

second turn will generate 12 times as much or a 684-lb. blow, and a half-a-second turn a 1,368-lb. blow, which would be just about enough to capsize or collapse any aeroplane that was ever built.

In preparing an apparatus for one of his experiments, Mr. Brooke, who first discovered the dangers of gyroscopic force, suspended a gyroscope in the air by a rope so that it was free to turn in any direction, the same conditions as described in the Gnome experiment. When he came to test the gyro force he found it so weak compared to what was felt when the gyro was held in the hands without other support that the apparatus was abandoned for demonstration purposes. He found that the supporting rope had received more than 70 per cent. of the gyro strain. This showed positively that the action of the gyroscope in the air, unsupported, is entirely different and considerably more powerful than when it is anchored to the ground by any character of support. To demonstrate this in another way Brooke placed a gyroscope in a round bottom bowl that was floating in water. Then, by a quick push, he changed its plane of rotation horizontally. Instantly it dived and sank. The bowl in water represents the same condition as the aeroplane in the air. Anyone who is sceptical can easily try this experiment and see for himself what happens.

I also think of another actual experiment that I have seen carried out by Mr. Brooke.

Twin gyros weighing 8 ozs. apiece were mounted independently in a four-wheeled frame and were set to rotating. With a hair stretched taut between his two hands Brooke gave the rear end of the gyro frame a sudden pull sideways. Instantly it reared up on its two front wheels and began slowly to turn around a circle. Quickly he struck the end that was floating in the air a 20-lb. blow with his fist. The blow had no effect on it whatever. It continued its circular movement, the rear end still in the air. Then he took the hair again and arrested the circular movement. Instantly it dropped back on its four wheels with a thud. A rotar weighing less than a pound had generated a force *twenty times greater than its own weight* in overcoming an attempted change in the plane of its rotation.

A prominent Chicago aviation engineer, in arguing this matter with the writer, admitted that according to the Seguin figures there would be 684 lbs. of gyroscopic force generated in a one second turn, but said that this was not sufficient to be dangerous, because the 684 lbs. was distributed through the wings in such a manner that at the centre of the wing warp on each wing there would only be in the neighbourhood of 50 lbs. of it to be overcome by the controls. A 50-lb. push up on one wing and a simultaneous 50-lb. pull down on the other, or, what would be the same thing, a 100-lb. pull down on only one wing, would not be dangerous. According to this theory a 100-lb. weight could be suddenly thrown on one wing of an aeroplane in flight and the operation would be perfectly safe. Is it possible that anyone can credit this? If so, would the believer consent to try the experiment with his life as the stake? Hardly. Not if he has observed the delicate balance of a machine in flight, sensitive to the least touch on the controls and the merest breath of wind. When everyone is agreed that this force is present in a flyer and has to be reckoned with, why argue that it is not dangerous because it can be overcome by the controls. Certainly it can be overcome by the controls and counteracted nine times out of ten when the aviator is quick enough, but some day the tenth time comes, the turn is too sudden, the force is just a trifle too strong for the ailerons, and we read of another "unknown cause" fatality where the machine capsized and dived headfirst.

c/o Holliday Engineering Co., RALPH M. PEARSON,
749, Bunker Street, Chicago, Ill.

[This is the second letter that we have received from Chicago in the last few weeks containing an attack on the Gnome engine, and we are rather at a loss to understand the *raison d'être* of their origin. The laws of gyroscopic force are fairly simple, and it is open to anyone to work out for themselves just how much it will be under any given conditions, and if they need any assistance in this matter there is a helpful article in FLIGHT, November 19th, 1910, which gives the formula and a curve. It is surely not a question whether gyroscopic force does or does not exist, but whether the ordinary exigencies of flying cause it frequently to assume a dangerous magnitude such as would be likely to destroy the pilot's control over his machine. Experienced pilots to whom we have spoken on the matter of the gyroscopic force of Gnome engines have always told us that they can recognise its presence by the difference in the effect when turning to the right or turning to the left, but we have heard no one complain of real danger in this connection, so far as the models ordinarily in use are concerned. The 100-h.p. Gnome has, we admit, been criticised in our presence, and we know that some pilots do not altogether like flying with a rotary engine of this weight and power. One of the characteristics that, presumably, may be attributed to gyroscopic force is a tendency to set up a very bad tremor through the machine when turning, and there is nothing that

most pilots dislike worse when they are in the air than any sort of vibration.

The difficulty about calculating the numerical value of the couple produced by gyroscopic action lies in the uncertainty as to the rate at which the machine changes its course in space. For our own part we are inclined to think that the most serious aspect of the situation lies in the effect that the couple might have on any weakness or slackness in the engine mounting that might give it a minute degree of free play.

There are many reasons why one naturally hopes that the typical revolving engine, with its many natural limitations, will not always remain the *ne plus ultra* of aero motors, but let us at least be fair-minded towards the engine that has done so much to make flying what it is to-day.—TECH. ED.]

Miss Quimby's Blériot.

[1630] The statement has been published that the new 70-h.p. passenger Blériot machine in which Miss Quimby was flying with Mr. Willard at the time of her tragic death at the Boston meet, has been sent back to the Blériot factory in Paris, France. Will you kindly say the monoplane is still in New York? I am constantly receiving letters regarding the matter, and Miss Quimby's parents authorise me to make this statement as executor of her estate.

JOHN A. SLEICHER (executor of the last will and testament of the late Harriet Quimby).

New York, September 5th.

PUBLICATIONS RECEIVED.

Modèles d'Aéroplanes; leur Construction. By A. Fieux. Paris: Librairie Aeronautique, 40, rue de Seine. Price 2 fr.

The Boy's Playbook of Science. By the late Prof. J. H. Pepper. Revised, rewritten and brought down to date by John Mastin, M.A. London: George Routledge and Sons, Ltd. Price 5s.

Aeronautical Patents Published.

Applied for in 1911.

Published September 19th, 1912.

- 12,756. G. S. DODMAN. Airships.
- 19,664. J. STODDART. Flying machines, airships, &c.

Applied for in 1912.

Published September 19th, 1912.

- 1,713. H. L. A. E. AND H. O. SHORT. Floats for flying machines, and dirigible balloons.
- 5,449. H. H. RIDLEY AND H. J. WHITE. Landing chassis for aerial machines.
- 5,879. S. DE LAN. Dirigible airships.
- 7,886. F. M. EGGERT. Flying machines.
- 9,547. L. F. BANCROFT. Aeroplanes.
- 13,608. O. REUTER. Aerial propellers.
- 13,883. G. MEES. Aerial propellers.

PRINCIPAL CONTENTS.

	PAGE
Editorial Comment	848
The Ban on Monoplanes.	
Hendon Autumn Meeting	849
The Factor of Safety in Aeroplane Design	850
Aeroplanes in the Army Manœuvres	851
Royal Aero Club. Official Notices	852
The Elevating Action of the Rudder	853
From the British Flying Grounds	854
The Effect of Factor of Safety	857
"X" and the Uninitiated. By G. Holt Thomas	858
British Notes of the Week	859
Foreign Aviation News	860
A Handy Blow-Lamp	862
Models. Conducted by V. E. Johnson, M.A.	863
Progress of Flight about the Country	864
Correspondence	865

FLIGHT.

44, ST. MARTIN'S LANE, LONDON, W.C.

Telegraphic address: Truditur, London. Telephone: 1828 Gerrard.

SUBSCRIPTION RATES.

FLIGHT will be forwarded, post free to any part of the world at the following rates:—

UNITED KINGDOM.		ABROAD.	
	s. d.		s. d.
3 Months, Post Free ...	1 8	3 Months, Post Free ...	2 9
6 " " " ...	3 3	6 " " " ...	5 6
12 " " " ...	6 6	12 " " " ...	11 0

Cheques and Post Office Orders should be made payable to the Proprietors of FLIGHT, 44, St. Martin's Lane, W.C., and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.