

RECENT FRENCH AEROPLANES AND THEIR PERFORMANCES.

Three of the photographs reproduced herewith show three of the latest successful French aeroplanes in flight, while the fourth picture shows one of the new biplanes which has recently been produced in that country.

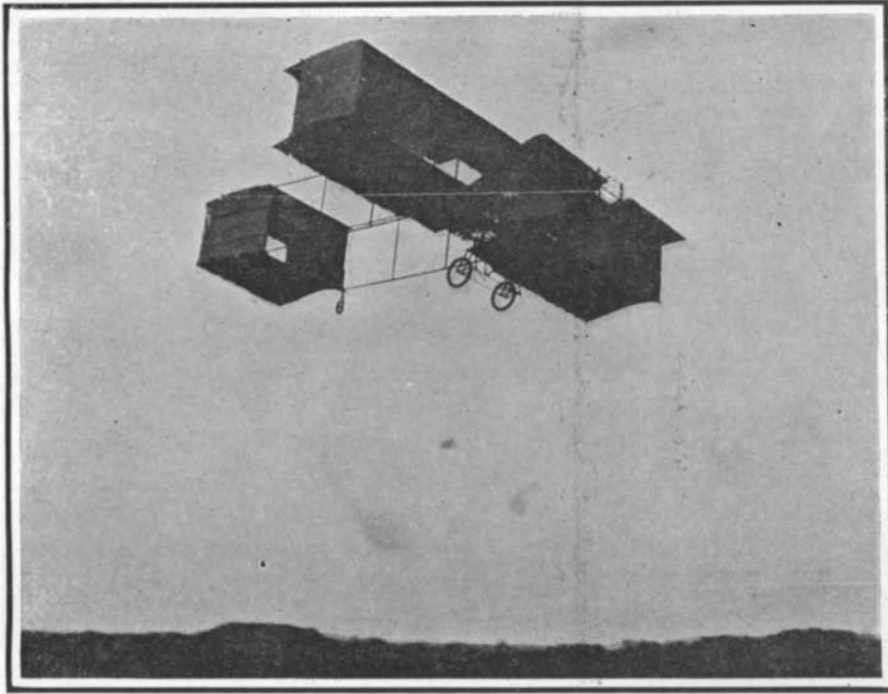
The most noteworthy of the two monoplanes shown in flight is the "Antoinette IV," which, driven by Mr. Hubert Latham, an Englishman, has recently made

some extraordinary flights. After only about fifteen practice flights, Mr. Latham began making record performances. Some of these have been noted by us in previous issues. The most remarkable of all of them is that made on Saturday, June 5th, when he remained in the air in continuous flight for 1 hour, 7 minutes, and 37 seconds, while traveling continuously at a speed of about 45 miles an hour. This flight beats all French records (with the exception of Wilbur Wright's *(Concluded on page 487.)*

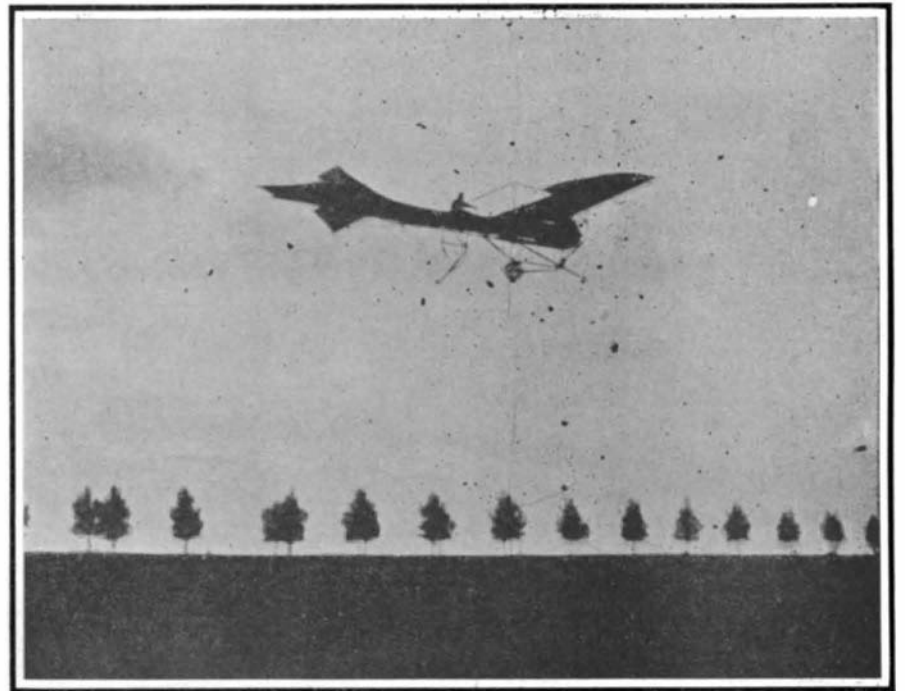
THE CONSTRUCTION OF THE ZEPPELIN AIRSHIP.

The illustration which appears below will give the reader an excellent idea of the general construction of the latest Zeppelin airship "Zeppelin II"—which recently made a record flight of about 900 miles, as described in our last two issues.

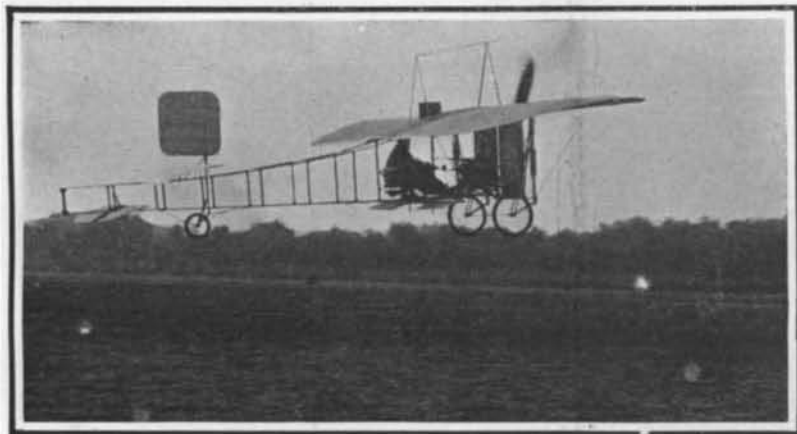
The airship consists of a trussed aluminium frame having tapered ends, and which is divided by vertical partitions into 17 compartments. Each of these com- *(Continued on page 487.)*



M. De Rue's Voisin biplane winning the Archdeacon cup.
De Rue flew about 6 miles in a 15-mile wind June 6th at Port Aviation, Juvisy.



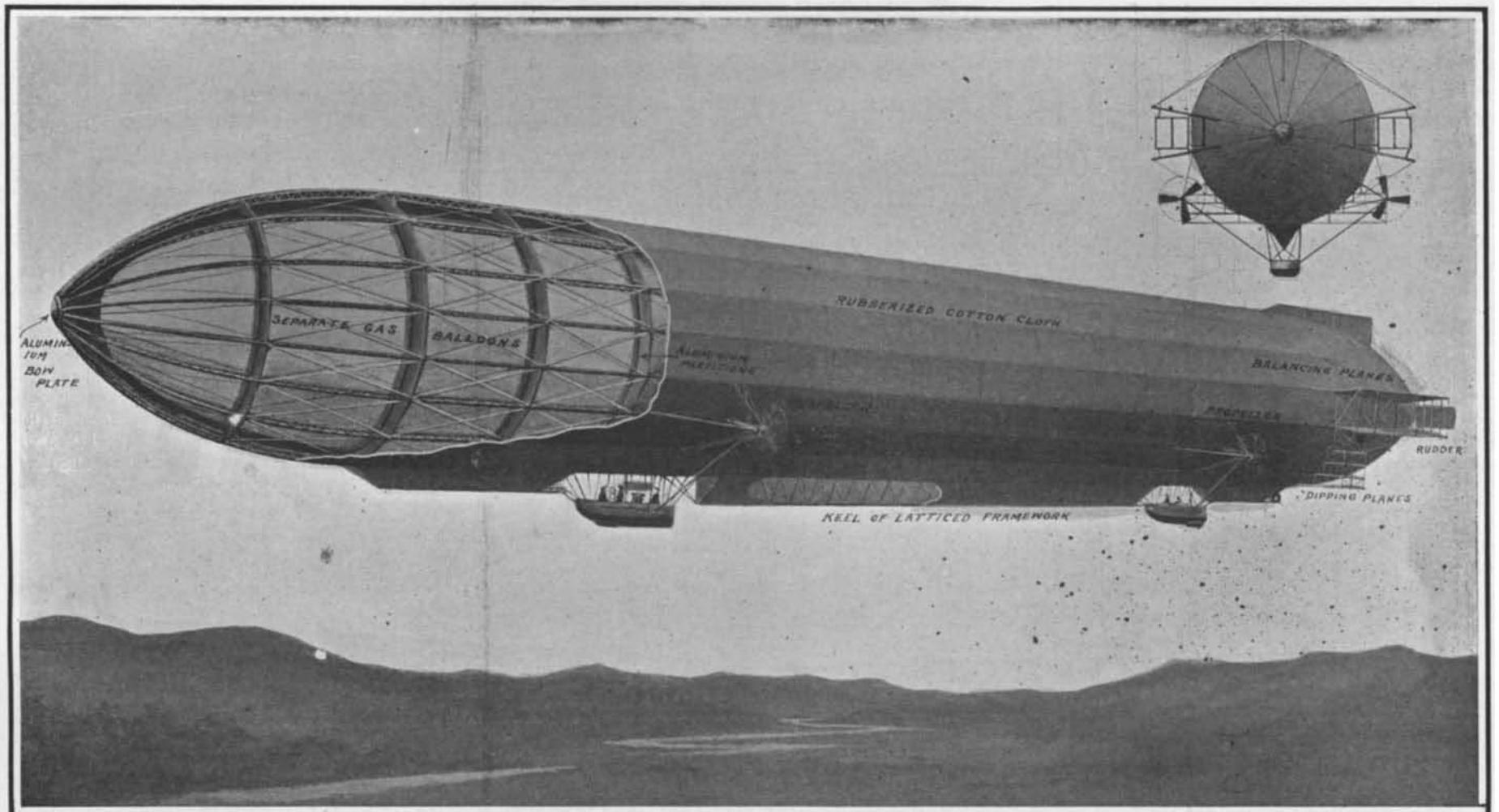
Latham making his 1 hour 7 minute record flight with the "Antoinette IV."
This is one of the most successful French aeroplanes. It has a 50-horse-power 8-cylinder motor.



M. Louis Bleriot flying in his No. 12 monoplane.
Note the two horizontal rudders below the body and the vertical rudder and fixed surface above.



The Lepetil aeroplane—a new biplane resembling the Voisin in general outline.
Note the transverse curving of the surfaces; also the four-bladed propeller.



View of the Zeppelin airship, showing compartment construction and arrangement of the various parts.

A 110-horse-power motor in each car drives a propeller on each side of the airship. Triple vertical rudders are placed between the stabilizing planes at the rear and multiple horizontal rudders are located both fore and aft.

SOME TRICKS OF THE MOVING PICTURE MAKER.

(Concluded from page 477.)
apparently look through the glass. They see the matches burning—this time the property matches—with a stream of water playing upon them, and the fairy falling backward and disappearing.

The final scene discloses the man squirting seltzer on the smoking matches, and in his anxiety to extinguish them completely deluging himself.

The effect of "The Princess Nicotine" when thrown upon the screen is so startling that it defies explanation by the uninitiated. The little fairy moves so realistically that she cannot be explained away by assuming that she is a doll, and yet it is impossible to understand how she can be a living being, because of her small stature. The illusion is heightened by the enormous size of the property cigarettes, matches, and corn-cob pipe compared with the diminutive size of the fairy. Naturally, in enacting this photographic play it is most important that the two fairies should act their parts faultlessly. Thus, when the girl is shown in the bottle, she must never move outside of a certain square marked on the platform upon which she stands beside the camera. Otherwise, she would no longer be seen in the bottle, but outside of it, and the illusion would thus be destroyed.

Again, when she hands her property cigarette to the man, and he apparently takes it, she must hold her hand, and the man his hand, in the proper position, so that the real cigarette and false are superimposed.

In other moving-picture plays it is sometimes necessary to produce effects which are not required in the "Princess Nicotine." Thus, in one film story, a robber is required to run 100 yards down the street, while the apparatus is in operation. If the crank were turned at the usual rate, about 900 pictures would be taken. In order to produce the impression of still greater speed, the film maker simply cuts down the number of pictures to 600, so that the robber runs the 100 yards with outrageous leaps and bounds.

The coloring of films may also puzzle many. The tinting is more simply done than may be supposed. Three positive prints are made from the negative. Out of each picture of the positive a section to be colored red is cut. From the second film, a different section is cut, which is to receive a blue color. Out of the third another part is cut, to receive yellow. Three positive stencils are thus obtained, each having perforations made by cutting away a particular section in each picture throughout the entire length of the film. The fourth positive is now colored by means of the three stencils. The film to be colored is passed slowly over paint rollers in contact with the first stencil, color being applied exactly in the same way as with ordinary stencil plates. The operation is repeated for the second and third stencil film, so that the positive is run over the rollers three times, each time receiving a different color through different perforations. The final result is a positive film in three colors.

RECENT FRENCH AEROPLANES AND THEIR PERFORMANCES.

(Concluded from page 481.)
flight of 2 hours and 20 minutes on December 31st last) and is significant from the fact that it was made with a monoplane, which is generally considered to be the most advanced type of aeroplane. The day before, Mr. Latham made a 37-minute flight at a height of from 60 to 75 feet, and the day after—June 6th—he won the Goupy prize for a flight of 5 kilometers (3.1 miles) in a straight line across country, covering this distance in 4 minutes and 13 seconds at a speed of about 44.1 miles an hour. The entire flight lasted 14 minutes. On June 7th he made four flights of 600 meters (1,968 feet), 700 meters (2,297 feet), 3 kilometers (1.86 miles), and 12 kilo-

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meters (7.46 miles) respectively. In each of these flights he carried a passenger. The last flight was of 11 minutes 6 seconds' duration, Mr. Latham's companion in this instance being Mr. F. Hewartson of the London Daily Mail. The latter sat facing backward in front of Mr. Latham, and so steady was the flight of the machine, that he was able to make stenographic notes while in full flight. Even with the extra passenger, the aeroplane had a tendency to soar, but this was easily checked by means of the horizontal rudder.

The other monoplane shown in flight is the new No. 12 machine of M. Louis Blériot. This monoplane has a length of 10 meters (32.8 feet), a spread of 12 meters (39.4 feet), and its weight with two men on board is given as 498 kilogrammes (1,098 pounds). The thrust obtained from the propeller (which in this case is chain-driven from a 30-horsepower, 8-cylinder water-cooled motor mounted in the lower part of the body framework) is 73 kilogrammes (161 pounds). The first test was made on May 21st. The machine flew successfully at its first trial. Since then it has been altered somewhat. Our photograph shows it in its altered condition. The vertical rudder has been moved from the extreme end of the body framework to a point about half way between the two ends, and has been placed above the frame. The horizontal rudder has been placed below the body framework near the rear, while there is a second one below the aviator's seat. A fixed horizontal surface is located above the body just below the vertical rudder. After making successful flights with a passenger, M. Blériot, on June 12th, is reported to have flown 1,000 yards at a height of from 15 to 20 feet, carrying two passengers, the weight of the machine with passengers being in this instance 1,232 pounds. This was a very remarkable performance, and it is the first time that an aeroplane is known to have carried more than two men. The passengers taken by M. Blériot were M. Fournier and Santos Dumont. M. Blériot is continuing his experiments, and he will, no doubt, make some record flights before long.

The biplane, shown in flight, is one of the Voisin machines, such as was first used successfully by Farman and Delagrangé. The particular one shown in the photograph is that of M. De Rue. It has made some excellent flights at the new aviation field of the Aero Club of France at Juvisy, and in the picture is shown winning the Archdeacon cup.

The biplane shown on the ground is a new machine, having planes which are arched from the center outward in a peculiar manner, as can be seen from the picture. This arching of the planes also extends to the tail in the rear. A large four-bladed propeller is placed just back of the main planes, and is driven by a chain from the motor. The designer, M. Lepetil, expects to increase the transverse stability by means of the arching of the planes. The machine has not yet received its initial test. It has two runners below the tail, and two runners with wheels in front.

THE CONSTRUCTION OF THE ZEPPELIN AIRSHIP.
(Continued from page 481.)
partments contains a separate gas bag. These gas bags are well shown in the picture at the front end of the airship. They fit the compartments, and press against a network of ropes (not shown) within the girders. Outside of these girders there is a covering of special balloon cloth. On the under side of the frame there is a trussed keel, extending to within two compartments of each end. The two cars are suspended from this trussed keel, and rigidly attached to the same about a quarter of the way back from the bow and a quarter of the way forward from the rear end of the airship. Each car contains a 110-horse-power motor, which drives, by means of shafts

(Concluded from page 487.)

and bevel gears, two propellers—one on each side of the airship. A reversing mechanism is provided, by which it is possible to reverse the propellers; and after the accident at Goppingen, in which the bow of the airship was badly damaged, the huge craft was, it is said, driven backward to its destination, some 150 miles away.

The total length of the "Zeppelin II" is 136 meters (446 feet). Its gas capacity is 15,200 cubic meters (536,773 cubic feet) and its lifting power is consequently about 16 tons. Its journey from Friedrichshafen almost to Berlin was cut short on account of lack of fuel; and while attempting to land in a rainstorm the accident occurred, the balloon smashing into a tree. The fact that Count Zeppelin was able to repair the damage within twenty-four hours and return to Friedrichshafen was a complete vindication of the advantages of the rigid-frame type of airship. Any other type of dirigible balloon would have been effectually demolished by such an accident as the "Zeppelin II" met with.

For further particulars of the constructional details of the recent Zeppelin airships, we refer our readers to SUPPLEMENT No. 1745. The "Zeppelin II," while an entirely new craft, has some of the parts used in the "Zeppelin IV," which was demolished last August. Its speed is fully as great as was the speed of that craft, and after repairs have been made, it will probably make some excellent long-distance voyages. Plans are on foot for the establishing of a regular airship line between several of the large German cities; and there is another new Zeppelin airship nearing completion for exhibition and flights at the Frankfurt Exposition, which opens in July.

Action of Brick Kiln Gases on Vegetation.

For years the brick makers of French Flanders have been paying indemnities to neighboring farmers for the damage done to crops by the gases discharged by the brick kilns. The greatest damage is done in foggy weather and during the precipitation of dew. No injurious effect on vegetation is produced by lime kilns situated near the brick kilns and using the same coal.

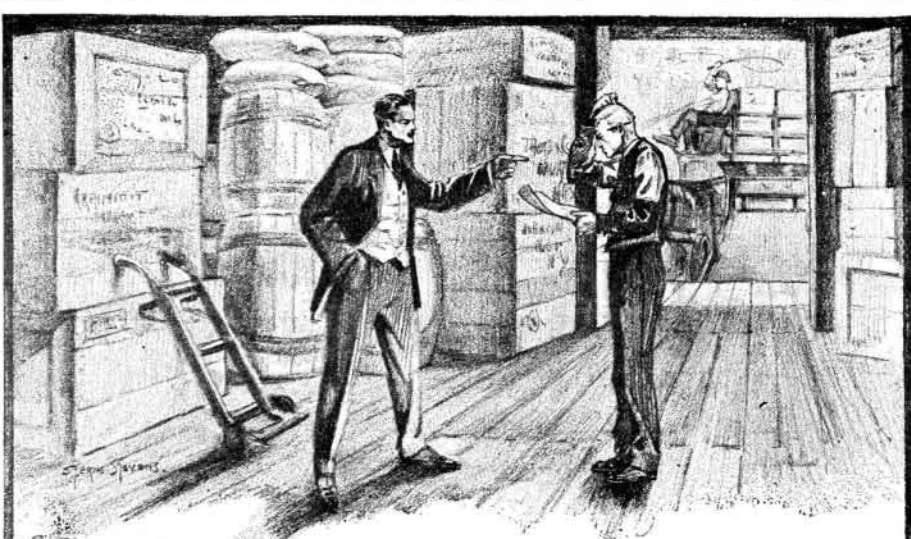
It appeared evident that the injurious constituent of the products of combustion was made harmless by lime, and it was suspected that this ingredient was sulphur dioxide, formed by oxidation of the pyrites contained in the fuel. This gas, if sufficiently diluted with dry air, does not injure vegetation, but in a moist atmosphere it becomes converted into sulphuric acid which destroys all vegetation on which it falls. In the lime kilns the sulphur dioxide combines with lime to form calcium sulphite, which remains in the kiln.

This theory was confirmed by experiment. Wet cloths were hung to windward and leeward of a brick kiln for a time and the moisture wrung from them was analyzed. Sulphuric acid was found in the leeward but not in the windward cloths. The obvious remedy for the existing state of affairs, therefore, was the addition of a sufficient quantity of lime to the brick kiln. This plan was adopted last season by several brick makers with great success and at a cost of only two or three cents per thousand bricks. In addition to the prevention of injury to vegetation, it was observed that the workmen suffered less from the effects of heat and discharged gases, drank less, and enjoyed better health than formerly.

The American Medical Association has voiced its protest against the use of benzoate of soda in food. A delegation of the Association, headed by Dr. C. A. L. Reed, of Cincinnati, recently called on President Taft and recorded their protest. The stand taken is that factories and plants where food products are prepared should be the subject of federal inspection.

Table listing various technical items and their authors, such as Sulfur burner, Superheater boiler, Switch, and various mechanical devices.

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