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RECENT FOREIGN AEROPLANES.

The illustrations on this page show some of the latest aeroplanes which have made flights or which are soon to be experimented with in France.

THE FERBER AEROPLANE.

The first of these machines to be noted is that of Capt. Ferber, who has studied the problem of flight (3.28 feet) wide in a fore-and-aft direction, and the use of a single horizontal rudder, which is universally jointed and which can be swung around to an inclined position so as to be used as a vertical rudder as well. This rudder has 1.89 square meters (20.334 square feet) of supporting surface, its dimensions being 2.1 by 0.9 meter (6.9 by 2.95 feet). It is operated by a single



The Remodeled Gastambide-Mangin Monoplane Flying Above the Parade Ground of Issy-les-Moulineaux, Near Paris.

by a heavier-than-air machine the most assiduously of any French experimenter. This machine is of the double-surface type, the chief points about it being the slightly curved planes and the location of the motor in front and the aviator himself at the extreme rear edge of the planes. A horizontal projection of these planes shows that their front and rear edges form the arc of a circle. They are also suitably curved in a fore-and-aft direction. The surfaces are constructed of cloth and wood, but the other framework is of bamboo. The horizontal rudder is located well in front, and at a higher point than it is usually placed, The vertical rudder behind is triangular in shape, and is combined with a horizontal surface of the same form. Movable triangular tips at the ends of the planes are used for steering. The machine is mounted upon two wheels, placed one behind the other, and curved runners at the ends of the lower plane take the weight of the machine if it tips to one side when striking the ground. A 50-horse-power 8-cylinder Antoinette motor is placed at the forward edge of the aeroplane, and carries a 2.2-meter (7.22-foot) propeller of 1.1 meter (3.61 foot) pitch. The total weight of the machine is about 880 pounds. The spread of the wings is 101/2 meters (34.44 feet), and the total supporting surface is 40 square meters (431 square feet). In its first trials, about a month ago, the aeroplane seemed to show fairly good stability. Several short flights of 10, 30, and 50 meters (33, 98, and 164 feet) were made; but in another trial on July 22, while making a flight of 120 meters (394 feet), Capt. Ferber directed his horizontal rudder downward, to diminish the height of the machine above the ground. This was readily accomplished, but in trying to turn upward again the control gave way, and the machine crashed to the ground and damaged the propeller and chassis. Before repairs could be made, the French aviators were forbidden the use of the parade ground at Issy-les-Moulineaux, and so no further trials have been made. THE ZENS BROTHERS' AEROPLANE.

This aeroplane represents the greatest advance in the line of simplicity that has thus far been made. Its chief features are the reducing of the tail to a single horizontal plane, 5 meters (16.4 feet) long by 1 meter steering wheel. The superposed surfaces of this aeroplane are not of the same length, nor are they set at the same dihedral angle. The upper surface has a spread of 8 meters ($26\frac{1}{4}$ feet), is 1.2 meters wide (3.94 feet), and has a dihedral angle of 156 degrees; while the lower plane has 8.3 meters spread ($27\frac{1}{4}$ feet), 2.3 meters width ($7\frac{1}{2}$ feet), and a sharper dihedral angle. The outer ends of this plane are flexible and curved upward. The surfaces are of varnished Japan aviator's seat forward to the horizontal rudder. The radiator is capable of carrying 24 liters (6.34 gallons). A 2-meter (6.56-f^oot) propeller is carried on the engine crankshaft. The overall dimensions of this machine are 8.4 meters (27.55 feet) long in a fore-and-aft direction, and 8.3 meters (27.22 feet) spread. The total weight is about 320 kilogrammes (705 pounds). The angle of attack of the planes is about 9 degrees.

As stated above, this machine is the simplest one of the double-surface type that has thus far been designed, and in all probability it will make some interesting flights before long.

THE GASTAMBIDE-MANGIN "ANTOINETTE II." MONOPLANE, The monoplane constructed by Messrs. Gastambide and Mangin, which was illustrated in our issue of March 7 last, was one of the first monoplanes to make an actual flight. It did not fly very steadily, and soon came to grief, as it was not fitted with either horizontal or vertical rudders. After the accident, the machine was remodeled, and one of the present photographs shows it in flight. The tail with its horizontal and vertical rudders is shown very well in this illustration. The machine itself appears to be gliding on a fairly even keel, and with good stability. No accurate information as to the flights it has made of late has come to hand, but the photograph speaks for itself, and shows that in the remodeling of this machine it has been somewhat improved.

WILBUR WRIGHT'S AEROPLANE FLIGHTS IN FRANCE.

After the painful accident he met with on the Fourth of July, when a bursting water-pipe caused him to scald his hand, it is somewhat remarkable that Mr. Wilbur Wright was able, in a trifle over a month, to guide his new aeroplane in its first flights in France.

The first flight was made on August 8, above an old disused racetrack near Le Mans. This flight was about 1¼ miles in length, and was accomplished in 1 minute and 45 seconds. The machine left its starting rail readily, and circled around the track. There were



The Zens Aeroplane, Which Has But a Single Rudder.

The tail consists of but a single plane, while the horizontal front rudder can be swung to a vertical position for side steering,

paper, and they are shaped with three different curves. The total surface of this machine including the tail is 28 square meters (301 square feet). The tail is located considerably farther back of the planes than it was placed at first. The machine has a 50-horse-power Antoinette motor fitted with a Fiat carbureter. It has also a special radiator of thin copper tubes 2 millimeters (0.079 inch) thick, arranged on either side of the projecting bow that extends from in front of the

many spectators present, and great enthusiasm was shown at this, the first public demonstration given by the Wright brothers abroad.

'After two attempted flights earlier in the day, the first of which failed owing to an assistant not releasing the aeroplane in time and the second of which, 600 feet in length, was cut short by trouble with the motor, Mr. Wright, at 7:30 P. M., August 10, made an excellent flight of about 11/4 miles in 1 minute and 43 seconds; which was at a rate of about 431/2 miles an hour. This flight was made in a dead calm and was officially timed. The following day, however, there was a wind of about 10 miles an hour, and about nightfall Mr. Wright made a flight of something over 21/2 miles in 3 minutes and 44 seconds. He did not fly very high, but turned readily in and out among the trees with which the field is studded. The machine rose and fell, as well as turning sideways, and seemed to be under perfect control. On Wednesday morning, August 12, a still longer flight lasting 6 minutes 56 2-5 seconds was made. In this flight the machine undulated considerably, and at one time rose to a height estimated to be as great as 90 feet. The flight was officially timed by the Aero Club of the Department of the Sarthe. There was a wind of 10 miles an hour blowing at the time. Toward evening two other short flights were made in a gusty wind, the aviator keeping his machine close to the ground, but controlling it with the same skill as before. The height attained in the first flight was considered by experts as being very remarkable, and as showing the skill and daring of this foremost of all aviators. The series of flights was terminated for a time on August 13, when, after a splendid flight lasting 8 minutes and 52 seconds in the morning, during which Mr. Wright made seven complete turns of the field at a height greater than the tops of the trees, he, at



Capt. Ferber Flying on His New Aeroplane.

The motor and propeller are in front, while the aviator is seated behind. The machine has a small horizontal-and-vertical tail, but for side steering triangular rudders on each end are used.

BECENT FRENCH AEROPLANES.

the end of a second 2-minute flight, struck one wing in landing while attempting to make a sharp curve, and damaged the machine slightly. The first flight was made at 6:30 A. M., and there was a fresh breeze blowing at the time. This seemed to have no effect upon Mr. Wright's control of the machine, however, and he soared to a height of from 50 to 60 feet, and maintained this elevation with the greatest ease. As no material was at hand for repairing the aeroplane, several days will be required in which to do this.

The flights of Mr. Wilbur Wright have completely vindicated him in the eyes of the foreign aeronautic world, and all the aeronauts and men of science have watched his performances with the greatest enthusiasm. His brother, Orville Wright, expects to experiment with the aeroplane built for the United States government, during the present week, or the week immediately following, at Fort Myer, near Washington, D. C.

THE UNITED STATES AND BRITISH GOVERNMENT AIRSHIPS.

The dirigible balloons illustrated on this page are the two which have been built by Capt. Thomas A. Baldwin for our government, and by Col. Cody for the British military authorities. The Baldwin airship, as noted in our last issue, has been undergoing tests at

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between 18 and 21 miles an hour. The official figures were not obtainable at the time of our going to press. Capt. Baldwin expected to make the 2-hour endurance flight, in which he must average 14 miles an hour, the following day.

The plans of this new dirigible were published in SUPPLEMENT No. 1684. Unlike most of the foreign airships, Baldwin uses a long quadrangular framework below the gas bag and suspended from it by netting. The motor and the small aeroplanes, which act as a horizontal rudder, are placed at the forward end of this framework. The motor drives the propeller direct. The airship carries two men, one of whom operates the motor and the aeroplanes for up-and-down movement, while the other steers.

The British military dirigible, which we illustrate, is the "Nulli Secundus" of last year remodeled, fitted with a larger motor, and improved in various ways. In place of the old engine, a 50-horse-power Antoinette motor is now used. This is located in a short car placed below the center part of the airship, and it drives two propellers, one on either side of the car. The gas bag has been fitted with a flat surface on its under side, and the car is suspended below this. Hexagonal twin rudders are used at the rear in place of the single one employed before, and a horizontal rudder is placed in front. There is no netting on this airship, the frameit quickly exterminates or drives out the native ants of any territory of which it takes possession. It is a native of South America, and is almost unknown in the northern part of the continent, except in the Mississippi Valley, where it is found chiefly in the neighborhood of New Orleans. The efforts to exterminate it in the Mississippi Valley have proved fruitless. In Louisiana whole sugar-growing districts have been devastated by the pest, which not only works enormous injury itself, but protects plant scale and cotton-plant lice, rendering them highly destructive to the cotton fields and to fruit and ornamental trees. No wonder, therefore, that its arrival in East Oakland, Alameda County, Cal., where it has occupied a square mile of territory, is viewed with alarm by entomologists. Many residents in the infected region have discovered it, and sent notice of its arrival to the entomological department of the University of California at Berkeley, Alameda. County. At a conference held by the members of the entomological department on July 14, the advent of this formidable ant was the chief subject of discussion, and Prof. C. W. Woodworth, who has been investigating the ant, has sent the following communication to J. M. Gillett, Governor of the State of California:

"I have the unpleasant information to report that the Argentine ant has gained a foothold in East Oak-



Capt. Baldwin's New Dirigible, Which Was Constructed for the U. S. A. Signal Corps, Making an Ascent at Fort Myer, Near Washington.

Military Dirigible Balloon.

This dirigible differs from foreign ones in having a long quadrangular body framework suspended from netting that covers the gas bag. The propeller is at the front end. Small superposed aeroplanes form a double horizontal rudder near the front end.

Note the flat tail and rounded substructure of the gas bag, as well as the horizontal and vertical rudders front and rear, and the small car with its two propellers.

THE NEW AMERICAN AND BRITISH MILITARY DIRIGIBLE BALLOONS.

Washington as to its speed and enduring qualities. The first trial of the three allowed for the purpose of testing the speed of this new airship, occurred on August 12, but owing to trouble with the wiring of the 8-cylinder Curtiss motor, no favorable showing was made in this test. The previous day, however, the airship flew about $4\frac{1}{2}$ miles against a strong cross wind, and developed a speed of some 15 miles an hour. The flight was from Fort Myer to Balston, Va., and back. The distance of 21/4 miles was covered in 8 minutes, or at a speed of 15.2 miles an hour. The return flight was made in the same time, but in returning the airship rose to an elevation of 1,000 feet. Upon reaching its destination the aeroplanes at the forward part of the body framework were directed downward, and the machine was made to descend slowly and gracefully to earth. Capt. Baldwin makes use of a drag rope in alighting, as by means of this the machine can be drawn down if necessary when it comes to rest.

work of the horizontal plane and car being supported by heavy bands of fabric placed around the gas bag at intervals. The length of this airship is 120 feet, and the diameter 26 feet. Its 56,000 cubic feet of hydrogen gas give it a reserve lifting power of from 700 to 800 pounds. It is capable of carrying three men readily. The car is about 12 feet long, and the total height from the bottom of the car to the top of the balloon is about 45 feet. On its first trial on July 24, the airship traveled 9 or 10 miles against a wind of 15 miles an hour. It rose to an elevation of about 1,000 feet, and there was no pitching noticeable. The chief trouble met with was the slipping of the driving belts which operate the propellers. After further trials have been made, it is expected that this airship will be put in use by the balloon corps of the British army.

land, and now occupies about one square mile of territory. The insect is known elsewhere in the United States only in the region about New Orleans: and the secretary of the Louisiana Crop Pest Commission, in the last report of the Governor of that State, writes that the insect has proven itself to be one of the most injurious that has been introduced into the United States from foreign countries. A most serious aspect of the problem is found in the destruction of orange and fig crops in the southern parishes by the ant, and the danger to sugar cane by its continued increase. It seems to me that the introduction of the insect is a far greater menace than the introduction of the white fiy, discovered a year ago at Maryville. I have already reported the matter to State Horticultural Commissioner J. W. Jeffrey, but I consider it important enough to report direct to you."



The second and third official speed tests of this new dirigible were made on August 14 over a course extending from Fort Myer to West Cherrydale, Va. In these two tests the airship is said to have averaged

The Argentine Ant Makes Its Appearance in California.

One of the most dreaded insect pests is the Argentine ant, the scientific name of which is *Iridomyrmea Humilis Maye*. It is very small, being less than oneeighth of an inch in length, but is so pugnacious that Japan's advance in machine building is indicated by the fact that its exports during the last year were five times greater than the average for the last five years. A large proportion of the exports consists of cotton gins, textile machinery, and printing presses, for China.