

THE FIRST GERMAN MONOPLANE TO MAKE SUCCESSFUL FLIGHTS.

Our illustrations show the monoplane of Herr Grade, who is the first German to make successful flights in a heavier-than-air machine. This monoplane resembles that of Santos-Dumont in its general make-up, the aviator being placed below the plane, and the motor—a 4-cylinder air-cooled engine of the V type—being located at the front edge, and carrying a propeller on its crank-shaft. The wings of the monoplane are set at a slight dihedral angle, and are provided with a flexible edge at the rear. A tail with vertical and horizontal surfaces is mounted upon a bamboo pole extending out behind.

While making an attempt to win the Lanz prize of \$10,000 at the Mars aerodrome near Berlin, Herr Grade experienced a bad fall, fortunately without injury. The flight required was one of $2\frac{1}{2}$ kilometers (1.55-mile) in the shape of a figure eight. The aviator made a splendid start, but in the middle of his flight, when at a height of nearly 100 feet, the propeller broke, and the machine came forcibly to the ground. Fortunately, the shock of striking the ground was lessened by the alighting of the monoplane in some low pine trees. The machine was badly damaged, but Herr Grade expected to repair it in a few days.

THE AVIATION MEET AT BERLIN AND LATHAM'S FLIGHT ACROSS THE CITY.

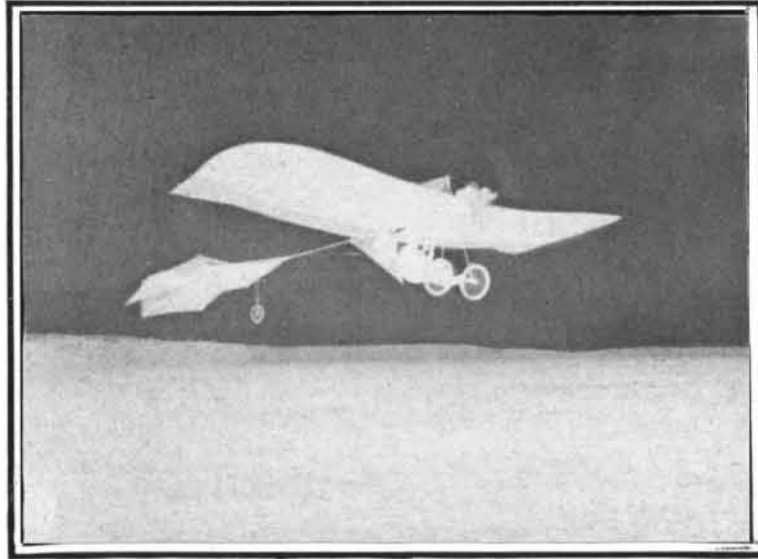
The aviation meeting which was held recently at Berlin was specially noteworthy for the great feat of Hubert Latham in flying across the city of Berlin from the Tempelhofer field to the aerodrome at Johannisthal. This flight was made on September 27th, the second day of the meeting, and it has already been mentioned in these columns. Our photograph shows the machine as it flew across the sheds which were erected for the aeroplanes at Johannisthal. The great height at which Latham flew is indicated by the small size of the monoplane, which looks like a huge bird of prey winging its way in the upper air. Latham made the flight of $6\frac{1}{4}$ miles across the city in less than 10 minutes. He first made two circuits of the Tempelhofer field, and then started straight off across the city at a height of about 300 feet. As soon as word was received by the waiting spectators at Johannisthal that Latham had started, they all strained their eyes in an effort to see the machine in the distance. Soon it appeared, a mere speck in the sky. It came rapidly nearer, and finally passed overhead, as shown in our illustration. Before coming to earth, Latham completed two circuits of the aerodrome, a distance of about $12\frac{1}{2}$ miles. Upon alighting, he received a decided ovation. The total length of his flight was about 24 minutes.

The opening day of the meeting, Sunday, September 26th, was not very auspicious. Baron De Caters made several circuits of the $2\frac{1}{2}$ -kilometer (1.55 mile) course, and Bleriot did likewise. Neither aviator kept aloft long enough, however, to qualify for the speed prize. Leblanc started on his Bleriot monoplane, but only succeeded in making a half round of the course.

On September 27th very little was accomplished, but the following day several excellent attempts were made to win prizes, the best of these being that of Rougier, who flew 44.75 kilometers (27.78 miles) in 52 minutes. Latham and Farman both attempted to win the speed prize. The former covered the required distance of 20 kilometers (12.42 miles) in 18 minutes $4\frac{3}{5}$ seconds, and the latter in 20 minutes $9\frac{2}{5}$ seconds. M. Bleriot did not quite succeed in completing the 20 kilometers. Rougier, in his long flight, attempted to win the height prize presented by Count Zeppelin, but he

only reached a height of 100 meters (328 feet). Edwards, who was operating a Voisin biplane, had a bad tumble after completing three circuits of the course. He fortunately escaped with only a few slight cuts. Baron De Caters damaged his biplane in making a sudden landing.

On September 29th, Rougier made 31 rounds of the course, and covered an official distance of $77\frac{1}{2}$ kilometers (48.12 miles) in 1 hour and 37 minutes, a speed of 28.73 miles an hour. Latham covered $67\frac{1}{2}$ kilometers (41.91 miles) in 1 hour and 14 minutes.



This is the first German aeroplane to make satisfactory short flights.

THE GRADE MONOPLANE IN FLIGHT

His average of 41.22 miles an hour in the 20-kilometer speed test caused him to be declared the winner of the speed prize of \$2,000. On October 1st Rougier won the distance prize of \$10,000 for 2-hour 41-minute 50-second flight, in which he covered $80\frac{3}{4}$ miles at an average speed of 30 miles an hour.

M. Bleriot's monoplane was attached by the management when the champion aviator attempted to leave with it for Cologne. He had been paid \$5,000 to fly at Berlin on five days, and because he refused to stay, his machine was retained. M. Leblanc also stopped when Bleriot quit. On the whole, this meeting was fairly successful, especially in view of the fact that it was run during the time of the aeronautic show at

Suicide of Scorpions.

The venoms of serpents, fishes, scorpions, centipedes, spiders, bees, etc., as well as the blood of the eel, owe their virulence to the presence of toxins similar to those which are secreted by bacteria. In both cases the toxins are specific products of the activity of living cells. They are very poisonous, non-crystallizable colloids, of unknown chemical constitution. The venom toxins are very sensitive to the action of heat and light, are easily destroyed by digestive ferments, and consequently are innocuous when swallowed.

There is a great variety of these toxins. Snake poison alone contains half a dozen distinct toxins, each of which exerts a specific action on the nervous system, the red or the white blood corpuscles, etc.

It is possible to produce in any animal an artificial condition of immunity to the effects of any animal venom. This is accomplished by the repeated injection of the venom in doses, each of which is too small to cause death. After a larger or smaller number of injections the animal acquires the power to resist the action of many times the quantity of venom that would suffice to cause death, if it were injected into the veins of a non-immunized animal. The blood of the immunized animal now contains a new substance, an antitoxin which has the property of neutralizing the toxin of the venom, and this blood (or rather its watery part, or serum) may be employed to combat the toxic action of the venom in a non-immunized animal.

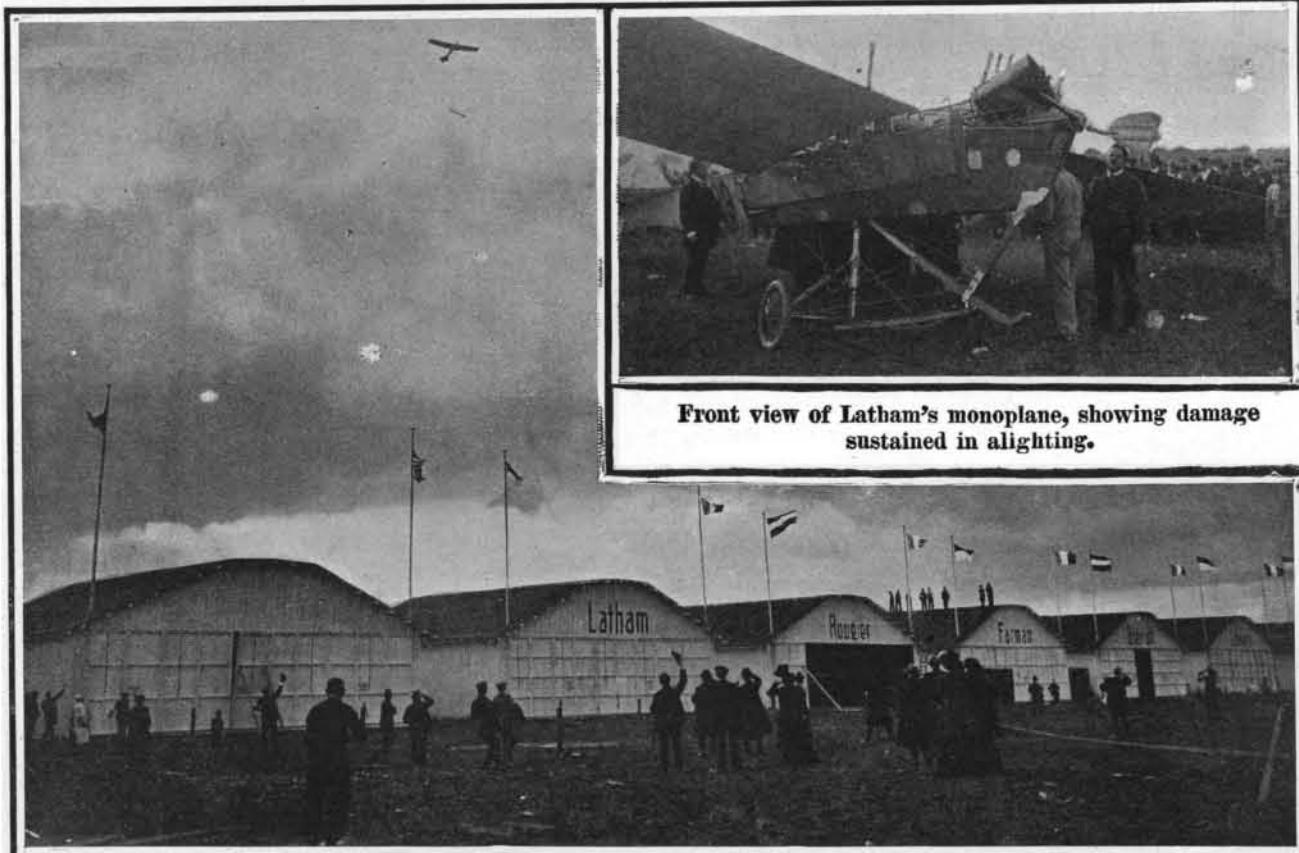
The ichneumon, the hedgehog, and some other animals which devour venomous serpents, exhibit an extraordinary resistance to the effect of their bites. This natural immunity is explained by the presence of antitoxins in the blood of these animals. Serpents are also little affected by their own venom. In general, it is almost impossible to kill a venomous animal by inoculating it with the venom of its own species, of which it can support very large doses with impunity.

These facts demonstrate the absurdity of the stories of rattlesnakes and scorpions committing suicide by means of their own venom. It is asserted that a scorpion or a rattlesnake imprisoned in a circle of red-hot coals will sting or bite itself to death. This is a physiological impossibility.—Cosmos.

Common iron scrap has now so low a commercial value that it is hardly worth the trouble of selling, unless it has accumulated in large quantities. But there is a difference in scrap, as the following story proves. A French ship recently sailed from Oakland, Cal., for Genoa, with a cargo of iron scrap collected from the ruins of San Francisco after the earthquake and conflagration of 1906. The scrap is consigned to the Italian government and is to be used in the construction of a warship of the "Dreadnought" type. It appears that a small lot of similar material, which was brought to Genoa two years ago and mixed with steel, produced armor plates of unusual strength. In consequence of this result, which was due to the intense heating which the scrap had experienced in the

conflagration, the Italian naval engineers advised the government to purchase all the scrap iron from the San Francisco fire that could be obtained.

The United States Treasury Department will soon take up the subject of providing sanitary paper money. Not the least of the reforms proposed is the proposition to wash national bank notes. It is said that the idea of washing bank notes is by no means infeasible, for it is possible by means of a chemical solution or bath to clean the notes without injuring the printing.



The arrival of Hubert Latham at Johannisthal after his flight across Berlin.

In this instance for the first time an aviator arrived at an aviation meeting on his machine, after taking a direct air line.

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Paris, which opened on September 25th. Latham struck the ground forcibly in one of his landings, breaking a wheel and damaging his propeller as shown in one of our photographs.

Holland compound is a solution of 5 parts of soda water glass and 1 part of carbonate of soda, or a powder mixture consisting of 3 parts of calcined soda and 1 part of dry potash water glass. Ten parts of this mixture is said to be sufficient to render 100,000 parts of hard water soft.



Front view of Latham's monoplane, showing damage sustained in alighting.