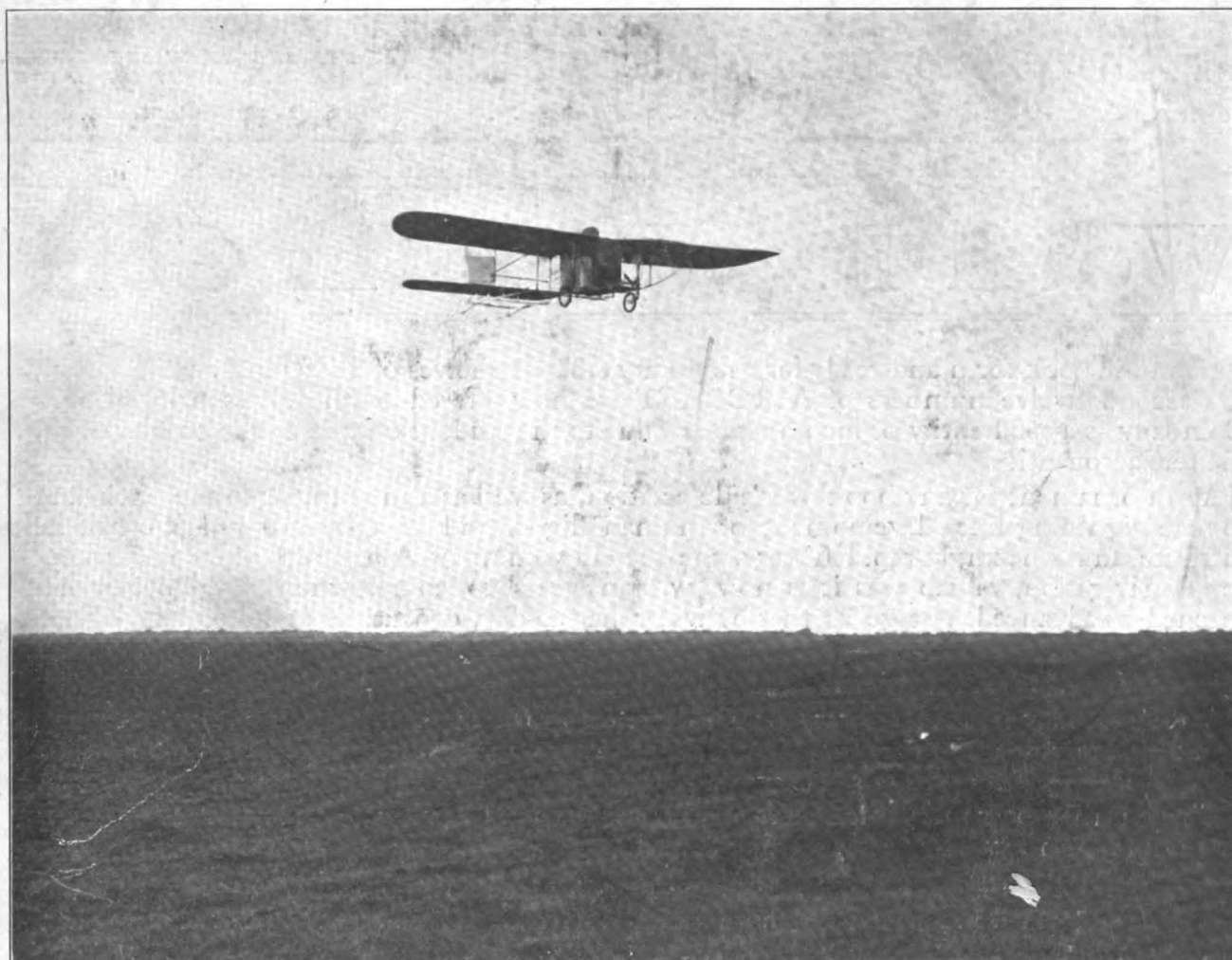


AIRCRAFT

Vol. II, No. 12

FEBRUARY, 1912

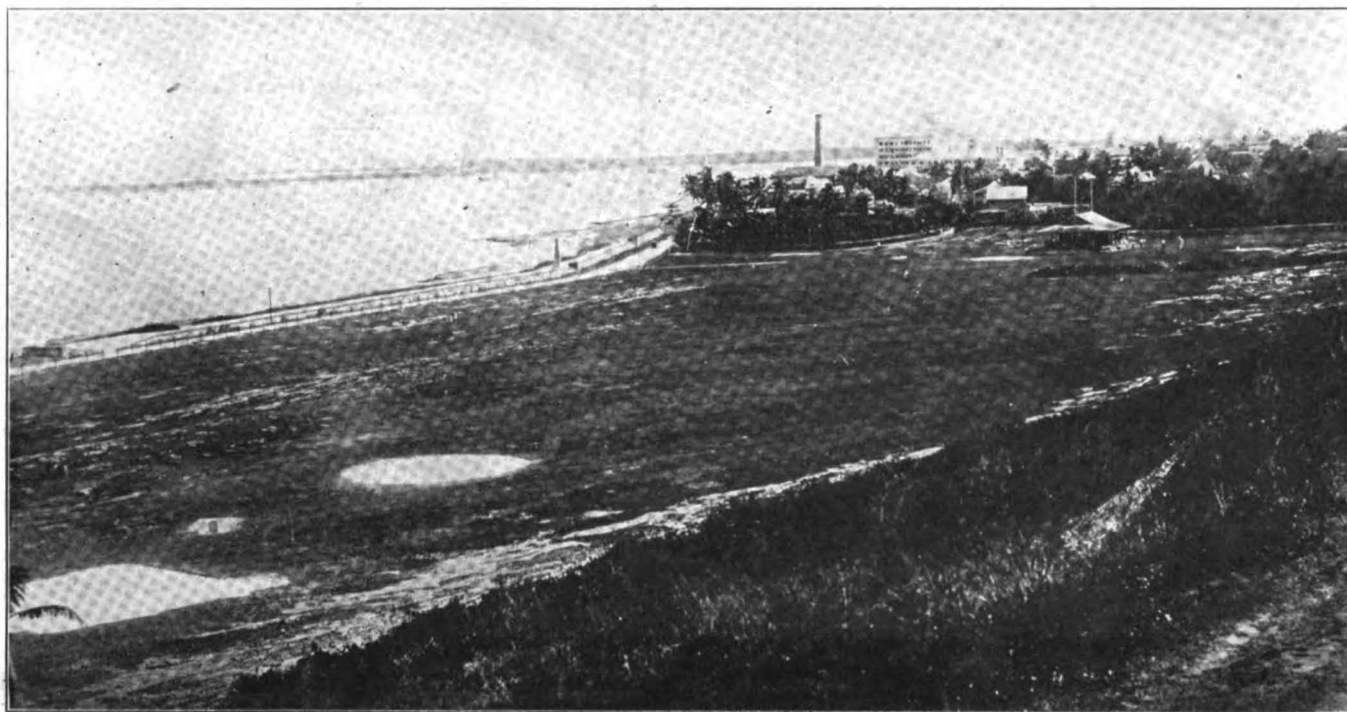
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C. C. WITMER

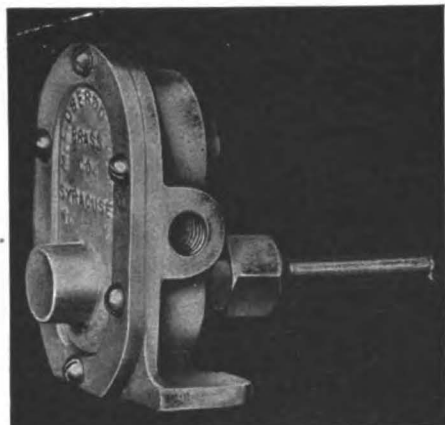
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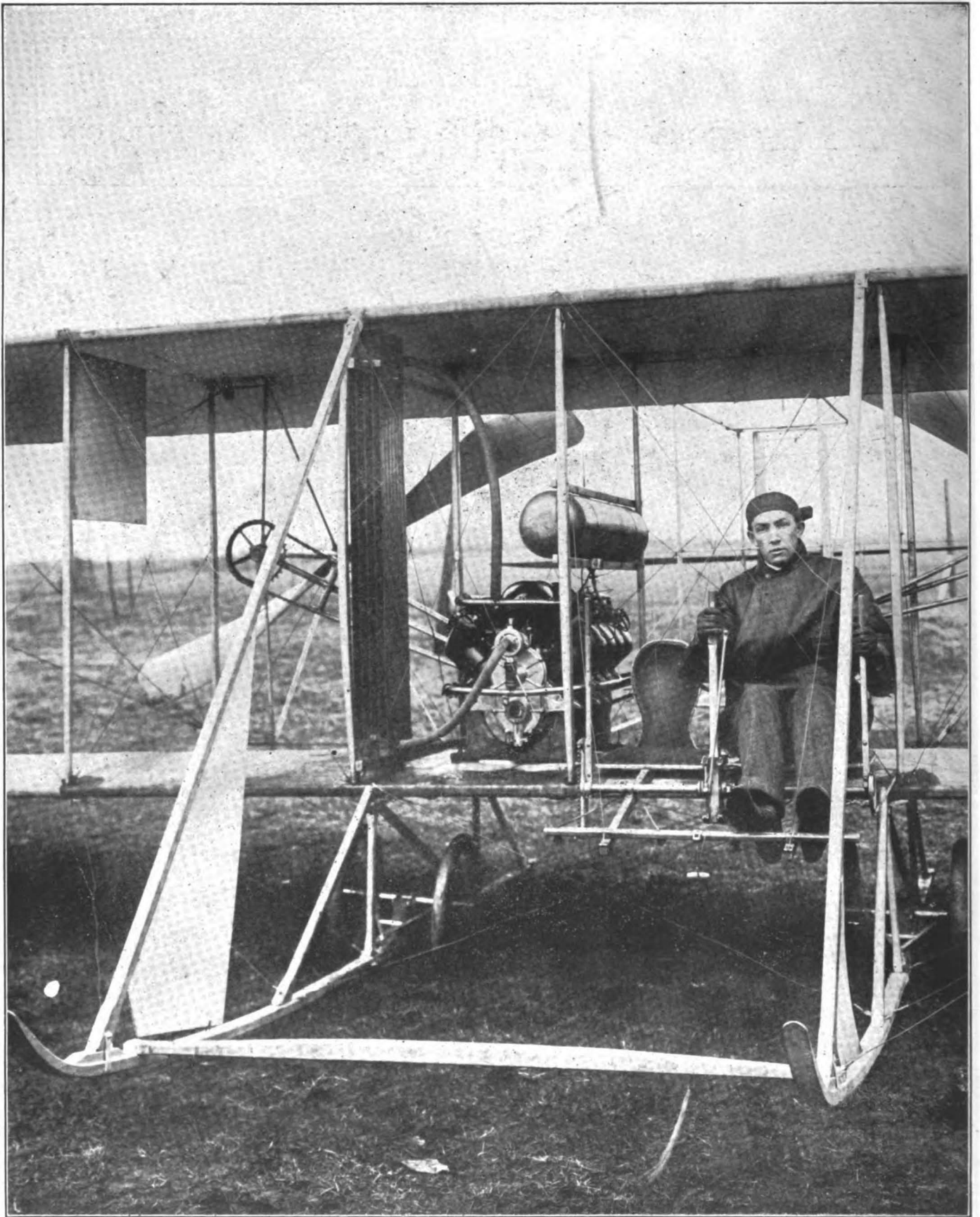
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AIRCRAFT

Vol. 2. No. 12

NEW YORK, FEBRUARY, 1912

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AVIATION FORECAST FOR 1912

By Denys P. Myers



AIRCRAFT in 1912 will be better constructed than ever before. They will be, speaking generally, a credit to the builder's art and far more correct in engineering principles. It is a maxim of construction that the simplest method to attain a result is the best. A year ago half the scaffolding that was necessary to erecting an aeroplane was left on the alleged finished product in the shape of wires, and stays, and struts, and braces, and whatever such things were named to the *n*th degree. The year just closed saw simpler design—and stronger. Two years ago it was like solving a Chinese puzzle to get into a machine without snapping a wire; last year one could almost take the aviator's seat blindfolded. This year it will be as easy to mount an aeroplane as it is to enter an automobile.

The reason is not far to seek. Notwithstanding the things we all said in our enthusiasm, the actual era of flight is not so old as the books aver. History, of course, records correctly the dates of the first flights, but everybody knows that they were based upon a very small part of the possible knowledge of aerodynamics. The first flights simply indicated that man had solved enough principles to enable him to beat out gravity. There remained the art of flying to be learned, and many details of aerodynamics to be solved. Even two years ago it was a considerable accomplishment to have built a machine that would fly. Last year they were constructed by the hundreds all over the world. New types have sprung up faster than a diligent press could report them. Almost every inventor dealt with minor details by original methods, and machine after machine has been produced which men technically familiar with aeronautics have declared could not fly—but which did. This situation means: We have definitely established many essentially correct principles. The more experienced constructors have become so expert that they have been able to turn from their first concern of building correct principles into machines, a thing which they are able to do now almost by instinct. They are consequently able to devote more energy to solving other problems. Here is a wire. Can it not be removed or passed to its destination internally? Such questions are occupying the leading builders now more than the former question, Will it fly? The result will be observable in 1912 models.

Machines to-day represent one problem of sustentation solved. Speaking simply, the air-craft is sustained because it is supported by a column of air extending from its surfaces to the ground, conditioned upon the fact that it possesses a motor that can drive it across many such columns in the time requisite for gravity to exert its force. In other words, we fly by sheer power of engine, aided and abetted to an extent by the arrangement of sustaining surfaces. And planes to-day are rather sustaining than lifting.

The ultimate type will make its greatest advances in the

transformation of the plane from a sustaining one to a lifting one. Langley made a study of the internal work of the wind, and found it was diligent quite regardless of union hours. Soaring is the traditional expression of the ability to take advantage of this internal force of the air as seen in birds. Orville Wright's recent experiments with his new type glider at Kill Devil Hill point the way in which the aviatorial mind is working, but the Wrights are not alone. I for one hope that the Dayton brothers will be successful in this pioneer work, and will be first to establish the necessary principle. But the superlative efficiency of the Nieuport, with its radically original wing sections, shows that others are approaching the problem, which is double-headed:

1.—Planes must first give all the lift possible. As a minor consideration, they must provide the lift with their under surfaces, and must diminish the danger of equilibrium being destroyed by suction on the upper surface, which in my opinion has been a contributing cause of deaths in glides, where the machine becomes poised very delicately and during which the under-surface pressure is reduced.

2.—Of prime importance to accomplish soaring, however, is facility of motion in the air. How can a man fly safely when he can get no inkling of the sort of air he is traversing until it has thrown his machine into a position that he must use all his energy to correct?

A bird is mobile in the air. It can extend or draw back its neck, and thus help to control its balance. It can not only move its wings as a whole, securing thereby the effect of our propellers, but it can move them internally, change the position of almost every feather, alter the camber of its wing spread, change the angle of wing incidence and do lots of other things. And over and above all these, it has an instinct for the air, a sixth sense that enables it to secure some foreknowledge of wind conditions before it arrives within a given area. How many of these bird qualities can be solved in a year, the writer does not intend to predict in detail.

But it can be asserted that we shall go far toward duplicating some of them. The stabilizers may give the results obtained by the mobility of the bird's neck, and if the weight carried on the Wright glider is movable, it would seem that it can be developed to duplicate this feature of the apparatus of winged things. Given a plane-section to snatch all available lifting power out of the contactual air—which we can produce by experiment—and the thing that is then needed is apparatus to reproduce the internal mobility of the bird's wing. Modern man can solve the problem, perhaps has solved it. If somewhere among experimenters now is not one who has advanced into it, by the end of the year the conditions for its successful solution will be understood, and that is far on the road to victory.

It will be well if in the coming year the aeronautical manufacturers specialize more than they have. Take the case of the propeller. I am told that a propeller is satisfactory if it delivers only a small percentage of the force used in driving it. A friend cites the instance of a ventilating blower driven with a single horse power which drew a man's arm into its blades despite his strength and broke it in sixteen places. Why could not the ventilator people, who have studied for years the problem of air suction and driving furnish information that, worked out to fit the conditions, might enable a manufacturer to produce propellers of so great an efficiency that nothing to-day would equal them. The aeroplane factory to-day is something of a one-man affair. Cloths, motors, and minor accessories represent about the extent of the specialist's products, largely because such things are quite outside the type of material the aeroplane factory is equipped to manufacture. The fertile field in aeronautical manufacturing lies in the direction of specialization on particular accessories. As yet, the motor is almost the only part of the machine which has had the full benefit of experts in the particular field in which it falls. Most of the rest of our machines are too often made by

men who understand aerodynamics and are building their ideas by means of materials procured, as it were, from the general store. The writer realizes that serious exception will probably be taken to details of this suggestion, but he believes that if, say, the propeller manufacturer has as a consulting expert a man with a reputation as a ventilating engineer, the two will produce results which will make it foolhardy for the prospective purchaser to buy any other goods. Specialization is bound to come in aeronautical manufacturing, and now is not too early to begin.

Lastly, it may be said that this forecast is not meant to be inclusive of everything that will happen. Advances along broad lines not here indicated will take place, records will be broken. Public interest in aviation will be centered during the year 1912 in watching new types of machines, or those which accomplish sustentation without great power. In fact, it is probable that 1912 will witness a cessation in the demand for mere speed and look for something else as marking the greatest thing in current aeronautics.

SIMPLE EXPLANATION OF AIR HOLES

By D. W. Starrett



THIS article is an attempt to point out the reason why aviators fall into "air-holes." The subject has been treated in a general way before, but, as far as the writer has been able to ascertain, the real cause of the danger has not been indicated.

Mr. D. E. Conner in an article, "Airswirls and Their Relation to Aviation," in the July issue of "AIRCRAFT," is undoubtedly correct in his conclusions regarding the first causes of air swirls and up and down currents. This is a step in the right direction. But it is necessary for the aviator to know that there is another reason for the sudden dropping of his machine while flying, apparently, in smooth air.

The knowledge which Mr. Thomas Preston Brooke brings to the attention of the aviator in "The Causes of Air-Pockets" in the May issue of "AIRCRAFT," is also a step in the right direction. Mr. Conner shows the main cause of the up and down air currents, and Mr. Brooke, after a great deal of experimenting, shows their relation to each other and surrounding objects. He seems to confirm all that Mr. Conner has written. It is therefore the intention of the writer only to add a little information on the subject.

Professor Langley, under his law, has given to the world the reason why a heavier-than-air machine can be made to fly. At present the aeroplane depends entirely upon speed for its buoyancy. The law has demonstrated that the more square feet of air it passes over per second of time the more weight it can carry.

This means, theoretically, that if it could attain sufficient speed no planes would be necessary with which to overcome gravitation. Imagine the machine, stripped of its planes, whirling around the earth with the force of gravitation as an invisible string holding it to the center of the earth against centrifugal force. Increase the speed sufficiently and the time will come when this string will be unable to withstand the pressure.

But the present requirements demand an understanding of the problem as it appears in every day practice. It is known, under the law, that a certain number of square feet of plane surface must have a certain speed to overcome gravitation. But, apparently, very little is known about a machine being able to overcome gravitation without momentum.

Aviators have found that facing the wind is the best position from which to make a start. The reason for this is that more square feet of air surface is flowing to the machine, which is equivalent to more speed of the machine. Increase the wind's speed and, theoretically, the time will come when a sufficient number of square feet of air will pass under the planes to overcome gravitation. This will be accomplished by the cen-

trifugal force of the wind, even though the planes are level and at rest.

The results, therefore, of speeding the wind and machine, each acting upon the other separately, are identical. Now assume the machine and the wind having speed and moving against each other; according to the Langley law the buoyancy of the machine, over that when acting separately, will be increased. But if each has the same speed and moves in the same direction, the buoyancy will be destroyed and the machine will fall to the earth unless this condition is speedily changed.

It is plain, then, that if a machine strikes a descending current of air with a speed that will overcome gravitation, according to the law, there can be no danger of falling any more than in a head wind, if the aviator has had the practice that will instantly tell him to elevate his planes.

No one has ever heard of an aviator falling upward, which would occur if an ascending current of air caught his machine and he could not steer it on its course. It is true that upon entering up and down currents there would be some momentary rise and fall. And if one had an engine with gyroscopic force, there would be grave danger no doubt if one was not prepared for the sudden change.

So the only reasonable explanation of the "air-hole" trouble is the one given below.

It will make no difference whether the aviator is flying in a straight line or circling; *if he passes into a current of air that is moving with the same speed and in the same direction as his machine, it is bound, under the Langley law, to fall.*

His supporting surface will be gone in an instant, and if he is ignorant of the cause of his danger, and unless his momentum takes him from this region nothing can save him. If his momentum does not take him out he must fall out and take his chances. But if he understands the principle he can speed his engine so that he may pass over the requisite number of square feet of air per second, when his rudder will act. Or he can slow his engine when the greater speed of the air will allow it to act, when he can steer and float.

Naturally, in circling, an aviator is certain to encounter more frequently air currents with the same direction and speed as his machine. This, then, is a time when he should be particularly on guard.

There should be an instrument in front of him which would indicate the speed and direction of the wind at each instant.

Birds always fall when sailing with the wind without wing movement. And birds can always rise when sailing against the wind.

AMERICAN AVIATION RECORDS ENDING JANUARY 1st 1912

GREATEST CROSS-COUNTRY DISTANCE FLIGHT

Calbraith P. Rodgers. From Sheephead Bay, New York, to Pasadena, California. Begun September 17, 1911. Ended November 5th, 1911. Elapsed time 49 days. Actual time in air 4,924 minutes, equivalent to 3 days, 10 hours and 4 minutes. A Wright Biplane was used.

[On November 12th Rodgers started to fly to Long Beach, on the Pacific Coast, a distance of 12 miles from Pasadena, and fell at Compton, Cal., and was badly hurt, causing a delay of 28 days, after which he arrived at Long Beach on December 10th, 1911, thus completing a coast to coast flight.]

(In Closed Circuits)

A. SPEED

1. Time on a given distance.

DISTANCE KILOM.	MILES	HOLDER	PLACE	DATE	MACHINE	TIME
5	3.107	A. Leblanc	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	2' 44" 4/5
50	31.068	A. Leblanc	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	27' 48" 7/10
100	62.137	C. Grahame-White	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	1 hr. 00' 41" 7/10
250	155.342	St. Croix Johnstone	Mineola, N. Y.	July 27, 1911	Moisant (Blériot-type)	3 hrs. 32' 56" 2/5

(b) Aviator and One Passenger

10	6.214	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	6' 13" 2/5
50	31.068	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	31' 01" 3/5

(c) Aviator and Two Passengers

5	3.107	T. O. M. Sopwith	Chicago, Ill.	Aug. 15, 1911	Wright	6' 56" 2/5
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2. Distance in a given time.

(a) Aviator Alone

25	15.534	A. Leblanc	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	15'
50	31.068	A. Leblanc	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	30'
95	59.030	A. Leblanc	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	1 hr.
141.97	88.216	C. Grahame-White	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	2 hrs.
214.57	133.327	St. Croix Johnstone	Mineola, N. Y.	July 27, 1911	Moisant	3 hrs.
283.628	176.238	St. Croix Johnstone	Mineola, N. Y.	July 27, 1911	Moisant	4 hrs.

(b) Aviator and One Passenger

24.14	15	C. Grahame-White	Squantum, Mass.	Sept. 4, 1911	Nieuport	15'
48.28	30	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	30'

3. Greatest speed obtained, whatever the length of the flight.

HOLDER	PLACE	DATE	MACHINE	KILOM.	SPEED PER HOUR	MILES
A. Leblanc	Belmont Park, N. Y.	Oct. 29, 1910	Blériot	109.237		67.877
C. Grahame-White	Squantum, Mass.	Sept. 4, 1911	Nieuport	101.762		63.232
T. O. M. Sopwith	Chicago, Ill.	Aug. 15, 1911	Wright	56.263		34.96

B. GREATEST DISTANCE

Aviator Alone

HOLDER	PLACE	DATE	MACHINE	KILOM.	DISTANCE COVERED	MILES
St. Croix Johnstone	Mineola, N. Y.	July 27, 1911	Moisant (Blériot-type)	283.628		176.238

C. GREATEST DURATION

(a) Aviator Alone

HOLDER	PLACE	DATE	MACHINE	DURATION OF FLIGHT
Howard W. Gill	Kinloch, Mo.	Oct. 19, 1911	Wright	4 hrs. 16' 35"

(b) Aviator and One Passenger

G. W. Beatty	Chicago, Ill.	Aug. 19, 1911	Wright	3 hrs. 42' 22" 1/5
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(c) Aviator and Two Passengers

T. de W. Milling	Nassau Boulev'd, N. Y.	Sept. 26, 1911	Burgess-Wright	1 hr. 54' 42" 3/5
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D. ALTITUDE

1. Greatest Altitude.

(a) Aviator Alone

HOLDER	PLACE	DATE	MACHINE	METRES	ALTITUDE ATTAINED	FEET
L. Beachey	Chicago, Ill.	Aug. 20, 1911	Curtiss	3,548½		11,642

(b) Aviator and One Passenger

C. Grahame-White	Nassau Boulev'd, N. Y.	Sept. 30, 1911	Nieuport	1,020		3,347
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2. Climbing. (Upward Vertical Speed)

(a) Aviator Alone

HOLDER	PLACE	DATE	MACHINE	METRES	ALTITUDE	TIME
R. Simon	Chicago, Ill.	Aug. 19, 1911	Blériot	500		3' 35"
T. O. M. Sopwith	Chicago, Ill.	Aug. 19, 1911	Blériot	(1,640 ft.)		
C. Grahame-White	Nassau Boulev'd, N. Y.	Sept. 30, 1911	Nieuport	1,000		9'
				(3,280 ft.)		

E. ALIGHTING

Aviator Alone

HOLDER	PLACE	DATE	MACHINE	DISTANCE FROM MARK	
T. O. M. Sopwith	Nassau Boulev'd, N. Y.	July 22, 1911	Howard Wright (Farman-type)	(0.445 metre)	1 ft. 5½ in.

F. WEIGHT-CARRYING

HOLDER	PLACE	DATE	MACHINE	WEIGHT
P. O. Parmelee	Chicago, Ill.	Aug. 19, 1911	Wright	458 lbs. (207¾ kilog.)

Open Hydro-aeroplane Records

Hydro-aeroplane Distance Records

Hugh Robinson. From Minneapolis to Rock Island, Ill. Distance 314 miles. October 17-21, 1911.

Hydro-aeroplane Two Man Record

Lieut. Ellyson, Lieut. Towers. From Annapolis to within two miles of Fortress Monroe. Distance 140 miles. Time 2 hours, 27 minutes. Date October 25, 1911.

Hydro-aeroplane No-Stop Record

Aviator Alone

Harry N. Atwood. From Point of Pines, Mass., to Narragansett Bay. Distance 130 miles. Time 165 minutes. Date December 21st, 1911.



EDITORIAL

WAR STIMULATES PROGRESS.

BARON LADISLAS D'ORCY, the famous aeronautical authority and statistician, who has just spent four months in France studying the conditions of that country, industrial, military and otherwise, states that there is no question in his mind that the remarkable advancement made by the French people in the science of aviation has been the most important factor in keeping the German people from entering into a hasty war with France, while on the other hand the feeling of wonderful superiority caused by the knowledge of having a great aerial fleet to aid in the strategical manœuvring of the Army has given the French people as a whole tremendous confidence in their capabilities in case war should break out between the two countries.

Whatever else may be said of war, there can be no doubt of it being a great tonic in stirring up the human mind to productivity and progress.

SEEING WITH THE NAKED EYE.

WE have received, with the compliments of Louis Bleriot, two pictures of his new aerocar, one of which in flight we reproduce on the front cover of this magazine, and the other on page 393. We also presented two pictures of this aerocar in *Aircraft* last month and we feel that we would like to keep reproducing a picture of this machine for a good many months to come.

This car is the beginning of a larger and broader field in flying and there can be no doubt that it is the first step between the primitive aeroplane and the great transport of the future. It surely disproves the pessimistic prognostications of some of the so-called pioneers of the aeronautical movement who claimed that flying would never get beyond the exhibition stage.

Here, right before their eyes, can be seen an enclosed car fitted up similar to a limousine automobile and capable of carrying a whole family if necessary in luxury, flying through the air at a speed of an express train. The occupants of the car can look out of the windows to the right, to the left, to the fore or

to the rear and later, no doubt, will be able to look through windows below or above and bring to their vision sights, and to their feelings thrills, such as the human mortal never before experienced.

Furthermore there is no dust from the highway for the occupant to inhale as he speeds along; no bumping over rugged roads; no stopping at railroad crossings; no police to interfere with the speed being made.

We request every one of our readers not merely to look at this picture but to study it and seriously contemplate on what it will lead to.

The picture presented was, but a few months ago, a vision of the dreamer; to-day it is, as can readily be seen with the naked eye and without the aid of foresight, an actual reality.

Do you think, reader, that this is the end of the development of aerial cars? Or do your thoughts tell you that it is only a beginning? Which?

BEST IN THE END.

WE often hear a small manufacturer complain about the dearth of capital to be obtained in the development of the aeronautical industry; many of them point to the fact that such men as Morgan, Rockefeller, etc., with their immense capital could do such wonderful things if they could but see the future development of aerial navigation.

There can be no doubt that if Morgan, Rockefeller and other great generals of commerce could understand the aeronautical situation as we understand it and could foresee the big strides to be made and the great utilization of air vehicles to come, that they would not only be interested in the subject but that they would do wonderful things for its development.

But right here we wish to call attention to this fact: that should these great financiers once enter this movement the unlimited opportunities of the small manufacturer would forever afterward be eliminated.

For instance, how could a small manufacturer with little or no capital compete with a concern financed by millions, capable of producing the very latest machinery in the construction of aeroplanes and their parts and able to turn them out by the hundreds or the thousands if necessary and even sell them at lower prices than a small manufacturer without capital, and

therefore without adequate machinery to construct machines cheaply, could make them for?

The great safeguard for the ambitious man without capital, but with foresight, is the invariable rule that the individual who has been eminently successful in one branch of human effort fails to see the golden opportunities still offered through other sources, and for that reason, if for no other, permits him to start a new business and put it upon a self supporting and solid foundation before discovering its value.

All of the great industries of this world as well as all of the great things of the universe grow from small beginnings, and the aeronautical industry is not an exception to the rule.

So we advise the small manufacturer not to bother about the big capitalist but go ahead and build up his business slowly and carefully and feel satisfied if at the end of his career he has been successful. Make a life's work of it and remember that the name established by twenty or thirty years' efforts along this line will remain longer to one's credit than that which can be made in a few days, weeks or months.

AGENCIES NEEDED EVERYWHERE.



MANUFACTURERS should not complain, as many of them do, because more companies are being organized throughout the United States to manufacture aeroplanes and accessories. Most of these companies are organized with small capital and therefore as competitors are on the same footing with each other. Further than that the more companies organized the better it is for every one concerned. The aeroplane industry can hardly be expected to be in a prosperous and healthy state until at least fifty good companies are making machines, not singly but turning them out by the hundreds. For when this is being done a market must be found for them and consequently bright, brainy men are going to make a market. They are going to demonstrate these machines to the public and the public is going to buy them because they understand and want them. In other words, the aeroplane industry must be built up along the same lines followed by the automobile industry, through practical demonstration of the machines.

And right here we want to call the attention of ambitious young men in every city, town and village in the United States to the fact that the time is now ripe for the sale of aeroplanes everywhere and that by beginning now the foundation of a permanent and prosperous business can be established with very little capital.

First, one should go to some responsible school of aviation and learn the construction and operation of a machine thoroughly, then buy one, take it to his home town and teach the people its simplicity of management and usefulness by actual demonstration and then sell them machines. In this way an agency for the sale of aeroplanes can be established, just as

the pioneers of the automobile demonstrated and sold their machines and established profitable agencies a few years ago throughout this and other countries. It is a simple proposition and the young men with ability, energy, honesty and patience are the ones who are going to be the successful captains of the aeronautical industry in the future. The day will arrive when there will be more air vehicles than there are automobiles.

SHOCK ABSORBING SAFETY DEVICE.



WE suggest that manufacturers of aeroplanes give some attention to inventing a shock absorbing device for the safety of the aviator along the following lines.

That the aviator's position be surrounded entirely with two or three walls of inflated rubber, each wall being separated by a net work of wire springs. This would not be such a difficult thing to arrange as far as the feet end of the aviator is concerned but there would have to be an automatic hood arrangement that could be thrown quickly over the aviator's head in case of emergency. In this way if the aviator found that the aeroplane was diving toward the earth and there was no possible means of saving it, he could at the last moment by touching a spring, encase himself entirely within an enclosure that would be absolutely free from shock no matter what part of the machine struck the ground first, or even if the rest of the machine was badly shattered.

No doubt the cost of producing such a life saving machine would be considerable but then there are thousands of men in the world to-day who would pay almost any reasonable price for an aeroplane free from the chances of fatal accidents. To work out an idea along these lines will, no doubt, take the constructor a great deal of time and much experimenting, but we feel sure that such an apparatus once properly completed and put into use would save the lives of a great many aviators that otherwise would have been lost and also bring a rich reward to the manufacturer who first produces it successfully.

To any one who wants to follow closely the gradual development of the primitive aeroplane into the scientific passenger carrying, enclosed, luxuriously furnished aerocar, we call attention to the picture of a design by Breguet on page 401. In order to appreciate the subject thoroughly, one must go back to the first numbers of *Aircraft* and follow step by step this great inventor's progress in aeroplane construction. Surely the law of mechanical evolution is clearly demonstrated in this man's work.

As the forms of this issue were closing, we received two photographs of the new aeroboast designed by Glenn H. Curtiss. These photographs we are reproducing on page 408 and offer as one more "positive proof" of the steady onward march of aerial progress.



GENERAL VIEW OF THE THIRD PARIS AERO SHOW—THE PECULIAR SHAPED RIPLANE IN THE FOREGROUND IS THE NEW ALBATROS TRACTOR SCREW MACHINE.

THE THIRD PARIS AERO SALON

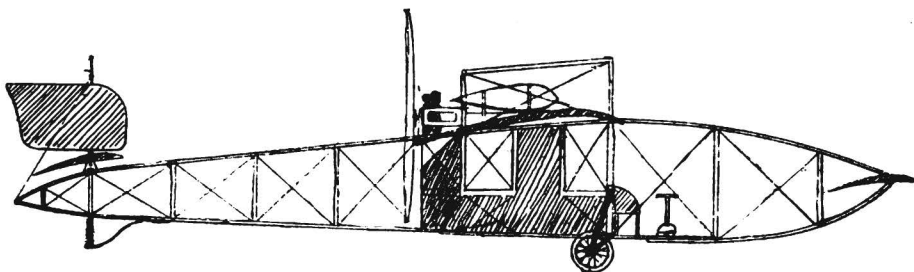
By Walter H. Phipps

That the aeronautic industry has reached a stage of commercial practicability and in consequence is here to stay, was clearly shown by the number and nature of the machines exhibited at the Paris 1911 Aero Salon, which was held in the Grand Palais, Paris, from December 16th to 23rd.

Already the manufacturing of aeroplanes has progressed to such an extent as to warrant classifying the different types according to their yearly models in much the same way as we do automobiles; thus those exhibited at the 1911 Salon represent the early 1912 types of the various builders and embody all the latest and most up-to-date features of present day practice.

In regard to the aeroplanes themselves, there were 43 exhibited, 29 being monoplanes and 14 biplanes. It was very evident that the speed events of the past year have influenced designers, for we find nearly every machine constructed with a view to cutting down head resistance and increasing speed and efficiency.

The general tendency is to protect the pilot in a sort of fuselage which usually affects the shape of a torpedo or elongated boat. Most of the biplanes are now fitted with fuselages and carry the engine and propeller in front. Steel tubing has entered largely into the construction of all machines, and



DIAGRAMATIC SKETCH SHOWING THE SIDE VIEW OF THE NEW BLÉRIOT "AEROCAR."

the landing skids in most cases have been cut down to a minimum.

Following is a detailed description of the more important exhibits:

ALBATROS.

The Albatroswerke exhibited a novel biplane, having the engine and propeller mounted in the

front of the torpedo-like fuselage. The seats for the aviator and passenger were arranged tandem fashion behind the gasoline tanks and immediately between the two main planes. To the rear of the fuselage was attached the large fan-shaped tail plane, which in this machine is warped up or down to act as an elevator, and thus serves the purpose of a stabilizing plane as well as elevator.

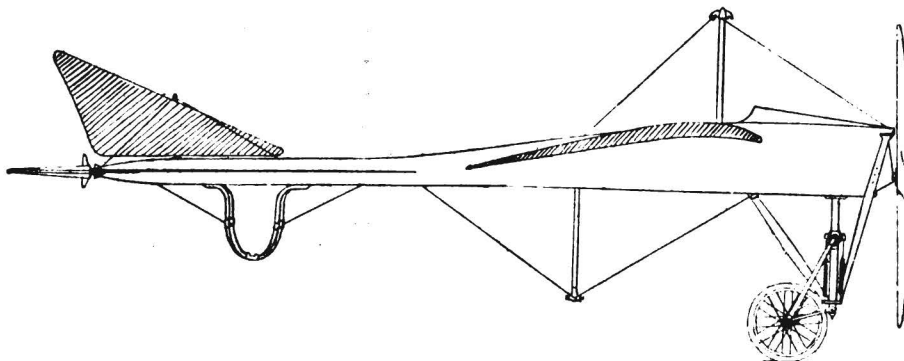
The chief peculiarity on the machine is the bird-like wings, which are very much after the style of the Etrich, having upturned end-tips, which are warped to preserve lateral balance.

The landing chassis is of a peculiar design and very strong. It consists of two skids which attach to their struts by small semi-elliptic springs instead of being rigidly joined to the struts, as on the Farman and other machines. The wheels are also fitted with shock absorbers, so that this landing gear should prove very effective on rough ground.

AVIATIK.

The only Austrian machine shown was the Aviatik monoplane, which attracted considerable attention owing to its fine workmanship and graceful lines. As a type this machine somewhat resembles the well-known Hanriot monoplane with the exception that it is fitted with a Farman type landing gear.

The power plant consists of a 70 H. P. Aviatik 4-cylinder water-cooled motor which drives a large Chauviere two bladed propeller.



SIDE VIEW OF THE 2-SEATER MILITARY TYPE BLÉRIOT.

THE ASTRA.

The Astra Company exhibited one of their latest three-passenger tractor-screw biplanes. This machine is very strongly built and looks rather heavy. It has a long triangular fuselage carrying the engine at the extreme front with the seats for the passengers arranged immediately behind, tandem fashion, while at the rear is the tail and elevator.

The landing gear is somewhat similar to the early Antoinette, but appears somewhat sturdier. It consists of a single pair of wheels and a single skid mounted on a large diameter shock absorbing, oleo pneumatic spring, which forms the central post of the whole landing chassis.

The planes have a Nieuport type curve and are double surfaced. They attach to the forward part of the fuselage with the bottom surface passing under the lower longitudinals of the fuselage.

Lateral control is accomplished by turning a hand wheel which warps the planes while the elevator is worked by pushing the control wheel and column forwards and backwards. Steering is done by a foot yoke.

The power plant consists of a 100 H. P. 6-cylinder, water-cooled Chenu motor which drives an 8-foot propeller at reduced speed through a short chain transmission.

THE BLERIOTS.

Louis Bleriot exhibited five monoplanes: a small popular type monoplane, a 50 H. P. cross-country model, a 70 H. P. two-seater, a 50 H. P. pigeon-tail racer and his latest machine, the new Bleriot aerocar.

The popular type Bleriot is a single seater machine which sells for quite a reasonable price. It has the regular box girder fuselage but carries the engine and gasoline tanks further forward than on former machines. The wings attach further back and the pilot's seat is placed immediately in back of their rear edge. The new inverse tail and elevator is fitted in place of the lifting tail used heretofore, and cane rear skids take the place of the pivoting rear wheel.

The landing carriage has been modified so that its top cross member attaches to the bottom of the fuselage instead of the top as heretofore. The power plant consists of a new 3-cylinder air-cooled radial Anzani motor of 35 H. P., which gives the machine a speed of from 50 to 55 miles an hour and permits of cross-country flying. The engine is rigidly mounted to the outside of the front end of the fuselage and the pilot is protected from flying oil by an aluminum hood.

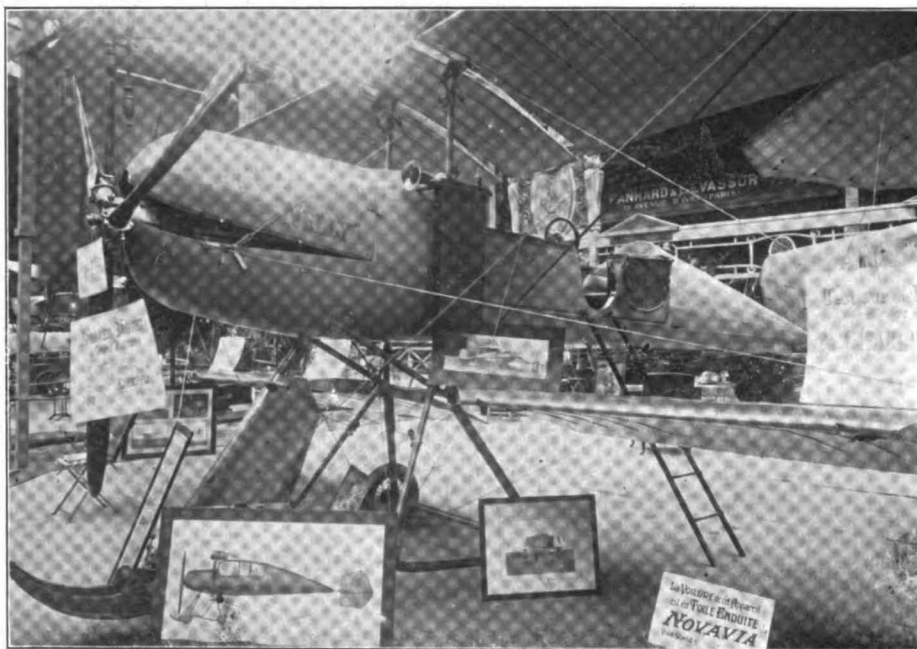
The 50 H. P. racer is perhaps the most graceful and business-like looking machine that Louis Bleriot has so far designed. The fuselage is entirely covered in and is quite narrow in front, so much so in fact that the Gnome engine will not fit between the longitudinals of the fuselage and has to be attached to the front of the frame, as shown in an accompanying illustration. The tail is formed by simply spreading out the main spars of the fuselage in such a manner as to form a wedge-shaped stabilizing plane to which the rear elevator is hinged. A distinct departure from regular Bleriot practise is the new landing arrangement, which simply consists of two wheels mounted on laminated springs, rigidly attached at their front ends to sockets into which the struts from the fuselage fit. The two bad features which limit the use of this arrangement in its present form for other than racing purposes are, first, that no provision is made for side play, and secondly, in case the wheels spring up too far or should break, the points of the struts would stick in the ground and cause a nasty smash.

The 70 H. P. military two-seater (illustrated in an accompanying drawing) is a large pigeon tail monoplane. It has a wide fuselage with seats arranged side by side and quite near the front of the wings so as to permit of a good view. In the latest machine the control cloche has been placed immediately in the centre so that both passengers can operate it.

The 70 H. P. cross-country model differs but little from the model of last year with which we are familiar. This type is simply a high powered machine used for extended cross-country flying competition work.

We now come to Bleriot's latest creation, the aerocar. This machine is a development of the Bleriot bus experimented with at Pau and was built especially to the requirements of M. Deutsche (de la Meurthe). As will be noticed from the accompanying drawing this monoplane differs considerably from regular Bleriot practise and contrary to his usual custom is fitted with a front elevator.

A system of spars and struts extend fore and aft of the main plane and support the elevator at their front end and the tail and rudder at their rear. The limousine car in which the passengers sit is built up in the middle of this frame work with the platform and seat for the operator in front and exposed to the air. The control consists of the usual Bleriot cloche arrangement which steers the machine up and down by a fore and aft movement, which works the front elevator and a side to side movement which controls the warping. Steering to the right and left is done by a pivoted foot yoke. The power plant consists of a 14-cylinder 100 H. P. Gnome which is mounted immediately in the rear of the main-plane and above the car.



View of the latest Breguet biplane fitted with a six-cylinder 100 H. P. Water-cooled Chenu Motor, which drives the special 3-bladed flexible propeller at reduced speed through reduction gearing. Attention is particularly called to the splendid workmanship displayed in the construction and finish, which plainly shows the advance toward engineering methods now being adopted by aeroplane builders instead of the unsystematic and primitive methods of the past. Note the torpedo-like form of the fuselage with side door, permitting easy access to the seats, the single uprights bracing the main planes with their special attachments for varying the angle of incidence, and also the radiators placed each side of the fuselage and also the siren horn. Further attention is called to the picture in the lower left hand corner showing Breguet's latest design for an enclosed passenger-carrying tractor-screw biplane in which head resistance is cut down to a minimum.

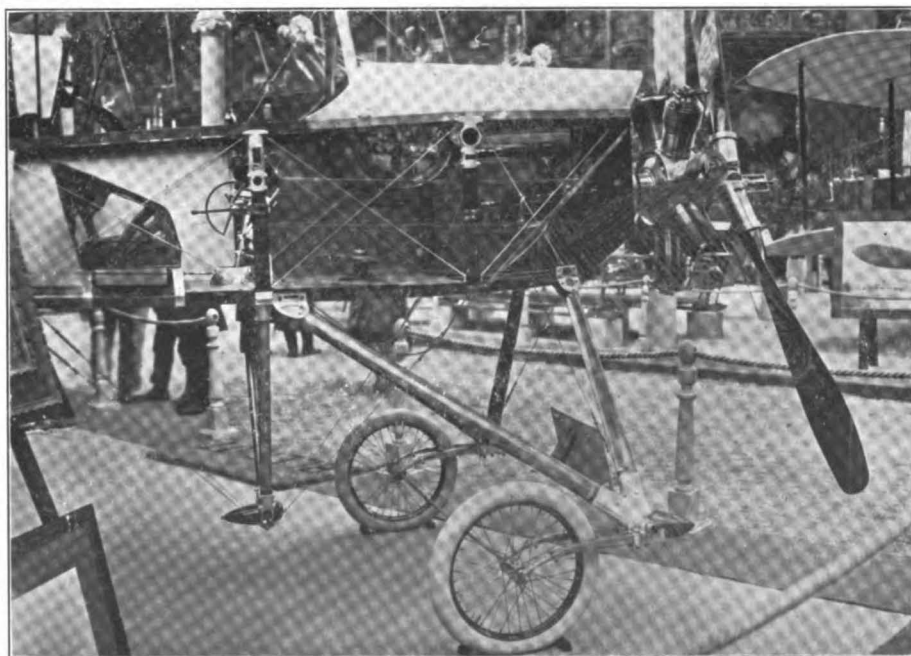
THE BRISTOL.

The British and Colonial Aeroplane Company showed one of their interesting two-seater machines which attracted considerable attention owing to the fact that it was on an exact duplicate of this machine that Valentine made a sensational flight over Paris only a few days before the opening of the show. As a type this machine somewhat resembles the Nieuport, but has many new and distinctive features. The fuselage which is of the box-girder type is deep chested and carries the Gnome engine in front mounted in a special brace and partly covered in by an aluminum shield. The wings attach near the front and the passenger and pilot sit tandem fashion immediately between them. The chief novelty and peculiarity, however, is the very small triangular shaped tail which pivots about a third of the distance from its front end and acts as an elevator and stabilizing plane. The landing carriage con-

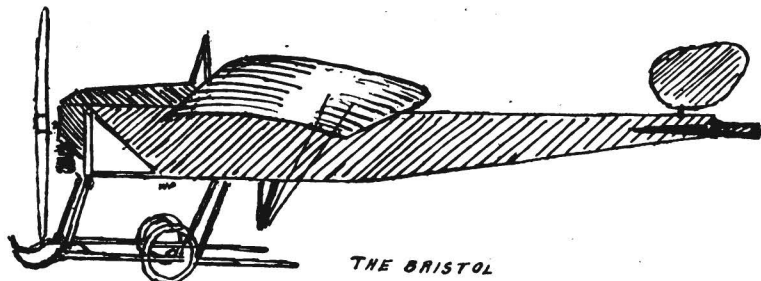
sists of two skids and two wheels mounted on a single axle, which are held in place by rubber shock absorbers. A peculiarity of this landing gear is the fitting of two small upturned pieces at the front, which attach by springs and are capable of springing on rough landings. No tail skid is fitted at the rear of the fuselage, the extensions of the main skids serving to keep this from dragging.

THE BREGUET BIPLANE.

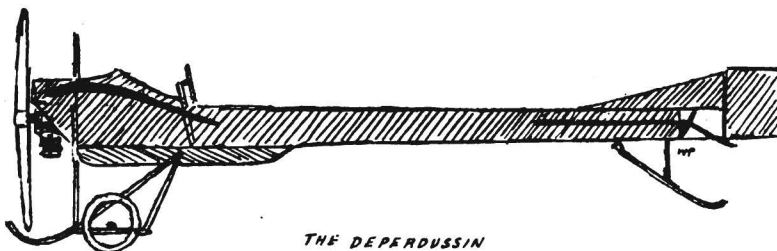
Louis Breguet exhibited two of his well known tractor-screw biplanes, one a new machine with torpedo type fuselage, and 100 H. P. Chenu water-cooled motor, the other the celebrated machine which Breguet used in his Casablanca-Fez flight. These machines are chiefly noticeable for their large size and excellent workmanship, steel tubing being used almost entirely, and every part being properly assembled and not merely slapped together. In this respect it is interesting to note



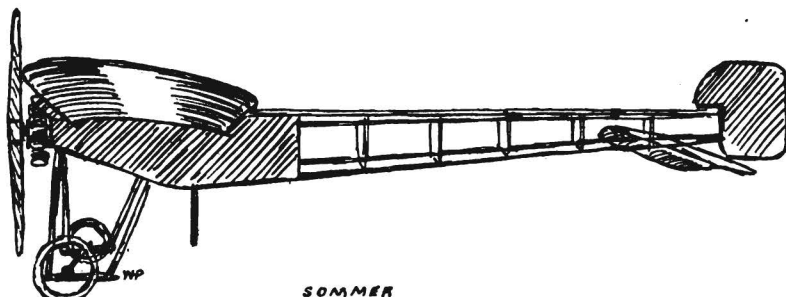
Side view of the latest Bleriot racer with part of the covering removed to show the construction, control and seating arrangement. Note the flexible bladed propeller, simplified laminated spring landing carriage and the special stream line attachments fitted to the ends of the landing carriage struts and also the warping pulley bracket, for the purpose of lessening resistance.



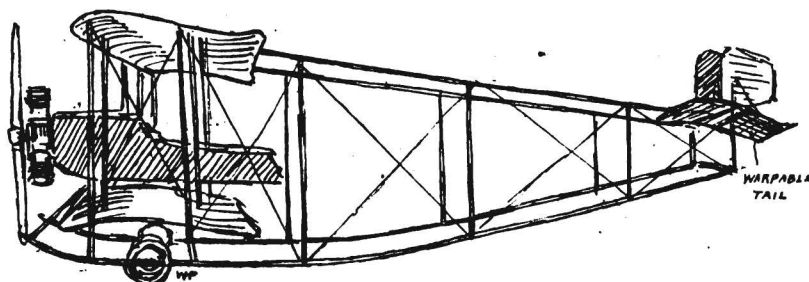
THE BRISTOL



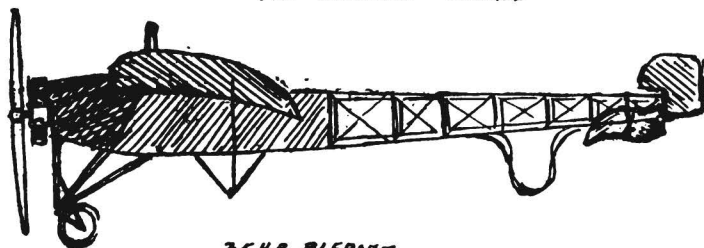
THE DEPERDUSSIN



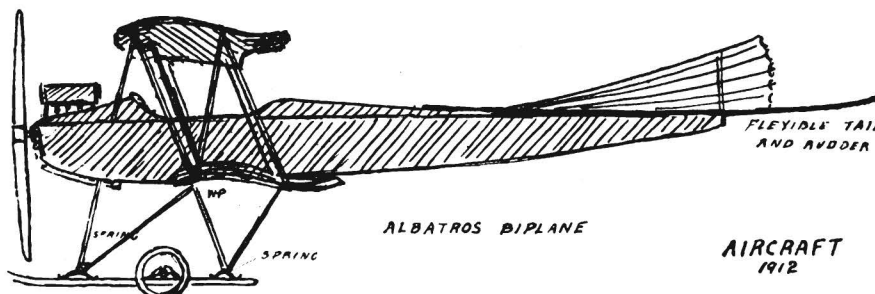
SOMMER



THE CAUDRON BIPLANE



35 H.P. BLERIOT



ALBATROS BIPLANE

AIRCRAFT
1912

SOME INTERESTING TYPES OF MONOPLANES AND BIPLANES EXHIBITED AT THE PARIS SHOW.

that this machine employs so many special fittings that special machinery has to be used in its manufacture.

The chief peculiarity is the use of only four single uprights in the formation of the biplane cellule, a form of construction not found on other machines except the latest Sommer biplane, which in many ways is modeled after it. Another feature which is not to be found on other successful machines of the present day is the universally jointed tail which acts as a combination elevator and rudder.

THE CAUDRON.

The small Caudron biplane attracted considerable attention on account of its small size and low price, the machine selling complete with 35 H. P. Anzani motor for \$1,800.

As a type this interesting little machine belongs to the tractor screw class, but unlike most others of this class it has no fuselage. The engine is mounted in front with the aviator's cock-pit immediately behind. The skids run all the way back to the tail where they are joined by the outriggers leading from the back of the top plane, the two acting as tail supporters, thus materially lightening the structure and simplifying construction. The tail plane consists of a small flat surface which is capable of being warped and so acts as a combination elevator and establishing tail. The uprights which join the two main-planes together are spaced only about 30 inches apart, thus the planes have long, flexible trailing edges.

BOREL.

Borel and Company, who were formerly associated with Morane and used to manufacture the Borel-Morane machine have now severed their connection with Morane and are manufacturing the Borel machine independently. This machine is simply an improved copy of the earlier Bleriot, the only changes which have been made being the altering of the shape of the wings and the fitting of a light wheel and skid landing gear in place of the tubular Bleriot construction.

The power plant consists of a 50 H. P. 7-cylinder Gnome, which drives a Chauviere propeller.

CLEMENT-BAYARD.

The Clement-Bayard Company exhibited a new biplane of the headless type which was constructed almost entirely of steel. This machine is also fitted with a fuselage body which of course carries the engine and propeller in front, the tail and elevator being attached to its rear. A 50 H. P. Clement-Bayard 4-cylinder motor forms the power plant and drives a Regy Freres two-bladed propeller.

DEPERDUSSIN.

The Deperdussin Sales Company exhibited four monoplane, the first the school type, the second, a military scouting machine, the third, a military two-seater and the fourth a military three-seater.

These machines in general appearance are all very much alike and differ only as to size and the position of the pilot. They all have a long, shallow, box-girder type fuselage which carries at its front end the motor and gasoline tanks, the wings and pilot's seat and at the rear the large triangular flat tail plane, single piece elevator flap and immediately behind this the rudder. The landing gear consists of two skids and two shock absorbing wheels. The control arrangement consists of a large arched bar which extends from one side of the fuselage to the other and is capable of being pushed backward and forward and so operating the elevator. Mounted on this arched elevator control is a large steering wheel which operates the warping by simply turning it to the right or to the left. The rear rudder is controlled by a pivoted foot yoke.

THE FARMAN BROTHERS.

The Farman Brothers exhibited on one stand a Maurice Farman biplane and a new Henry Farman monoplane. The Maurice Farman biplane is a new machine similar to one of his regular type machines but has the lower surface greatly reduced and both the main planes and tail planes set staggered fashion instead of one above the other as heretofore. In all other features this machine retains the regular Maurice Farman characteristics.

The Henry Farman monoplane has a large square box-girder fuselage which carries a 50 H. P. Gnome engine at its front end encased in special aluminum housing, which has large apertures to permit of efficient cooling. The main wings are attached immediately behind this, with the aviator's seat between them and near their rear edge. At the rear end of the fuselage is attached a semi-circular tail plane and elevator flaps with a vertical rudder immediately above them. The control on this machine is of the regular Farman type, ailerons being fitted to the main wings to preserve lateral balance. The landing gear consists of two Farman type skids with two wheels mounted on a single axle, which are attached by rubber shock absorbers.

GOUPY.

On the Goupy stand was shown one of the regular tractor screw Goupy biplanes. This machine has a regular Bleriot fuselage to which are attached a staggered biplane main cellule and tail cellule. The controlling arrangement consists of four elevator tips in the rear and four ailerons attached to extremities of the main planes, which are operated by the regular Bleriot controlling gear.

The landing chassis consists of Blériot type shock-absorbing wheels but has two small skids attached to extensions of the two steel columns on which the two sleeves of the shock absorbing device slide.

MORANE-SAULNIER.

The Morane-Saulnier stand formed one of the centres of attraction of the entire show, owing to the fact that here was exhibited an all-steel monoplane. The fuselage consisted of a large pressed steel cylindrical tube inside of which the aviator and passenger sit and to which the all-steel wings attach. This fuselage tapers toward the rear, where it carries the regular Morane type lifting tail and elevator, the frame work of which is likewise constructed of steel. The landing gear consists of a wheel and skid arrangement, all the members of which are steel tubing. In addition to this all steel monoplane Morane exhibited a small school type of machine fitted with a 35 H. P. Anzani motor and a racer fitted with a 50 H. P. Gnome. These two machines very much resemble the Nieuport but have the regular Morane tail arrangement and a landing gear, which consists of two skids and two shock-absorbing wheels.

NIEUPORT.

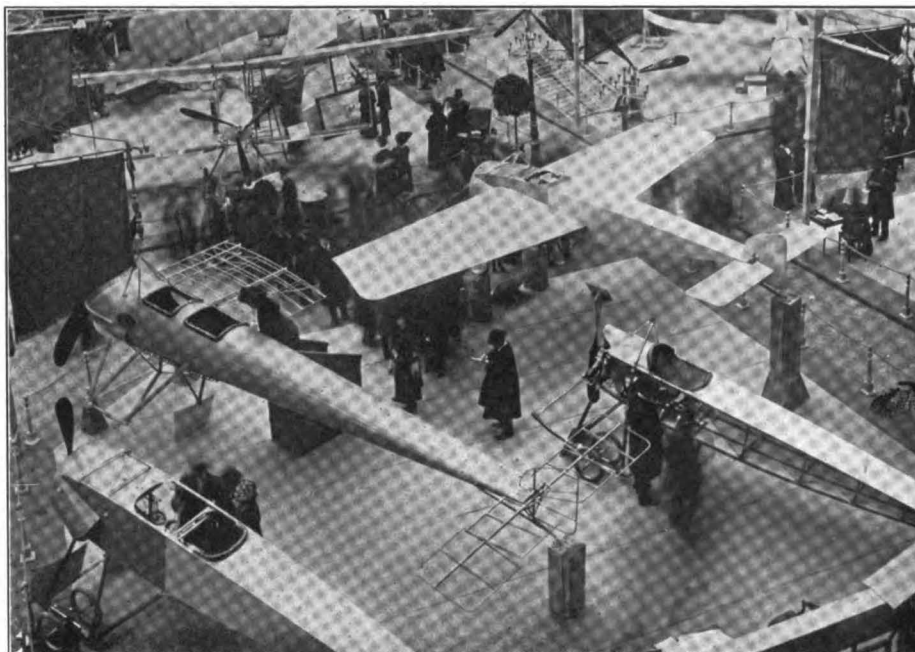
The Nieuport firm exhibited two of their well-known monoplanes, one a school machine fitted with a 28 H. P. 2-cylinder air-cooled Nieuport motor, the other a military type two-seater with 50 H. P. Gnome. As these machines are so well known and were described so fully in the August, 1911, number of *Aircraft* further description is unnecessary here.

PAULHAN-TATIN.

On the Paulhan-Tatin stand was shown the new Paulhan-Tatin monoplane which has created such a sensation in French aviation circles by reason of its peculiar design and tremendous speed. The fuselage is in the shape of a large torpedo and carries at its front end a seat for the operator, the main planes, and motor and at the extreme rear the tail with the propeller immediately behind it. The landing gear consists simply of two arched wooden members which serve the purpose of skids and an attachment for the two shock-absorbing wheels.

R. E. P.

Robert Esnault Pelterie exhibited two of his well-known steel tube monoplanes, one a single seater and the other a military two-seater. These machines differ but little from the types which were used so successfully last year in the different competitions, the only change being that they were fitted with new and improved motors of 60 H. P. The chief peculiarity, however, is the landing chassis, which is different from all others



View at the Paris Aero Salon showing the Morane-Saulnier stand in the foreground, and in the background the Breguet stand on the left, and that of Paulhan-Tatin on the right. Note the change in design of the fuselage and landing carriage of the new Morane Saulnier machines and also on the left their new torpedo-like all steel military monoplane.

and consists of an arrangement of two wheels and a large skid which is mounted on a powerful oleo pneumatic spring shock absorber.

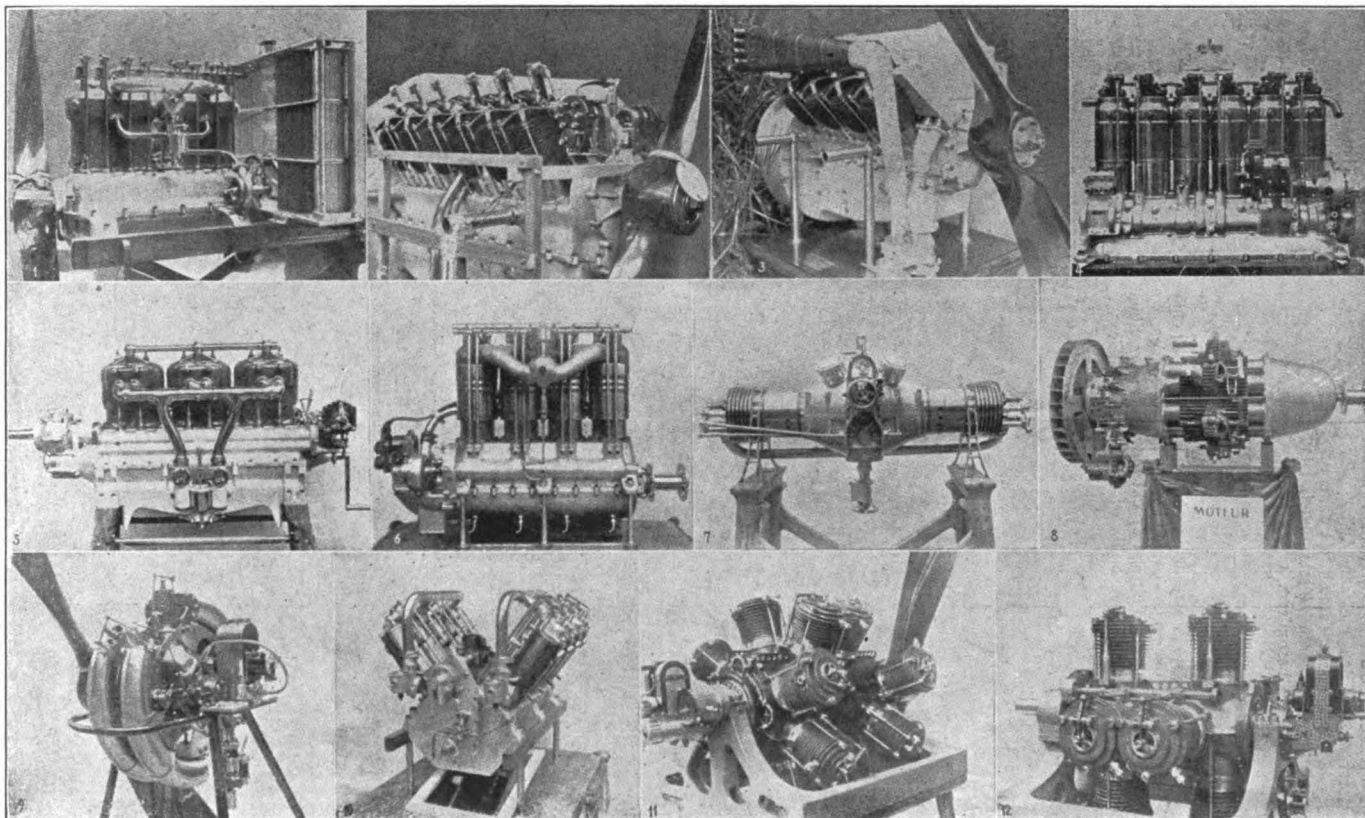
SOMMER.

On the Sommer stand was to be found two machines, one a new steel tube Sommer biplane, the other a regular Sommer monoplane. The Sommer biplane was a machine of the regular Sommer type, but constructed almost entirely of steel tubing and only had single uprights joining the lower and upper main wings. The front elevator has been greatly diminished in size while the rear elevator flap has been increased, thus making the machine almost a

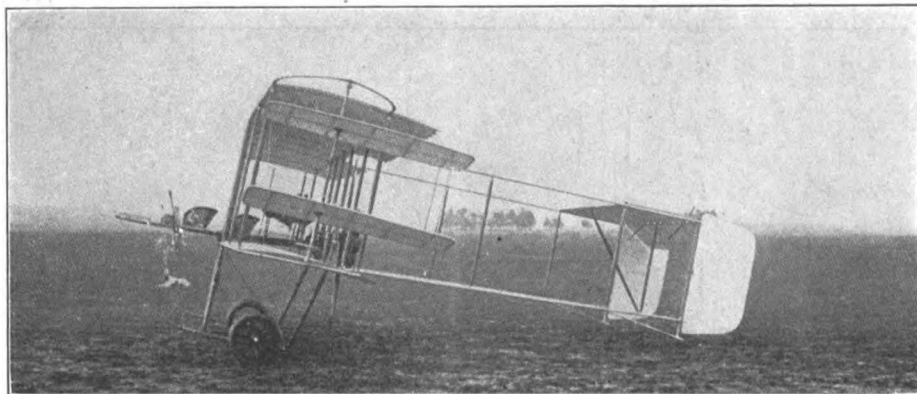
headless flyer. The Sommer monoplane is very similar to the Blériot, the only changes being in the fitting of the wheel and skid landing gear and the addition of a flat tail flap to the rear of a curved lifting type tail.

VOISIN.

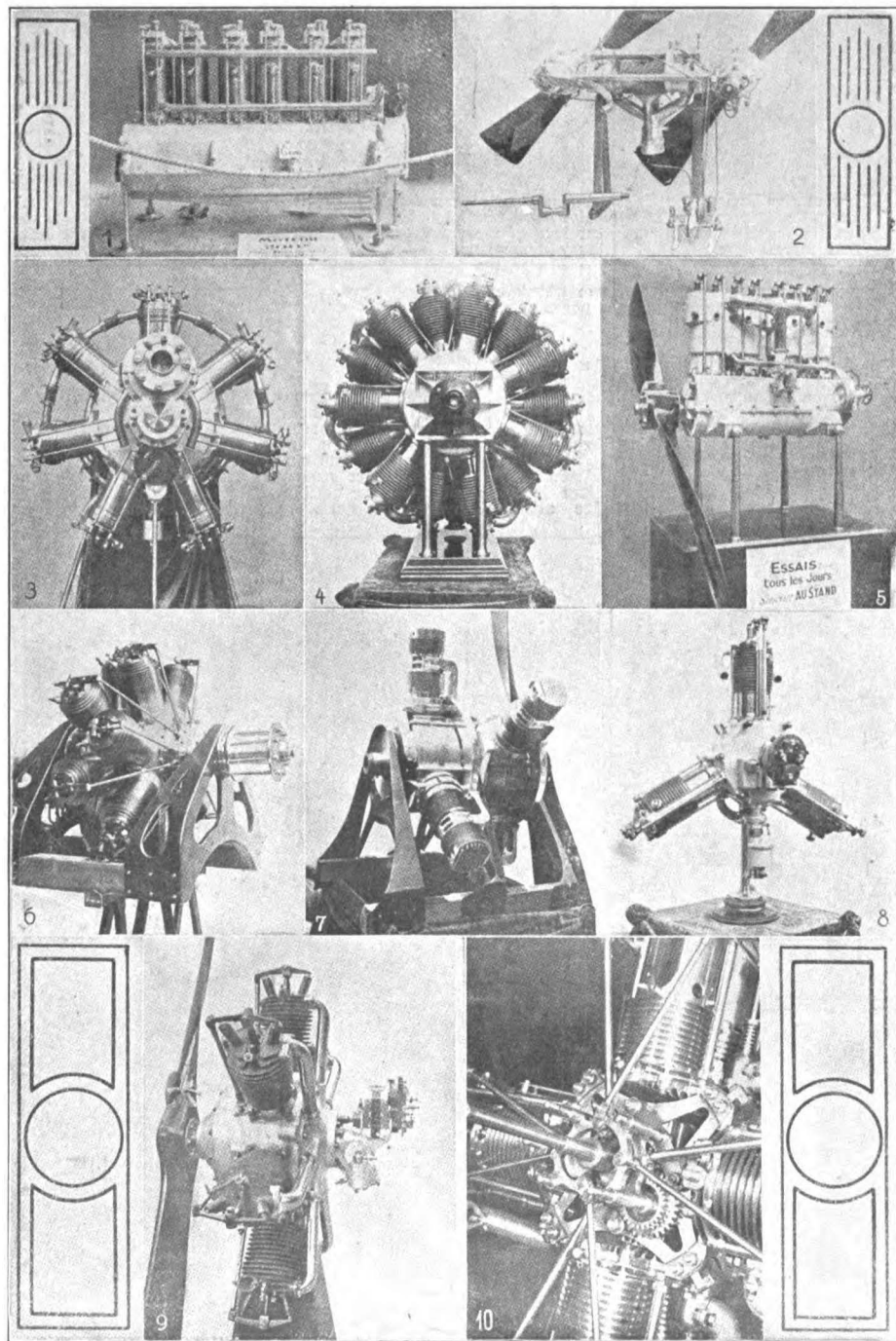
The Voisin firm exhibited one of their latest front rudder hydroaeroplanes. This machine, contrary to most others, has the elevator situated way out at the front of the fuselage with the main planes and motor at the very rear, while the seats for the passenger are in front of the main planes. The machine shown was fitted with three



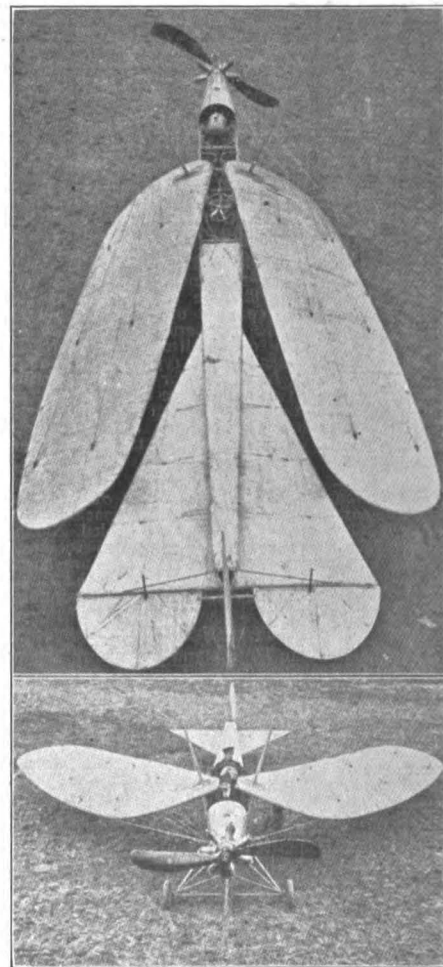
1.—Four cylinder, 100 H. P. water-cooled Aviatik motor. 2.—Twelve cylinder 90 H. P. air-cooled Renault motor, fitted with two magnetos. 3.—Eight cylinder, 70 H. P. Renault motor. 4.—Six-cylinder, 60 H. P. water-cooled Panhard motor. 5.—Six-cylinder, water-cooled, Chenu motor fitted with special reduction gearing for propeller shaft. 6.—Four-cylinder, water-cooled Werner and Pfeiffer motor. 7.—Two-cylinder opposed, 28 H. P. air-cooled Nieuport motor. 8.—Sixty H. P. Salson motor, with cylinders arranged horizontally and parallel to axis. 9.—Beck 35 H. P. gasoline turbine motor. 10.—Eight-cylinder water-cooled, 120 H. P. Dansett-Gillet Motor. 11.—Sixteen cylinder, 140 H. P. air-cooled Burlat motor. 12.—Eight-cylinder 70 H. P. air-cooled Burlat motor.



A Farman military biplane fitted with Brolinski revolving ailerons. These ailerons are normally in the position shown in the illustration, but for preserving natural balance are operated by swinging one set out and the other in, thus increasing the surface of the low side and decreasing the surface of the high side.

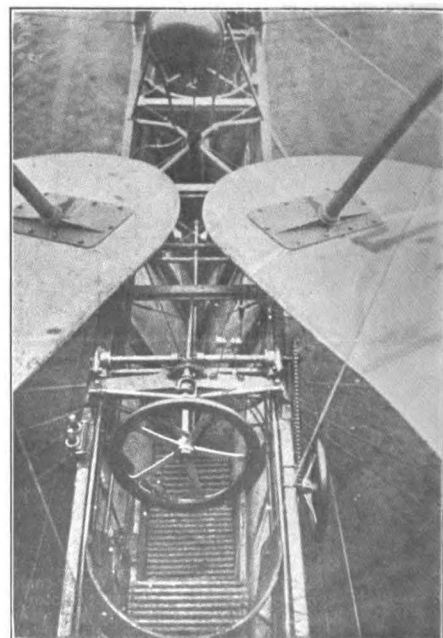


1. Six-cylinder water-cooled Dansett-Gillet motor. 2. Four-cylinder opposed air-cooled motor having two propellers and explosion chamber in the centre, which operates two pistons with each explosion. 3. Seven-cylinder 80 H. P. water-cooled Salmon motor. 4. Fourteen cylinder radial type stationary air-cooled Anzani motor of 130 H. P. 5. Four-cylinder 100 H. P. water-cooled Russell-Peugeot motor. 6. Latest type fourteen-cylinder rotary Gnome motor. 7. Six-cylinder 2 cycle Helium motor of 110 H. P. 8. The latest three-cylinder, radial stationary air-cooled Anzani motor of 130 H. P. 9. New seven-cylinder stationary radial air-cooled R. E. P. motor of 90 H. P. 10. Favata air-cooled 180 H. P. motor.



The top view shows the Marcey-Moonen monoplane with the wings folded back to facilitate transportation and storage. The lower view shows the machine with wings partly folded back.

the machine, the other two at the rear, placed one on each side of the fuselage. When used on land these floats are replaced by wheels which attach at the same points as the floats. The power plant consists of a 7-cylinder 70 H. P. Gnome motor which attaches the extreme rear of the machine in a position which has many advantages, chief of which are that there are no outriggers within proximity, which would be likely to be carried away in the event of a propeller breaking, and also the draught of the propeller has no effect on the flying, as there is no surface in the rear.



View showing the seating arrangement of the Marcey-Moonen monoplane with the operating mechanism for opening and folding the main planes. There is also an arrangement for varying the angle of incidence of these planes.

TABLE OF MACHINES AT THE THIRD PARIS AERO SHOW

Constructor.	Type.	Span.	Length.	Type of Body.	Construction	Landing Gear	Controlling Surfaces.		Motor.			Propeller.	Speed. (Kil.)	Price.
							Lateral.	Longitudinal.	h. p. and Type.	No. of Cyls.	Position.			
Albatros	Biplane	43' 8"	34' 3"	Torpedo	Wood	W. & S.	Wa.	Rear elevator	100 Argus	4	Front	Albatros	90	\$6,000
Astra	"	40' 0"	36' 0"	Triang. section	"	"	"	"	80 Chenu	6	"	Astra	93	5,600
Aviatik	Monoplane	41' 2"	31' 0"	"	"	"	"	"	70 Aviatik	4	"	Chauvière	115	5,000
Blériot	" Popular type	28' 6"	24' 6"	Rect. section	"	Wh.	"	"	30-35 Anzani	3 Y-type	"	Normale	8' 1/2	2,360
"	" Cross-country	29' 3"	25' 0"	"	"	"	"	"	50 Gnome	7	"	"	95	4,300
"	" racer	23' 0"	21' 3"	"	"	"	"	"	50 " "	7	"	"	125	4,800
"	" two-seater	36' 0"	27' 0"	"	"	"	"	"	70 " "	7	"	"	95	6,000
"	" Aerocar	42' 6"	45' 0"	"	"	"	"	Front elevator	100 " "	14	Rear	Normale	—	—
Borel	"	29' 7"	22' 6"	Square section	"	W. & S.	"	Rear elevator	50 " "	7	Front	Chauvière	115	4,400
"	" two-seater	39' 6"	26' 8"	"	"	"	"	"	70 " "	7	"	"	95	5,100
Bristol	"	33' 6"	23' 4"	"	"	"	"	"	50 " "	7	"	Bristol	110	4,750
Breguet	Biplane	44' 0"	30' 0"	Torpedo	Steel	"	"	"	100 " "	14	"	Chauvière	95	9,000
"	"	44' 0"	30' 0"	"	"	"	"	"	75 Chenu	6	"	Breguet	90	7,000
Caudron	Biplane	24' 0"	22' 0"	"	"	"	"	"	30-35 Anzani	3 Y-type	"	Normale	90	1,800
Clement-Bayard	"	36' 4"	32' 0"	Pent. section	Steel	"	"	"	50 Clement-Bayard	4	"	Regy Frères	90	5,600
Deperdussin	Monoplane (school type)	28' 0"	24' 0"	Square section	Wood	"	"	"	30-35 Anzani	3 Y-type	"	Rapid	85	2,300
"	" military	28' 0"	24' 3"	"	"	"	"	"	50 Gnome	7	"	"	110	4,600
"	" two-seater	32' 6"	26' 6"	"	"	"	"	"	70 " "	7	"	"	110	5,400
"	" three-seater	42' 6"	24' 3"	"	"	"	"	"	100 " "	14	"	"	110	9,100
Farman (M.)	Biplane (staggered planes)	36' 0"	40' 0"	None	"	"	Ai.	Front and rear	70 Renault	8	Rear	—	85	5,000
Farman (H.)	Monoplane	33' 0"	24' 3"	Square section	"	"	"	Rear elevator	50 Gnome	7	Front	Chauvière	105	5,900
Goupy	Biplane	23' 6"	23' 6"	Rect. section	"	"	"	"	50 " "	7	"	"	90	5,600
Kauffmann	Monoplane	34' 0"	26' 6"	"	"	"	Wa.	"	50-60 Anzani	—	"	Centrale	140	4,000
Loiré et Olivier	"	34' 3"	27' 0"	"	"	"	Ai.	"	60 " "	—	"	Chauvière	120	4,000
Marçay-Moonen	"	44' 0"	39' 0"	Skiff	Wood and steel	Wh.	Wa.	"	50 Gnome	7	"	"	90	—
Morane-Saulnier	" (school type)	29' 6"	29' 0"	Rect. section	Wood	W. & S.	"	"	35 Anzani	3	"	"	90	3,400
"	" (racer)	29' 6"	20' 0"	"	Wood and steel	"	"	"	50 Gnome	7	"	"	120	4,600
"	" military 2-seater	29' 6"	20' 0"	"	Steel	W. & S.	"	"	50 " "	7	"	"	102	4,800
Nieuport	" (school type)	28' 6"	24' 4"	"	Wood and steel	"	"	Rear	28 Nieuport	2	"	"	120	3,600
"	" (two-seater)	36' 0"	26' 0"	"	"	"	"	"	50 Gnome	7	"	"	110	5,200
Paulhan-Tatin	Monoplane	28' 4"	28' 0"	Torpedo	Wood	Wh.	N.	Rear elevator	50 " "	7	Middle	Regy Frères	130	5,000
Ponche and Primard	"	32' 6"	28' 0"	Open triang. section	Steel and alumin.	W. & S.	Wa.	"	35 Labor Aviation	—	Front	Chauvière	75	3,200
R. E. P.	"	39' 6"	25' 0"	Pent. section	Steel	"	"	"	60 R.E.P.	5	"	Regy Frères	110	6,000
Savary	Biplane	45' 0"	36' 3"	None	Wood	"	"	Flexing tail	70 Labor Aviation	4	"	Chauvière (2)	190	5,200
Sloan	"	42' 6"	31' 0"	Square section	"	"	"	Rear eleva or	100 Gnome	14	"	Chauvière	95	7,000
Sommer	"	39' 6"	29' 8"	None	Steel	Wh.	Wa.	"	50 " "	7	Rear	—	90	4,200
"	Monoplane	29' 0"	21' 6"	Square section	Wood	"	"	"	50 " "	7	Front	Chauvière	108	3,200
Train	"	30' 6"	29' 3"	Triang. section	Steel	W. & S.	"	"	50 " "	7	"	"	85	4,400
Vinet	"	29' 0"	26' 0"	Rect. section	Wood	"	"	"	50 Anzani	5	"	"	88	3,600
"	"	29' 0"	21' 4"	"	"	"	"	"	35 Bariquand & M.	4	"	"	95	2,200
Voisin	Biplane (Canard)	39' 6"	26' 0"	"	Wood and steel	H.	Ai.	Front	70 Gnome	7	Rear	"	90	6,000
Zodiac	"	49' 0"	38' 6"	"	Wood	W. & S.	"	Rear	50 " "	7	Front	Normale	95	5,600

W. & S. = wheels and skids.

Wa. = warping.

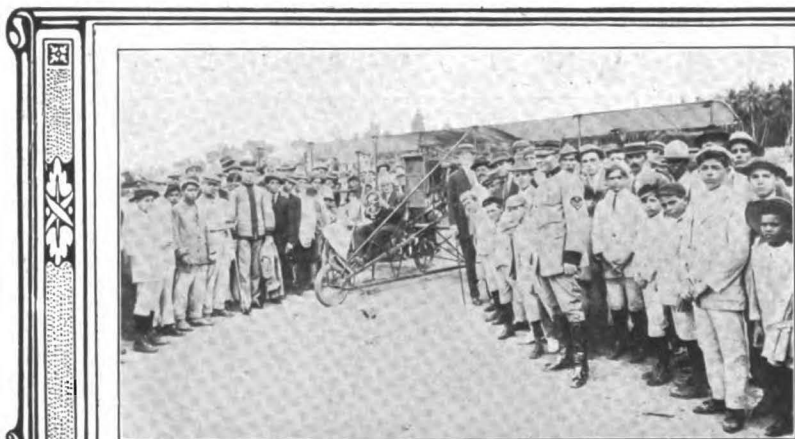
H. = hydroplanes.

Ai. = ailerons.

N. = natural.

Wh. = wheels.

We are indebted to "Flight," of London, for the original of this table.



LINCOLN BEACHEY AT SAN JUAN, PORTO RICO.

FOREIGN NEWS

Bohemia

Some very good flights were made by Jean Kaspar and his cousin, Eugene Cihak, in Bohemia, on December 6th, the former accompanied by a friend, on his Blériot monoplane, going from Meluix to Prague, where he landed on the Chuelle Race course, having covered the 70 kiloms. in 42 mins. 52 secs. Ten minutes after they started Cihak started off on a Morane monoplane and reached Chuelle five minutes after they landed. A good deal of flying was seen on December 10th, when a regular demonstration was held and Kaspar took up a number of prominent people.

England

Lieut. Dunne has been continuing his interesting experiments on his automatic stability monoplane, which he has recently fitted with a 50 H. P. motor. On December 23rd he succeeded in accomplishing several circuits of the Eastchurch Aerodrome and afterwards rose to a good height and passed over the village of Eastchurch before alighting. The peculiarities of the Dunne machine are the backwardly sloping V shaped wings and the inverted wing tips.

On January 10th the first aeroplane flight from a British warship was made when Lieut. Samson made a successful ascent from the battleship *Africa* in Sheerness harbor.

The fore part of the deck was cleared as for action in order to allow of the ascent.

The Aero Club of the United Kingdom intends to enter the international balloon race in Germany this year, as well as the international aviation event to be held in America. The balloon race for the Coupe Internationale des Aeronautes will be in Stuttgart, Germany, as the latter country is the holder of the trophy won in October last in this country by Lieutenant Hans Gericke.

The British club has called for three competitors to represent Great Britain in the race.

CONDITIONS OF THE BRITISH MILITARY AEROPLANE COMPETITION

The conditions governing the British military aeroplane competition have been officially given out and are as follows:

The total prizes amount to \$55,000. Two prizes are open to the world. The first is of \$20,000, and the second \$10,000. The owners of ten machines, which are submitted to all the flying tests and are not awarded a prize, are to receive \$500 for each machine so tested. The following conditions are those to be fulfilled by a military aeroplane:

1. Be delivered in a packing case, suitable for transport by rail, and not exceeding 32 feet by 9 feet by 9 feet. The case must be fitted with eye-bolts to facilitate handling.
2. Carry a live load of 350 pounds, in addition to its equipment of instruments, etc., with fuel and oil for four and one-half hours.
3. Fly for three hours loaded as in clause 2, and maintain an altitude of 4,500 feet for one hour, the first 1,000 feet being attained at the rate of 200 feet a minute, although a rate of rise of 300 feet per minute is desirable.
4. Attain a speed of not less than 55 miles per hour (in a calm, loaded as in clause 2).
5. Plane down to ground in a calm from not more than 1,000 feet with engine stopped, during which time a horizontal distance of not less than 6,000 feet must be traversed before touching.
6. Rise without damage from long grass, clover or harrowed land in 100 yards in a calm, loaded as in clause 2.
7. Land without damage on any cultivated ground, including rough plough, in a calm, loaded as in clause 2, and pull up within 75 yards of the point at which it first touches the ground when landing on smooth turf in a calm. It must be capable of being steered when running slowly on the ground.

8. Be capable of change from flying trim to road transport trim and travel either on its own wheels or on a trolley on the road; width not to exceed ten feet.

9. Provide accommodation for a pilot and observer, and the controls must be capable of use either by pilot or observer.

10. The pilot's and observer's views of the country below them to front and flanks must be as open as possible, and they should be shielded from the wind, and able to communicate with one another.

11. All parts of aeroplane must be strictly interchangeable, like parts with one another and with spares from stock.

12. The maker shall accurately supply the following particulars, which will be verified by official test: (a) the horse-power and the speed given on the bench by the engine in a six hours' run. (b) The engine weight, complete (general arrangement drawing), and whether air or water cooled. (c) The intended flying speed. (d) The gliding angle. (e) Weight of entire engine. (f) Fuel consumption per hour at declared horsepower. (g) Oil consumption per hour at declared horsepower. (h) Capacity of tanks.

13. The engine must be capable of being started up by the pilot alone.

14. Other desirable attributes are: (a) Stand still with engine running without being held. Engine preferably capable of being started from on board. (b) Effective silencer fitted to engine. (c) Strain on pilot as small as possible. (d) Flexibility of speed; to allow of landings and observations being made at slow speeds if required, while reserving a high acceleration for work in strong winds. (e) Good glider, with a wide range of safe angles of descent, to allow of choice of landing places in case of engine failure. (f) It is desirable that the time and number of men required for the change from flying trim to road trim, or packed for transport by rail, and vice versa, should be small, and these will be considered in judging the machine. The time for changing from road trim and packed condition to flying trim to include up to the moment of leaving the ground in flight, allowance being made for difficulty in starting engine. (g) Stability and suitability for use in bad weather and in a wind averaging 25 miles an hour 30 feet from the ground without undue risk to the pilot. Stability in flight is of great importance. (h) The packing case for rail transport to be easily dismantled and assembled for use, and when dismantled should occupy a small space for storage.

France

NEW WORLD'S DISTANCE RECORDS.

It is reported that the competition for the A. C. F. Criterium, which is competed for under almost the same rules as the Michelin Cup, has been gained by Gobe on a Gnome-engined Nieuport monoplane at Pau, when he succeeded in flying 740.22 kiloms. in 8 hrs. 16 mins., thus beating the former world's distance record of Fourney of 722.93 kiloms., which took him 11 hrs. 1 min. 29½ secs. on his Maurice Farman biplane.

NEW WORLD'S HEIGHT RECORD WITH A PASSENGER.

On December 3rd, at Courcy Betheny, Prevost, on the 100 H. P. three-seater Deperdussin monoplane, succeeded in rising, with a passenger, to a height of 9,800 feet in 55 minutes. He started from the ground at 3 P. M., and landed again at seven minutes past four. His passenger was M. Besnard, manager of the Deperdussin School.

On December 31st James Valentine, the noted English aviator, made the first flight over Paris ever accomplished by an Englishman in a British monoplane. He started from Issy in his Bristol monoplane, circled the Eiffel Tower, crossed the Seine and continuing along the Place de la Concorde to Notre Dame, the tower of which he circled before, returning to Issy. This flight occa-

sioned quite a stir in Paris, and attracted considerable attention to this make of machine at the Paris Salon.

It is announced that the Michelin Cup competition will be conducted under the following conditions in 1912: The course selected is in trefoil form, consisting of three great loops each 500 kilometres in circumference, making a total of 1,500 kilometres to be covered by the competitors. Paris is the starting point, and stops to replenish supplies will be allowed there after completing each loop of the circuit. The route passes through various towns and places so far apart as Dieppe, Orleans and Troyes will be visited. An additional prize is awarded for each passenger carried.

WORLD'S SPEED RECORD.

On January 13th at Pau, Jules Vedrines beat the world's speed record by covering a distance of 142 kilometres 150 metres (about eighty-eight and a quarter miles) in one hour in a monoplane.

Germany

By Stella Bloch

An aeroplane factory and a pilot school is to be erected at Arad in Hungary by the Hungarian Aero Club; it will be connected closely with the Vienna Daimler Company, which purchased the Westinghouse factory recently at Arad to extend its works to Hungary as well.

The new passenger Zeppelin now in course of construction at Friedrichshafen will commence its trials in February. It is intended for Frankfurt-on-Maine.

August Euler has built a triplane at Darmstadt, which is pronounced to be a great success, as the tests were most satisfactory. The apparatus is but seven metres in length and has the same dimensions from tip to tip.

Mr. Campbell Wood presented the Aerial Gordon Bennett Cup won by "Berlin II." in America this past year to the Berliner Verein für Luftschiffahrt at a meeting specially arranged for this purpose on December 4th at Berlin. A large and influential number of guests were present when Mr. Campbell Wood made the presentation on behalf of the Aero Club of America. At the close of his interesting address Mr. Wood promised that an American team would appear next year in Germany to combat the event. A banquet closed the proceedings.

The International Aero Show, promoted by the Royal and Imperial Austrian Aeronautical Society, takes place from May 18 to June 23 in the Vienna Rotunde and covers the same ground as the majority of these exhibitions.

Stuttgart will be the scene of the 1912 Gordon Bennett balloon race won by Herr Gericke's "Berlin II." in the United States in 1911. The city will bear not only all expenses of the arrangement and necessary gas, but give besides several trophies, 30,000 marks in cash prizes, as well.

An excellent performance was achieved on December 8th at Berlin Johannisthal, by the Etch pilot Suvelack, who beat Lieutenant Gerard's passenger world's record of 4 hours 13 mins. by remaining aloft for 4 hours 33 mins. The new Etch monoplane, driven by a 65 H. P. six-cylinder motor, showed remarkable staying capacities and carried no inconsiderable load, the two men weighing 153 kilograms, and besides this there were 160 litres of petrol and 30 of oil on board.

Switzerland

The Swiss Automobile Club offered a prize of \$1,000 for the first Swiss aviator on a Swiss machine to cover a circuit of two kilometres before the end of the year. The prize has been practically won by Grandjean, who has made some very satisfactory trials with a monoplane which he built himself at Dubendorf, near Zurich.



AN AMERICAN MACHINE EXPORTED TO FRANCE. THE CURTISS HYDRO-AEROPLANE BUILT FOR LOUIS PAULHAN.

THE TRADE

The American Aeroplane Supply House of Hempstead, N. Y., report that during the winter months they are making up a lot of stock parts in order to be in a position to deliver several Blériot type monoplanes when spring arrives. This concern has kept three men working at Nassau Boulevard altering the "Pollyplane," which was built for the San Domingo Government. They have taken out the 4 X Roberts motor and substituted a 6x75 H. P. Roberts motor in its place. It is expected that the designer of the machine, Mr. Z. H. Garcia, will return from San Domingo shortly to begin a series of experiments. The American Aeroplane Supply House will issue a new catalogue of their machines about the 25th of January.

The Sloane Aeroplane Company has put in charge of their factory in Brooklyn, Mr. A. P. Christensen. Several of the same workmen who were formerly with the Chelsea Aero Company have also been employed to make the Charavay Propeller for them. John E. Sloane is President of this company and Kingsford Goodman, Secretary, while Mr. Frederick Charavay is the chief engineer and Vice-President of the company. Mr. Sloane, the president, reports that his company is meeting with considerable success, and that during the past month business was exceptionally good.

The American Aeroplane Manufacturing Company and School of Aviation, of Chicago, Ill., report that Andrew Drew, licensed pilot number 50, has closed a contract with them to take charge of their winter classes. Mr. Drew has had considerable experience as a flyer and will no doubt prove a great help in conducting the school. This company has an aviation field at East Pullman, Ill., where they expect shortly to make considerable improvements and additions to their hangars. The new hangars about to be erected will be capable of housing two machines each. The officers of the American Aeroplane Manufacturing Company and School of Aviation are looking forward to a most prosperous season during the year of 1912 and are very optimistic over the outlook.

Mr. Hugo C. Gibson, President of the Gibson Propeller Company, has spent the last few months in making an exhaustive series of tests to determine the most effective and efficient shapes of propellers and obtain knowledge pertaining to the development of the highest possible thrust under actual working conditions when moving through the air as compared with those designs which will produce enormous static thrusts.

One of the latest pupils to graduate from the Wright Company's Aviation School at Dayton, Ohio, is Farnum Thayer Fish, of Los Angeles, California, who is probably one of the youngest graduates of an aviation school of national reputation in this country. He is but 17 years of age, and took up flying for his health.

American Propeller Company, of Washington, D. C., reports having found their present facilities entirely inadequate for the growth of their business as demonstrated during the season of 1911. Active arrangements are now being made for removal of their plant to a location more central and better adapted in respect to materials and labor supply for the production of their goods.

The company has not definitely decided as to the exact location of the new plant, but the territory adjacent the Ohio River between Pittsburg and Parkersburg, W. Va., is receiving most favorable consideration as an advantageous locality for shipping as well as for manufacturing.

It is the intention to establish in the new location a thoroughly up-to-date plant, with every modern appliance for the efficient and most perfect production of their well known Paragon Propellers.

This company reports thus early in the year the most favorable indications for an extensive trade, which will more than justify their proposed removal and increase of facilities.

The Elbridge Engine Company, of Rochester, New York, has announced that they are now in readiness to take care of any and all orders which may come their way during the year of 1912. They have been experimenting recently with their 6-cylinder 60-90 H. P. engine for use on hydro-aeroplanes.

One of the chief difficulties of the hydro-aeroplane is that of getting the engine started on the water, without killing or drowning the engineer. Following the lead of the leading automobile manufacturers of the country, Mr. Seely, head of the Elbridge Engine Company, began several months ago to investigate self-starting engine devices. An equipment was found that added very few pounds to the weight of the engine and permits the aviator to start and stop his engine at will without leaving his seat. The device has been subjected to exhaustive tests and found to be nearly 100 per cent. perfect; starting the engines readily even in weather far too cold for comfortable flying.

All of the six-cylinder Elbridge Engines are now equipped without extra charge with dual ignition systems, so that they may be started without the special apparatus on spark alone after the engine has been running for a few minutes.

Mr. Lyman J. Seely, the president of the company, reports that the increased sales of Elbridge engines during 1910 and 1911 was really phenomenal. About 40 engines were sold in 1909, more than 200 during 1910, and 1911 showed an increase of about 50 per cent. over the preceding year.

Among the well-known aviators now flying the Burgess Company and Curtis hydro-aeroplane are Howard W. Gill, Frank T. Coffyn, Lieut. John Rodgers of the United States Navy, Walter R. Brookings, Harry N. Atwood, Phillips W. Page, W. Starling Burgess and Clifford L. Webster.

The Burgess Company report that their machine has been flown in all kinds of weather from calm to 25 knots, carrying passengers with ease and without a single unpleasant occurrence of any kind, which proves that the future sport of aviation to a great extent lies over the water. The United States Navy has purchased a set of hydroplanes for equipping the Wright machine which is now in service.

Palm Beach, Fla., has been definitely decided upon as the winter training headquarters in the south of the Burgess Company and Curtis of Marblehead, Mass. A Burgess Hydro-aeroplane has been shipped to the southern winter resort, and will be in operation there after January 25. Phillips W. Page will be the instructor in charge of the school. One of the first pupils will be Patrick Grant 2d of Boston, the former All-American football player of Harvard.

Mr. Grant is now at Palm Beach, where he is overseeing the erection of a shed adjoining the waters of Lake Worth. This body of water will be the headquarters of the Burgess camp. It is expected that the greater part of the flying during the winter months will be done over water, but for land flying the regular skid and wheel attachment has been shipped.

By completing his course of instruction at the Burgess school at Marblehead on December 22 Henry James White, of Baltimore, Md., becomes one of the youngest aviators in the country. White, who is only 19 years old, thus deposed his instructor, Clifford L. Webster, who was the youngest Burgess operator, since Webster is one year his senior.

White signaled the finishing of his training by taking his instructor for a 15-mile flight across country, over Salem Bay and portions of the towns of Salem and Beverly. He is an appointee to the United States Naval Academy at Annapolis from Maryland, and will specialize in aviation during his course at the Academy.

The Lindsey-Hopkins Aviation Company of Atlanta, Georgia, has begun business both as manufacturers and exhibitors. They expect to put several aviators on the road during the summer months.

The Aeroduster Construction Company, of Chicago, Ill., has issued a new catalogue of aeroplanes and accessories, which no doubt they will be glad to furnish the reader for the asking.

The Frontier Iron Works of Buffalo, New York, feel highly elated over the fact that Aviator G. W. Beatty has installed a new Frontier Motor in his Wright biplane and is meeting with considerable success in its operation.

The Frontier people are making preparations to secure a large percentage of the demand for aeronautical motors this season and feel sure that the American made motor can equal if not excel those of foreign make.

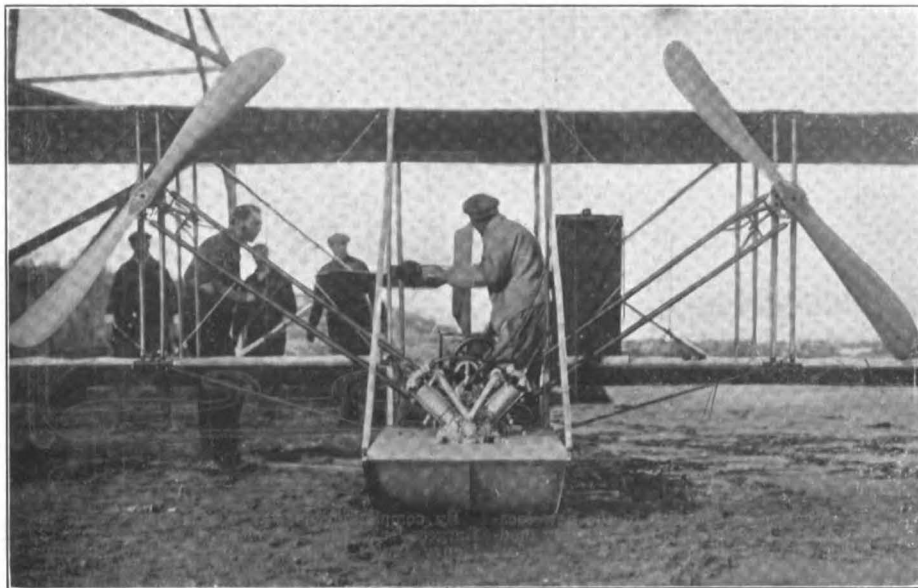
The Curtiss Motor Co., with Glenn H. Curtiss, the noted aviator and aeroplane manufacturer as President, was incorporated at Albany recently for the purpose of taking over all Curtiss's enterprises, including the manufacture of aeroplanes. The new company controls the Curtiss Aeroplane Co., which manufactures the Curtiss biplane, and the Curtiss Exhibition Co., which manages a number of the most prominent aviators and which is the selling agency and foreign representatives for the Curtiss Aeroplane Co.

We regret to say that AIRCRAFT has just received notice that *Aviation*, a monthly magazine published at Los Angeles, Cal., and edited by Van M. Griffith, has discontinued, owing, as they say, to the impossibility of running a magazine on a break even basis. This makes about a dozen aeronautical magazines that have begun and discontinued for the same reason during the past. These magazines were, while they lasted, a considerable help to the development of the aeronautical movement, but unfortunately were not sufficiently appreciated and supported.

Arrangements were made for the disposal of 500 shares of 7 per cent. cumulative preferred stock. The proceeds from the sale of this stock is to be utilized for improvements to the present factory at Hammondsport, N. Y., which needs to be enlarged to handle the increased business of the Curtiss Aeroplane Co.

The directors of the Curtiss Motor Co. are Glenn H. Curtiss, Monroe Wheeler, President of the Curtiss Exhibition Co., Jerome Fanciulli, Vice-President and General Manager of the Curtiss Exhibition Co.; G. Ray Hall, Secretary of the Curtiss Aeroplane Co., and Philip B. Sawyer, of Elmira, N. Y., who will represent the purchasers of the preferred stock.

NEWS IN GENERAL



Front view of the new Curtiss hydro-aeroplane or "flying boat." Note the twin propellers which apparently revolve in the same direction through straight chain drives and also the radiator set to one side to overcome the consequent torque. It is claimed that this machine can travel 50 miles per hour in the water and 60 miles per hour in the air and that it will stand any wind or wave which any other boat its size can weather.

Curtiss Doings

At San Diego on January 10th the new Curtiss hydroaeroplane, or "flying boat," was given its first trial on the bay there with entire success. This is the machine which Mr. Curtiss designed and had constructed under strict secrecy at his factory at Hammondsport.

The new craft, which is equipped to carry a passenger and is driven by a 60 horse power motor, made tremendous speed in contact with the water, estimated at about 50 miles an hour. It lifted off the water with ease and traveled at more than 60 miles an hour in the air. It differs in many respects from the Curtiss hydroaeroplane now in use by the United States navy officers. There are two propellers instead of one, and these are driven by clutch and chain transmission. The motor is equipped with a new automatic starter, which Mr. Curtiss has lately designed, and there is also a fuel gauge and bilge pump.

The boat, or hydro equipment, contains a bulkhead fore and aft, and is twenty feet long, with an upward slope in front and a downward slope in the rear. The great advantages claimed for the new machine are that it is safe, comfortable and quick to rise from the water in response to its control. The hydro equipment, which is more like a boat than anything yet designed and used on the aeroplane, will, it is claimed by Mr. Curtiss, be able to withstand any wind or wave that a motor boat of similar size could weather.

Jerome Fanciulli, Vice-President and General Manager of the Curtiss Exhibition Co., sailed from New York on the steamship "Amerika" for Hamburg, Germany, on January 6th. He is accompanied by Aviator Hugh Robinson, Aviator Eugene Godet, and Mechanic W. J. Shackelford. They took with them two Curtiss hydroaeroplanes, one of which is to be delivered to Louis Paulhan, the famous French aviator and manufacturer of aeroplanes at Sartrouville, France.

From France Mr. Fanciulli and party will go to Germany, thence to Italy and finally to Russia, where the Curtiss hydroaeroplane sold to the Russian Aerial League will be demonstrated. This latter demonstration will probably take place at Sebastopol on the Black Sea, about the first of March, or earlier if conditions permit.

Mr. Robinson will give exhibitions with the Curtiss hydroaeroplane equipped with an 80 H. P. Curtiss engine in the principal cities of Europe.

Four Curtiss aviators, Lincoln Beachey, Beckwith Havens, Charles F. Walsh and Eugene Godet, recently closed a seven days aviation meet in the City of Havana, which attracted wide attention on the island of Cuba. The exhibitions were given at Camp Columbia, which is the military headquarters on the island, and a large number of Cuban Army officers were in attendance, and, in a measure, took part in the exhibitions to the extent of being passengers in daily flights and observing the general practicability of aeroplanes. The City Council of Havana appropriated money for three prizes of \$1,000 each, one of them for

the carrying of military passengers, another for the greatest altitude attained during the meet and a third for a race around Morro Castle, a distance of 14 miles from Camp Columbia.

The Curtiss winter training school at Miami, Fla., began operations on January 1st, with Aviator Charles C. Witmer in charge as instructor. The school is equipped with three machines, a low powered one for beginners, a 60 H. P. standard Curtiss aeroplane and a 75 H. P. Curtiss hydroaeroplane.

Fowler Still Flying

Robert G. Fowler, who is flying from Los Angeles to New York, arrived at Mobile, Alabama, on January 10th, having flown sixty miles from Biloxi, where he had been detained for some time. In spite of the many hardships Fowler is sticking to his task and is slowly but surely working his way eastward.

The Tantarnapol Exhibition Company, Chicago, expects to leave shortly for the South to make

exhibitions throughout the Southern States, Mexico and South America. They have purchased American biplanes equipped with Kirkham six-cylinder motors from the American Aeroplane Mfg. Co. and School of Aviation, the American Aeroplane Company booking them upon this trip. The aviators and crews to be graduate pupils from the above school.

Nassau Boulevard News

On January 4th, G. W. Beatty at Nassau Boulevard in a Wright machine gave an exhibition of flying, during which he indulged in a number of spirals and dips. After flying an hour Beatty came down and took five passengers out in turn, keeping in the air until darkness fell. Those who were taken up were Wilbur R. Kimball, who is learning to fly the machine, and W. L. Avery, of Manhattan; Dr. A. G. Belden, of Terre Haute, Ind.; J. R. Wood, of Milwaukee, and J. J. Williams, of Colbyville, Ind. In all Beatty made eleven flights, covering eighty miles.

Mineola News

On January 4th, Lester Weeks, of Mineola, in the Curtiss biplane of S. M. Moore, made circles around the Court House dome at Mineola.

The engine and seat of the Dietz paraplane have been shifted so that the weight is now in the front part of the plane, and another trial will be made soon.

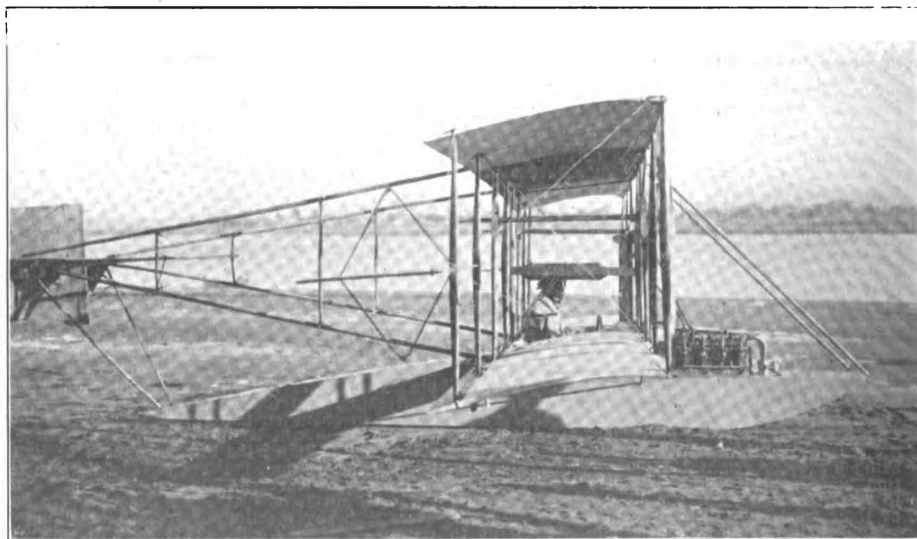
Frank Cline and Oscar Kemmerle, novices, made a series of flights in biplanes on January 5th that carried them some fifteen miles out over the countryside. Frank Boland, with his tailless machine, also flew.

Burgess News

Hunting with a motion camera from an aeroplane had its beginning, in this country at least, during the last week in December, when some interesting views of a flock of ducks were taken from a Burgess hydroaeroplane operated by Phillips W. Page at Marblehead, Mass. The "man behind the lens" was J. C. Hemment, the well known New York photographer. It is believed that this means of picture taking, besides opening a new field of sport, will offer excellent opportunities for the study of bird flight, and with this end in view the experiments are to be continued during the winter.

ATWOOD'S HYDROAEROPLANE FLIGHT.

On December 21st a long distance hydroaeroplane flight was made by Harry N. Atwood, who flew along the coast line from Point of Pines, near Lynn, Mass., to Narragansett Bay, a distance of 130 miles, in 165 minutes. Atwood headed across Boston Harbor, flew over Hingham and reached the Massachusetts south shore. Skirting along the side of Cape Cod Bay the aviator passed over the new Cape Cod Canal and then crossed over Buzzards Bay. He was seen from Horseneck Beach, in the town of Westport, Mass., soon after as he headed toward Rhode Island. The machine used was a Burgess-Wright hydroaeroplane.



Side view of the Curtiss flying boat showing the shape of the 22-foot hydroplane and also the position of the motor and the pilot's cockpit. The machine has air-tight bulkheads fore and aft in the hydroplane, automatic engine starter, fuel gauge, bilge pump, and clutch on the engine. A spray hood not shown in the picture fits over the engine when in use.

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An Interesting Interview

Baron Ladislas d'Orcy, who has just arrived from Paris, says that the Aero Show held in Paris recently was a wonderful success. He says that all of the newest machines are constructed for the most part with steel tubing and sheeting, together with aluminum and other metals showing that wood is being discarded almost entirely in the industry. The machines are also being built to accommodate passengers and with more comfort than heretofore and with the very least head resistance. A great many biplanes are now being built with fuselages, showing thereby the tendency of biplanes and monoplanes toward each other. One of the most remarkable machines exhibited was the Paulhan-Tatin, which

Baron d'Orcy described in the August number of *Aircraft*. This machine has made 130 kilometres per hour with a 22 H. P. motor, and it is expected will make 160 kilometers per hour when installed with a 44 H. P. motor. The Breguet assortment was also a great success, one of them exhibited being that with which Breguet made his Morocco flight. The Breguet machine is especially adapted for military purposes. The Morane-Saulnier Company exhibited a fuselage made of steel sheeting and part of the structure of the wings of steel tubes.

Baron D'Orcy says the French people as a whole are taking up the study of aeroplanes. With them it is a science, and as a nation they have taken to this new industry in the same way as the English nation takes to sport and the Americans

to money-making. Everything is scientifically constructed. Great engineers are devoting their energies and follow scientific laws; there is no guess work. They will spend their money even if they see no immediate return for it, whereas the American, he says, expects two dollars for every one expended and that immediately. The French war department will spend about ten million francs next year in air vehicles, and that before the end of the year the Army will have about 500 machines in use.

Baron D'Orcy is of the opinion that the majority of the French builders will not send over aeroplanes to the American Show to be held in May unless the committee in charge of the Show guarantees to take all the risks of any litigations that may be brought about by the Wright Company.

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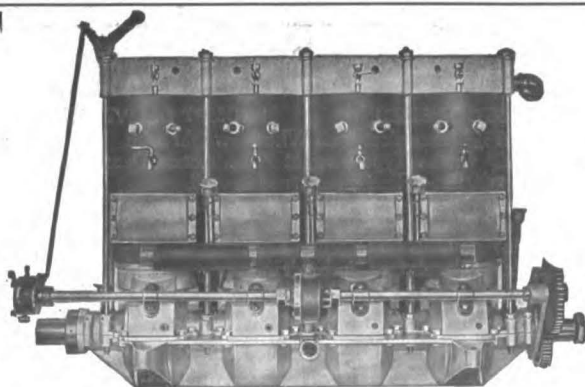
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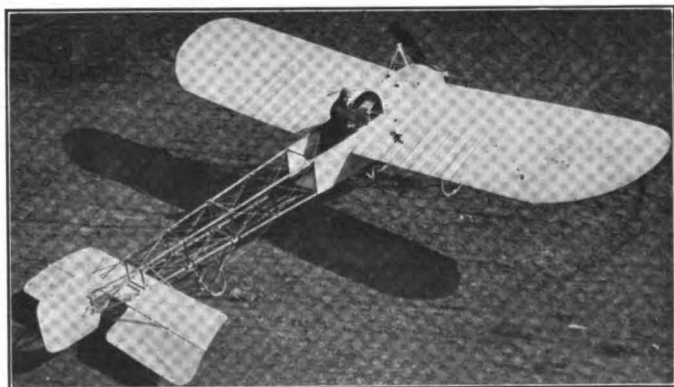
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2' BLERIOT . . . \$5.00

\$1.50

2 1/2' ANGLONETTE \$7.00 This machine we positively guarantee to fly 800 to 1000 feet or money refunded.

WE CARRY SUPPLIES



OUR 1912 MODEL "CROSS COUNTRY TYPE."

Bleriot Monoplanes

PLACE YOUR ORDER NOW

Our Monoplanes now flying in the North, South, East and West by

E. J. MARLEY, Sumner, Miss., Racing Monoplane
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SINGLE SEATERS, PASSENGER MONOPLANES, RACING MONOPLANES, ETC.

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266 FRANKLIN ST. Tel. 47 HEMPSTEAD HEMPSTEAD, N. Y.

AEROPLANE RADIATORS

IN STOCK OR TO ORDER

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EL ARCO RADIATOR CO.

6 EAST 31st STREET
NEW YORK

THE MAN WHO INVESTS in the AMERICAN AEROPLANE MFG. CO. & SCHOOL OF AVIATION



A Class of Students and Instructors of the American Aeroplane Mfg. Company and School of Aviation

today is bound to make money. The opportunities for making money in Aviation now are greater than they were in the Railroad, Telephone or Automobile Industry. Had You bought stock in those industries when they were in their infancy you would be independent today. Read now—Right now— You can buy shares in the American Aeroplane Mfg. Co. & School of Aviation at **25 Cents** - - - - - **Par \$1.00**

These shares are bound to double or perhaps treble within a short time. Our advice to you is to investigate and act quick. Every Investor or Student of Aviation should *Send at once for our Free Book.* Read carefully every word of this announcement.

The American Aeroplane Mfg. Co. & School of Aviation

has been organized for the purpose of manufacturing Biplanes, Monoplanes, and all aerial machines.

More than this—it is our purpose to operate a number of our own aeroplanes with our own aviators in order to fill the great demand which now exists for exhibitions in cities, and at county fairs, resorts and open air field meets, etc.

Already they have manufactured and flown successfully 19 of their own biplanes. The profit involved in the manufacture of aeroplanes is enormous. And the demand is growing at a tremendous rate—faster than the company can make them.

It is their intention to enlarge their factory and school—make it the largest and most complete institution of its kind in the world, and for the first time, are inviting the general public to join with them.

Only a limited amount of stock, however, will be sold—simply enough to make the necessary improvements. To enable everybody to join, they have, for a few days, made the price 25 cents a share—par value \$1.00.

Aviation today is in its infancy. Its possibilities for expansion and development are too great for human mind to comprehend. Many noted aviators today will tell you that "heavier than air" machines will be as common as automobiles in a few years hence. Look at the progress they have made in the past twelve months. If this is any indication—have you any idea what the future holds for this industry?

You know the advantage of getting in on the ground floor of any new industry.

Make up your mind to investigate this opportunity at once.

The men back of this company are all practical men.

One of the world's greatest aviators, whose record is scarcely approached by any one flying today, is Bud Mars. He is General Field Manager, Consulting Aviation Expert and Vice-President of this Company. Mr. Mars will take charge of our aviators in the making of all exhibitions and open competition flights. The story of this man's genius and his achievements in the air reads almost like romance.

Bud Mars has exhibited and made successful flights in scores upon scores of American cities, as well as a world's tour with Captain Baldwin, reaching all the way from New York to Japan. All you have to do to learn of the proficiency and reputation of this man is to write to any aero club in the United States.

General Kaif Belton, who is well known throughout Canada and is honorary commander in chief of the Imperial Veterans Brigade of Canada is our chief instructor.

General Belton was formerly a captain in the English Army during the Boer war. He won his commission through distinguished service, and after that war entered the service of Mulai Hafid, the pretender at the Moroccan throne, and succeeded in putting this monarch on the throne, being commander of his army of 67,000 men.

General Belton has taken up aviation and is now our chief instructor.

Such men as these absolutely assure the future under the personal direction of men who stand high in aviation and business circles.

This Company Controls the Biggest Flying Field in the West

This Company controls its own flying field, which is located at 118th and Morgan streets, and is the best field obtainable in the City of Chicago. It is ideal for flying and landing and to gain some idea of the extent of this field, one has only to



A Part of Our Factory—Students Receiving Practical Instruction

learn that it takes our fastest machine more than four minutes to complete a circle of these grounds. This Company has a favorable lease on this field.

We are not dealing with any new or untried proposition. We build all types of aeroplanes to order and the profits involved in so doing are enormous.

The American Biplane, which is a product of this company, is one of the most modern and up-to-date machines used today. It will be used solely

by some of America's most noted aviators this coming season. Already several orders are on hand and more are sure to follow.

Our Factory and School

Our Manufacturing Plant and Aviation School, at the present time, is located in Chicago, at 2224-38 Cottage Grove Avenue, 2227-31 Indiana Avenue, extending through and occupying nearly an entire block, having over 14,000 sq. ft. of floor space.

It is our intention to manufacture the American aeroplane for the purpose of supplying the demand today for aeroplanes of this type. Our type of aeroplane is similar to that of the Curtiss, and this is the machine which the United States Government has said, through its actual orders to the Curtiss factory, is the best aeroplane, for the United States Government has purchased more Curtiss planes than any other plane manufactured.

The demand for aeroplanes is tremendous—and is growing larger each and every month. It is our purpose to produce an aeroplane, the equal of any flown today, and to sell such planes anywhere from \$2,500. to \$1,500 less than any other manufactured.

The directing force of our Company are all practical men. We use the same materials employed in other aeroplane construction and, with proper equipment, we can produce, if necessary, three aeroplanes a week, which would show us a profit of \$1,700 per plane, or \$5,100 per week, or a total of over \$2,000,000 per year. It is our belief that when our factory is in full running strength we will be compelled to exceed this capacity.

Already we have secured communications from hundreds of amusement parks, cities, county fairs, associations, etc., asking for contracts for exhibitions during the coming years of 1912-13. These exhibitions are guaranteed to net the Company as high as \$5,000 per exhibition and this work will be directly under the management of Bud Mars.

We have many advantages over every other aeroplane factory in the world. Aside from the manufacturing feature, this Company owns and operates a school of aviation. Our course in aviation is, in our opinion, the best in the world today. We take students, place them in our factory and teach them not only the theory of aviation, but construction and operation as well. We show them everything about an aeroplane, so that when these students have graduated from our factory each and every one of them should be able to build his own aeroplane and operate it. These students pay us for the privilege of working in our factory and, therefore, the great cost in the manufacture of an

aeroplane is eliminated in our product. Other factories are compelled to expend large sums of money for labor. This factory, through its school, turns its labor into a source of profit. All money paid for tuition will be applied on purchase price of machine.

AVIATORS AND STUDENTS PLEASE NOTE.—We have prepared a handsome book filled with interesting facts and information regarding our school, with photographs of our students in our factory and on the field—in brief just the facts and information you will be interested in. It describes fully our "HOME STUDY COURSE," our "CONSTRUCTION" course and our "COMPLETE FLIGHT COURSE." This handsome book will be mailed you on receipt of 4 cents in stamps to partly cover expense. In writing state which course you are most interested in now. This book should be in the hands of every aviator and student. Write for it today.

We estimate as a minimum for tuition charges for our Aviation School to be \$80,000, and we believe that the figures here computed are indeed conservative from every point of view.

Roughly figured, \$108,000 is a very low profit for manufacturing; \$50,000 as the earnings of one aviator; and \$80,000 income from the Aviation School.

All the stock of this company is common stock. It is non-assessable and fully paid up. The entire capitalization is \$1,000,000, organized under the laws of Arizona and divided into 1,000,000 shares of a par value of \$1.00 each.

This Company contemplates selling only a limited number of its shares (of a par value of \$1.00) at the price of 25 cents. We do not desire to actually compute the possibilities of the earning power of this stock. But we do say that every aeroplane manufacturing plant in the United States is a close corporation, the stock has all been sub-

To every person who buys 300 shares of this stock we will send gratis a complete "HOME STUDY COURSE" (regular price, \$50.00). We make this offer, with a view of interesting financially as many aviators and students of aviation as possible.

To the stockholder purchasing 2,000 shares or more we will give a certificate entitling such shareholder to each and every one of our three full courses. Thus we will educate you in the actual manufacture of an aeroplane, in the principles and science of aeronautics, and the final and complete operation of a machine under your own control.

We desire to urge upon each and every reader of this paper the necessity of sending in your application, together with your remittance in today's mail, as the number of shares which we have to sell at the 25-cent rate is very limited indeed.



A View of Our Factory and School Which Covers Nearly an Entire Square Business Block

Only a Limited Amount of Shares to be Sold

We are selling only a limited amount of stock to complete the necessary improvements in our factory for exploitation purposes. We desire to immediately begin filling as many orders as the capacity of our factory will permit. The Company desires to have at least 10 aviators with their machines filling exhibition dates before the spring of 1912.

If this Company, during the following year, only builds 60 aeroplanes, it will be enabled to show a profit of at least \$108,000. If we only have one man flying for us during the year 1912, we believe his earnings will be in excess of \$50,000, and it is our purpose to place at least ten men in the field—and we can make dates sufficient to cover this number of men.

scribed by wealthy men and the earning power of these plants is not known. Without the question of a doubt, the earning powers of the Wright, Curtiss, Burgess-Curtis, Capt. Baldwin, etc., are tremendous.

Make Up Your Mind Now to Become a Part Owner in This Company

Please remember that this announcement is appearing in the leading metropolitan dailies.

There is no question but what the small quota of stock will be over-subscribed within a very few days. In order that YOU will not be disappointed, fill out and mail the Special "Stock Coupon" attached for as many shares as you desire, using the table below.

If, however, you want more and complete information with respect to this company, its purposes and plans, just clip the stock information coupon below and send it to us, and we will be glad to send you, without any cost, a large book: 1 with facts and figures, letters and photographs, etc., of our factory, of Mr. Mars, of our demonstration and flying grounds—of everything you desire to know.

The par value of this stock is \$1.00; capitalization is \$1,000,000; non-assessable and fully paid up.

We have appointed Arthur W. Greiner & Co., Industrial Bonds and Stocks, as our financial agents, and we desire that all communications, with respect to the school or to the shares of the Company, be addressed to them. Just use the coupon below.

How to Buy This Stock

PRICE NOW 25 CENTS PER SHARE

- \$ 5.00 down and \$2.50 a month for three months buys 50 shares.
- \$10.00 down and \$5.00 a month for three months buys 100 shares.
- \$20.00 down and \$10.00 a month for three months buys 200 shares.
- \$100.00 down and \$50.00 a month for three months buys 1,000 shares.

If you desire to pay all cash, you may deduct five per cent.

STOCK INFORMATION COUPON

ARTHUR W. GREINER & CO.,
1224-28 First National Bank Bldg., Chicago, Ill.

Gentlemen: Please send me your big book containing views of the factory, your flying field, your School of Aviation and explaining thoroughly the achievements of your Company. I enclose 4c. in stamps to help pay postage.

Name

Address

City..... State.....

(Aircraft)

STOCK COUPON

ARTHUR W. GREINER & CO.,
1224-28 First National Bank Bldg., Chicago, Ill.

Gentlemen: Enclosed please find \$..... for the purchase of..... shares. I agree to pay \$..... each month for a period of 3 months. (Refer to accompanying table on how to buy this stock.)

Name

Address

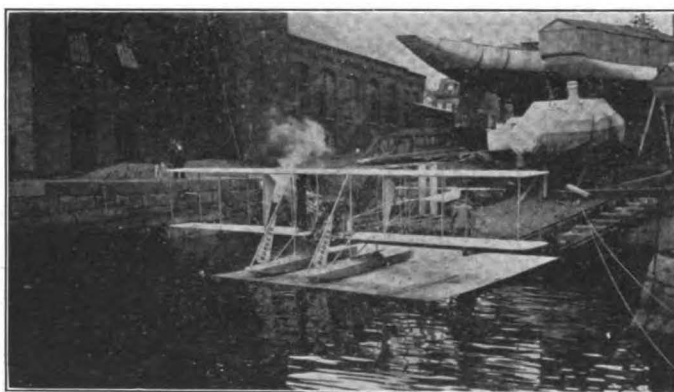
City..... State.....

AMERICAN AEROPLANE MFG. CO. & SCHOOL OF AVIATION CHICAGO, ILLINOIS

ARTHUR W. GREINER & CO., 1224-28 First National Bank Building, Chicago, Illinois

FISCAL AGENTS

We have just secured the services of the well known aviator, Mr. Andrew Drew, Licensed Pilot number fifty, perhaps the best posted aviator in this country, who is to be our field manager, in charge of our winter classes.



"THE PASSING OF THE YACHT"

The Burgess Hydro-aeroplane is epoch making. It has brought flight into the field of yachting.

Wherever there is a small body of water, at the summer place by the sea, on inland lakes and rivers, the Burgess Hydro-aeroplane meets the demand of the sportsman for safe flying.

In the 1912 models we offer no untried experimental devices, simply refinements in construction, additional strength and durability. Both the hydro-aeroplane and aeroplane may be started by the operator while in the machine.

The following aviators, when free to choose their own aeroplanes, selected a Burgess type:

C. Grahame-White	T. O. M. Sopwith
H. N. Atwood	W. R. Brookins
C. K. Hamilton	H. W. Gill
Lieut. T. D. Milling	Phillips W. Page
Clifford L. Webster	
U. S. Navy (hydroplane)	U. S. Army

Training on Burgess Hydro-aeroplane equipped with duplicate control, under the instruction of licensed aviators only, may be secured during February and March at Palm Beach, Fla., or Los Angeles, Cal.

BURGESS COMPANY & CURTIS

Dept. C

MARBLEHEAD, MASS.

BLERIOT MONOPLANES

(GENUINE)

Winners of ALL the European Contests in 1911

In 1909—The First Aerial Crossing of the Channel.

In 1910—The "Circuit de l'Est".

In 1911—The Paris-Rome Race (1st and 2d.)

The European Circuit (1st and 2d.)

The English Circuit (Daily Mail Race.)

The Belgian Circuit.

The Saint Petersburg, Moscow Race.

The Valencia Alicante Race.

The London to Paris non-stop Raid, etc. etc.

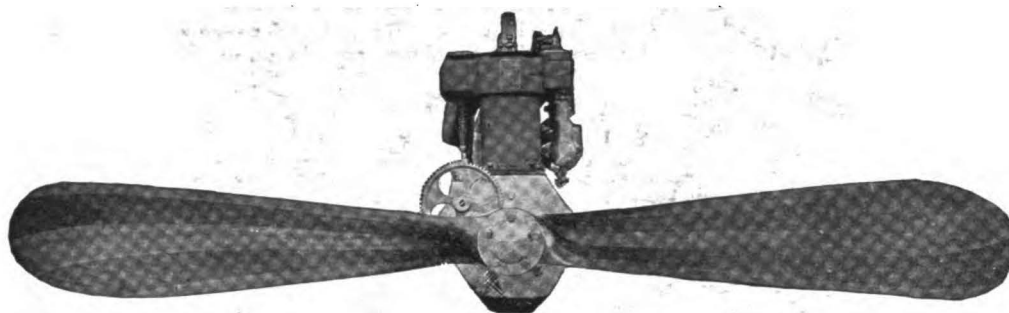
WORKS AND OFFICES: 39, Route de la Révolte à Levallois - PARIS
and Belfast Chambers, 156 Regent Street, LONDON

FRANCE

ENGLAND

AVIATION SCHOOLS: Etampes, near Paris during Summer
Pau, during Winter

Hendon, near London



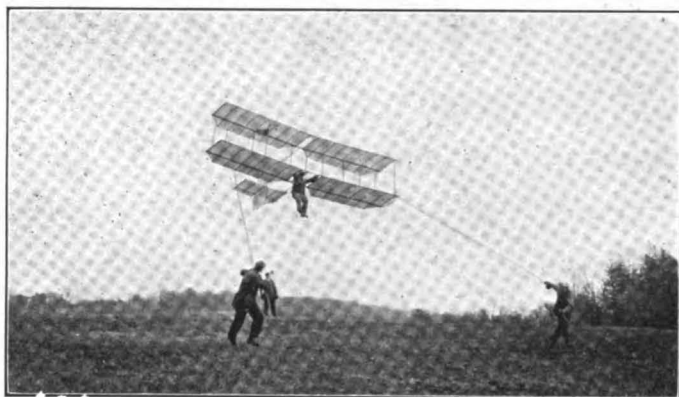
More MAXIMOTORS were built, sold and flown last year than any other motors in the western hemisphere.

The MAXIMOTOR is the only one of the seven prominent American engines; the only aviation engine in the world produced in commercial quantities, with which no fatal accident has ever occurred.

The Reason?

The "MAXIMOTOR BECAUSE" booklet will tell you.

MAXIMOTOR MAKERS
DETROIT
52 CRANE AVENUE



A Wittemann Glider in towed flight

Own a Wittemann Biplane Glider; the best, the safest, easiest to operate, and enjoy flying in a moderate form.

YOUR OPPORTUNITY

Two single cover biplanes for immediate delivery; slightly used, perfect condition with 8 Cyl. 60 H. P. Hall Scott power plant. Write for particulars.

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Aeronautical Engineers

The oldest aeronautic manufacturing concern in the United States. Established 1906.

Works : Ocean Terrace and Little Clove Road
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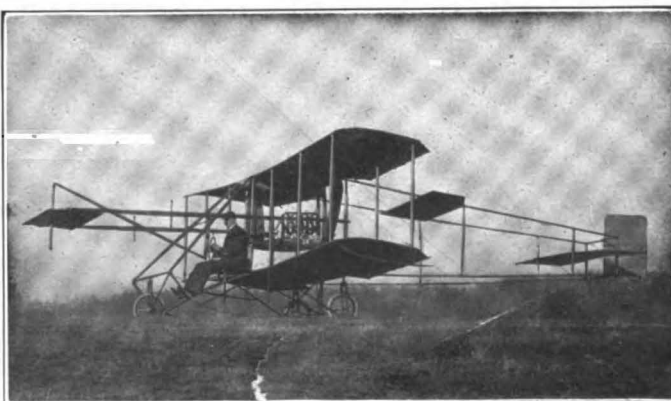
The Wittemann Biplane has a reputation, not only for pace, but for Quality and Service.

Write for information of 1912 Biplane with our new stabilizer.

If you want to build a machine of your own design or parts thereof, we can help you to make it successful. Some parts of your plane can be made of steel. We rid you of the annoyance of constant repairs and insure absolute safety.

Send us your specifications and requirements and secure our quotations.

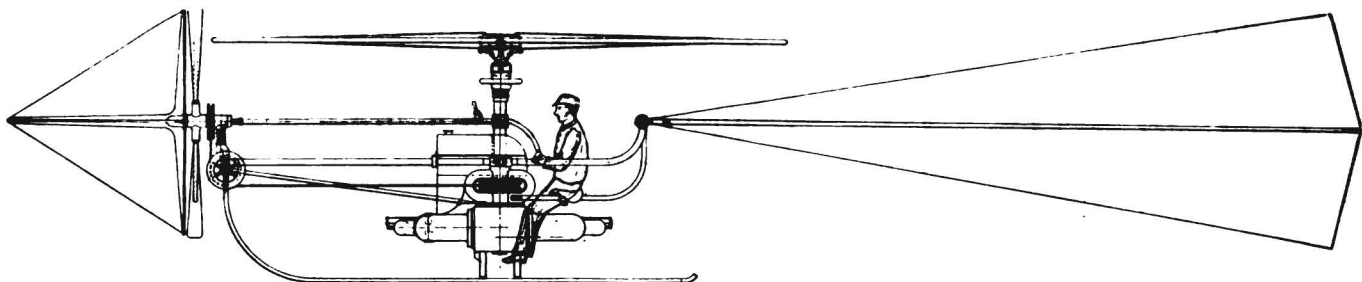
Large stock of steel fittings, laminated ribs and struts of all sizes carried in stock.



Witteman Biplane to Seat One or Two Persons

ALL HAIL THE GYRO

Bird of birds, Wi' parachute and a' that; Though shunned and damned with vulgar words,
It's a' the better for a' that, for a' that, and a' that, Inspired lies, and a' that."



"Then let us hope the great sky scope may with us stay for a' that, That sense and worth o'er the earth, May bear the gree
for a' that, It's coming yet for a' that, That man to man the war! o'er shall brothers be for a' that."

JOS. E. BISSELL**Box 795****PITTSBURG, PA.****Wolverine Motors, Propellers, Aeroplanes**

We will continue until February 1st to sell a limited number of complete
bill of material for either 26 or 30 feet Curtiss type biplanes at

\$160.00

This bill of material includes every thing except power plant. The wood
parts are made from selected western spruce and white oak. The metal parts,
seamless steel tubing, steel straps, aluminum castings, etc. All parts are bent,
formed and drilled ready to be varnished and put together. The wheels are
20" x 2" Hartford tires and knock out axles. The wire is the finest tinned German
music wire tightened with our improved wire tighteners. Cloth Naid No. 2 C.

Drawings and complete instructions for assembling are furnished with each
set. The 26 feet machine will fly with 25 H. P. and the 30 feet with 30 H. P.
but either are strong enough to carry 60 H. P.

For further particulars address the

WOLVERINE AERONAUTIC CO.
DETROIT, MICH.

**HYDROGEN****For BALLOONING Uses**

THE International Oxygen Company's plant is located
on the main line of the Pennsylvania Railroad, and
the Company is prepared to make immediate shipment for ballooning
uses, to any part of the United States, of practically unlimited quan-
tities of pure hydrogen, in high pressure cylinders, at a low cost per
cubic foot.

We install complete plants or furnish
Oxygen and Hydrogen in cylinders

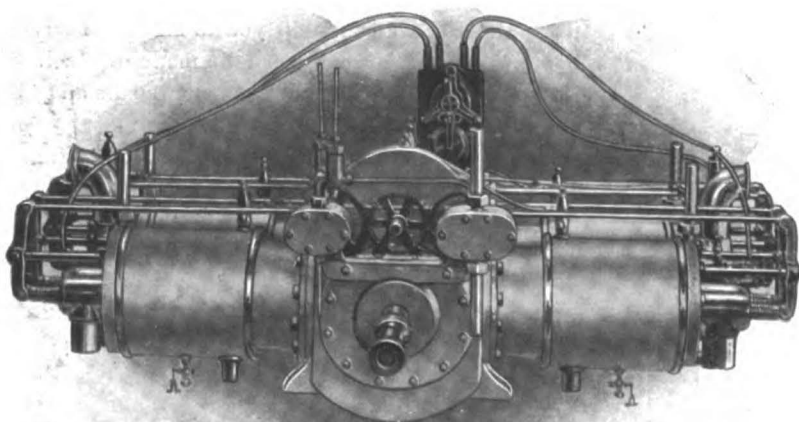
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Paris, France:
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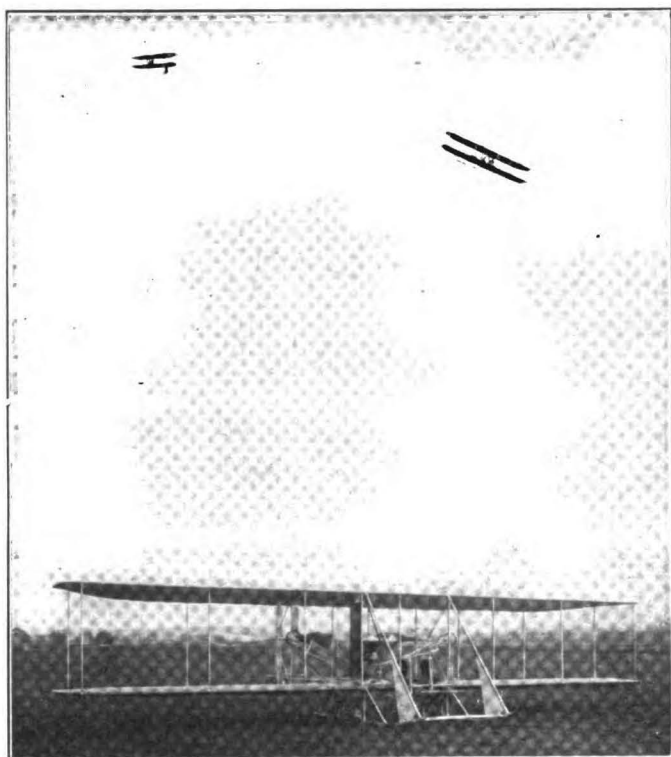
THE CALL AVIATION ENGINE**THE AVIATION ENGINE WITHOUT A PEER****Right in Principle****Artistic in Design****Powerful in Action**

**Perfect in Material and
Workmanship**

**AS DURABLE AS ANY
AUTOMOBILE
ENGINE**

50 H. P. size, 500 lbs. guaranteed thrust
100 H. P. size, 900 lbs. guaranteed thrust

THE AERIAL NAVIGATION COMPANY OF AMERICA, GIRARD, KANSAS



THE WRIGHT FLYER

1912 MODELS

In addition to these features, which in the past have made Wright Flyers famous for efficiency and reliability, the new models can be furnished with **Automatic Control, Silent Motors, and Hydroplanes**. These special features make the 1912 machine unusually attractive to sportsmen.

EXHIBITION MACHINES

For exhibition work we have other models especially adapted to high winds and small fields. It was a stock "EX" Model that Rogers made his wonderful flight from coast to coast. Reliability means dollars to the exhibitor.

WRIGHT SCHOOL OF AVIATION

Training consists of actual flying, in which the pupil is accompanied by a competent teacher. No risk and no expense whatever from breakage. The most famous flyers in America are graduates of our school and includes such names as

Lieut. Arnold	Drew	Lieut. Rogers
Atwood	Elton	Parmelee
Brookings	Lieut. Foulois	Page
Brindley	Fowler	Reynolds
Bonney	Gill	Simmons
Beatty	Lieut. Lahm	Turpin
Burgess	Lieut. Milling	Welsh
Coffyn	Mitchell	Webster
Capt. Chandler	C. P. Rogers	and many others.

Our School at Dayton is now open and pupils may begin training at once if they wish. By enrolling now you can reserve date most convenient to you for training. Write for particulars.

THE WRIGHT CO., Dept. "B" **DAYTON, OHIO**

BALDWIN

VULCANIZED PROOF MATERIAL

For Aeroplanes, Airships, Balloons. First Rubberized Fabric on the market. Lightest and strongest material known. Dampness, Heat and Cold have no effect. Any Strength or Color.

"RED DEVIL" AEROPLANES

That anyone can fly. Free Demonstrations.

HALL-SCOTT MOTORS

Eastern distributor. 40 h. p., 4-cyl.; 60 and 80 h. p., 8-cyl., on exhibition at Frank Schumacher's, 164 W. 46th Street, New York. All motors guaranteed. Immediate delivery.

EXPERTING

Will install a Hall-Scott free of charge in anyone's Aeroplane and demonstrate by expert flyer. Expert advice. Planes balanced.

Capt. Thomas S. Baldwin

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AEROPLANES

"ROOLD" SAFETY HELMETS

AVIATORS' SUPPLIES

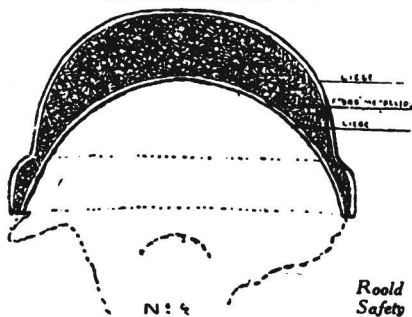
for AVIATORS

These helmets are made with an outer covering that is absolutely indestructible and are so constructed as to absorb all shocks.

ROOLD is official furnisher of these helmets to the French and Russian armies.

ROOLD

50 Avenue de la Grande Armée
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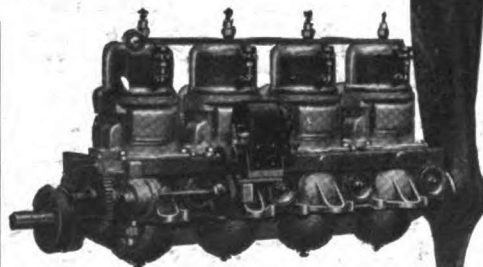
SUCCESS

Rests with you when you purchase a Fox De Luxe Aero Motor. The best Aviation Motor on the market today for endurance, power and efficiency.

Illustration shows 50 H. P. Fox De Luxe Aero Motor 4 cylinders $4\frac{3}{4} \times 4\frac{1}{4}$, with Bosch Magneto and Propeller.

We
build
other
sizes

Write
today for
cata-
logue



50 H. P. Fox De Luxe Aero Motor.

Expert Report on Fox Aero Motor Endurance Test

Lieutenant John Rodgers, U. S. N., detailed for Aviation, writes on April 9, 1911:

"After witnessing a six-hour run during which time the engine maintained a speed of between 1,200 and 1,300 R. P. M. I shut down the Fox De Luxe Motor (shown in cut). At the end of the run the motor was cool and in good condition, ready to start again."

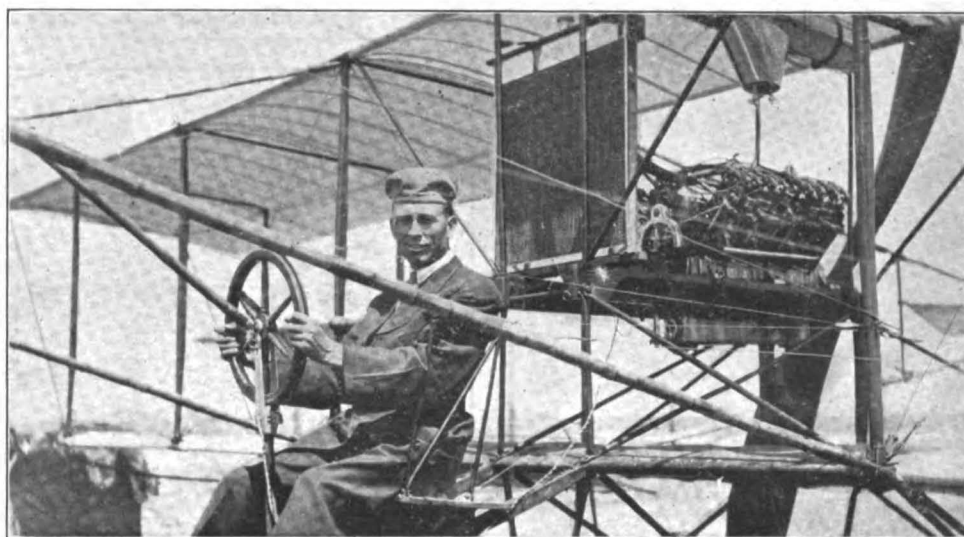
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The Dean Mfg. Co.,

225 Front Street, Newport, Ky.

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The Choice of Professional Airmen



Fred De Kor and his HALL-SCOTT equipped bi-plane

FRED DE KOR, the clever young flyer, who in less than a month's schooling astonished Southern California by his remarkable cross country flights, obtained his pilot's certificate with ease, and is now on an exhibition tour in Texas.

Glenn L. Martin, Beryl Williams, E. L. Holt, Holmes and Doherty are five other airmen who have within the last few months obtained their pilots' certificates in Southern California. Hall-Scott equipment used in every instance.

Over a dozen other airmen, scattered throughout the Union, have obtained their Brevets with the use of HALL-SCOTT.

HALL-SCOTT equipment can be depended upon to deliver the goods. There is no HOT AIR in our assertions as to the excellence of our product or results obtained.

Every HALL-SCOTT owner a booster, with no after regrets.

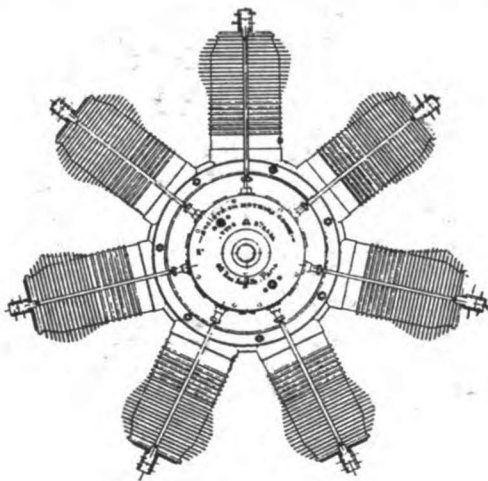
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SAN FRANCISCO, CALIFORNIA

Rotary Motor

G N O M E

The "Wizard of Aviation"



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PAULHAN, FARMAN

And All Other Leading Foreign Aviators

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DISTANCE — DURATION — HEIGHT — SPEED

PRICES
50 H. P. \$2600 100 H. P. \$4800

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We have compiled a list of the very best aeronautical books written in the English language and offer them for sale to our readers. Earnest students of Aerial Flight should read every book in this list.

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