

# To Make Flying Safe



THE W. I. TWOMBLY SAFETY-HARNESS.

This harness will hold the aviator to his seat in the roughest kind of weather, but will release him instantly when he pulls the cotter-pin.

**I**F USE, and not sport and mere excitement, is to be the aim of aviation, it must be possible to engage in it without more danger to life and limb than is encountered, say, in motoring. No one will assert that it has yet reached this stage, and constructors and aviators alike are now racking their brains to devise all sorts of safety-appliances and tests. In an article in *The Aero Club of America Bulletin* (New York), Henry Woodhouse tells us that the necessity of this has been realized first in Europe, and that it is there that most of the efforts are being made which will doubtless in time make flying a much safer occupation than it is at present. While the bulk of accidents, Mr. Woodhouse says, are due to carelessness—to lack of proper consideration rather than lack of safety—a larger margin of safety would minimize the loss of life, therefore the margin can not be too great. He finds that the movement toward developing greater safety in flight is general in Europe, where in the short space of eighteen months it has made a radical change in the construction of aeroplanes.



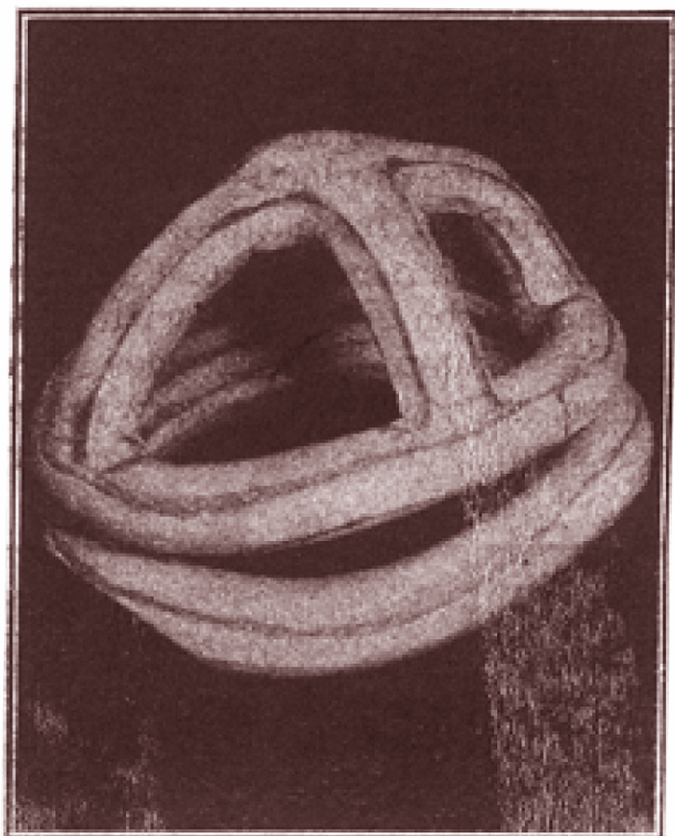
March 1, 1912: Captain Albert Berry executes the first successful parachute jump from his doomed aircraft in Jefferson, Miss.

"It has introduced steel for general construction, heavy wheels and reenforced, improved skids, strong cables for trussing, double cables for controls, better joints, turnbuckles, bolts, and general accessories. It also brought thoroughly tested propellers, remarkably efficient motors with self-starters, self-acting gasoline pumps, oil safety-valves, oil quantity-indicators, and special devices to minimize the danger of fire, brakes to stop the aeroplane on the ground, scientific instruments to facilitate travel, safety-helmets and safety-belts to minimize hurt when accidents happen. Other innovations have been hoods to shield aviators from the elements, comfortable seats with special arrangement for carrying passengers. A notable feature, the standard makes are obtainable in three or four types—light, medium weight, or heavy; for sport, for racing, for cross-country flying, for military service, and to carry one or more passengers. The last and best innovation has been the hydro attachment which is now being supplied with one dozen of standard machines, and is in itself a wonder in safety and utility.

"If we stop to consider the great change that has taken place in a little over a year, and if we compare the symmetrical, compact, finished, and efficient machines of to-day with the irregular, unfinished apparatus that took part in the Belmont Park meet, for instance, and if we consider that there are now two scores of standard machines made to not quite a dozen in 1910, and if we consider the youth of the science, and the fact that three years ago this month, July 25, we marveled at Blériot's flight of twenty-two miles across the English Channel—made with wavering wings and a skipping motor—we are apt to forget the recent fatalities and become enthusiastic.



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FRAME OF PNEUMATIC HELMET.

"That is especially true if we consider that there are now 2,500 licensed pilots, at least as many unlicensed; not less than fifty aviation schools where pupils make from one to two hundred flights each day; and if we realize that airmen, expert and beginners alike, achieve seeming impossibilities and handle their machines with a carelessness that would bring tragic results with any other kind of vehicles—perhaps more often."

Outside of factories, Mr. Woodhouse goes on to tell us, consideration is being given to developing safety by the military, scientific, and lay authorities. The military authorities

are doing the most and are responsible for much of the improvement. They originated, for instance, testing the strength of wings by loading them with sand, which has been widely adopted. The experiments made with mounted and trussed wings have shown tremendous carrying capacity. This sand-load method, however, is not in itself conclusive, as the wings may carry a load of 2,500 pounds and yet break under the strain of a sudden dive. To remedy this, the so-called roller-truck test was originated, the first trials of which took place in May, at Survilliers. Mr. Woodhouse thus describes it:

"The aeroplane is mounted on a truck. It is mounted in a way to allow change of position during the tests, the truck is drawn by an engine at rates varying from fifty to seventy miles an hour, and the pressures on the planes are registered by special instruments. Had this method been adopted months ago, the French Army would have a half dozen more officers in service—who are dead.

"Another important test also made necessary by military requirements, tho not directly requested, is the exposure test, which consists of placing the aeroplane in the open air and leaving it unprotected from the elements for a certain length of time, ranging from three weeks to two months, only covering the motor and the propellers with leather hoods. . . . .

"Aerodynamic laboratories have existed for many years, and their existence was scarcely noticed until after the excitement over exhibition-flying subsided, and the world at large began asking questions about the causes of accidents. Then, when the constructors' and fliers' empiric knowledge could explain but a few obvious cases, it was realized that to find the subtle causes of fatalities and devise means to eliminate or minimize them, it was necessary to conduct researches, combining empiric and scientific knowledge, and that the work could be done in a well-appointed aerodynamic laboratory better than anywhere else. Now the French laboratories founded by Gustave Eiffel and Henri Deutsch de la Meurthe, respectively, are renowned the world over, and the countries that possess such establishments are proud of their possession.

"It is significant that one of the first steps of the German Government when it decided to construct a large aeroplane fleet was to found an aerodynamic laboratory, the Reichstag approving the expense.

"Another significant demonstration of the general attention given to developing safety is the organization of the Union for Safety, a body which comprizes the scientific, professional,



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"SOON I'LL HAVE TWO HUNDRED WITH MY TRAP."

—Ulk (Berlin).

military, and sportive authorities of France, and is pledged to promote safety by fostering the development of ways and means. . . . .

"The delegation of this Union, having at its head M. de la Vaulx, was lately received by the Minister of Marine, who assured its members of his cooperation and who promised to take up without delay, with the Ministers of War and Public Works, the consideration of the best measures for the expenditure of a sum of 500,000 francs donated to reward inventors and constructors who could assure the safety of flying-machines in an efficacious manner. . . . .

"The presidents of the syndicates for war material and naval construction and the committee of iron industries and railroad material have placed at the disposal of the Ministers of War and Marine the sum of 150,000 francs, subscribed by their patrons, to be applied to naval and military aviation. In response to the intentions of the subscribers this sum is donated to the Government with full discretion for employing it in solving the problem of *safety* in aerial navigation.

"But more significant than anything else is the wide-spread interest in automatic stability and the efforts being made to effect its wide adoption.

"That is more significant than anything else, because the automatic stabilizer, by minimizing the human factor in maintaining stability, ought to do more to prevent fatalities than any improvement suggested or made hitherto. . . . .

"So far the pilots in general have opposed the application of the stabilizers, objecting that it is a mollicoddle's aid and that flying is easy and requires only a little care to make it absolutely safe. The authorities have accepted their objections more to avoid a seeming humiliation to the pilots.

"Now, however, that the public is demanding additional safety, regardless of how it is obtained, the stabilizer may be made a regular part of the aeroplane's equipment. If that is done the fatalities will, no doubt, be greatly minimized."

## THE LITERARY DIGEST

October 5, 1912: p. 65