Sound was smooth, and the boats were able to make very fast time. The course was a triangular one, 10 nautical miles in length, the apex of the triangle being in the harbor, and the base of it in Long Island Sound. The "Dixie" was first to cross the line, which it did 14 seconds after the starting whistle blew. The "Den" crossed the line second, and was quickly followed by the "Daimler II" and the "Wolseley-Siddeley." The "U. S. A." was late in starting, on account of a slight accident, but after it did get away, it soon passed the "Den," which dropped to the last place.

While traversing the base of the triangle in the first round of 10 nautical miles, the "Daimler II" had trouble with one of her engines, and was passed by the "Wolseley-Siddeley." The former boat abandoned the race at this time, and throughout the balance of it the other English boat tried, in vain, to catch the "Dixie II." On the second round she gained 21 seconds on the "Dixie II," but in the first part of the third and final round the "Dixie" regained her lead, and finally finished 49 seconds ahead of the fast British racer of double her power. The elapsed times of these two boats were 1 hour, 4 minutes, and 57 seconds (corresponding to an average speed of 27.71 knots, or 31.94 statute miles an hour) and 1 hour, 5 minutes, and 46 seconds (corresponding to 27.34 knots, or 31.51 statute miles per hour). The "U. S. A." and the "Den" finished in 1:15:11 and 1:20:47, or at average speeds of 23.9 knots (27.55 miles per hour) and 22.3 knots (25.70 miles an hour).

As the result of this extraordinary performance of the "Dixie," the beautiful trophy will remain in this country another year. The hull of the defender was designed by Clinton H. Crane and built by Frank Woods. It is of light construction, 39½ feet long by 5¼ feet beam, and is fitted with an 8-cylinder, V-type gasoline engine of slightly over 200 horse-power. The engine was built by Messrs. Crane and Whitman. Its cylinders are 7¼ x 7¼ inches, and at the average of 825 R.P.M., which is about what it made in the race, this engine is capable of developing about 225 horse-power. The valves are located in the heads of the cylinders, each pair being operated by a single rocker arm worked from one camshaft. The complete power plant, consisting of engine, clutch, and reversing gear, weighs between 2,100 and 2,200 pounds, while the displacement of the boat with supplies and crew was about 4,700 pounds. A metal-to-metal cone clutch is used in combination with a positive jaw clutch. The engine is thoroughly lubricated by oil pumped through the hollow crankshaft. The propeller used is a three-bladed one, 26½ inches in diameter and 49-inch pitch.

The "Wolseley-Siddeley" and her engines were illustrated in our issue of June 13. The second English boat had triple screws driven by three 8-cylinder, V-type engines of about 175 horse-power each. This boat showed excellent speed, and would have stood a good chance of winning if one of the engines had not given out. The "U. S. A." was fitted with two 4-cylinder Chadwick engines of 100 horse-power each. This boat ran very smoothly, but did not have suffi-

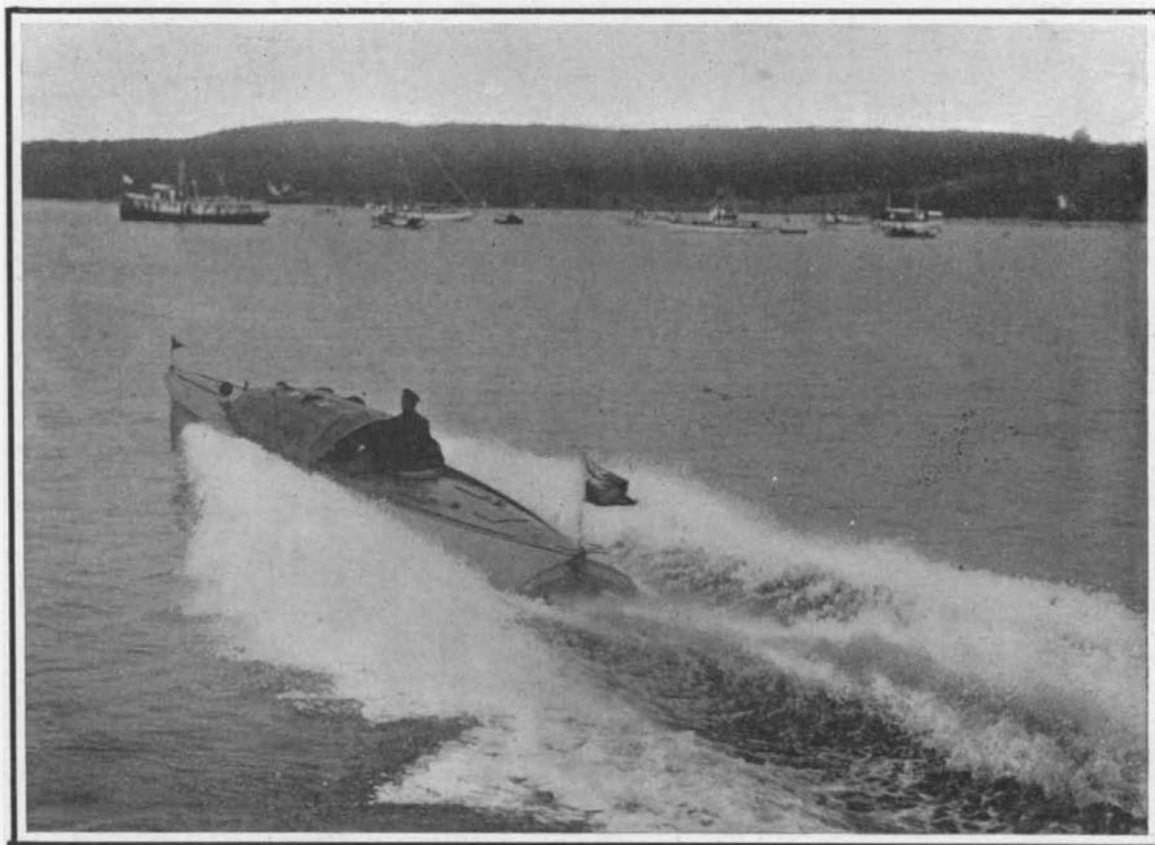
Siddeley." It was due to her excellent lines that the "Dixie II," in a private speed test held last week, was able to average 35.85 statute miles an hour over a 1.1 nautical mile course. This is the fastest speed over an accurately measured course that has ever been made by any motor boat.

Carbon Extracted by Plants from the Soil.

The researches of numerous investigators have proved that plants do not derive all their carbon from atmospheric carbonic acid, as was formerly believed. The most recent experiments are those of Lefevre, which have just been published. Lefevre used a soil composed of sifted sea sand, washed with acid, calcined and mixed with sterilized chopped moss. To this were added certain mineral salts (according to Detmer's formula) and also certain organic amides in the following proportions: 1 part of leucine, 1 of oxamine, 4 of glycocoll, and 4 of alamine, to 4,000 parts of soil. Pots filled with the prepared soil were sown with cress, monkshood, and basil, and, after the young plants had produced a few leaves, were covered hermetically with bell glasses which also contained baryta for the purpose of absorbing any carbonic acid that might be present.

The height of the plants and the number of their leaves was tripled or quadrupled in a few weeks, but other plants inclosed in bell glasses without the addition of organic amides to the soil failed to develop and soon died.

This experiment proves that green plants can produce the albumen of protoplasm from amides con-



The "Wolseley-Siddeley," the English Contestant, Which Finished Second in 1 Hour, 5 Minutes, and 46 Seconds. She Had About Twice the Horse-Power of the Winning American Boat.

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