

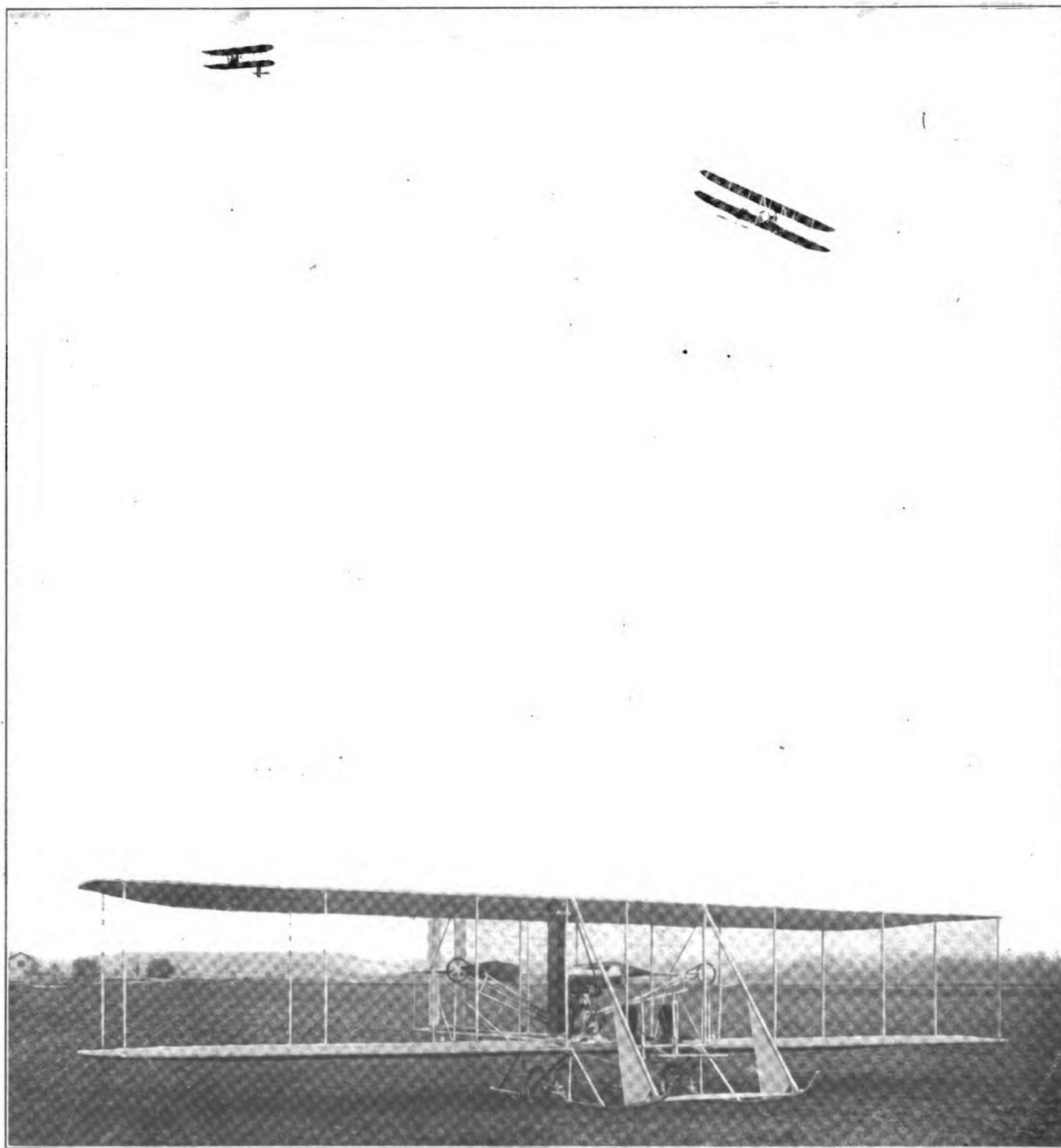
HENRY FARMAN, TO INVADÉ AMERICA

AIRCRAFT

Vol. 2, No. 4

JUNE, 1911

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A FLEET OF WRIGHT AEROPLANES IN AND OUT OF ACTION

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\$1.50 A YEAR

Henry Farman to Invade America



ALFRED W. LAWSON,
President of The Farman Company of America.



HENRY FARMAN,
Director of The Farman Company of America.



BARON LADISLAS d'ORCY,
Secretary of The Farman Company of America.

PERHAPS the biggest surprise of the year in aeronautical circles in this country was the announcement made on May 4th that Henry Farman, the famous builder of French aeroplanes, had decided to establish a manufacturing plant in America for the purpose of building American made Farman machines. It is generally conceded by those directly interested in the development of aviation in this country that this move on Farman's part will have a greater effect in stimulating progress in the industry in this country than any one thing that has taken place since its beginning, for it can be correctly stated that no one man in all the history of flying has done more toward the development of the movement than Henry Farman:

The Farman Company of America is the firm name under which the new company will do business, and it has been incorporated under the laws of the State of New York, and capitalized at \$500,000.

The directors of the concern are: Henry Farman, Alfred W. Lawson and Baron Ladislav Emile d'Orcy.

Alfred W. Lawson, who was made president of the corporation, has been an active figure in the aeronautical movement during the past three years. Besides establishing and editing during that time two successful aeronautical magazines, "Fly" and "Aircraft," he also acted as president of the Aero Publishing Company, of Philadelphia, in 1908 and 1909, and the Lawson Publishing Company, from 1909 up to the present time. Mr. Lawson is

a member of the Aero Club of America, and an honorary member of several aero clubs throughout the United States. He is also vice-president of the Aeronautical Manufacturers' Association.

Baron Ladislav Emile d'Orcy, the secretary of the Farman Company of America, is a young nobleman of French extraction. He was born in Gratz, Austria, 24 years ago, and after completing his education in Hungary and Italy spent several years in visiting Switzerland, England, France, the Balkan Peninsula, India and the Far East. In Turkey he took up journalism to some extent, and in this way became acquainted with many of the prominent European aviators, which whetted his appetite for a deeper study of the science of aviation, a leaning toward which he had had from his early boyhood; during the last two years Baron d'Orcy has devoted all of his time and attention to the study of aeronautics, until now there are few men who have a greater knowledge of the entire subject than he. Since coming to this country Baron d'Orcy has fallen in with the American spirit of doing things, in a manner both energetic and substantial; he must now be reckoned as a strong factor in the actual development of the aeronautical movement in this country.

So much can be said of Henry Farman that we have requested G. F. Campbell Wood,—the well-known writer and authority on aeronautic history and statistics,—to write an article for "Aircraft" on the subject; it will be found on the next page.

What the Farmans Have Done

By G. F. Campbell Wood



WHAT have the Farmans done for aviation? It would require a good many pages to adequately answer the query but lack of space should not prevent some sort of summary of their rôle appearing here, at a time made appropriate by the announced probability of an early visit to America of Henry Farman in person.

Henry, Maurice and Dick Farman are three Englishmen, born in Paris, thirty-five to forty years ago. Their father is the well-known Parisian correspondent of a big London newspaper.

The Farmans have always been closely and professionally interested in the newer forms of locomotion and their connection with them extends over three distinct periods, in each of which they achieved both fame and prosperity.

When the pneumatic-tired bicycle first appeared some twenty years ago, the Anglo-French brothers were among the first to take up the novel pastime and sport.

Henry Farman's first great success in this line occurred in the Paris-Clermont road-race, where, although little more than a lad, he defeated the most famous professionals of the time; he then won the 100 kilometres track championship, and later formed, with his brother Maurice, the most renowned tandem bicycle team the world has ever known. The writer for one, well recalls the roar of welcome which swept around the Parisian vélodromes when the famous "équipe vierge"—the team unsullied by a single defeat—made its appearance at the hey-day of cycle racing.

When the motor-car first made its appearance, Henry and Maurice Farman were again to the fore; they will long be remembered as race-drivers, if their aeronautical successes do not too completely overshadow their performances on terrestrial vehicles.

In the great Paris-Vienna race of 1902, Henry Farman was first in the heavy-car class and the next year, came very near winning the Gordon Bennett Cup in Ireland—finishing a close third to Jenatzy and de Knyff.

In the eliminatory race to select the French team for the 1905 Cup race, he missed a turn, the car falling down a ravine, and Farman being kept from following it by the providential presence of a tree, the branches of which caught him as he went by. Farman looks upon his sudden swoop onto this aerial perch as his true début in aviation.

Henry was the first of the Farmans to become interested in flying machines. In 1907 he stayed out of the annual automobile Grand Prix race for the express purpose of giving his attention to the new sport of flying. In September of that year, at the wheel of the second successful Voisin biplane—the first one belonging to Delagrange—Farman made several short straightaway flights at Issy, outside of Paris, but did not attract universal attention in the latest sport of his selection until he unofficially broke the distance and duration records of Santos-Dumont which had stood for nearly a year.

A few days later, on October 27th, 1907, he made several official trials and beat the records three times in a single day, his final flight being nearly half a mile in 52"¾. Farman was henceforth famous as an aviator; before the end of the year he had, for the first time in Europe, made flights exceeding a minute in duration and had also succeeded in making a turn. The greatest of his early aerial triumphs came however on January 13th, 1908, when he won the Deutsch-Archdeacon prize of \$10,000 by flying one kilometre in a closed circuit; no subsequent feat of flying created such enthusiasm throughout France as this one; in fact the tremendous interest now manifested in aviation dates from this day.

A few weeks later he doubled this record and in May went to Belgium, where, at Ghent, he gave the first paid exhibition of flying. He here succeeded in carrying a passenger for over three-quarters of a mile thereby winning a wager made with several

Parisian sportsmen, who claimed that the feat would not be accomplished prior to March, 1909.

Farman had already on March 2d, 1908, had the distinction of first carrying a passenger. At Ghent one of his passengers was a Belgian lady, the first woman to ever leave the ground in an aeroplane. On July 7th, 1908, Farman again broke all world's records by flying continuously for 20'19"¾, thereby winning the Prix Armengaud for the first flight exceeding quarter of an hour in duration.

Farman then visited America where, sad to relate, his demonstrations of flying were neither understood nor appreciated by the general public: he returned to Europe much disgusted with his experience.

He found Wilbur Wright flying at Le Mans and was the only man who made any showing at all against him in his efforts to capture the Michelin Cup and the first Michelin yearly prize. In one of his trials he was up 44' 32", which constituted the record for European machines for over nine months.

On October 30th, 1908, Henry Farman again made history by accomplishing the first cross-country flight ever known: twelve miles in twenty minutes.

In the last two months of 1908 he made many experiments with his Voisin using it at one time, with an added surface, as a triplane.

In 1909 Farman started building machines on his own account, and instructed several pupils, the first being Roger Sommer and Cockburn, the Englishman. Sommer early showed what could be done with a Henry Farman biplane by making a flight on August 7, 1909, of 2 hours, 27' 15", thereby being the first European to beat the Wright brothers world's duration records—an honor they have never recaptured.

The Gnome motor had just come out at this time, having first been used early in June by Louis Paulhan on a Voisin machine. Farman quickly saw the possibilities of the new engine and at the historical Reims meet of 1909, he fitted one of these motors to his machine just in time, on August 27th, to compete in the Grand Prize for distance.

Directly the new engine was in place, Farman rose in the air and never alighted until after nightfall—3 hrs. 15 mins. after he started. He thereby broke all world's records for distance and duration and captured the biggest prize of the greatest meet ever held.

Farman had flown very close to the ground on this occasion so as to go the greatest distance possible by shaving the pylons. Many spectators after witnessing the monotonous and almost endless performance, thought that he would not or could not go higher; two days later he got second place to Latham for altitude, soaring 400 feet, a tremendous height in those days. He also captured first prize in passenger-carrying, with two passengers up, and generally was the most successful contestant of the Reims meet of 1909.

Later in the year he went to England and made some remarkable flights at Blackpool, where he broke the English duration record. This was the first meet at which Paulhan flew on a Farman biplane, a type of machine on which he was, later to achieve such success. On his return to France, Henry Farman went after the Michelin Cup and the distance and duration records. He succeeded in every point; won the Michelin Cup for 1909, broke the distance record with 144 miles and the duration record with 4 hrs. 17' 53"¾. Notwithstanding many attempts made by his rivals in the last days of the year, these figures remained unequalled.

With the beginning of 1910 Farman started turning out pupils in earnest. The first was Van den Born, the Belgian, who learned to fly in three days and later broke the passenger-carrying duration record. The next was Efimoff, the Russian, after whom Frey, Kinet, Crochon, Christiaens, Duray, Rawlinson, Chavéz,

Grahame-White, Dickson, Camernnan, Edmond, etc., etc., started to drive Henry Farman biplanes. During the first months of 1910 every prize of importance at every meet held was won by Farman biplanes to say nothing of such great cross-country prizes as London-Manchester, in which only these machines apparently dared to compete. The dramatic struggle between Paulhan and Grahame-White for this prize is too recent history to dwell upon. Paulhan was the victor but Grahame-White's Farman carried him to many victories later to reward him for this defeat, and has never been replaced in his affections by his swifter and more sensitive mounts. At Los Angeles, Cannes, Nice, St. Petersburg, Verona, Lerona, Lyons, Angers, Tours, Rouen, Farman machines carried everything before them, while at Budapest and Reims they held their own against the new-born rivals, the speedy Blériot and Hanriot monoplanes.

Louis Paulhan took his Farman throughout the United States and at Los Angeles broke the world's altitude record; he later sold it to C. B. Harmon, who broke Paulhan's American duration record with it, for the first time exceeding two hours.

At about this time Maurice Farman, who, for the previous year had been turning out experimental machines of great promise, revealed himself as a worthy rival for world-honors to his famous brother.

From Buc, near Versailles, where he had his school, came Tabuteau, Renaux, Barra and many others who were to bring fame to the younger brother's product.

It was thought that monoplanes would carry all before them in the final big events of the year but the Farman brothers who, up to now had been rivals, joined hands with the result that they captured all the big prizes in their final campaign of 1910. The great Paris-Brussels-Paris prize of 100,000 francs went to Wynmalen on a Henry Farman, with eight hours to spare. and notwithstanding many efforts made, no other contestant even succeeded in covering the course. The great Michelin prize of 100,000 francs, offered to the man who, with a passenger, would fly from Paris to the summit of the Puy-de-Dôme within six hours, was won by Eugène Renaux on a Maurice Farman after one of the most splendid flights of which the history of aeronautics has record. The only aviator to come near winning the prize outside Renaux was Chas. Weymann, the American, who drove a Henry Farman. Other prizes recently won by Farman machines are the military cross country prize in which the world's duration passenger carrying record of 4 hrs. 3 mins. was put up,

the Coupe Femina won by Hélène Dutrieu, who as a woman, showed the extraordinary ease with which this machine could be driven by making a continuous flight, on a winter's day of 2 hrs. 32'.

The Farman machine has also had its share of over-sea records, Mr. Loraine's feat by flying across the Irish Channel on a Farman remaining the record by several miles for many months.

If other machines can claim to hold their own against the Farman for speed and altitude there can be no question up to the present that the Farman machines have shown themselves super-excellent as regards endurance.

The *Daily Mail* Prize for the greatest distance flown across country was won by Paulhan on a Henry Farman; Grahame-White on a Farman was second. The Michelin Prize of 1910 in which a dozen aviators of world-wide prominence took part narrowed down to a struggle between Tabuteau on a Maurice Farman and Henry Farman himself on one of his own machines. Tabuteau's machine was faster and he won the big prize with the astounding distance of 583 kilometres, which at this day is still the world's distance record, but Henry Farman achieved a feat in the way of consolation, which is even more marvellous: he succeeded in staying above the ground in a heavier-than-air machine for a continuous period of 8 hrs. 12' 47" 2/3 and would have continued longer had not the shortness of the winter's day compelled him to return to terra firma.

In altitude the Farman machine was the first one to exceed a height of one and a half miles above sea level. It also holds the world's altitude record for passenger-carrying with 4,700 feet.

In the military manoeuvres held last year in France the Farman machines showed themselves to be about the best military machine as yet turned out, as much in reliability, stability and weight-carrying as in capability and speed of ascension.

The tremendous advantage to the pilot of being able to see immediately beneath him also makes them favored by the military authorities as compared to their single plane rivals.

This year the French Army will have at least sixty Farman biplanes at its disposal and the activity displayed at the military schools in France at the present time must be seen to be believed.

The Wright brothers were the first to fly: the Voisin brothers were the first to turn out practical European machines: but to the Farman brothers must belong the credit of contributing more to the speed of Aviation's progress in the last three years, than to any other individual or association.

One of the Numerous Big Checks Won by a Farman Biplane



Eugene Renaux the aviator who on March 7th won the Michelin Grand Prize of \$20,000 in cash for his remarkable flight from Paris to the summit of the Puy-de-Dôme at Clermont-Ferrand on a Farman biplane. received the above check for that amount from the Michelin Tire Company, on April 7th. Renaux received his pilots license only the day before his successful flight, prior to which he was practically unknown.

The New Sport of Water-Flying

By Henry A. Wise Wood

OUT of the airplane at last has come the universal vehicle—one that flies, trundles, and swims. No other contrivance of man is self-propulsive ashore, afloat, and aloft. No other, in fact, can utilize more than one of the mediums of locomotion; the hydraeroplane commands all three. The work of Curtiss at home, and of Fabre and others abroad, has made this possible. It is the most important advance in aeronautics since the Wrights' discovery and application of the principle of warping. Let us attempt to forecast its influence upon the sport of flying. One of the cleverest flyers of the treacherous Demoiselle has stated that in the beginning he invariably chose to fly over water, which, he says, proves a safer medium than ground in the event of a low fall, and affords less tumultuous atmospheric conditions. And his belief that it is safer and easier to fly over water than over land seems to be generally accepted. Here we have factors that immediately become assets of the hydraeroplane; its danger and difficulty are less, especially for the beginner. These are but minor advantages, however, for danger nowadays is a cheerfully accepted possibility of sport, while the difficulties of acquiring air-skill are exceedingly short-lived. Orville Wright recently astonished the writer by saying that any clever man whose flights have aggregated no more than two hours, should be ready for exhibition work. But the advantage which comes to the airplane with Curtiss' wheeled pontoon rests upon a very much broader foundation. Its most striking feature lies in the fact that a huge, hitherto unusable, area of the earth's surface has been added to the airplanes' normal range of action; while the looked-for trans-Atlantic passage assumes a saner aspect, and is at once brought appreciably nearer. To many it will seem that the hydraeroplane at best is but a smooth-water affair. Such need only be reminded that where three brief years ago the airplane was a bird of the still air, out only at evening when the wind is low, it is already assuming qualities of strength, power, and controllability which will shortly make it more nearly akin to the stormy petrel. Man has a way of turning that which is possible—and worth while—into that which is easily practicable; so, given the hydraeroplane afloat on a smooth sea, we soon shall find it adapting itself to ever more

difficult conditions, until it shall have become a safe and serviceable craft aloof or aloft.

The place that such an aircraft shall take in sport, it seems to the writer, will largely determine the line and rapidity of its evolution into a useful vehicle. Therefore it is important to estimate its sporting value. Men are more lavishly extravagant in providing their pleasures than their necessities,—which gave rise to the rapid advance of the automobile, with its phenomenal development of the high-powered light-weight propulsive machinery which has made flying possible. Thus the two recent revolutions in transportation, represented by the pleasure-car and the airplane, clearly were born of and promoted by the love of sport,—which, despite the lugubrious prophecies of those who consider as wasted the money spent on recreative appliances, is a healthy influence working to a serious and useful end.

In order to realize the extent of the airplane's new possibilities for pleasure, which have come with the over-water type, one need only picture what, in view of Curtiss' accomplishment, may be expected shortly to become a usual Sunday's scene, off any of our shore resorts: Hydraeroplanes—"triads," Curtiss calls them—are seen trundling under power from sheds ashore to the water; others, afloat at their moorings, their motors tarpaulined, are riding under bare spars; and others, with tarpaulins stowed and wing-cloths set, are being got ready for flight. Still others, a passenger or two aboard, their screws flashing in the sun, are scudding for open water; while awing and wheeling overhead, or off singly or in fleet, are to be seen still other glistening triads prepared for a morning's overseas cruise. To a lover of the sea such a picture would indeed seem a return to the spirit of the days of white canvas, ere the "puff boat" had eaten the heart of the sailorman. The words, *wind* and *leeway*; *spar-outrigger*, and *stay*, come again into use, and the compass with its new duties takes on new dignity. To alight on the sea; to arise from it; to be upon it or above it at will; to command equally the adjacent shore, and move hither or thither over both as the fancy listeth, is surely magnificent sport. And such indeed will be the new sport of Water-Flying,—a mere outline of the possibilities of which is sufficient to thrill those who love vast spaces, and yearn for the physical freedom which comes of the open sea.

The Aeronautical Manufacturers' Association

A PERMANENT organization of the Aeronautical Manufacturers' Association was formed at the Hotel Cumberland, New York, on April 29. A large and enthusiastic gathering of manufacturers got together during the evening and ratified the election of officers by the Board of Trustees earlier in the day.

The officers elected were: Ernest L. Jones, president; Alfred W. Lawson, vice-president; F. D. Wood, secretary, and A. J. Inderrieden, treasurer.

The membership committee appointed for the first year is: J. R. Westerfield, of the Emerson Engine Company; Jerome Fanciulli, of the Curtiss Aeroplane Company; Hugo C. Gibson, of the E. W. Bonson Company; Lyman J. Seely, of the Elbridge Engine Company, and S. E. White, of the White & Wood Company. This committee received twenty-three personal applications and several proxies at the meeting.

Those making application for membership were: The Emerson Engine Company, of Alexandria, Va.; P. Brauner & Co., of New York; The Volanaut Construction Company, of Long Island; Ellsworth Gaskell, of New York; C. G. Goddard, of New York; The E. J. Willis Company, of New York; The International Aero Construction Company, of Woodhaven, N. Y.; Messrs. C.

and A. Wittemann, of Staten Island; The Curtiss Aeroplane Company, of New York; E. W. Bonson, of New York; F. P. Schneider, of New York; The Scientific Aeroplane Company, of New York; W. C. Durgan, of Syracuse, N. Y.; The Tiger Cycles and Aeroplane Company, of New York; Henry Walden, of New York; Aeronautics Press, of New York; The White and Wood Company, of New York; The Aeronautic Supply Company, of New York; R. O. Rubel, Jr., of Louisville, Ky.; The Lawson Publishing Company, of New York; The Aero Publishing Company, of Philadelphia, Pa.; The F. T. Sanford Automobile Company, of New York; The New York Aeronautical Supply Company; The Elbridge Engine Company, of Rochester, N. Y., and Aviation Publishing Company, of Los Angeles, Cal.

A committee consisting of Hugo C. Gibson and Dr. Walden was appointed to investigate the subject of insurance to aviators and all those directly interested in aviation.

The meeting was a success in every particular and the new organization begins life in a most promising manner. There is little doubt that with good management it will eventually grow to huge proportions and prove of inestimable service to the development of the aeronautical industry in this country.

Tests of the Resistance and Strength of the Wings of the Breguet Aeroplane

By Louis Breguet

ON Saturday, March 18th, 1911, the following tests were made at the Bréguet Works at Douai in the presence of Colonel Boutieaux, who came specially from Chalais-Meudon to witness them. The question was to test the strength of the wings and of the stays ordinarily used in the Bréguet aeroplane.

The adopted method for such a test was the one advocated by Mr. Gabriel Voisin, viz., a pair of wings are placed upside down with all their wires and stays, and then progressively loaded with sand in such a way that the repartition of that weight is similar to that of the vertical component of the air resistance in flight.

The patented wings of the Bréguet aeroplanes are of the "supple" or "flexible" type; their frame is formed by a very strong steel tube on which is attached the ash ribs which carry the fabric.

The ribs are fixed to the tube by the means of tubular springs, which give the wing its peculiar flexibility, since the ribs can oscillate around the tubes independently of the suppleness already due to the elasticity of the back parts of the rib.

The main tubes of the wings are fixed to the framework of the aeroplane by a patented form of coupling which allows the angle of incidence to be regulated and the wings to be folded alongside the fuselage (which design forms one of the chief patents of the Bréguet machine).

These couplings are strongly screwed on steel joints placed at each end of a vertical steel tube of 1 7-12 inches diameter, which is part of the main framework of the aeroplane itself.



THREE-QUARTER VIEW OF TWO-SEATER MILITARY TYPE BREGUET SHOWING POSITION AND MOUNTING OF THE R. E. P. MOTOR.

Scheme of the Tests.

For this test, a similar vertical tube was braced up to a wall of the works.

Moreover, two bolts (similar to those ordinarily used on the aeroplanes) were passed through the wall and were used for fixing, with the same stays and at the same angles, the several cables and wires which connect the wings to the framework.

To represent the resistance of the air on the wings when flying, two horizontal cables were bound to the main steel tubes of the wings at their connection with the vertical strut, and they were pulled back by counterweights.

To facilitate the regular distribution of the sand on the wings their length was divided in portions of 2 ft. 5 inches so that each portion had an area of 1 sq. meter (10.76 sq. ft.).

On each of these portions was poured a quantity of sand

corresponding to the loads for which the wings had to be tested.

The sand was then carefully distributed in such a way that the centre of gravity came about one-third of the chord where the centre of pressure is when flying.

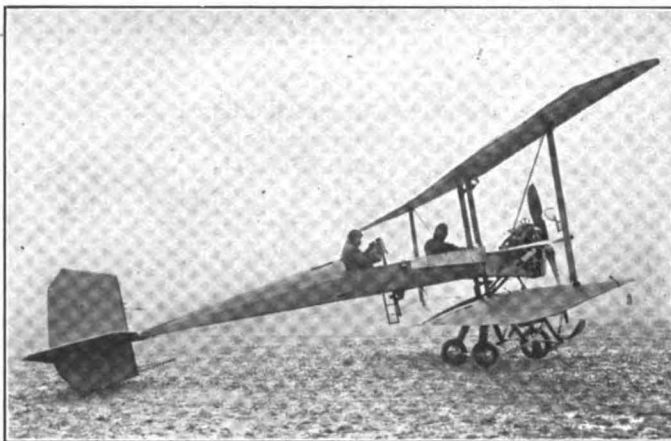
Determination of the Loads.

The tested wings were of the standard type as used on the 1910 models.

The area of the wings were respectively of:

83 sq. ft. for the upper wing.

67.8 sq. ft. for the lower wing.



SIDE VIEW OF THE TWO-SEATER BREGUET FITTED WITH R. E. P. MOTOR.

The total area of this pair of wings (one-half only of an aeroplane) was thus 150 sq. ft.

The dead weight of the aeroplane itself is 1,057 lbs., and the normal weight it carries is 530 lbs. (aviators, fuel and oil).

The total weight is thus 1,587 lbs.

The tail of the aeroplane carries its own weight, viz: 77 lbs. and the small surface placed between the upper wings above the fuselage carries about 33 lbs.

The wings therefore carry only: $1,587 - (77 + 33) = 1,477$.

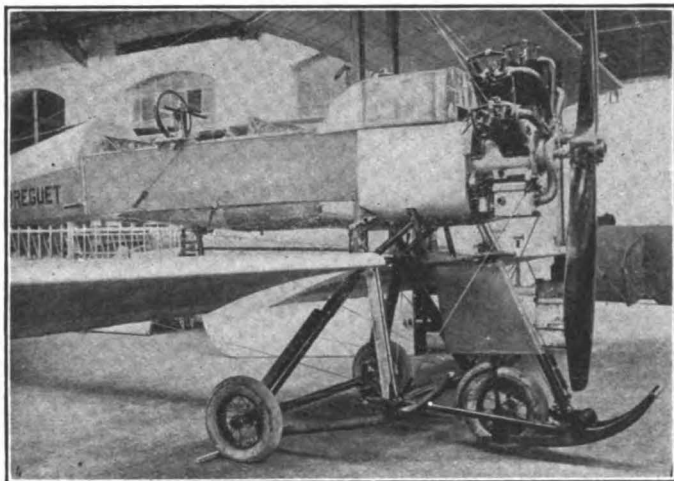
The tests being made on one-half of the wings only, the corresponding load is 738 lbs.

The weight of this pair of wings complete with wires, cables, stays and struts is 123.5 lbs. that is to say exactly 8.8 lbs. per sq. met. (0.818 lb. per sq. ft.).

For determining the load C carried by the wings according to the weight put into the fuselage, M. Bréguet used the formulæ of the "Commission de Navigabilité Aérienne" which is:



THE BREGUET AEROPLANE WITH WINGS FOLDED FOR TRANSPORTATION OR STORAGE IN SMALL PLACES.



DETAILED VIEW OF THE UNIQUE LANDING-CHASSIS OF THE BREGUET AEROPLANE. THE FRONT WHEEL IS CONNECTED TO THE REAR RUDDER AND STEERS THE MACHINE WHEN ON THE GROUND.

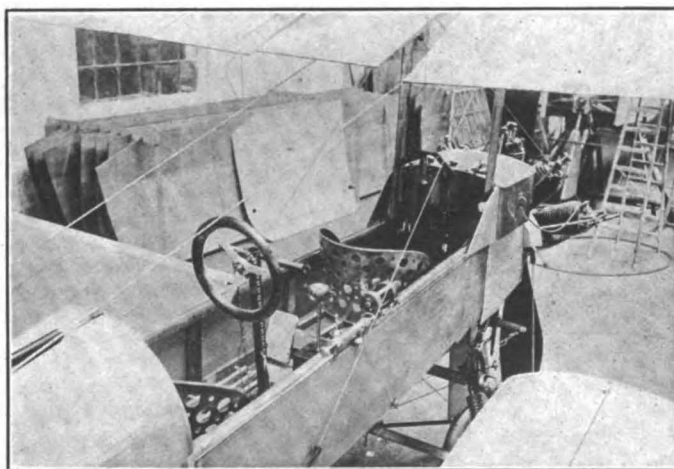
$$C=n(P-p)-P$$

C representing the load supported by the wings;
 n the number of times the normal load is put on;
 P the normal total weight of the aeroplane;
 p the weight of the wings.

One thus arrives at the following figures:

Number of normal loads used: "n"	Corresponding Weight of sand Kilogs per sq. met.	lbs. per sq. ft.
1 Normal	16	3.27
2	36	7.35
3	56	11.45
4	76	15.54
5	96	19.62
5.2	100	20.44

The tests were brought to an end when $n=5.2$ on account of



VIEW SHOWING THE SEATING ARRANGEMENTS, POSITION OF GASOLINE TANK AND R. E. P. MOTOR, CONTROLS, COMPASS AND OIL PUMP.

lack of sand. On examining the wings, it was found that they had undergone no strain whatever.

Results.

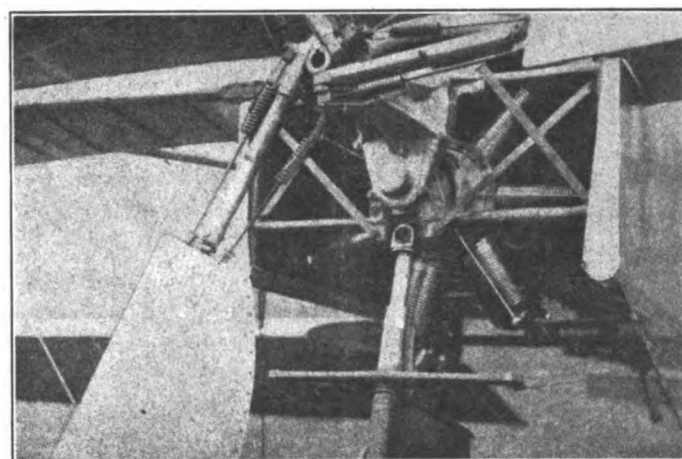
The height of several parts of the wings above the ground had been carefully noted before beginning the test, and the wings were set at their normal angle of incidence: 20%.

Under the load of 20.44 lbs. per sq. ft. no distortion nor flexing was observed.

Every stay was found to be perfect, and the angle of incidence had by reason of the flexibility of the wings, come down to 5%.

The cables representing the head resistance were pulling at 310 lbs. which is by far a bigger figure than would ever be reached in actual flight.

After having taken the sand away from the wings, the main tube of the upper wing was examined. It was found to have dropped 15 m/m (0.6 inches) at the point where it takes the strut, which is 10 ft. 4 in. away from the frame work of the



Detail view of the latest Breguet, showing how a Gnome rotary engine is used to drive a Breguet flexible propeller at reduced speed. The blades of the Breguet flexible propeller are hinged to the boss, and are anchored by springs so arranged as to allow the blades to fold back a little towards the engine under excessive pressure. The purpose of this mechanism is to diminish the stresses due to gyroscopic and centrifugal force resulting from sudden changes of the attitude of the machine in flights.

aeroplane, and it seems certain that it was due to the fact that under such a big load, the steel ribbon which carries the whole load of the wing had moved into its normal position in its fastening.

During the test, the tension of every wire cable was examined by a special process, and it was found that the work was normally distributed between them.

Conclusion.

In short: Neither the wings, stays, cables nor wires had sustained any strain.

After taking away the load, every part returned to its normal shape and the best proof of the strength of those wings is that this very pair has since been fitted on an aeroplane.

The Breguet Aeroplane

By W. H. Phipps

One of the most interesting and original aeroplanes ever constructed is the new machine designed and built by L. Breguet. Although commonly called a biplane, L. Breguet has termed it a double monoplane owing to the fact that the wings the attached and braced to the frame in the manner generally used on monoplanes. In fact, the machine combines the best principles of both types. It possesses several very interesting features: the wings, which are flexible and also capable of being folded back against the frame; the landing chassis and the universal tail.

The Breguet aeroplanes are mounted with either Gnome, R. E. P. or Renault motors, but all are about the same type. Below we append a detailed description of this interesting machine.

DESCRIPTION.

Main Planes.—The spars consist of steel tubes of large diameter passing through the thickest part of the planes about one-third of the chord from the leading edge.

The ribs are elastically attached to these spars by a patented fastening, and it is to this "Supple Wing" construction that the Breguet Aeroplane owes its extraordinary steadiness and automatic stability. The planes are double surfaced and the leading edge is bound with sheet aluminum. The angle of incidence can be modified with unusual ease. There are only four steel tubular struts connecting the upper and lower planes, the two middle ones serving to carry the fuselage.

The steel frame being very strong in itself re-

quires but little wire bracing, and every wire used is calculated to withstand ten times the strain it would normally be called upon to bear.

While getting thereby a tremendous margin of safety, the scarcity of wires and general neatness of design reduces resistance to a minimum.

The Tail.—The framework of the tail is of steel tubing; it is very large and of the cruciform type. It is hinged at the end of the fuselage by a universal joint and does duty of both rudder and elevator. It is held in its normal position by springs which allow it to act to a marked degree as an automatic balancer.

The Fuselage.—The fuselage is boat-shaped and is attached to the two centre struts about a foot above the lower planes. It is built of tubular steel,

pressed steel girders and ash, and its shape is such that it offers the least possible resistance.

The Control.—The patented control system consists of a wheel mounted on a pivoted lever. The backwards and forwards movement of the entire column operates the elevator; the sideways movement warps the rear edge of the upper planes, and the rotation of the wheel steers the machine. The latter operation also governs the front wheel of the landing Chassis so that when on the ground the machine can be steered like a motor car.

On the Military models, a supplementary control is fitted in front of the mechanic's seat, thus allowing the driving to be taken in turns.

Every controlling steel cable is doubled.

The Landing Chassis.—The landing gear consists of three stout wheels each protected by skids. The two main wheels, placed on either side of the centre of gravity, are fitted with patent "Oleo-pneumatic" shock absorbers. The steering wheel and front skid, whose chief duty is to protect the prow of the machine, have a spring suspension.

Engine and Propeller.—The engine is mounted on a bed in steel tubes formed by the front of the fuselage, and drives a specially designed two bladed wooden propeller, or a three bladed metal one.

Portability.—By means of an ingenious device the main planes can be folded alongside of the fuselage so that the entire aeroplane occupies but a space of about 12 ft. by 30 ft. In this form, the machine can travel on any ordinary road and does not necessitate a special shed, as it can be housed in places such as farm buildings, stables, etc., since large doors which are essential to allow the passage of an ordinary type of aeroplane are not necessary. The folding or opening out of the wings can be done by two men in about 15 minutes, and this operation in no way disturbs the accurate setting of the planes.

During a trial recently made in the presence of a French Military Committee at the Aerodrome of La Brayelle, near Douai, the complete folding has been made in five minutes, and the complete opening out in eight minutes.

Wireless Telegraphy.—On account of its metal construction, the Breguet Aeroplane is specially adapted for wireless telegraphy, as it forms a far better earth than the ordinary wood constructed machines. On one of the Military Cruiser models (G2 type), special provision has been made for carrying the necessary receiving and transmitting instruments.

SPECIFICATIONS.

"Cruiser" type L-1. (Special Military model as supplied to French Ministry of War).

Seating Capacity.—3 including pilot.

Engine.—Renault 8-cylinder 60 h.p. turning at from 1,600 to 1,800 r.p.m., or Gnome 70 h.p.

Propeller.—Two-bladed wooden, or three bladed metal indirect drive, turning at from 800 to 900 r.p.m.

Span.—Upper plane, 45 ft. 9 in. Lower plane, 28 ft. 8 in.

Chord.—5 ft.

Overall Length.—28 ft.

Height.—10 ft 6 in.

Total Supporting Surface.—365 sq. ft.

Area Occupied with Wings Folded.—11 ft. 9 in. by 28 ft.

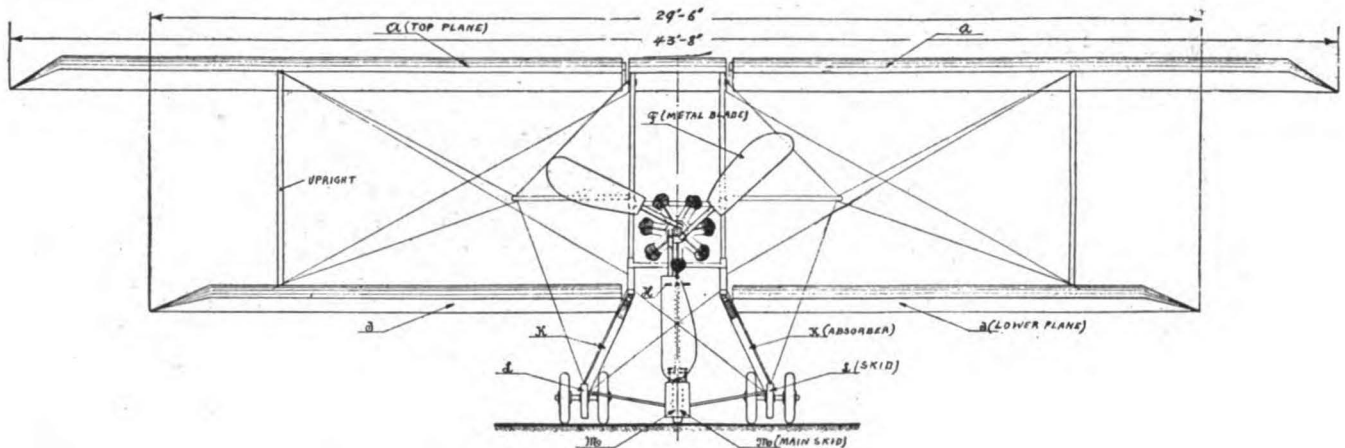
Weight of machine complete, without passengers nor fuel or oil, 1,200 lbs.

Speed.—53 miles per hour.

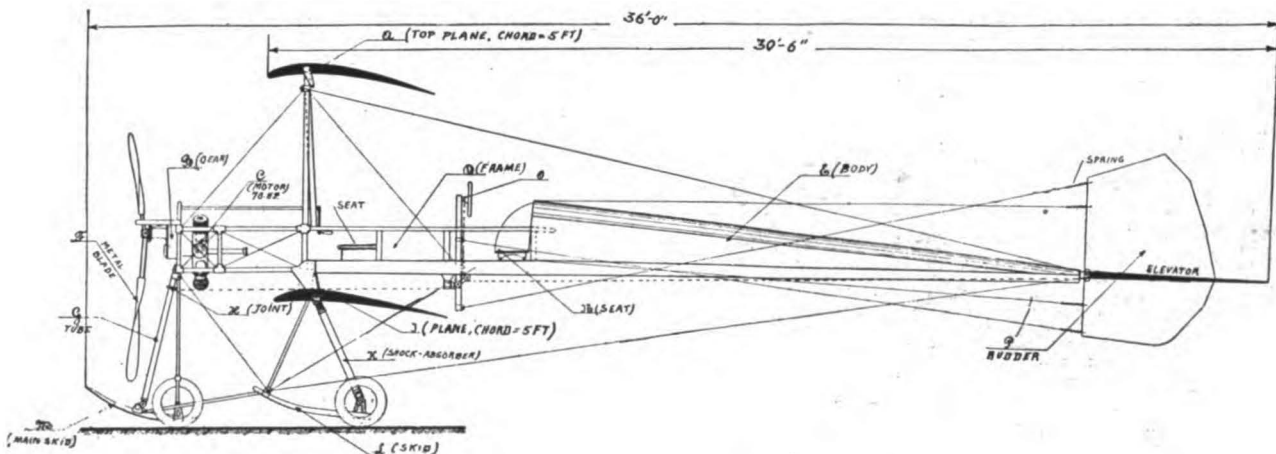
Fuel Carrying Capacity, with two people aboard, for 320 miles.

Height attainable in 15 minutes, with total weight aboard, 1,000 ft.

Weight Carrying Capacity, 660 lbs.



- FRONT VIEW -



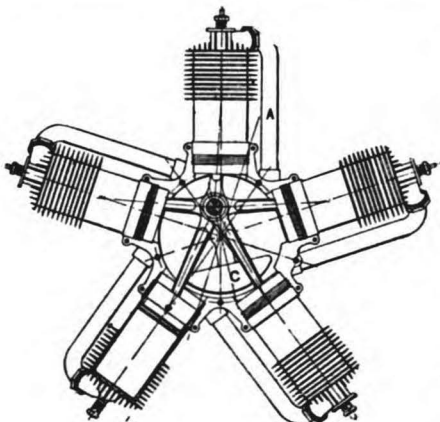
- SIDE VIEW -

The Anzani Motor

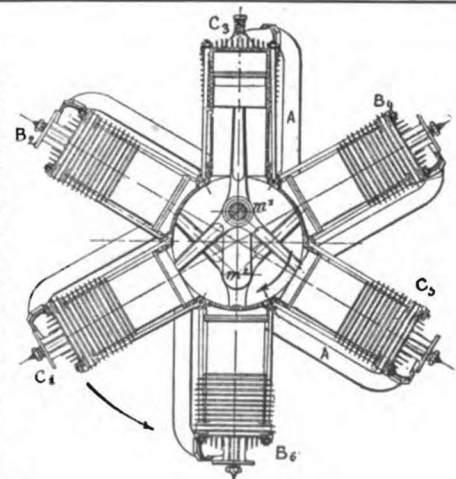
The Anzani air-cooled motors are being produced in three types for 1911. A 3-cylinder 30 h.p., a 5-cylinder 50 h.p. and a 6-cylinder 60 h.p.

The motors have been much improved and lightened for 1911 and all are fitted with automatic oiling, high tension magneto and throttle control. In the 3-cylinder 1911 motor the angle of the cylinders has been changed to 72 degrees instead of 60 degrees. This change in angle was made in order to improve the equilibrium of the motor and also to permit of ignition by magneto.

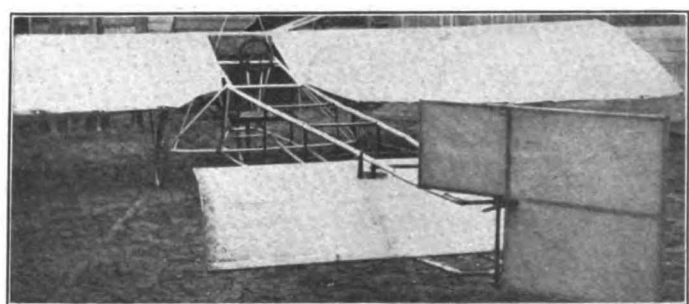
Another improvement is the eliminating of valve chambers and placing the valves at the base of the cylinders, stems upward with the exhaust in front, and admission in the rear. The advantages of this system are: First, saving in weight of 1300 gms. per cylinder; second, the exhaust in front receives all the wind when moving forward; third, the inlet piping is shortened and straight, and therefore does not admit any condensation as before, nor does it miss in winter time at a great height; fourth, the inlet valve, guided better and pushed straight, and not sideways as before, cannot get stuck; fifth, last and above all, the cylinder heats without valve chambers, and increases the H. P. from 15% to 20%.



5 CYL. 1911 TYPE R. P. M. 1200; BORE 4 INCH; STROKE 5 IN.; WEIGHT 154 LBS.



6 CYL. 1911 TYPE 60 H. P., R. P. M. 1100; WEIGHT 172 LBS.



BURGESS-WISEMAN MONOPLANE BUILT IN CLEVELAND, O.

CLUB NEWS

By G. A. Haviland

The Aeronautical Society

The banquet of The Aeronautical Society held in the Hotel Astor, New York City, April 27, 1911, was one of the most notable events of its kind ever held in the United States. More than eight hundred diners sat at the tables and several hundred ladies, including Mrs. William H. Taft, wife of the President, were seated in the sixty-four boxes of the grand ballroom and banquet hall. It was unquestionably the largest aeronautical indoor function ever held anywhere in the world, and it was the first time in history that the chief executive of a great nation personally attended an aeronautical event. The speakers were:

Hon. William Howard Taft, President of the United States.

Hon. William Randolph Hearst, Brigadier General James Allen, Chief Signal Corps, U. S. A.

Rear Admiral Robert E. Peary, discoverer of the North Pole.

Thomas A. Hill, director, The Aeronautical Society.

Prof. W. R. Turnbull, representative, Aeronautical Society of Great Britain.

Dr. Charles D. Walcott, Secretary, Smithsonian Institution.

Captain Washington I. Chambers, U. S. N.

Gutzon L. M. Borglum, sculptor.

Dr. Willis L. Moore, Chief, United States Weather Bureau.

Hudson Maxim, Toastmaster.

There were present representatives of the Aero Club of America, Royal Aero Club of the United Kingdom, Aero Club of Sweden, Aero Club of Italy, Aero Club of the Netherlands, Aero Club of Australia and The Aeronautical Society of Great Britain. Also members of the Aero Clubs of France, Austria, Belgium and Spain and The Aeronautical Society of Canada.

Aero Clubs of Pennsylvania, New York, Jacksonville, Washington, Dayton, Rochester, Buffalo, New Jersey, Ohio, New Orleans, Long Island, Springfield and The Aeronautical Recreation Society of Philadelphia, Aero Scientific Club of Washington, The Intercollegiate Aeronautical Federation, The Harvard Aeronautical Society and The Southwestern Aeronautical Association.

The Long Island Automobile Club, Hebrew Technical Institute, New York Electrical Society, Chemists' Club, St. Lawrence University, Columbia University, New York University, The Brooklyn Yacht Club, The Waterway League, The Minnesota Society, The Richmond County Automobile Club and The Penataquit Corinthian Yacht Club.

The banquet was planned for the purpose of stimulating greater interest in aeronautics in the United States and was a great success in every sense of the word. Mr. Hearst was presented the first award of The Aeronautical Society, a medal struck in gold, for exceptional services during the year 1910. The award was voted by the directors of the society last December, in consideration of Mr. Hearst's public-spirited offer of \$50,000 for the first American transcontinental flight.

Plans for a national monument at Washington, D. C., in honor of the famous flyers recently killed, and others who meet a similar fate, were announced.

It was also announced that negotiations for the endowment of an Aeronautical Chair in one of the leading universities, and a national laboratory for Aeronautics, were being pushed as rapidly as possible under the auspices of the society, and an appeal was made to all organizations interested in the science and sport of aeronautics to open correspondence with the society with a view to co-operative mutual development, to assist in the standardization of construction for purposes of safety, to standardize rules of aeronautical sport and flight for purposes of uniformity and in the interests of fairness to investigate and determine

best methods for promoting proper legislative enactments, to crush illegitimate aeronautical enterprise and to foster discriminate investment and development along progressive lines.

There were many good speeches made which AIRCRAFT for want of space, is unable to publish. The following, however, is the address made by Mr. Thomas A. Hill, director of the Aeronautical Society, setting forth some of the aims of the organization:

Mr. Toastmaster, Gentlemen and Ladies:

I am sure, after all the intelligent opinions you



THOMAS A. HILL, DIRECTOR OF THE AERONAUTICAL SOCIETY.

have heard here to-night, it will be a very easy matter for you to go home, build a flying machine and take a trip down Broadway.

I propose, in the few words I have to say, to try to point out in my own way, some of the things which I believe to be necessary for the development of the art. It is well enough to talk about future possibilities in aeronautical development, but the question is how to reach them. I agree that there is a great deal of interest in the sporting side of aeronautics, and it is well that it is so. It has its place; it is a very important part of the development; so, too, is the scientific side of it.

In this connection it will interest you to know that The Aeronautical Society hopes soon to be able to announce the endowment of an Aeronautical Chair in one of our leading universities and possibly a great Aeronautical laboratory. This, we believe, is assured through a great philanthropist, whose name I am not privileged to make public to-night.

It is the intention of the society to present a medal every year to the one who has rendered the most signal service to aeronautics during that year; and we propose to award that medal according to the vote of the directors. It was pre-

sented this year to our guest of honor this evening, Mr. William Randolph Hearst, whose public-spirited offer of \$50,000 to the first to fly across the American continent was undoubtedly the greatest incentive for the year 1910.

Regular lectures of the society are given twice a month upon engines, propellers, aeronautical construction work and other kindred subjects. We maintain an aerodrome, and have purchased motors and various other equipment in so far as the means of the society will permit.

There are many things to be understood of the various types of flying machines, and for this reason we try to bring out discussion from those engaged in practical work. We believe that by so doing we secure the most reliable data, and that the proper way for development is along these lines. All organizations interested in the science and sport of aeronautics should open correspondence with the society with a view to co-operative mutual development, to assist in the standardization of construction for purposes of safety to standardize rules of aeronautical sport and flight for purposes of uniformity and in the interests of fairness, to investigate and determine best methods for promoting proper legislative enactments, to crush illegitimate aeronautical enterprise and to foster discriminate investment and development along progressive lines.

I believe, and I know a great many others believe, that this work would be more rapidly developed if there were more co-operation among the various organizations interested in this work. Hundreds of thousands of dollars are being wasted for lack of proper direction. There should be some working understanding, and aeronautical clubs and societies should be amalgamated in some manner to promote this work systematically and economically.

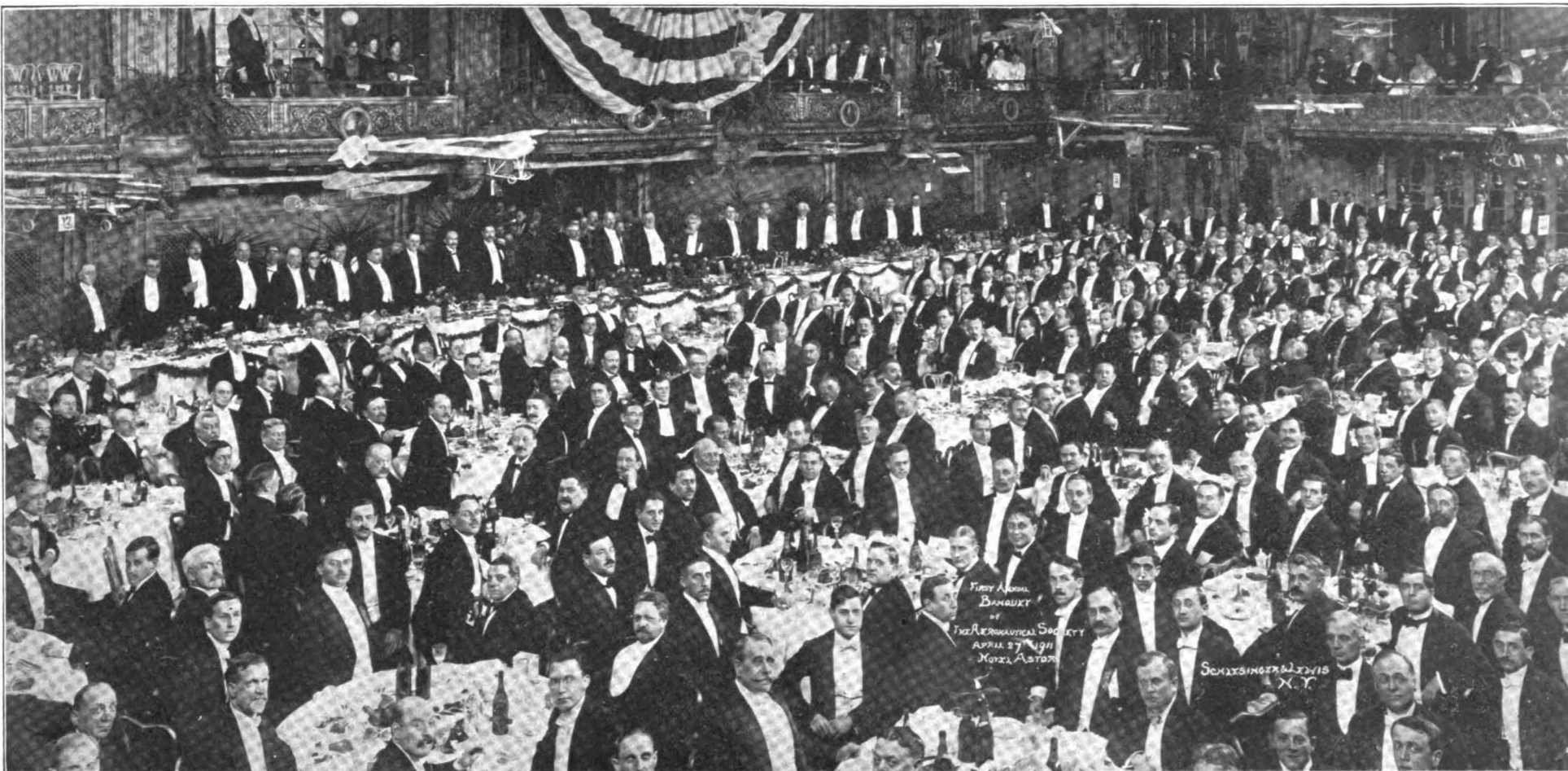
There should also be some committee or section to give attention to advertisers who offer for unreasonably small amounts to furnish standard aeroplanes; they, of course, catch many of the uninitiated who always are an easy prey to sharks, and this sort of thing intimidates legitimate prospective interests.

Then there are special lines of work which should be encouraged. One of the greatest difficulties of the beginner has been to obtain proper flying ground. You all remember Mr. Curtiss. Hardly two years ago this society purchased the first aeroplane he ever sold. Mr. Curtiss at that time could scarcely go into the air and make a turn at Morris Park. We all know what remarkable things he has done since. He also developed the water machine sometimes called the hydroplane, and it is possible that this is going to be the solution of the difficulty of aviators in trying to find proper places to fly. There is plenty of open water that could be used for this purpose, while it is difficult to secure suitable landing places on the solid earth, especially near the big cities.

Now, gentlemen, the kind of work we are engaged in promises a great future, but requires active support and co-operation. We want you to feel that you are always welcome at the rooms of the society and we hope you will become interested and attend the lectures.

The development of the aeroplane and its manufacture has assumed vast proportions. This is especially true in Europe, even much more than in the United States. If you will investigate the facts, you will find that there are quite a few French concerns employing upwards of 500 men in the manufacture of aeroplanes and motors and propellers. Last season alone, more than a million and a half of francs were expended in France for crates for aeroplanes. In the United States development has been comparatively very small.

We intend to investigate and promote all the phases of this very interesting science and will know more about it in the future. Come to our lectures and be one of us—you will all be cordially welcomed.



BANQUET OF THE AERONAUTICAL SOCIETY, ASTOR HOTEL, NEW YORK, APRIL 27.

Those present were: Hon. John J. Fitzgerald, Dr. John Henry MacCracken, Hon. Ernest R. Ackerman, Hon. Timothy L. Woodruff, Hon. J. S. Martine, General Benjamin F. Tracey, Hon. James M. Beck, Arthur Brisbane, Esq., Hon. John W. Goff, Lee S. Burridge, Esq., Hon. Nathan Straus, Pierre S. du Pont, Esq., Maj. A. W. Butt, Col. John Jacob Astor, Hiram Percy Maxim, Esq., Chas. E. Abbott, William N. Abee, Chas. E. Acker, John D. Adams, Dunbar B. Adams, Lewis R. Adams, Herrick Aiken, L. P. Alford, James M. Anderson, W.B. Armstrong, Geo. E. Armstrong, Jr., J. Loring Arnold, R. F. Arnot, N. Arrowsmith, Edward Ashforth, A. T. Atherhold, E. Atkinson, Herbert Baker, J. W. Ball, Arthur J. Baldwin, Thos. S. Baldwin, O. F. Bancroft, W. E. Banks, H. M. Barksdale, Alpheus F. Barnes, Dr. Barney, E. C. Barrett, W. S. Barstow, Stanley Y. Beach, Anson McCook Beard, Douglas Beardsley, David S. Beasley, Jr., Geo. W. Beatty, Chas. B. Beckwith, S. F. Beckwith, Curtis Bell, Peter Bentley, Chas. E. Berner, William Berri, Wilson Berryman, Bernhard M. Beskow, Chas. R. DeBevoise, A. H. Bickmore, Harold Binney, Archibald Black, Donald R. Black, C. F. Blackmore, Collins P. Bliss, Sidney B. Bowman, Geo. A. Bradt, S. Brauner, P. Brauner, Eug. V. Brewster, J. D. Brown, Walter E. Brown, Geo. J. Bryan, B. A. Bullock, Henry J. Burchell, James Burchell, Thos. H. Burchell, W. Starling Burgess, Wm. Wallace Burnham, Geo. H. Burr, F. C. Burridge, James Butler, W. H. Button, Harry Buxton, S. T. Cameron, Wm. M. Campbell, Frank Canby, Allen A. Canton, F. Capdavia, Macy Carhart, Francis X. Carmody, James Carruthers, R. R. M. Carpenter, J. M. Carples, Douglas P. Carritte, J. P. Carritte, P. Carter, J. M. Ceballos, Clarence Edw. Chapman, M. S. Chapelle, Fred. Charavay, John Lewis Childs, E. N. Chilson, Chas. Chudleigh, W. C. Church, John Holly Clark, Wm. P. Clyde, Wm. P. Clyde, Jr., Frederic B. Cochran, T. R. Coffin, Howard A. Colby, Geo. T. Colter, Louis R. Compton, S. D. Conger, Frank A. Connable, G. A. Cooper, R. E. L. Costan, M. A. H. Courmettes, J. W. Cox, J. S. Coxey, William Crawford, Byron Creamer, Preston Creighel, Harris N. Crist, Ernest Crowhurst, Frank Daniels, Jr., Lawrence Dare, Thomas Davis Day, Ashby Deering, J. R. De Lamar, Laban W. Dennis, Henry Irving Dodge, C. Carleton Dominick, R. J. Donovan, Baron d'Orcy, Felix Doubleday, F. N. Doubleday, Nelson Doubleday, Wm. L. Douglass, W. V. Downer, John H. Downer, Michael Dreicer, Geo. H. Dresler, Wm. Dreyfus, Jas. F. Duhamel, Louis Duncan, C. W. Dumont, A. Felix Du Pont, Ernest Du Pont, Felix Du Pont, Francis I. Dupont, Irene Du Pont, Edward Durant, C. V. Dykeman, R. J. Ecob, Thos. Edwin Eldridge, Robert E. Ely, Louis G. Erickson, Allen W. Everts, Frank Eveland, Jos. G. Ewing, Walter L. Fairchild, J. G. Faist, Romolo Fanciulli, W. H. Fauber, Francis J. C. Ferris, Leon P. Feustman, Herbert L. Fielding, Jacob E. Fickel, W. G. Filer, E. W. Findley, Frank FitzSimmons, Ludwig C. Flaccus, Arnold R. Fleming, C. W. Force, R. K. Forsyth, Fred Foster, Geo. G. Foster, W. E. Franklin, J. S. Frazee, Leopold Friedrich, H. J. Frost, B. F. Funk, I. K. Funk, Wilfred Funk, Herbert B. Fuller, Bernard Gaffney, R. D. Garden, Wm. V. P. Garretson, Hugo C. Gibson, G. Curtis Gillespie, Henry Webster Gillett, Henry Ginnel, W. S. Ginell, Saml. Glucroft, G. H. Godley, E. E. Gold, H. C. Goode, Geo. H. Graham, C. P. Gray, Alexander M. Green, Franklin N. Gregory, H. B. Griffin, Samuel E. Hall, Wm. Hallock, J. H. Halloran, Chas. K. Hamilton, Wm. J. Hammer, Rudolph Hanau, Carl L. Hanau, W. D. Hanford, Hobart B. Hankins, Herbert B. Harding, E. Paul Harman, Clifford B. Harmon, Melvin Conkling Hascall, Henry N. Hausman, Edward H. Haven, Forbes Hawkes, D. A. Hawkins, Chas. R. Hedden, Edgar L. Heilprin, Carl Herbert, D. W. Hering, Leo. S. Herzog, F. Benedict Herzog, Robert Hewitt, Herbert M. Hill, H. Horvey Hill, John A. Hill, H. W. Hillman, Wm. T. Hoelin, Edgar P. Holliday, R. H. Hood, Edward P. Hopkins, F. L. V. Hoppin, A. E. Horn, Wm. Hoster, C. W. Howell, Jr., W. N. Howell, Jr., Geo. L. Hubbell, Chas. H. Hughes, F. E. Humphreys, Frank Landin Humphreys, Miller Reese Hutchinson, Thadeus P. Hyatt, Jas. H. Hyslop, E. F. Ingraham, Chas. H. Inman, Joseph E. Ismay, Thos. P. Jackson, J. C. Jenkins, E. M. Johnson, Frank V. Johnson, Geo. H. Johnson, A. G. Johnson, E. L. Johnson, G. H. Johnson, I. B. Johnson, I. W. Johnson, Ernest L. Jones, M. B. Jones, Wm. T. Jones, John Jones, C. Joseph, E. L. Judkins, August Jurgensen, Walter J. Kennedy, F. H. Kenny, W. R. Kimball, Wm. P. Kiggins, Chas. Kingsley, V. Hugo Koehler, Chas. Kohler, Arnold Kruckman, C. J. Lake, Simon Lake, Ernest Lallier, K. Landmesser, Leonard Landes, Dr. Lang, E. Tascaris,

(Continued on next page)

Geo. A. Lawrence, Alfred W. Lawson, L. J. Lesh, Leopold Lewis, John Lewis, Ladis Lewkowicz, Hon. John H. Lied, Jr., Frederick Linden, Thos. L. B. Lineburgh, Emil J. Limer, C. H. De Lion, Robt. McAllister Lloyd, J. A. Lomax, Herbert Longendyke, A. C. Lord, Judson Loundsbury, John W. Loveland, D. J. Lyon, Emory S. Lyon, Wilson D. Lyon, Robert T. Lozier, A. MacDougall, Benjamin Mallam, H. E. Manville, S. S. Mapes, Theo. H. Marburg, Fred L. Marshall, C. A. L. Massie, Seabury C. Mastick, John B. Maus, Reginald Maxwell, Fred J. Mayer, John B. Mayo, S. S. McClure, Willis McCormick, John H. McCovey, Dennis McEvoy, J. J. McKelvey, J. E. Meek, H. Meisinger, H. W. Merriam, G. Norton Miller, Jr., Geo. W. Miller, Hoffman Miller, Spencer Miller, Wm. W. Miller, J. H. Mink, O. B. Mitcham, J. Ad. Mollenhauer, Monell Ambrose, Russell W. Moore, Wm. J. Moran, Charles Morgan, W. B. Morrison, Willard S. Morse, Chas. D. Mosher, M. A. Mosle, John P. Munn, Fred T. Murphy, Patrick Francis Murphy, Wolfred Nelson, W. A. Nelson, Jr., Mesrop Newton, E. Newgold, W. A. Nicolay, F. C. Nieschlag, Nathaniel Niles, L. C. Nilson, Rex C. Northwood, N. R. Norton, William Oberhardt, Thos. W. O'Connor, L. J. O'Reilly, C. W. Osborn, John A. Overton, I. J. A. Owens, Chas. A. Paar, G. L. Palmer, Michael A. Paresen, Noel J. Pargon, Herschel C. Parker, Orrel A. Parker, Herbert V. Pease, Chas. W. Pearson, H. H. Pell, S. H. P. Pell, J. W. Perry, P. A. Peterson, Richard Oliver Phillips, Jr., Percy Pierce, Henry Pierson, Hamilton Piltz, Chas. W. Place, H. C. Poillon, N. R. Potter, F. H. Pough, W. Augustus Pratt, Chas. F. Pray, William Pritchard, E. A. Quayle, Jos. F. Randolph, W. S. Rauch, Benj. Reass, Fred W. Reid, A. J. Reilly, Isaac L. Rice, W. B. Richards, Henry Richardson, G. A. Richardson, W. Payson Richardson, E. J. Riederer, B. E. Roberts, Geo. W. Roberts, William Robinson, Allen Rogers, N. Wash. Rohr, Jordan J. Rollins, DeWitt P. Rosenheim, Otto A. Rosalsky, Charles R. Rosevear, A. L. Rotch, David Rousseau, John T. Rowland, Jr., Jas. A. Robertson, W. B. Ruggles, Arthur Kyle, J. Salkind, John W. Satterfield, A. G. Sauter, Edward H. Sayre, Fred A. Scheffler, E. R. Scheffel, Wm. Schimpf, F. W. Schmidt, Carl E. Schultze, E. E. Schwarzkopf, Ray W. Scott, W. E. Scarritt, Alonzo R. See, Alva B. See, John F. Seekamp, L. G. Seeley, Robt. H. Sexton, Ralph L. Shainwald, J. H. Shale, Paul Sheldon, O. B. Sherwood, Arch. M. Shady, Robert Lee Sim, Geo. H. Simmerman, John T. Simpson, Frank R. Slocum, J. J. Slocum, Geo. S. Smith, H. H. Smith, Jesse M. Smith, C. O. Smyth, Herbert C. Smyth, Neptune B. Smythe, A. M. Snedeker, A. C. Soper, Chas. D. Spence, Jr., Elmer A. Sperry, A. J. Stadler, Walter W. Sternberger, Adman Stahle, Edwin Sternberger, H. S. Sternberger, Harry R. Stewart, J. R. Storer, W. L. Stow, James Louis Suffern, Sol. Sufrin, Jos. E. Stevens, A. Leo Stevens, A. B. Strange, Chas. Strauss, Eugene Strauss, M. Stuhler, D. S. Sullivan, Francis H. Tabor, Jokichi Takamine, G. E. Tarbell, Franklin Taylor, Leroy M. Taylor, U. Grant Teetsell, Fred C. Thomas, John L. Tysili, ———— Thomas, H. G. Thompson, M. H. Thor, David Todd, Geo. Oakley Totten, Jr., H. A. Toulmin, W. E. Townen, Joseph T. Tower, John Frederick Tracy, Dwight Tracy, Wm. Dwight Tracy, Albert C. Triaca, Geo. C. Turner, K. M. Turner, Robt. M. Thompson, Thos. T. Tuttle, W. Irving Twombly, Walter H. Turner, Inglis M. Uppercu, R. H. Upson, Yves De Villers, Geo. J. Vestner, Baron Von Dewitz, Arthur P. Van Gelder, Harry A. Van Gilder, Mr. Van Muffling, Eugene Van Rensselaer, Reo Stephen Van Rensselaer, G. V. Van der Borcht, A. A. Vascelus, C. E. Voigt, Alfred W. Wagg, G. N. Walsh, Wm. B. Walker, J. Bernard Walker, H. W. Walden, E. Waldenberger, Worcester R. Warner, H. R. Wardell, Reyburn Watres, W. de H. Washington, E. Wassermann, Louis T. Weiss, J. R. Westerfield, Geo. H. Waters, Ed. L. Wertheim, Chas. Werner, Walter Wellman, Louis T. Weiss, Jr., Michael H. Whalen, Robert Whitaker, Wm. Whitehouse, Louis R. Whittemore, Edward J. Wheeler, Hunter L. Wilson, E. B. Wilson, Keyes Winter, A. D. Wittemann, C. A. Wittemann, H. Winterfelt, Henry J. Winter, L. J. Wing, Louis Wiley, Pliny W. Williamson, F. G. Winkler, I. W. Wortman, Richard Wolberg, Charles Wake, Carlos De Zafra.

Aero Club of America

Advance proofsheets of the year book of the Aero Club of America for 1911 have just been received and show the work to be the most elaborate this or any other club has ever issued in addition to containing the full list of the present and former officers and members of the club, its constitution and by-laws, it includes a vast amount of informative matter regarding aviation and aviation organizations throughout the world. Full accounts appear of the races last year for the Gordon Bennett Cup-race (balloons and aviation) both of which took place in this country.

In addition there are the world's records and the American records in both aviation and ballooning and a two-page map of the United States and Canada, showing the start of the international balloon race and the landing place of each balloon. The club has eight honorary members: the

President of the United States, the Governor of the State of New York, the Mayor of the City of New York, Comte Henri de la Vaux, Lieutenant Frank Purdy Lahm, U. S. A., Wilbur Wright, Orville Wright and James Gordon Bennett.

The seven life members are William Wallace Young, Allan A. Ryan, Colonel John Jacob Astor, Courtlandt F. Bishop, James A. Blair, Jr., William W. Miller and Archer M. Huntington.

There are 347 resident members and 142 non-resident members, making the total membership 505.

The club, as representative of the International Aeronautic Federation in America, has licensed forty spherical balloon pilots.

1, J. C. McCoy; 2, A. Leo Stevens; 3, Frank S. Lahm; 4, Lieutenant Frank P. Lahm, U. S. A.; 5, Carl E. Myers; 6, Henry B. Hersey; 7, Alan R. Hawley; 8, Captain Charles DeF. Chandler, U. S. A.; 9, Thomas S. Baldwin; 10, Albert C. Triaca; 11, A. Holland Forbes; 12, Charles J. Glidden; 14, Nason Henry Arnold; 15, J. H. Wade, Jr.; 16, A. H. Morgan; 17, Charles Walsh; 18, A. B. Lambert; 19, Charles Levée; 20, H. E. Honeywell; 21, G. L. Bumbaugh; 22, Dr. R. M. Randall; 23, Carl G. Fisher; 24, John Berry; 25, William F. Whitehouse; 26, Edgar W. Mix; 27, S. Louis von Phil; 28, Clifford B. Harmon; 29, James Bemis; 30, Henry H. Clayton; 31, Roy A. Knabenshue; 32, George B. Harrison; 33, Jay B. Benton; 34, J. Walter Flagg; 35, William T. Assman; 36, Arthur Atherholt; 37, William Van Sleet; 38, Dr. L. E. Custer; 39, E. S. Cole; 40, Horace B. Wild.

There are three dirigible balloon pilots—Thomas S. Baldwin, Frank P. Lahm and Horace B. Wild.

Twenty-seven aviators have been licensed in this order:

1, Glenn H. Curtiss; 2, Frank P. Lahm; 3, Louis Paulhan; 4, Orville Wright; 5, Wilbur Wright; 6, Clifford B. Harmon; 7, Thomas S. Baldwin; 8, J. Armstrong Drexel; 9, Todd Schriever; 10, Charles F. Willard; 11, J. C. Mars; 12, Charles K. Hamilton; 13, John B. Moisant (deceased); 14, Charles Weymann; 15, Arthur Stone; 16, Harry S. Harkness; 17, Eugene Ely; 18, J. A. D. McCurdy; 19, Walter R. Brookings; 20, Ralph Johnstone (deceased); 21, Arch Hoxsey (deceased); 22, J. C. Turpin; 23, A. L. Welsh; 24, J. J. Frisbie; 25, P. O. Parmelee; 26, Frank C. Coffyn; 27, Lincoln Beachey.

Aero Club of Long Island

By Frederick Rockstroh, Vice President

At the May meeting of the Aero Club of Long Island it was definitely announced that trial flights would begin in a few weeks by members of the club. Heretofore the club confined its energies mostly to instruction of its members and the building up of a permanent organization.

Francis Willson, member, is assembling his Curtiss type biplane at Mineola. It possesses features never before embodied in a flying machine and is expected to open the eyes of some of the veterans of the old field. It is built on thoroughly sound principles and has already won the admiration of Charles K. Hamilton.

A Chanute-type glider of exceptional efficiency has been built after his own modifications by Thomas Kramer, member, aged 18, and has already made about 150 flights on the hills near Long Beach. Young Kramer has become expert in gliding and is willing to match his machine and skill with any amateur. This is his fifth glider and he has made nearly 1,000 glides.

The motorless bi-plane of William and Henry Newel, members, is complete and will be shipped to Mineola and set up in preparation for towed flight prior to the installation of its motor. It is of the headless type, simple in construction and

equipped with the Newell method of control.

Charles D. Spence, member, is having constructed a 40-foot monoplane embodying the most advanced and practical methods of trussing and control yet attained in that type of flying machine. The building of the machine is well under way. Mr. Spence's invention is a substantial modification of the well-known Pratt truss.

The Aero Club of Long Island is an educative society, and invites inquiries from those who wish to associate with it. Address Secretary, Aero Club of Long Island, Richmond Hill, L. I.

The Harvard Aeronautical Society

By Edwin C. Brown, Secretary

The First Intercollegiate Glider Meet, scheduled to be held on May 3-6 under the management of the Harvard Aeronautical Society on the Harvard Aviation Field, Atlantic, Mass., has been postponed to May 27-30, inclusive. This change has been found to be more convenient to the great majority of the Aero Clubs interested. The new dates include Saturday, the second day of the Intercollegiate track games in Cambridge; Sunday, when there will be no contested flying, and Tuesday, a holiday, and cannot, therefore, seriously interfere with college work. The meet is to be held with the sanction and support of the Intercollegiate Aeronautical Association.

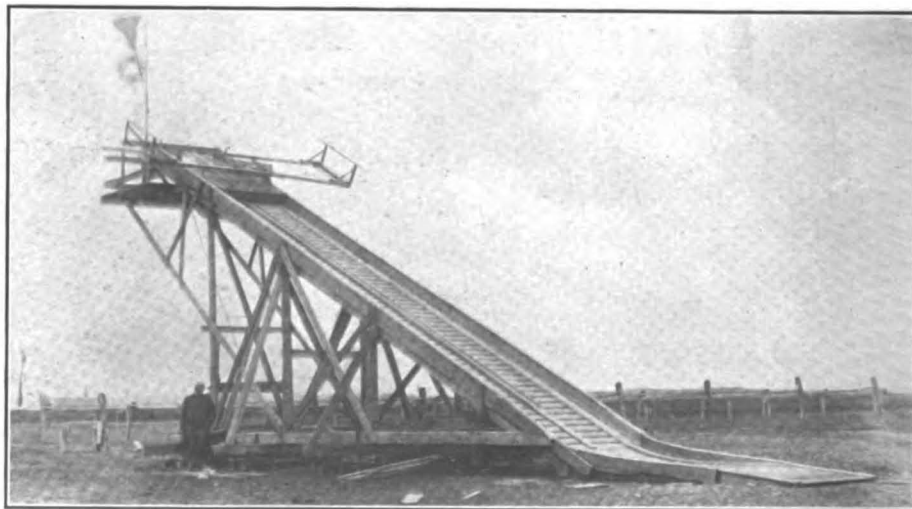
The Gliding Slope, a photograph of which accompanies this, is completed and is now being used in preliminary practice. It is 25 feet high with a slope of 52 feet and is equipped with a light truck and rack which run on a track down the slope and from which the gliders are launched. A weight and pulley attachment is being added so that increased initial velocity may be obtained. The whole structure is novel in that it is easily turned to face any prevailing wind, and should prove valuable in gliding contests and experiments.

Massachusetts Institute of Technology and Harvard have their machines on the field, and when work on the new hangars, now under construction, is completed, other gliders will be moved to the field. It is possible that the W. Starling Burgess Company will have its aeroplanes in action at its new school on the field at the time of the glider meet.

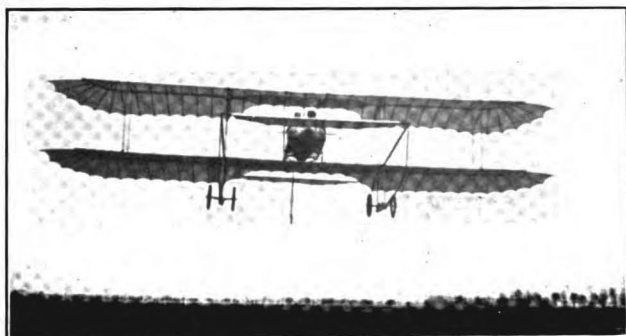
To date eleven colleges and universities have entered the meet. The final list of events and officials will be announced later. Colleges wishing to enter should communicate with Edwin C. Brown, Secretary, Harvard Aeronautical Society, 34 Dana Chambers, Cambridge, Mass.

Aero Club of Connecticut

The first banquet of the Aero Club of Connecticut was held at the Stratfield Hotel, Bridgeport, Conn., April 20, and was very successful. About one hundred members and guests were present. A. Holland Forbes, President of the club, presided as toastmaster and cleverly introduced the speakers, who responded to the following toasts: "Greetings of Bridgeport," Hon. Edward T. Buckingham; "The Aero Club of America," Mr. Allan A. Ryan; "Aeroplaning in Japan and China," Capt. Thomas S. Baldwin; "Aviation as a Commercial Enterprise," Mr. Alfred T. Moisant; "Ballooning as a Gentleman's Sport," Mr. Alan R. Hawley; "The State of Connecticut," Hon. Stiles Judson; "What of the Future," Mr. Henry A. Wise Wood; "The Possibilities of Motor Power in Aeroplanes," Mr. Hiram Percy Maxim; "The Development of the Aeroplane," Mr. Augustus Post; "Aeroplaning in England and France," Mr. William C. Beers.



HARVARD AERONAUTIC SOCIETY GLIDING SLOPE.



THE LATEST PAULHAN PASSENGER CARRYING BIPLANE IN FLIGHT.

FOREIGN NEWS

Argentina

Some long flights have been made in Argentina by André, who is using a Farman biplane. On April 23rd, he made a flight of 300 kiloms, from Mar del Plata to Ferrari, passing over Marpu, Dolores and Charcomus, and on the following day he continued his journey to Buenos Ayres. Cattaneo also is indulging in cross-country flying on his Blériot.

China

Mons. René Vallon, of Paris, piloted a Sommer biplane over Shanghai for thirty-five minutes on April 24th at a height of 800 metres. This was the longest flight ever made in China.

Denmark

On April 21st Cozic flew over the city of Copenhagen several times during a flight of 1 hr. 13 mins., thereby winning a prize of \$400. While he was attempting to land a gust of wind struck the machine causing it to collide with an aeroplane belonging to Svendsen, with the result that both machines were badly damaged, although the aviator escaped unhurt.

England

Mr. A. V. Roe, has produced a new front-propeller biplane along the lines of his standard triplanes, which met with instant success at its first trial. On April 17th, in the hands of Mr. Pixton it succeeded in flying for 1 hr. 27 mins.

Work at the different British aerodromes continues to increase and many new and promising pilots are being turned out daily. At the Brookland's grounds A. V. Roe & Company employ a staff of competent aviators and mechanics who train pupils to fly either monoplanes, biplanes or triplanes. In addition to the Roe school there are many private aviators located on the ground who fly prominent makes of machines and give flying instructions to a limited number of pupils. London Aerodrome, Blériot School. On April 25th there was considerable activity at the Blériot School and the pupils were busy all day. A new American pupil, Mr. Dycott of New York, joined the school and was given his first lesson.

M. Prier, not content with having succeeded in flying from London to Paris without a stop, is now contemplating the repetition of this performance, but this time with a passenger on board his Blériot monoplane.

France

MARSEILLES-ALGIERS.

The Parisian aeronautical newspaper "L'Aéro," is organizing a flying contest across the Mediterranean. The competitors will have to accomplish the flight from Marseilles to Algiers in two stages, the first from Marseilles to Minorca Island (400 kil.) the second from Minorca to Algiers (350 kil.).

The rules provide that every machine shall be able to float and the aviators will have to wear life-saving appliances. No machine can be changed during the contest. In Minorca, however, motor and propeller can be exchanged, but this enables the aviator only to be classified for the second stage.

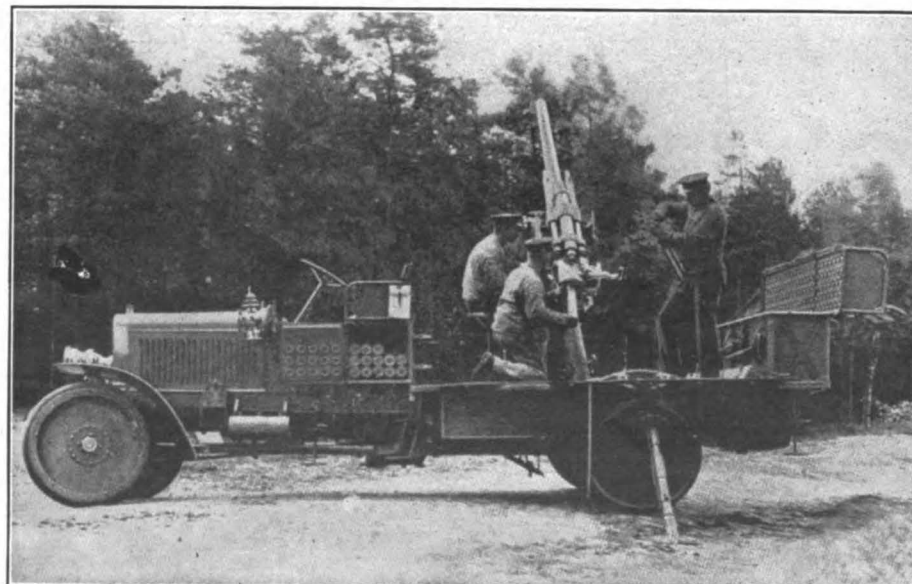
The contest opens on August 13th. Biplanes and monoplanes will be classified separately.

The French daily newspaper "Le Petit Parisien," is organizing a flight from Paris to Madrid. The competitors are to leave Paris on May 21st and the aviator who succeeds in reaching Madrid in the quickest time will be awarded a prize of \$20,000. In the event of none of the competitors reaching Madrid "Le Petit Parisien" will award a prize of \$10,000 in the following order: \$6,000 to the first, \$3,000 to the second and \$1,000 to the third.

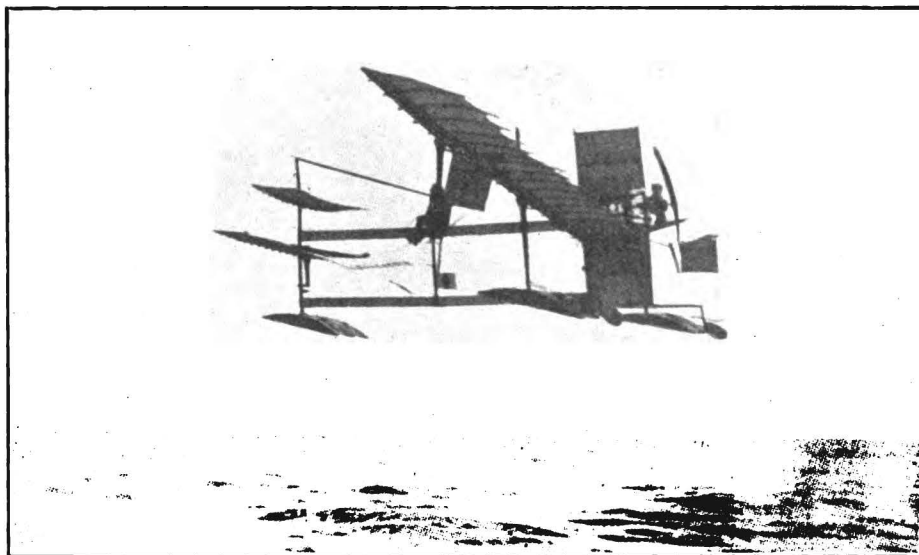
During the week of April 16th a great deal of flying was seen both at the Hanriot and at the Déperdussin schools at Bétheny. On the morning of the 21st for instance, Vasseur was flying



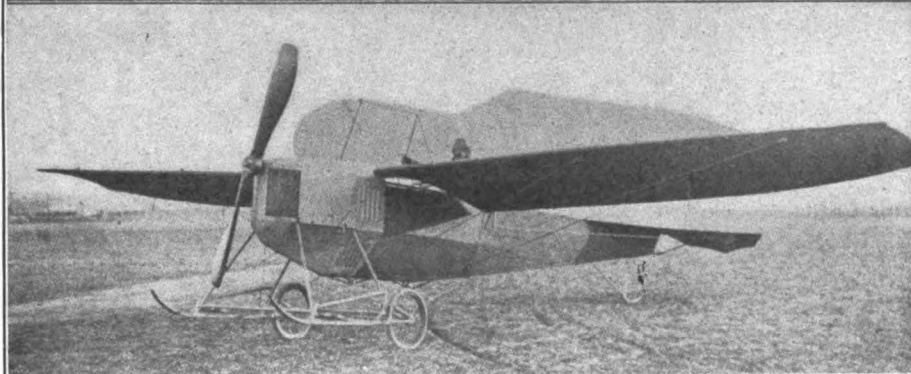
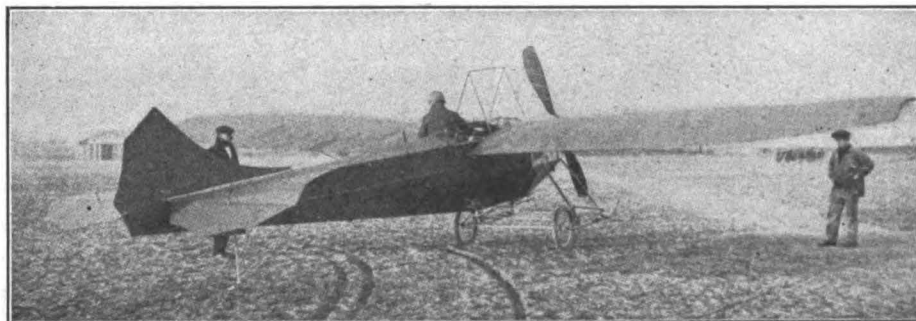
The Oxford and Cambridge Boat Race of 1911, which has become historic owing to the presence of six aeroplanes, which almost monopolised the attention of the crowds, at the expense of the two crews. This illustration shows Oxford leading past Duke's Meadows, with Graham-Gilmour watching the progress from his Bristol-Farman Biplane.



A GERMAN-BUILT AUTOMOBILE GUN FOR AERONAUTICAL WAR.



THE FABRE HYDRO-AEROPLANE IN FLIGHT AT THE MONACO MEETING.



THE NEW CLEMENT-BAYARD MONOPLANE. NOTE THE HOOD OVER THE MOTOR, NOVEL LANDING CHASSIS AND ENCLOSED BODY.



THE LATEST MORANE MONOPLANE.

on his Hanriot for two hours, while during the evening he was up for three hours during which he flew over Rheims and the environs. Marcel Hanriot was also out on the small "Dragon Fly," while his father was flying for two hours with Count d'Allincourt on a 100 H.P. Clerget-engined monoplane. Lenfant, the chief pilot of the Hanriot school was also out with passengers, and carried two from Bétheny over Vitry and the Bourgogne Woods to Mourmelon and back. Count d'Allincourt was flying for an hour by himself, while Wittot, on his Hanriot monoplane, flew around the Bétheny Clock Tower. At the Déperdussin School, Aubrun and Pierre Marie were practising, while Pascal, the chief instructor, was giving lessons to pupils.

During the week of April 23rd, Colliex was practising at Issy with the Voisin-Canard and also with a two-seated biplane of the military type, while Anzani and Darioli, have been testing their Anzani engined Blériots, the former having a 5-cylinder motor and the latter a 3-cylinder one. Another monoplane which was out is the Roux, while Deletang made several short flights on the new Clément-Bayard monoplane.

On the 22nd of April a number of Japanese officers paid a visit to the Farman School at Buc and witnessed several demonstration flights made by Captain Etévé and Lieuts. Lucas and Binda, and afterwards Mr. Maurice Farman took each of the officers for a short trip. Barra also made some speed tests on a racing machine.

Captain Wood, of Messrs. Vickers, Ltd., is proving as much at home at the wheel of a R. E. P. monoplane as he used to be when flying a double decker. On April 20th he carried several passengers at a height of 300 metres and this performance was duplicated on the following day. Busson and Amerigo also made several good trips, the former on April 21st flying over the neighborhood of Versailles while, on the previous day, he was flying for an hour about Buc.

Some splendid flying was seen at Juvisy on April 24th when early in the morning Champel, with Plunz on his biplane, left the aerodrome and was absent for two hours, during which he passed over Buc, St. Cyr and Villacoublay, having covered a distance of 150 kiloms. In the evening he made another excursion, this time for an hour's duration over Loujumeau, Monthery. In the afternoon Cassis and Didier on a Maurice Farman flew over to Buc, while Ladougue and Lieut. J. d'Aiguilou on a Goupy were also flying across country.

At the aerodrome itself good flights were made by Weiss, Gaudart, Gassier and Verdier on their various machines.

As a mark of their appreciation of the services which he has rendered to the club and the movement generally up to the time of his resignation recently, the Aero Club of France has asked M. Léon Barthou to accept an Honorary Vice-Presidency. At the same time it has been decided to present the club's gold medal to him.

Continuing his series of passenger carrying experiments M. Sommer on April 19th took his family and several relations for a jaunt of 20 minutes at a height of 80 metres. The passengers included Mme. Geoffroy, M. Geoffroy and M. Lar-moyer. Afterwards Sommer again took six passengers for a short circular flight over his flying ground, the live weight this time being 450 kilogs., while the oil and gasoline weighed another 100 kilogs.

On April 23rd Sommer was testing two new monoplanes which he has just completed. The first was a single seater built mainly for speed, and over a closed circuit it is anticipated as a result of its preliminary trials, that it will reach a speed of 110 K. P. H. The second monoplane has the two seats arranged in tandem and is said to be capable of doing 90 kiloms. an hour, while the fuel and oil tanks are large enough to contain a three hours' supply.

Mounting his Vinet monoplane on April 20th, Liger set out to fly from Jargeau to Paris. He passed Orleans at a height of 1,000 metres, but soon after found the squally winds too trying, and therefore came down at Artenay, having traversed 40 kiloms. in 28 mins.

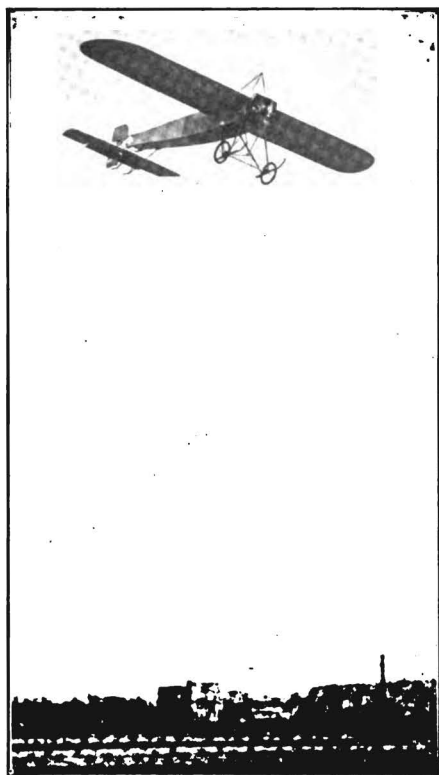
Accompanied by his friend Lafosie, Paul Le-prince, on his Nieuport monoplane, flew over Rheims and around the Cathedral on April 21st, his speed during the trip working out to an average of 95 kiloms. an hour.

The Parisian daily paper "Le Petit Journal" is organizing an aerial race between Paris and Rome, for which already \$80,000 in prizes has been subscribed. The route will comprise stops at Avignon, Nice, Leghorn from which latter place it will follow the Italian coast.

On April 12th, Louis Bréguet, the builder of aeroplanes, flew two of his machines before the Military Aerial Commission. The test was a brilliant demonstration of the excellent qualities of his machines as Bréguet far exceeded the conditions asked by the commission, which were: flight in 6 metre wind, 65 km. speed, 200 kg. additional weight and 300 metres to be reached in 10 min. Instead Bréguet flew in a 14 metre wind, at 92 km. speed, carried 230 kg. additional weight and reached 300 metres in seven minutes.

On May 11th, Nieuport created a new world's record at Mourmelon by flying 62.1 miles in fifty minutes four seconds.

Using a Blériot monoplane to which he has



THE MORANE MONOPLANE TRAVELING 90 MILES AN HOUR WITH THE WIND.

fitted a five-cylinder Viale engine, Dancourt has made several lengthy cross-country flights in the neighborhood of Meru. On April 20th, he was flying over Lormaison, Marivault, Sandricourt and Meru.

Pierre Védérine, who left Paris in his monoplane on April 22nd, arrived at Pau on April 24th having covered the circuitous course of 500 miles in six hours and fifty-five minutes actual flying time, or at the rate of 72.28 miles an hour. He thus wins the prize of \$4,000 offered by the *Aéro-Club de Béarn* for the fastest flight between the cities. Védérine made several long stops en route.

Germany

On April 21st the German dirigible Parseval VI came to grief while attempting a non-stop flight from Berlin to Amsterdam north of Brunswick. The accident was caused by a gust of wind that caused the dirigible to slow up when flying low. The drag rope caught in the branches of a tree which gave the balloon a jerk which upset its equilibrium. This, combined with the force of the wind, made it necessary to make an immediate descent, which was done somewhat hastily and the car of the dirigible was somewhat, though not seriously damaged. On account of the wind the rip cord of the envelope had to be pulled and a new start pending repairs, was out of the question so the dirigible was sent to its shed for an overhauling.

Lieut. Roser, of the German army, who recently obtained an aviation pilot's license fell with his aeroplane from a height of 150 feet on May 2nd and was seriously injured.

Bekemüller, a German aviator, was killed at the Johannisthal aviation grounds when his aeroplane crashed against a house that had been hidden from his view by a thick fog.

Dr. Wittenstein, a newly certificated German aviator, carried out a successful journey from Munich to Augsburg recently, this being the first time Augsburg has been visited by an aeroplane. On the return journey Wittenstein was forced to land near Munich as a wire snapped, fortunately without any unpleasant results.

On April 22 last, Prince Henry of Prussia beat his own duration record by staying in the air for a period of 40 minutes during which he covered a distance of 33 miles, then having to descend owing to the motor giving trouble. The flight was witnessed by five regiments who were drilling at the time, and Prince Henry maintained an average altitude of 500 ft.

Eugene Wienziens is now a Blériot pilot. At Munich he carried out a pretty idea during the celebrations in honor of the Prince Regent's 90th birthday, when he appeared high in air at the unveiling of a monument and scattered roses out of a basket attached to the plane on the assembled royalties and invited guests.

After careful sorting and weeding three hundred German officers have remained from whom to choose the fifty or sixty men for a course of instruction at Doeberitz. Nominations simply poured in from all regiments. The instructors are seven officers all of them good pilots themselves, the course lasting three months.

The German elimination race for the Gordon Bennett balloon race which starts from Kansas City, October 5, is fixed for May 19 under the auspices of the Silesian Aero Club at Breslau.

The new Zeppelin air-cruiser "Deutschland" arrived in Duesseldorf after a circular journey from Friedrichshafen to Baden-Baden, Stuttgart and Frankfurt. It embodies in its structure all the parts that were rescued from the disaster in the Teutoburger Forest last year, when the original "Deutschland" came to grief whilst piloting a party of journalists. But fate has already not been very kind to the new dirigible as, on attempting to take it out of its Duesseldorf hangar, the order was not fully understood and the dirigible

was crushed against the wall ripping away the rear propeller on the right and tearing the envelope.

Russia

On April 20th, Capt. Alexandroff paid a visit to M. Bréguet's headquarters near Douai, to witness a Bréguet biplane built for the Russian Army put through its paces. With M. Bréguet himself at the wheel the machine had no difficulty in passing the tests laid down, and Capt. Alexandroff expressed himself thoroughly satisfied with the result.

Switzerland

Colonel Théodore Schaeck, the Swiss aeronaut who competed in last year's Gordon Bennett cup-race at St. Louis, died on May 2nd at Berne.

Colonel Schaeck piloted the balloon *Helvetia*, which landed at Ville Marie, Quebec, having covered a distance of 826 miles. The balloon took fourth place in the contest.



THE SOMMER BIPLANE WHICH RECENTLY MADE A SUCCESSFUL FLIGHT WITH 13 PERSONS ABOARD.

Dear Mr. Lawson:

In answer to the enquiry of one of your readers which you refer to me (as to what are the duration records for continuous flight of present-day aeronautic engines), I have made up the following list, which may contain some omissions, but which, I think, will be found to be substantially correct.

As regards the Panhard, the flight referred to was not, strictly speaking, a continuous one, for Dubonnet stopped for a few seconds after about an hour's flight to enquire his way; the engine was not stopped, however, but merely voluntarily slowed down, so it seems only fair to credit it with the full figures.

There are a number of good motors, such as Clerget, Grégoire-Gyp. Labor Aviation, Daimler, etc., etc., the best performances of which I am not aware of.

Very sincerely,

G. F. Campbell Wood.

May 12, 1911.

ENGINE	TIME	PILOT
Gnome—50 H. P.....	8 hrs. 12' 47" $\frac{3}{4}$	(H. Farman)
Renault	7 hrs. 48' 31" $\frac{3}{4}$	(Tabuteau)
Gnome—70 H. P.....	7 hrs. 11'	(H. Farman)
R. E. P.....	6 hrs. 29' 19" $\frac{1}{2}$	(Bournique)
Green	4 hrs. 47'	(Cody)
Antoinette—50 H. P.....	4 hrs. 37' 00" $\frac{3}{4}$	(Labouchère)
Argus	4 hrs. 37'	(Amerigo)
E. N. V.....	4 hrs. 07'	(Sopwith)
N. A. C. (2 cycle).....	3 hrs. 55'	(Ogilvie)
Wright—30 H. P.....	3 hrs. 39' 49" $\frac{1}{2}$	(Parmelee)
Vivinus	2 hrs. 27' 15"	(Sommer)
Curtiss—60 H. P.....	2 hrs. 11'	(McCurdy)
Anzani, 1910—30 H. P.....	1 hr. 58'	
Anzani—40 H. P.....	1 hr. 57' 12"	(Train)
Panhard-Levassor	1 hr. 40' 50" $\frac{1}{2}$	(Dubonnet)
Anzani, 1909—24-30 H. P.....	1 hr. 30' 28"	(de Lesseps)
Gnome—100 H. P.....	1 hr. 07'	(G.-White)
Grade (2 cycle).....	1 hr. 04'	(Grade)
Nieuport—40 H. P.....	45'	(Nieuport)

THE EVOLUTION OF MILITARY AVIATION IN FRANCE

By Henry Woodhouse

SOME weeks ago the inhabitants of Pau and that part of Southeastern France extending from Pau to Tarbes, were regaled with the sight of an aerial squadron of monoplanes—five Blériots piloted by officers of the French army—flying from Pau to Tarbes and again from Tarbes to Pau.

The sight would have been startling in America and almost anywhere else, but it did not startle those who saw it; they were just surprised at the innovation. Pau is one of the most important flying grounds of France and one of the oldest. The Blériot, Wright and other flying schools are there, and flying is rather common.

The witnesses of these flights showed their enthusiasm, however, for, like the Germans, the French are ardent believers of military aeronautics and never fail to show their appreciation of any efforts in this line.

The flying officers made Tarbes, twenty-two miles away, and were received and feted by the officers of the garrison there; after which they again mounted their winged steeds, circled over the crowd en groupe, and returned to Pau.

Although the affair was unofficial and just a casual experiment, its significance was great. The feat was especially important, in that it showed the meteoric rise of French military aviation in the last nine months.

French military aviation is barely a year old, and when it started, the outlook for an efficient aviation body was anything but bright. The French government, like the American government, was, until recently the reverse of liberal in this respect. Seemingly, because they conducted costly experiments years ago (those of Ader in France and Langley in America) without attaining practical results, both governments refused to adopt the aeroplane until the very last, when it was impossible to do otherwise without incurring public criticism.

Early last year, when the first real interest in military aviation in France was manifested, a number of officers of the French army were practicing with aeroplanes of their own and were achieving successes. The earliest and one of the most successful, Lieutenant Cammerman, earned his pilot license on March 8, 1910; he holds the distinction of having been the first army officer to do so, outside of the late Captain Ferber, who was granted one, as a pioneer. Lieut. Bellenger, who has since been promoted to captain as a reward for his excellent services in the air, and Captain Burgeat, got their licenses on April 5, 1910; they were followed closely by Lieutenants Féquant, Sido and Acquaviva. The achievements of these attracted attention, and soon there came suggestions to the Ministry of War that aeroplanes might prove efficient instruments for scouting. In the meantime, Germany had mobilized her fleet of great dirigibles, and the French Nationalists, comparing the splendid aerial forces of Germany with the limited ones of France, bitterly reproached the Minister of War for allowing France to be so humiliated. It was then the Minister of War proposed to spend a large sum in aerial armament and to buy aeroplanes as well as dirigibles. This was followed by a wrangle, the authorities being divided in opinion as to the efficiency of the two. As Germany ruled supreme with her mammoth airships, most people favored the lighter-than-air craft, and opined that the aeroplane was more or less of a toy, and not to be compared with the big, awe-inspiring airships. The Minister of War, General Brun, did not propose, however, to act solely on outside advice. Knowing much concerning dirigibles and little or nothing about aeroplanes, he went with his staff to the Camp of Chalons, the maneuvering plains which have become such a great aviation centre, to investigate. Twenty-four hours after, France was fairly sure of its aeroplane fleet. What General Brun had seen had convinced him that the aeroplane was a most promising thing, and one far

superior to the dirigible; he accordingly recommended their being taken up. In vain the conservatives cried that the War Department was once more leading France into wild speculations; in vain the partisans of the gas-bags cried that the aeroplane was inefficient compared with the dirigible, and that France would be further humiliated by failure. General Brun followed his convictions and carried the thing to success. That he was not mistaken is now evident. It was indeed a master stroke, for it took the leadership in aerial armament from Germany and gave France a distinction which has called forth the envious admiration of the other powers.

The opposition to aeroplanes did not last long. As fast as the machines were received from the factories they were put in use, and as fast as they were used their utility became evident. The French people are naturally military enthusiasts, and their antagonism to Germany is most radical. When early in June Lieutenant Féquant made two exceptionally good cross-country flights, one lasting one hour and thirty-seven minutes, the other a little over two hours, and Captain Marconnet took photographs, made drawings and noted down general information while in flight, the people became enthusiastic and the Minister of War began reaping praises. These performances had given proof of the aeroplane's efficiency for scouting purposes, and promised great things for the future.

The feats of Féquant and Marconnet were soon duplicated by Lieutenants Bellenger, Cammerman, Captain Etévé and others. Lieutenants Cammerman and Féquant distinguished themselves when taking part in the Circuit de l'Est and won the first and second Prix Militaires, respectively, the first covering 500 miles in ten days, and the second 220 miles.

The great cross-country event, which had kept France in a fever of patriotic exaltation for ten days, was followed by the grand military maneuvers in Picardy, and there, through the number of wonderful feats performed, military aviation gained for itself a solid foundation in the military establishment. Until the French maneuvers the possibility of the aeroplane playing an important part in the war game was still somewhat doubted. It is a toy, it was said, capable only of flight in exceptional weather; then it takes the power of a hundred horses to carry up one or two men in a rocket-like jump from which no practical benefit can be derived. Besides, the element of danger is so great that (quoting verbatim from a critic's comment) "all the present excitement concerning aviation is a palpable and shameful danger to humanity." A week's trial at the military maneuvers refuted all these charges, silenced the critics and brought out the admission that the introduction of the aeroplane in warfare revolutionized military science to the extent of making a change of war tactics necessary.

Some of the feats performed at the maneuvers were indeed wonderful, all the more so because, being a first trial, actions were beset with more or less uncertainty; also the scouting was done under difficulties. There were no special maps, plans or tables to guide the flying scouts, and the men went in the air without any knowledge as to how they could distinguish one armed body from another, how they could estimate the strength of bodies and how they could locate places. That they attained such good results was nothing less than wonderful.

An idea of the advantages afforded by the aeroplane on the military field can be derived from the following facts: The "Red Army," commanded by General Picquart, had on a certain day been heavily attacked; during the ensuing night the outposts kept in touch with the enemy's lines, but nothing was known of his actual intentions and dispositions. Under the usual tactics the actions would have been governed somewhat by guesswork. By employing the aeroplane, however, reliable observations were ob-

tained. A Farman aeroplane with Adjutant Ménard as pilot and Lieut. Sido as observer, was dispatched on a scouting trip early in the morning. Lieut. Sido's report of the reconnaissance to General Picquart reads as follows:

Date, September 16, 1910. Order received to explore the region comprised between Grandvillers, Crévecœur, and Marseille-le-Petit.

Itinerary chosen: Poix, Equennes, Grandvillers, Thieuloy, Fontaine, Lavaganne, Marseille-le-Petit, Rothois, Haute-Epine, Crévecœur-le-Grand, Le Gallet, Choqueuse, Les Renards, Beaudeduit, Sommereux, Dargis, Saint-Romain, Poix.

Left Poix 5:45 A. M. Information obtained:

5:56 A. M.—At Halloy: A cyclist company.

5:59 A. M.—Thieuloy: Sixteen squadrons of cavalry and six batteries at the southwest entrance to the village.

6:05 A. M.—Southwest of Rothois: At the north point of Malmifet wood a company and two batteries of artillery marching towards Marseille-le-Petit.

6:07 A. M.—Haute-Epine (northern entrance of the village): One company of infantry to the right and one to the left of the road from Marseille to Crévecœur; one company at point 188; one company in the village of Haute-Epine.

6:09 A. M.—At the cross roads at Lihus: A squadron of dragoons concealed behind the edge of the wood.

6:15 A. M.—On the road Crévecœur to Marseille, south of Lihus: A squadron marching towards Marseille-le-Petit, and a troop in the village of Lihus.

6:16 A. M.—On the Lihus to Rotangy road: A squadron and two machine guns marching toward Marseille-le-Petit.

6:19 A. M.—Southwest entrance to Crévecœur: Three regiments of cavalry, including cuirassiers, and six batteries of artillery in assembly formation.

7:00 A. M.—Landed at Poix.

This information showed that only the rear guards of the enemy's army were in the vicinity and that therefore the enemy was in retreat. Orders were issued to advance. The move proved to be entirely successful, subsequent developments proving that the day's success was due almost wholly to the good work of the aviator.

Another instance, taken from the report of the opposing army for the last day of the maneuvers, shows that the advantages were well balanced. General Meunier, of the army, ordered Lieutenant Bellenger, of the aviation corps, to make a reconnaissance on the enemy's right wing. Flying out towards a village the scout met the army's cavalry. Reasoning that if the cavalry was there the enemy could not be very far, he searched the woods and valleys around and found the enemy's cavalry at a cross-roads. That body was, no doubt, without knowledge or suspicion of the nearness of the opposing forces, for several squadrons had dismounted. The scout lost no time, made a sketch of the place and position, noted down the important details, then made a bee-line (literally) for the place where he had seen his army's cavalry. Gliding downward he signalled that he had something to communicate, and dropped the message by a group of dragoons. The message was hurried to headquarters and there orders were issued for a division of cavalry to rush over to surprise the enemy. As they were about to start the scout brought a new message, slightly rectifying his first one. The position of the enemy was a kilometre further away than he had estimated at first. The cavalry, with this certain and precise information, rushed to the spot, and so exact had been the report that the enemy was surprised before they had time to remount, and the whole body theoretically captured.

As pointed out above, these results were obtained despite the lack of proper instruments of observation, maps, or knowledge of how bodies of troops looked from on high. With specially colored maps showing villages, roads, streams, woods and landmarks, and giving picture forms of how different military bodies

looked from above, and some means for estimating quantities, the results would have been still more marked. It may here be noted that the aviators were allowed full freedom of action. General Brun thought he could get best results by letting the officers in charge of the aeroplanes use their own judgment, rather than follow orders. They were simply told by the commanding officers that certain reconnaissances were to be made; the details of the accomplishment of their duty was left to their skill and discretion. That was undoubtedly wise, as no one knew more about the matter than the officers themselves.

WHAT WAS LEARNED FROM THE FRENCH MANEUVERS.

Although the maneuvers lasted only a week, and the experiments made with aeroplanes were limited and undoubtedly rather elementary, their importance was obvious, and their widespread effect influenced the other nations. Germany having held her maneuvers at about the same time as France and having used mostly dirigibles, had the opportunity to compare results, and having found the aeroplanes more efficient, changed her program in favor of the latter. In America the French achievements were cited by the military authorities when urging the appropriation for military aeroplanes, and helped, no doubt, in securing them. So it was with England, Russia, Italy and Austria. They all considered the French achievements, and, recognizing the value of the aeroplane as an instrument of war, set about to develop strength in that line.

The experiments were not long or special enough to afford conclusive arguments in the matter of respective worth of aeroplanes and dirigibles, but the results afforded a fair idea of the capacities of the two and the aeroplane proved superior. The most significant point was that the dirigibles were prevented from leaving their station on several occasions by high winds, when the aeroplanes were in the air. Then the dirigibles did much slower work, were, in fact, altogether too slow and too bulky, and were easily captured by the enemy.

Another very strong point which brought the aeroplane in favor was its economy when compared with the dirigible. Twenty aeroplanes could be bought for the price of a dirigible, and the cost of maintenance was proportionately small.

After the grand maneuvers, things developed rapidly. The whole nation was enthusiastic and the army administration had no opposition in carrying out its plans. Numerous officers took up flying, aviation schools and posts were opened in different parts of the country, and everything was generally systematized. The nature of the experiments became most serious, aviators being dispatched on long flights on semi-official business, as though they were regular messengers. Already during the maneuvers Lieutenants Cammerman and Féquant had been dispatched to Bordeaux under orders. A month after Captain Bellenger signalled his promotion from the lieutenantancy by making a remarkable flight from Vincennes to the Camp of Sissonne, two hundred miles, carrying orders from Colonel Estienne. A month later this same officer flew from Vincennes to Mourmelon, one hundred miles. On December 21st Lieutenant Cammerman, accompanied by Captain Hugoni, made a flight of one hundred and forty-five miles, from Chalons to Montigny-sur-Aube and return, lasting 4 hours 2 minutes 35 seconds, a flight that broke three world's records; distance and duration in non-stop passenger flight and cross-country. This feat won them the Prix Lazare Weiller of 25,000 francs, a prize put at the disposition of the Minister of War, to be given to the officer-aviator who made the best flight in 1910, by the same financier, who, as head of the French syndicate, purchased the rights of the Wright patents in France. The next best feat for this prize was performed by Lieutenants Delage and Maillols, who flew from Etampes to Blois, dropped a written message at Blois, then returned to Etampes without stopping, covering a distance of 145 miles.

The best military feat in 1911 is at this writing Captain Bellenger's flight from Vincennes, near Paris, to Pau, in the Pyrenees. Captain Bellenger started from the military aerodrome at Vin-

cennes, on the southeast of Paris, and flew straight to Bordeaux, only stopping on the way for lunch and to get oil and gasoline. He covered the distance in 8 hours 28 minutes, including the time spent in the two stops. The actual time in flight was 5 hours 21 minutes, an average speed of 60.35 miles per hour. On the following day he resumed his journey to Pau, 105 miles from Bordeaux, which he covered without trouble or stop. He flew altogether 428½ miles in 7 hours 5 minutes actual time in the air.

At the same time that Captain Bellenger was making his great flight, Lieutenant Menard, in response to a telegram from the Minister of War, left the camp of Chalons on a Farman, with Captain Camine as passenger, and flew to Satory, 125 miles away, making a safe landing there after having flown 2 hours 5 minutes, at a rate of 60 miles per hour.

This mention of abstract events gives but a faint idea of the actual development of the new military factor. The official report at the closing of 1910 showed that the aeroplanes in actual use were thirty-two in number, of different types, as follows: 11 Henry Farman, 5 Wright, 4 Maurice Farman, 4 Sommer, 2 Breguet, 4 Blériot and 2 Antoinette. Besides these there were about twenty ordered and under construction. The number of military aviators was 34, with a score more under training.

The improvements planned for the year 1911, part of which have already been carried into effect, include, among other things, the acquisition of twenty special aeroplanes and the establishment of aviation posts along the eastern frontier.

The twenty aeroplanes cost an aggregate sum of 1,200,000

francs. The new machines must have a minimum carrying capacity of 300 kilograms; be fitted with three seats for carrying pilot, observer and mechanic, and must have a minimum flying radius of 300 kilometers, at a minimum speed of 60 kilometers per hour.

Early in the year there were enforced special rules and regulations to govern the issue of pilot licenses to military aviators. According to these rules, which are special for the army, aviators, to obtain their licenses, must make a flight of 100 kilometers across country; fly for two hours; reach the 1,200 feet mark, and fly in a wind of twenty miles per hour. They are thus much stricter than the Federation rules. It is significant that when the new rules were made there were twenty officers whose accomplishments were equal to and above the requirements. Among these were the well-known officers: Captains Bellenger, Sido, Marconnet and Marie; Lieutenants Cammerman, Féquant, Rémy, Acquaviva, Cronier, Chevreau, Mailloes, Mailfert, Letheux, and Adjutant Ménard, of the army, and Lieutenants Byasson and Delage of the navy.

A remarkable feature and a strong argument for the general practicability of the aeroplane is the fact that the present stage of progress was reached without loss of life other than that of Lieutenant de Caumont, who was killed in trying out a machine intended for the Prix Weiller. This accident was, however, out of the military field, and the accident was due to Lieutenant de Caumont's hastiness in ascending in a machine whose elevating rudder was stiff and inclined to jam.

SOME CONSTRUCTION DETAILS

By W. H. Phipps

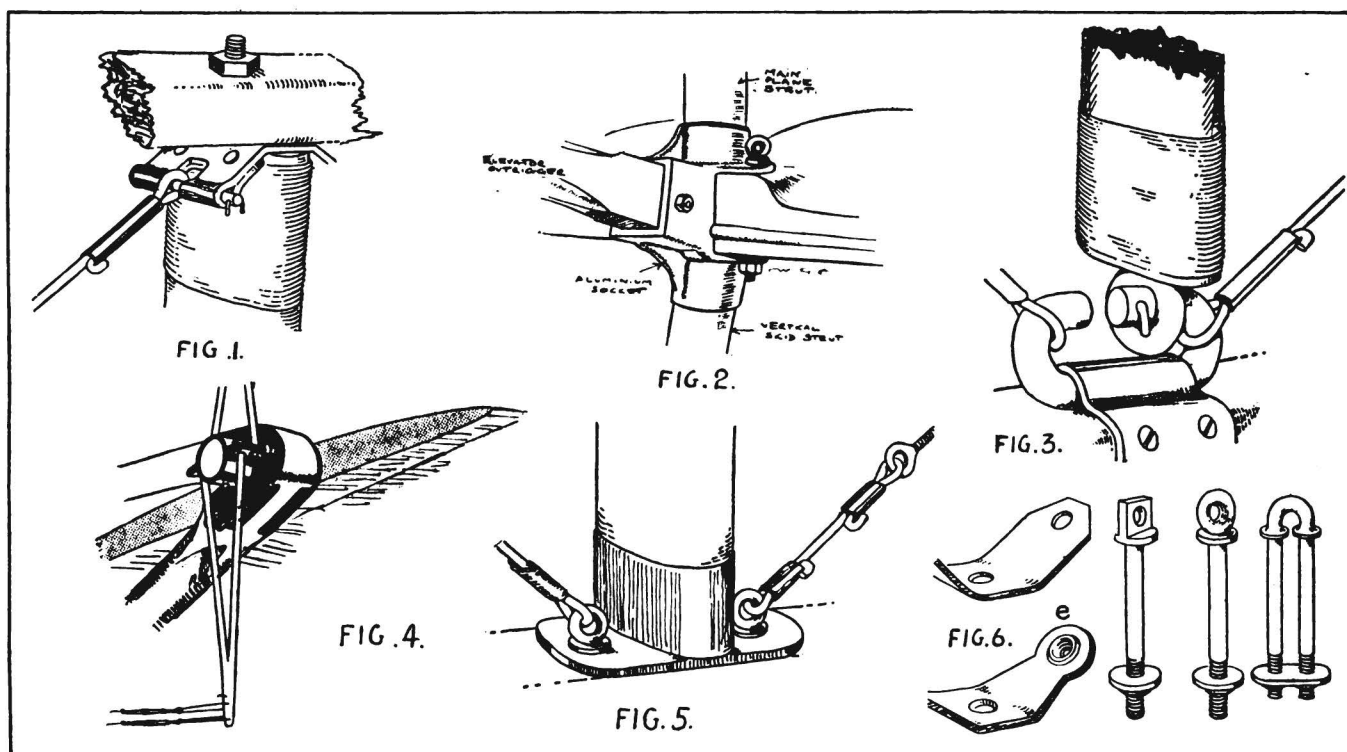


Fig. 1—Illustrates a rigid form of joint used on the Wright biplane. Fig. 2—Shows a three-way terminal casting used on the English Bristol biplane. Fig. 3—Shows a flexible upright connection used on the Wright biplane. Fig. 4—Illustrates the method of attaching and staying the front elevator as used on the Bristol biplane. Fig. 5—Shows a steel socket used on the Wittmann machines. Fig. 6—Illustrates various eye bolts and steel plates used in the bracing of aeroplanes.

GYROSCOPIC FORCE A MENACE TO AEROPLANES

By Thomas Preston Brooke

Gyroscopic force, the most obstinate of all of nature's known forces, provokes an almost uncanny fascination to the student, chiefly because it never does just the expected thing. When the gyro is anchored to the earth through one of its poles, and its plane of rotation is disturbed, it sets up a gyrating movement with its axle describing the outline of an old-fashioned funnel. If you suspend it by a cord and suddenly change its plane of rotation the axle will then describe the outlines of two funnels with their small ends connected, now, as we have nothing in known mechanics into which such movements will fit, gyroscopic force is constantly at war with all other forces. In my four years' study of the subject, I

AVIATION WORLD'S RECORDS

(IN CLOSED CIRCUIT, WITHOUT STOPS)

Compiled by G. F. Campbell Wood
A. SPEED

1. Time on a given distance (a) Aviator Alone

DISTANCE KILOM.	MILES	HOLDER	PLACE	DATE	MACHINE	TIME
5	3.107	A. Leblanc	Pau	April 12, 1911	Blériot	2' 41"
10	6.214	"	Belmont Park	Oct. 29, 1910	"	5' 30" 4/5*
20	12.427	"	"	"	"	11' 04" 3/5*
30	18.641	"	"	"	"	16' 38" 1/5*
40	24.855	"	Pau	April 12, 1911	"	22' 12" 1/5*
50	31.068	"	"	"	"	27' 41" 1/5*
100	62.137	"	"	"	"	54' 55" 3/5*
150	93.205	E. Aubrun	Bordeaux	Sept. 14, 1910	"	1 hr. 43' 19" 3/5
200	124.274	"	"	"	"	2 hrs. 18' 30" 3/5
250	155.342	P. M. Bournique	Buc	Dec. 31, 1910	R. E. P.	3 hrs. 04' 28" 1/5
300	186.411	"	"	"	"	3 hrs. 40' 55" 2/5
350	217.479	"	"	"	"	4 hrs. 17' 26" 1/5
400	248.548	"	"	"	"	4 hrs. 54' 06" 4/5
450	279.616	"	"	"	"	5 hrs. 30' 35" 3/5
500	310.685	"	"	"	"	6 hrs. 07' 07" 4/5

(b) Aviator and One Passenger

5	3.107	G. Busson	Reims	Feb. 11, 1911	Déperdussin	3' 15" 4/5
10	6.214	E. Nieuport	Mourmelon	Mar. 6, 1911	Nieuport	5' 58" 1/5
20	12.427	"	"	"	"	11' 54" 3/5
30	18.641	"	"	"	"	17' 53" 1/5
40	24.855	"	"	"	"	23' 57" 3/5
50	31.068	"	"	"	"	29' 58" 3/5
100	62.137	"	"	"	"	59' 16"
150	93.205	"	"	"	"	1 hr. 28' 27" 4/5

(c) Aviator and Two Passengers

10	6.214	E. Nieuport	Mourmelon	Mar. 9, 1911	Nieuport	6' 00"
20	12.427	"	"	"	"	11' 59" 2/5
30	18.641	"	"	"	"	17' 52" 3/5
40	24.855	"	"	"	"	22' 44" 2/5
50	31.068	"	"	"	"	29' 37" 2/5
100	62.137	"	"	"	"	59' 08"

(d) Aviator and Three Passengers

10	6.214	G. Busson	Reims	Mar. 10, 1911	Déperdussin	6' 16" 3/5
20	12.427	"	"	"	"	12' 34" 1/5
30	18.641	"	"	"	"	18' 48"
40	24.855	"	"	"	"	25' 05" 3/5
50	31.068	"	"	"	"	31' 23" 1/5

(e) Aviator and Four Passengers

5	3.107	G. Busson	Reims	Mar. 10, 1911	Déperdussin	3' 34"
10	6.214	"	"	"	"	7' 08"
20	12.427	"	"	"	"	14' 00" 3/5

2. Distance in a given time

(a) Aviator Alone

26.199	16.279	A. Leblanc	Pau	April 12, 1911	Blériot	15"
53.424	33.196	"	"	"	"	30"
108.424	67.371	"	"	"	"	1 hr.
167.5	104.079	E. Aubrun	Bordeaux	Sept. 16, 1910	"	2 hrs.
252.5	156.896	"	"	"	"	3 hrs.
325.905	202.508	P. M. Bournique	Buc	Dec. 31, 1910	R. E. P.	4 hrs.
407.675	253.317	"	"	"	"	5 hrs.
490	304.471	"	"	"	"	6 hrs.
522.935	324.936	M. Tabuteau	Etampes	Dec. 30, 1910	M. Farman	7 hrs.
451	280.238	H. Farman	Reims	Dec. 18, 1910	H. Farman	8 hrs.

(b) Aviator and One Passenger

23.54	14.627	G. Busson	Reims	Feb. 11, 1911	Déperdussin	15'
46.515	28.903	"	"	"	"	30'
101.25	62.914	E. Nieuport	Mourmelon	Mar. 6, 1911	Nieuport	1 hr.

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

(a) Aviator Alone

HOLDER	PLACE	DATE	MACHINE	SPEED PER HOUR KILOM.	MILES
A. Leblanc	Pau	April 12, 1911	Blériot	111.801*	69.47*
E. Nieuport	Mourmelon	Mar. 6, 1911	Nieuport	103.211	64.132
E. Nieuport	Mourmelon	Mar. 9, 1911	Nieuport	102.855	63.911
G. Busson	Reims	Mar. 10, 1911	Déperdussin	96.308	59.843
G. Busson	Reims	Mar. 10, 1911	Déperdussin	87.251	54.215

B. GREATEST DISTANCE

HOLDER	PLACE	DATE	MACHINE	KILOM.	MILES
M. Tabuteau	Buc	Dec. 30, 1910	M. Farman	584.745	363.343
E. Nieuport	Mourmelon	Mar. 6, 1911	Nieuport	150.	93.205
E. Nieuport	Mourmelon	Mar. 9, 1911	Nieuport	110.	68.351
G. Busson	Reims	Mar. 10, 1911	Déperdussin	50.	31.068
G. Busson	Reims	Mar. 10, 1911	Déperdussin	25.74	15.994

C. GREATEST DURATION

HOLDER	PLACE	DATE	MACHINE	DURATION OF FLIGHT
H. Farman	Etampes	Dec. 18, 1910	H. Farman	8 hrs. 12' 47" 2/5
Amerigo	Mülhausen	Dec. 11, 1910	Aviatik	3 hrs. 19' 39" 4/5
J. Mamet	Reims	July 9, 1910	Blériot	1 hr. 38' 40"
G. Busson	Reims	Mar. 10, 1911	Déperdussin	31' 23" 1/5
G. Busson	Reims	Mar. 10, 1911	Déperdussin	17' 28" 1/5

D. GREATEST ALTITUDE

HOLDER	PLACE	DATE	MACHINE	ALTITUDE ATTAINED METRES	FEET
G. Legagneux	Pau	Dec. 9, 1910	Blériot	3,100	10,171
F. Verschaeve	Belgium	Jan. 29, 1911	"	428	1,404

* The above list is checked to April 30th; cable-despatches of May 11th state that Nieuport flew, at Mourmelon, 100 kilometres in 50' 0"; in so doing he must have beaten those records marked by an asterisk.
G. F. C. W.

have discovered many interesting features, nearly all of which seem to be contrary to the generally accepted beliefs and theories. First of all, and of most vital importance to the world just at this time, is the fact that instead of being a stabilizing agent, it is a highly destructive force when employed in suspension. By suspension I mean that when suspended in the air by an aeroplane, or dirigible balloon, or suspended in the water by a ship, its action is a constant menace to the structure to which it is attached and sooner or later it is certain to cause disaster. I personally know of dozens of applications for patents on "gyroscopic stabilizing devices" for aeroplanes, and will venture to say that the number will run into hundreds. All of these devices had their inception in the false belief that the gyroscope resists all effort to change its plane of rotation. If this army of inventors will take the trouble to study carefully the true action of their apparatus, and will suspend their gyros by a cord from the ceiling, to represent the perfect condition of the gyro in its relation to the aeroplane, they will speedily acquire two simple but highly valuable bits of information regarding this subtle force.

(1) That instead of resisting all effort to change the angle of its plane of rotation, it requires but a slight touch to excite the gyroscope, and it immediately begins its double funnel shaped gyration with the large ends of these funnels describing circles around the original position of its axle, and at an angle of about 45 degrees from the original plane of rotation. This gyration always occurs in a direction opposite to that in which the gyro is revolving. (2) That the gyro never shows any tendency to "right" itself or resume its original position. In stating the above facts, I refer only to the gyroscope in its connection with the aeroplane, and whether this force is supplied by a high speed motor flywheel, a revolving cylinder motor or by the revolving wheel of a so-called gyroscope, the effect is the same. The amount of force exerted by these gyroscopes (when the plane of rotation of any revolving mass is suddenly changed, it at once becomes a gyroscope) depends on, (1) The diameter of the revolving mass, (2) The peripheral speed of the mass (3) The specific gravity of the mass at its periphery and (4) The abruptness of the change in the plane of rotation.

At a recent lecture given by one of these "gyroscope stabilizer" inventors, the gentleman attempted to show the great resistance set up by this force. He had constructed a gyro by filling with sand the rubber tire of a small bicycle wheel and had mounted it in a case just large enough to contain the wheel. On one edge of this case he had provided "feet" so that the gyro might stand on its rim, and to the protruding axle, squared at one end, he attached what he termed a "multiplying key." This key was composed of a crank connected with a set of multiple gears, and by its aid the gyro was set spinning at a high speed, and the key was then removed. In one of his experiments, and as he announced, "to demonstrate its wonderful stabilizing power," he placed the gyro on the floor, and after winding it, he requested some one from the audience to assist him. The appeal brought out a strapping big fellow who looked like a "tackle" on a football team. The lecturer directed this assistant to place the gyro on a nearby table, and then the fun commenced. The assistant stooped over and grasped the case of the gyro with both hands, lifted it clear off the floor, and attempted to raise it to the height of the table. Here is where the audience received the worth of their money, for, as soon as the gyro had been lifted clear of the floor it began a series of gyrations so complex and unexpected that it startled the assistant to such a degree that he quickly replaced the gyro on the floor. In setting it down it landed on but one of its feet, and at once began to merrily waltz around on this one foot. All of this seemed to strike the audience as being very funny and they laughed heartily at the young man's failure. The assistant, flushed, but with a look of determination on his face, again lifted the now gyrating thing from the floor, and after a display of contortions that would have done credit to a professional "fire dancer," finally succeeded in placing it on the table, not, however, before it had turned him completely around. The audience again laughed uproariously, and even the lecturer seemed to think it a splendid joke. I will admit that a display of this treacherous and erratic force, when presented in the lecture room, may be highly amusing, but when the demonstration occurs on a fragile aeroplane hundreds, or thousands, of feet above the earth and endangers the life of the aviator, I fail to see any humor in it. To further illustrate the resisting qualities of gyroscopic force (using the words of this inventor), he again deposited the gyro on the floor and invited someone to come forward and tip it over by pushing with a hand placed against one side of the case. Although several men in succession tried to push it over on its side, not one of them succeeded! The reason that they could not upset it was that the instant they began to push the gyro turned to one side and commenced to travel in circles around the stage. Any extra effort on the part of the pusher only succeeded in accelerating the movement of the gyro over the floor and in diminishing the diameter of the circles. In this experi-

(Continued page 126)

GENERAL NEWS

New England News

By Denys P. Myers

On April 20 Gov. Eugene N. Foss, of Massachusetts, sent a message to the House of Representatives of the Commonwealth calling attention to the necessity for regulation of aerial traffic and suggesting concurrent action in this regard by all the New England states. This suggestion is the first of its kind in the western hemisphere. The message and accompanying document, a copy of the bill pending before the Connecticut Legislature, were referred to the House Committee on Public Health and sent up to the Senate for concurrence on the same day they were received. The message reads:

The Commonwealth of Massachusetts, Executive Department, Boston, April 20, 1911. To the Honorable Senate and House of Representatives:

I call to your attention the necessity of providing for the regulation of aeroplanes.

These machines are now being manufactured in such numbers that the present year will probably witness a greatly increased use of them. They already present a serious menace to life, and their increasing use will occasion a much more serious danger to the public.

They should, I believe, be restricted, so far as law can accomplish such result, to certain limited and specified routes and practice grounds.

Governor Baldwin of Connecticut has kindly sent me the draft of a bill recently introduced into the Legislature of that state, and I transmit it herewith for your consideration.

In connection with this subject I desire to say that it appears to me that great advantage would result if all legislation of this sort is enacted in co-operation with the legislatures of the other New England states.

For lack of such co-operation, Massachusetts and the other New England states have in the past enacted laws regulating transportation which are widely at variance. Much confusion and waste result from such lack of method, and our New England states thus lose the value which a sort of confederation in our legislative methods would bring about.

I urge you to consult with the governing bodies of other New England states and endeavor to formulate laws for the regulation of transportation by air craft which will be fairly uniform.

EUGENE N. FOSS.

Connecticut News

By S. H. Patterson

It is expected that the State Legislature will pass Mr. Forbes' aviation bill substantially as presented. This will be the most complete bill regulating aviation adopted by any state.

Aviator Charles K. Hamilton of New Britain, Conn., in trying out a Burgess-Wright, biplane April 23, met with an accident and fell from a height of 80 feet. The machine was badly smashed, but Hamilton, with his customary luck, escaped uninjured.

George C. Nealy has been making a number of flights at Lordship Park, Stamford, Conn., in a Blériot monoplane, with gyroscope attachment, owned by Stanley Y. Beach, Aeronautical Editor of the "Scientific American."

Earle L. Ovington gave a three days' exhibition at Tilyou's Steeplechase Island, just off Bridgeport, on May 5, 6 and 7. On the first day Ovington made a very pretty flight of about fifteen miles, circling over Long Island Sound. He did not fly on the following day, as the number of paid admissions were too small to risk taking out his \$10,000 machine. There was a good attendance on Sunday, May 7, and Mr. Ovington made a very sensational flight of about sixteen minutes and attained an altitude of 2,460 feet. On making a turn in this flight at a height of about 1,500 feet he encountered an "air-hole" and dropped fully 100 feet before regaining control. On returning to the island he made a perfect landing on the very small race track, and in this flight demonstrated his perfect control of his machine at all times.

Mr. Ovington has a 1911 Blériot equipped with a 1911 70-horse power Gnome motor, which drives an 8 foot 4 inch propeller of 2 1/2 foot pitch and is capable of making seventy miles per hour.

After his Sunday flight Mr. Ovington stated that he did not intend to do any more exhibition flying, but would confine himself to cross country work and keep his flyer at Belmont Park.

The meeting held at Nutmeg Park, Bridgeport, May 11, 12 and 13, in which Curtiss, McCurdy and Beach performed was decidedly a most successful event. Lieut. J. E. Fickel of the Twenty-ninth United States Infantry, and Lieut. Elyson, of the United States Navy, conducted experiments in shooting from aeroplanes at this meet.

The Bridgeport "Evening Post" conducted a voting contest in connection with this meet. The man and woman who received the largest number of votes were taken as passengers by Mr. Curtiss on one of his flights.

Clifford B. Harmon has leased Sandy Beach at Greenwich, Conn., where he will keep his new aeroplane of military type and do his flying. He will have as a pupil Joseph Anderson, a Greenwich High School boy, who has perfected an engine of special design with double propellers.

Washington News

By Courtland Wrightson

Washington's three day aviation meet opened on Friday, May 5, with ideal weather and good flights were made by J. A. D. McCurdy, Lincoln Beachey and Hugh A. Robinson in Curtiss biplanes. Mr. Beachey made a spectacular flight from the Benning race track to the capitol, where he circled the dome several times before starting his return flight, which was accomplished at a height of 3,000 feet. This was the first time the dome had been circled by an aeroplane and it is interesting to note that Mr. Beachey, five years ago, made the first and only flight around the dome in a dirigible balloon. Mr. Beachey took several photographs while aloft with a camera attached to the front of his machine.

On the second day, Saturday, May 6, a race of five miles was witnessed between J. A. D. McCurdy and Lincoln Beachey. The latter won, accomplishing the distance in five minutes.

On Sunday, the 7th, Lincoln Beachey and J. A. D. McCurdy performed air "stunts" and delighted the spectators by racing each other and an auto-



EARLE L. OVINGTON WHO HAS BEEN DOING SOME SPLENDID FLYING LATELY.

mobile. Both aeroplanes easily outdistanced the automobile and Mr. Beachey again nosed out his air competitor. Mr. Beachey also won an American license before a representative of the Aero Club of America by flying five times in a figure eight at an altitude of 600 feet and landing within seven feet of a given point.

H. A. Robinson made several flights, circling the course and rising to a height of 500 feet. He also made an attempt for his pilot's license, but on making his third figure eight his motor began to cause trouble and then completely stopped. Although he was then flying over some woods, by gliding he managed to get into the vicinity of a nearby marsh, into which he and his machine were precipitated, the machine being buried in mud to the seat. Mr. Robinson, however, escaped with a few bruises and scratches.

J. A. D. McCurdy, in the bomb throwing contest, hit the mark four times out of six at a height of 300 feet.

Messrs. Fred C. Dieterich and Albert E. Dieterich, patent attorneys of Washington, D. C., have received a patent on a device which has for its object the means to provide a power plant in which there is always present a sufficient amount of reserve energy that is automatically brought into operation upon the failure of the main motive power when the operation of the same drops below a predetermined degree. The number of this patent is 990,712.

California News

By Ernest Obrt.

Clarence Walker made a twelve-mile flight from Palo Alto to San Mateo in his 60-horse power Curtiss biplane on April 11. He drove his aero-

plane against a stiff wind and except for a stop of twenty minutes at Redwood City, the actual time for the trip was fifteen minutes. He flew at a height of 500 feet, and near Redwood City, where his engines stopped, he landed in a field where a Chinaman was working and who became panic stricken. Two days later he made the return trip with no stop.

While making an exhibition flight at Palo Alto on April 23, Walker met with an accident in which his running gear was badly smashed.

Charles F. Walsh tried for his license on April 16; he circled Dominguez field three times and also made a passenger-carrying flight of more than a mile.

Norman De Vaux, manager of the Reo Pacific Auto Company, has secured the agency for the Curtiss biplane.

On April 16 the Ohrt brothers' glider No. 2 made 28 successful towed flights. The Ohrt brothers, W. Hanley and Lieut. M. McHenry, of the National Guard of California, went as high as 100 feet. Flights were made from the San Francisco beach.

The R. O. Rubel, Jr., Company, of Louisville, Ky., reports the sale of two "Gray Eagle" motors. One is for Mr. Louis Ferner of Trenton, N. J., the other being sold to Mr. D. L. Dennis of Franklin, Ind.

The Pacific Coast Aeronautical Supply Company have formed an exhibition department, which will be ready for engagements by the 20th of June. They have four machines that can be booked in any section of the United States.

The Moisant Aviators

By Edward J. McCormack.

The Moisant International Aviators celebrated their return tour to this country with extremely sensational flying at Pueblo, Colo., after their brilliant exhibitions in Mexico and Cuba.

At Hutchinson, Kansas, which was the first stop after leaving Havana, and then at Pueblo, the Moisant aviators proved beyond a question of a doubt that flying at high altitudes in Mexico and in the balmy breezes of the little island republic had not decreased their pluck or skill.

At Hutchinson thousands of Kansas business men and farmers were given their first sight of an aeroplane. The country for miles around was depopulated. Hutchinson was the mecca for everyone who was able to own, buy, borrow or rent an automobile or a horse. Every train brought in its cargo of human freight—and a very curious and excited cargo it was.

The flights were, to say the least, great. Simon and Barrier opened the meet in a wind that was blowing over thirty miles an hour. Twice during the meet did an aviator come near meeting disaster. Simon was caught in a counter current of wind and his machine dropped thirty feet or so. Barrier on the second day took a sudden plunge that gave even the stolid French champion a scare.

After three days of flying the Moisant Aviators left Hutchinson for Pueblo.

Hardly three hours after the arrival of the special train bearing the aviators, René Simon flew over the business section of the city. The French birdman made the flight in spite of a puffy wind that caused him no little trouble. During the afternoon's programme he was again caught aloft in a hard wind and after a hair-raising joy ride in his monoplane succeeded in landing without further damage than a broken strut or two and a badly jarred motor.

The International Aviators went from Pueblo to Denver and then to Kansas City.

Mineola and Belmont Park

The fine weather of the last few weeks has occasioned considerable activity on the flying grounds at Mineola and Belmont Park, and almost every day there are new arrivals at these two places. We append a list of the machines now at Mineola:

AERONAUTICAL SOCIETY SHEDS.

1. Louis Rosenbaum, Curtiss type, Bradley-Rosenbaum 8-cylinder, air-cooled motor.
2. George Schmitt, Curtiss type, built by Wittemann Brothers, Elbridge 40-60-horse power motor and Requa-Gibson propeller.
3. Clyde, Curtiss type, made by F. Raiche, Fox 60-80-horse power motor.
4. Herrick Aitken, Curtiss type, Aeromotor, 40-horse power.
5. Blood and Hadley, original biplane, Roberts motor.
6. Louis Ragot, original monoplane.
7. Joseph Stevenson, Curtiss type.
8. N. Thor, original two propeller monoplane.
9. Walden and Dyott monoplane. Anzani 3-cylinder 30-horse power motor.
10. Captain Thomas S. Baldwin, all steel biplane built by Wittemann Brothers and fitted with an Elbridge engine and Requa-Gibson propeller.

AERO CLUB SHEDS.

1. Walter Lowe Fairchild, original monoplane, Emerson 2-cycle 100-horse power motor.

2. Moisant monoplane (Blériot type), Anzani motor.

On April 12 the first Model F Burgess biplane, "The Moth," known as the Burgess-Wright aeroplane, arrived at Mineola and the next morning, April 13, W. Starling Burgess, the builder, took the machine to the aviation field and without waiting for any preliminaries, started the biplane off on a ten mile flight. The aeroplane rose smoothly and circled outside the limits of the aviation field under perfect control. After sixteen minutes' flight Mr. Burgess brought his machine to earth.

The Burgess-Wright aeroplane, manufactured under license from the Wright Company, is a duplicate of the latest Wright with the 35-horse power Wright power plant. The power plant and transmission were furnished by the Wright Company. While built on the same lines as the Wright model, the Burgess Company and Curtis have, however, introduced many minor modifications, all of which add either to the strength or to the finish of their Model F. The value of these slight changes is more apparent to the constructor and the connoisseur than to the general public, as most of them are inconspicuous and, in fact, some of them are completely hidden within the surfaces. The outside finish is up to the high standard which has made the Burgess racing yachts famous in Eastern waters. The wood work has a coat of spar varnish over the aluminum paint. Metal parts are nickel plated. Brass work is polished and the whole machine is finished and maintained in apple-pie, ship shape order. As a finishing touch a small signal staff is mounted on the front skid, where it carries the Burgess private signal first made familiar on the Burgess cup defender, "Puritan." A light automobile clock mounted on one of the skid struts.

A critical inspection of the biplane showed the main body in perfect alignment and so rigid that no deflection was observable either in the front truss or in the tail when the weight was unevenly supported by lifting up either extremity. This machine is of the "headless" type and is controlled by the well-known Wright flexible rear elevator and box vertical rudder.

While future Burgess-Wrights will be covered with Goodyear No. 10 aeroplane fabric, the present aeroplane uses the special sail cloth known as Union silk, furnished and cut by Messrs. Wilson & Silsby, the Boston sail makers. Goodyear 20x2 inch aeroplane tires are used mounted with the usual Wright suspension. As may be inferred from the foregoing, the Wright Company co-operates heartily with the Burgess Company and Curtis in the construction of these machines.

The first school biplane (Model D) of the Burgess Company and Curtis came to grief on April 17 when Hilliard started out with A. Leo Stevens as passenger for a cross country flight. He had gone hardly two miles before motor trouble developed, the motor stopping in mid-air. Owing to the nearness of the motor parkway bridge and fences, Mr. Hilliard had no opportunity to find a smooth landing place, but was forced to come down in a cramped position so abruptly that parts of the biplane were broken and the aviators landed on the ground. Luckily neither was hurt and the machine was soon back in quarters.

Some good flights were witnessed at the Mineola Aviation Field on May 5. William Haupt, the automobile driver, was out in his Blériot and made his best flight by ascending 150 feet and making several circuits of the field. George Schmitt of Rutland, Vt., was up in a Curtiss type biplane. He made five flights, ascending to a height of more than 50 feet.

Sunday, May 7, was the opening day of the aviation season at Mineola, and quite a large attendance was on hand in the afternoon. George Schmitt, a novice, made an excellent flight of twenty minutes in his Wittemann built Curtiss type, which is fitted with an Elbridge motor. Schmitt is only a beginner, but he bids fair to establish a reputation for himself as a flyer.

Walter Lowe Fairchild had his monoplane out testing the motor and thrust of the Requa Gibson propeller. The large Hadley and Blood biplane, which is fitted with a Roberts motor, was also out and made several short flights with Hadley in the pilot's seat.

On May 8 George Schmitt was out at 6 o'clock a. m. and made several circuits of the field at a height of 150 feet and taking turns at sharp angles.

Charles K. Hamilton has filed articles of incorporation of the Hamilton Aviation Company, capitalized at \$75,000. The company is composed of Mr. Hamilton and his wife, Mr. and Mrs. J. B. Beadette, Mr. Hamilton's stepfather and his mother, and Thomas W. O'Connor. The company is formed for the purpose of manufacturing, exhibiting, selling and buying aeroplanes. Mr. Hamilton intends using the Andrews Field at Winsted, Conn., for an aviation park and hopes to establish the greatest aeroplane centre in the world there.

Claude Grahame-White, winner of the Gordon Bennett trophy at the Belmont Park aviation meet last autumn and therefore regarded as the holder of the world's aviation championship title, is having built by the Burgess Company and Curtis, of Marblehead, Mass., a set of ten biplanes. This is



HOWARD LEVAN, THE 17-YEAR-OLD TOLEDO AVIATOR FLYING A STROBEL CURTISS-TYPE BIPLANE ACROSS THE MAUMEE BAY. LEVAN'S LONGEST FLIGHT UP TO MAY 9TH WAS 32 MILES ACROSS-COUNTRY.

regarded by American aviators as the highest compliment from an individual that can be paid to Uncle Sam's youngest industry, and it is further considered a foreign expert's endorsement of the rubberized aeroplane wing fabric manufactured by the Goodyear Tire and Rubber Company of Akron, Ohio, with which these machines are being covered.

W. Starling Burgess, of Marblehead, Mass., experienced a nasty fall on May 5 while flying one of his new biplanes over the aviation field at Atlantic. The machine was badly damaged, but the aviator fortunately escaped without injury. No details are to hand concerning the cause of the accident.

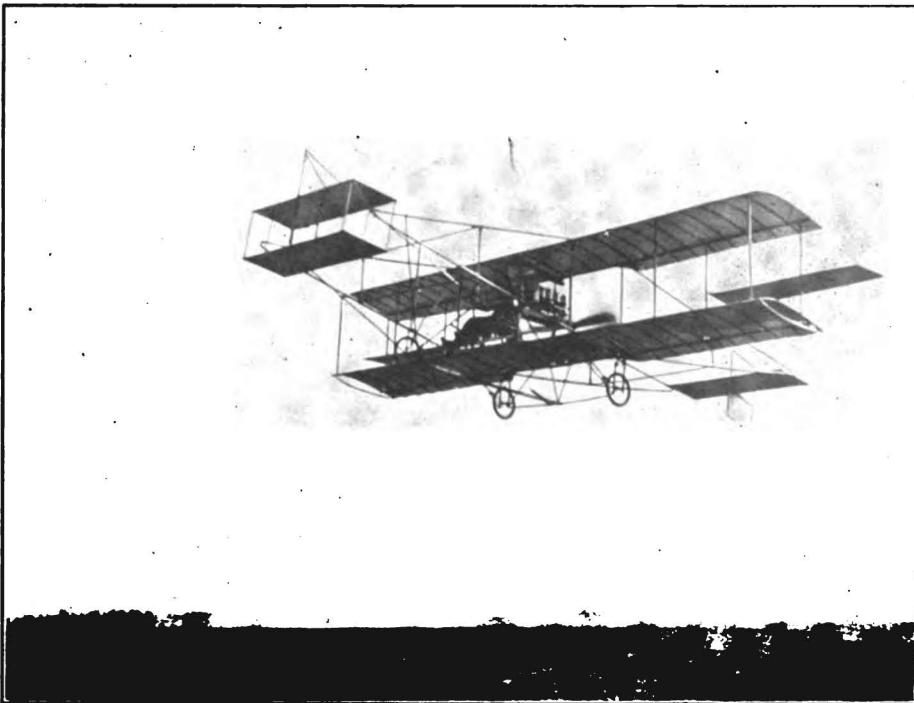
St. Croix Johnstone, of Chicago, has joined the Moisant international aviators. Mr. Johnstone will be seen in a series of exhibitions and will also enter all the big contests that will be held on this side of the Atlantic, particularly those of a cross country nature. Mr. Johnstone will use the new Moisant metal limousine monoplane.

On May 5, Albert Grasing of Highwood, N. J., received a serious injury while testing a monoplane at Englewood, which he and his brothers had

built. One of the brothers took his seat in the machine for the trial and went around the field, keeping the machine on the ground. Satisfied that the machine worked properly, Albert Grasing signalled the brother who was operating it to slow down. As the latter did so the machine veered off the track and seemed about to run into a tree, when Albert Grasing ran forward and attempted to stop it. He did not, however, gauge the distance accurately, for one of the blades struck him on the head, inflicting serious injury. This accident should serve as a warning to experimenters and spectators to keep clear of the propeller.

The management of the Interstate Fair to be held at Trenton, N. J., during the week of September 25, intends to hold aeroplane exhibitions during the week. Aviators desirous of booking are advised to communicate with Mr. William T. Taylor, who is in charge of the aeronautical division.

Earle L. Ovington, the American aviator who has recently returned from France, where he gained his pilot's license at the Blériot school, has brought back with him a new 70-horse power Gnome racing Blériot with which he hopes to



George L. Schmitt, the young aviator, of Rutland, Vt., who has been flying a short time, went into the air May 7th at Mineola, and mounting to a height of 200 feet, struck a level balance and began to wheel around the field like a veteran. At the end of 22 minutes, Schmitt came down amid the tooting of the automobile horns and sirens. Schmitt is a 19-year-old high school boy. He uses a Wittemann Curtiss type biplane equipped with a 40 h. p. Elbridge "Featheweight" engine and Requa-Gibson Propeller.

wrest the Gordon Bennett cup from England. Mr. Ovington's Blériot is the first of the new "inverse curve tail" type which will be the standard equipment for all 1911 single seater raceabouts. The main planes are approximately the same shape and size as those fitted to the regular 50-horse power types. This machine is the first and so far the only single seater to be sent out from the Blériot factory with the new 70-horse power motor.

Mr. Ovington has had several special features incorporated, principally to strengthen the construction. Instead of the four steel straps under the wings he has had six fitted. There are also two extra main-spars running the full length of the wings and just twice as many ribs as in the ordinary 50-horse power Blériots. Every control wire is duplicated, while the warping wires are extra large and strong.

A feature of the Aeronautical Society's banquet held at the Hotel Astor, New York, on April 27, was the menus, which were printed on Goodyear aeroplane fabric. This is a new rubberized cloth made especially for the wings of heavier than air machines. It had done so much to advance the triumph of the "air man" that the committee on arrangements included it in the features which marked the banquet as a unique event.

Army News

During the military manoeuvres held at San Antonio, the government aeroplane was made use of and on May 4 the aeroplane was ordered to scout east and north of the battle front formed twelve miles from San Antonio, for signs of the enemy, the division cavalry having reported no signs of the enemy. Lieut. B. D. Foulois and Aviator Frank Coffyn were asleep when the order arrived, but were awakened and inside of ten minutes were off reconnoitering. They returned forty minutes later without having been able to locate the enemy.

Future army and militia manoeuvres will include training in aeronautics, and there will be at least one aeroplane on the field.

The War Department is already mapping out plans for manoeuvres to be gone through by the Massachusetts militia which will begin late in July and work out important military problems. Captain M. E. Hanna, U. S. A., of the Chief of Staff's office, has just returned from a hurried trip to the scene of the manoeuvres. He went over a good portion of the ground in an automobile and is having maps prepared to aid the militia officers.

There will be five regiments of infantry, three batteries of artillery, four troops of cavalry, one signal corps, one hospital and an ambulance corps and two companies of cadets. One aeroplane at least will be operated for scouting purposes.

The advantages which the use of the aeroplane offers to the army necessitates a radical departure from some of the older methods of reconnaissance. Difficulties in locating the enemy's position or in getting an idea of the topography of the ground are minimized by the work which observers can do from their position high in the air.

Altogether there will be upward of six thousand men on the field when the war game begins in Massachusetts.

Indiana News

The "Aerodrome" of the Aero Club of Indiana, which is located on the Indianapolis Motor Speedway's grounds, houses five machines—four Curtiss and one Blériot type.

Shaw and Slaick own two of the Curtiss, they are the most modernly equipped and the only ones in constant use. The other Curtiss belongs to G. L. Bumbaugh, the pioneer balloon man, and is a double surface plane having a box tail. A noticeable feature is that his rear wheel is turned by the same control that operates his perpendicular rudder.

The Hunt machine which is also of the Curtiss type bears no special features whatever.

Ray Harroun, the well-known Marmon driver, has constructed a monoplane of the Blériot type. He has just returned from Tampa, Florida, making a few short flights and is now building a couple of new machines in preparation for his aviation school which he intends to start soon.

Notes

The Chicago Aeroplane Manufacturing Company of Chicago, Ill., announce an increase in their capital stock to \$50,000. The rise of this company has been rapid. Less than two months ago the company found it necessary to more than treble their floor space and now occupy quarters with seven stores on Cottage Grove avenue, 2224 to 2238, and three stores on Indiana avenue, the building extending through from one street to the other.

In addition to this, the company has an aviation field, with hangars, shops and living rooms for those of its employees and students who desire to live at the aviation grounds.

The present equipment provides for the completion of two aeroplanes per week. In spite of these increased facilities the company finds itself unable to meet the demand for its product and negotiations have already been closed for three more stores on Indiana avenue, which are being remodeled to be used as machine shops.

A new control and automatic stability for aeroplanes has been perfected and patented by M. B. Dunkle of Culebras, Idaho. Its main features may be described briefly as follows:

The supporting planes are hinged to the chassis in such a manner that their line of connection forms an angle converging to the rear. Thus as a side is swung down its angle of incidence is increased or when raised its angle is decreased, and the air pressure on that side respectively increased or decreased. The opposing sides are connected so they reciprocate when acted upon by the unequal pressure of the air and by thus equalizing the air pressure the equilibrium is preserved.

This movement of the planes is either entirely automatic or under the control of the operator. An additional adaptation of the connecting element permits the use of the main planes as elevators, and also to adjust themselves to changes in speed as in the stopping of the engine. This plan does entirely away with any twisting or warping of the planes, and with extra weight or complex apparatus for control or equilibrium.

Mr. Charles H. Metz, head of the Metz Manufacturing Company of Waltham, Mass., builders of aeroplanes and automobiles, has recently purchased a tract of land in that town which comprises 120 acres, where he intends to establish an aviation school and factory.

Mr. W. Wilson Southard of Baltimore has recently had delivered to him a 40-50-horse power Roberts aero motor, which he is installing in a large monoplane of his own design, which incorporates some of the features of the Blériot and Antoinette types.

On April 21, Horace F. Kearney of Kansas City met with an accident while flying at St. Louis. The accident was caused when he tried to cross a barbed wire fence and caught the rear wheels on it, wrecking the aeroplane, but fortunately not seriously injuring the aviator.

Chicago is to hold a great air meet in August. One hundred thousand dollars has been offered for prizes, and Harold McCormick, John D. Rockefeller's son-in-law, is the prime mover behind the meet.

Failing in their attempts to reach the altitude of 4,700 feet gained by James J. Ward in the meet at Nashville on April 28, J. A. McCurdy and Lincoln Beachey on April 30 relinquished to the youngster the silver cup offered for the highest altitude made during the meet.

The White Aeroplane Company of Brooklyn, New York, have gone into the making of regular aeroplanes and have shipped one Curtiss Willard and a racing monoplane which is of unique design.

The Queen Monoplane Company of Fort George is conducting an aviation school at Belmont Park which is one of the largest of its kind in the country. Its factory is most complete and is being rushed to its full capacity.

The Aeronautical School of Engineers have shipped to Mineola two more machines. They have now four machines there which are being flown whenever weather permits and Manuel A. Gonzalez, a Philippine, is being instructed at the school.

Lieut. George E. M. Kelly of the U. S. Army was killed in a flight at San Antonio on May 10th. The accident appears to have been caused by the aviator making a bad landing. He came down at a sharp angle and bounced right off the ground again, at the same time losing control of the machine which heeled over and fell.

Gyroscopic Force (Continued from Page 123)

ment he again proved the contrary of his claims in that, while the gyro refused to move in the direction away from the applied force, it *did* move in other and complex paths that must have resulted in disaster to an aeroplane. After these convincing (?) demonstrations the lecturer, with a satisfied smile on his face, informed the audience that he had applied for patents on his "wonderful invention," and that he felt certain that the world would eventually recognize in him a great life saver for having discovered and invented the "Gyroscope Aeroplane Stabilizer." He thereupon pushed out his chest a bit further, buttoned his coat over it, picked up his apparatus and wended his way homeward to smoke, and dream again.

In my long study of gyroscopic force I have positively proven, and I believe that many other experimenters have also found, that when the gyrating motion is stopped, the gyro immediately falls and, under this condition, it exhibits no more life than does a brick.

In the upper left hand corner of one of the illustrations is shown one of my twin rotor gyros. Each rotor weighs but eight ounces, is 2½ inches in diameter, and the entire gyro weighs approximately 5 lbs. This gyro is provided with four flanged wheels, so that it may travel on rails. For the experiment shown in the accompanying

illustration, I constructed an inclined track at an angle of 30 degrees, a curve and an extension on a horizontal plane, substantially as shown. When one or both gyros were revolving anti-clockwise, as viewed from the front, thus representing the high speed flywheel motors and the revolving cylinder types, and the gyro then placed on the track at the top of the incline and released, it ran down until its direction was suddenly changed to that of the horizontal; at this point it was jerked violently to the left, toppled over and plunged downward, head foremost. This test never failed to show the same disastrous result. Again, when the rotors were revolved in opposite directions, to represent the action of my Non-Gyro Aero Motor, the gyro ran smoothly down the incline and out on the horizontal track without the slightest tremor.

In a paper recently read before the French Society of Engineers by one of their prominent members, M. Bouchaud-Praceig, he stated that a great number of aeroplane accidents were undoubtedly due to the gyroscopic force generated by the revolving motors. M. Bouchaud-Praceig also gave some demonstrations with a twin gyro similar to mine and suggested, as a remedy, that two motors revolving in opposite directions, one driving a tractive and the other a propulsive propeller, be employed in aeroplanes. He further suggested that clutches be provided and the propellers cut out when making a glide. He explained that this arrangement would permit the motors to be operated and the force (?) so generated would assist in stabilizing the machine. In this later suggestion the gentleman was in error, as there would be absolutely no more force perceptible in the motors when operated in this manner than if they were not running at all. He also neglected to state that, to accomplish perfect results, it would be necessary to connect the motors so that they would always revolve with the same speed and also that the revolving mass of one motor would have to be of the same weight as the other. Interesting extracts from this paper with illustrations were printed in "La Nature" under date of March 4th, 1911.

In view of the above facts, and *they are facts*, as can be readily verified by anyone that may care to experiment right, are we not tempting fate by carrying up into the air this powerfully destructive force hidden away in our aeroplanes, to risk having it awakened by a sudden lurch of the machine and, by sheer brute force, hurl us to our deaths? There are also several other reasons why all gyroscopic force should be eliminated from our aeroplanes, but as they bear directly upon the science of aeronautics, and as that subject is too big to take up at this writing, I will save them for future discussion.

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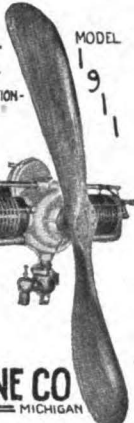
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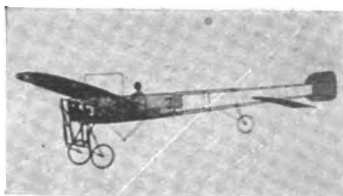


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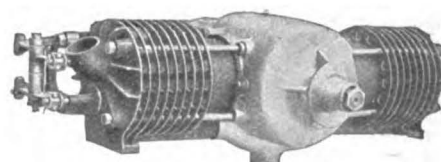
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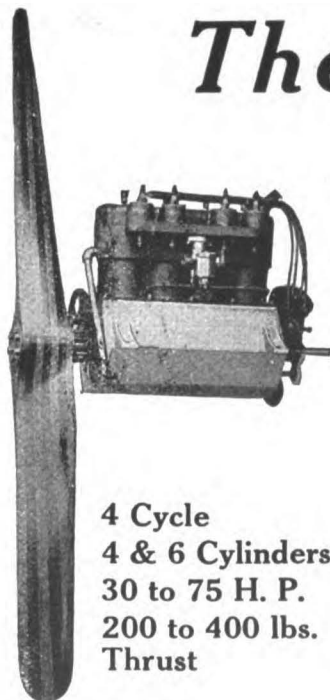
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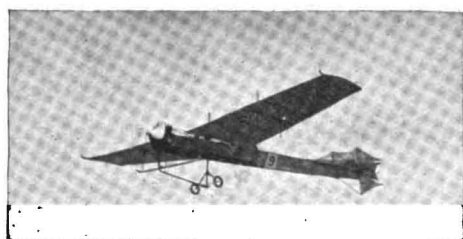
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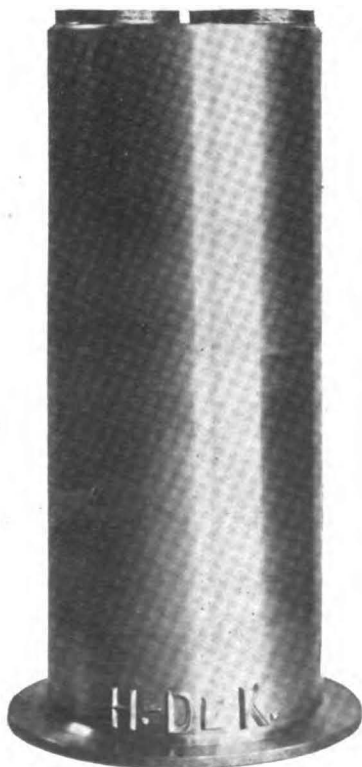


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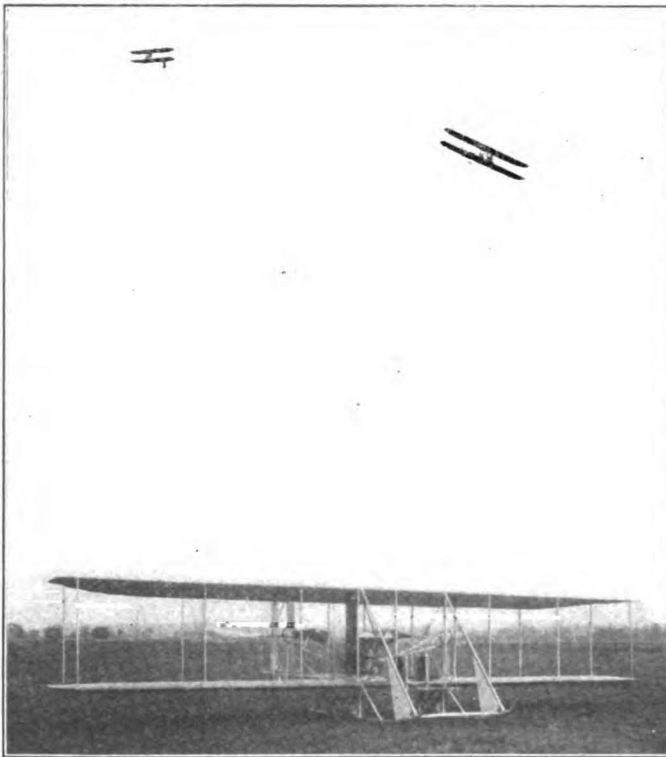
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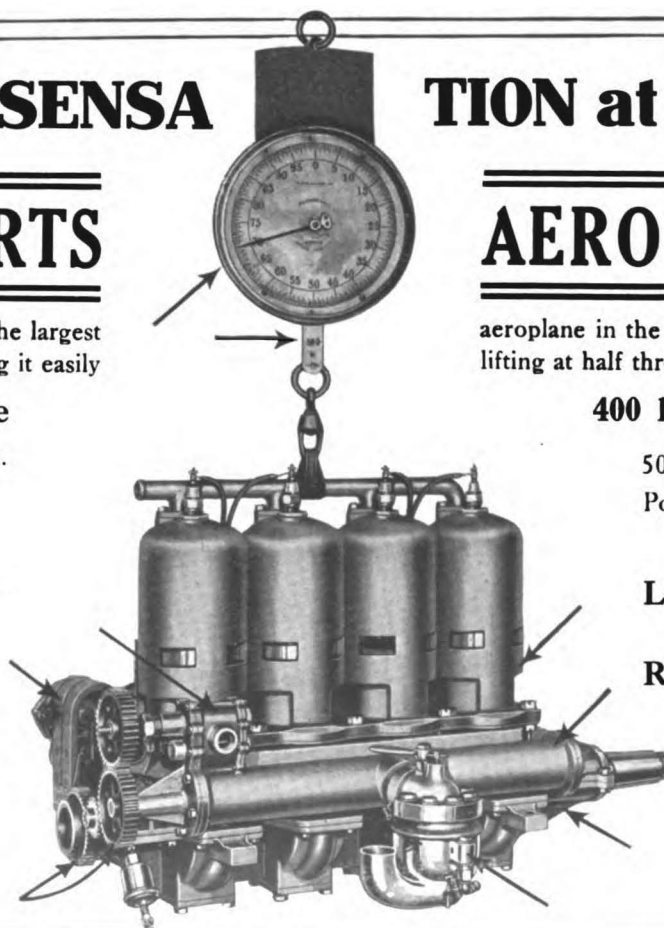
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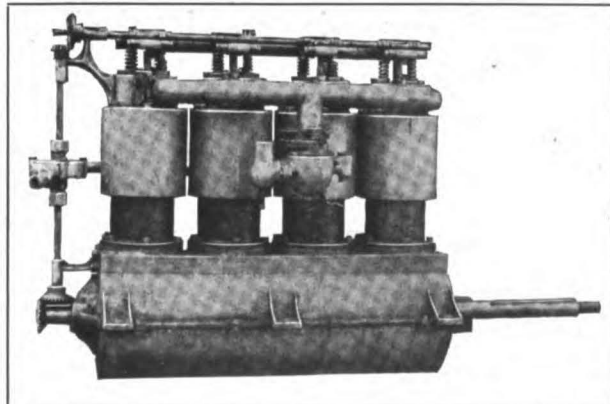
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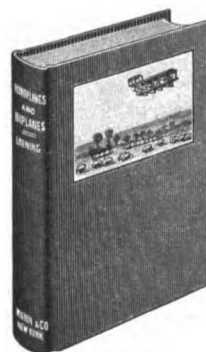
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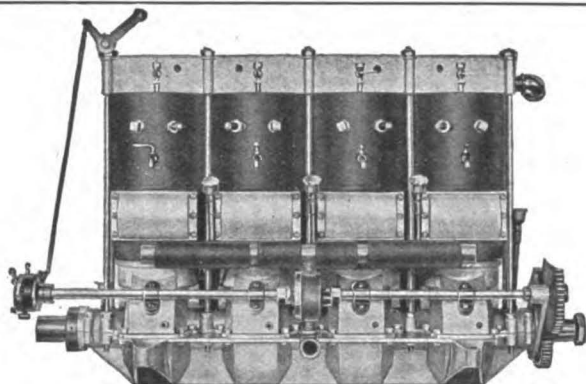
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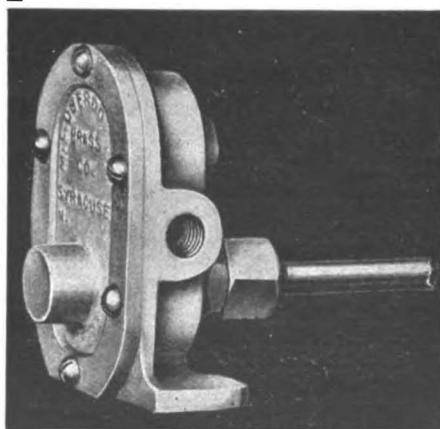
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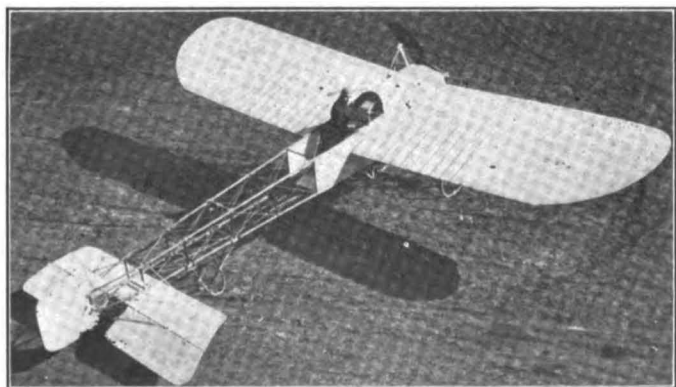
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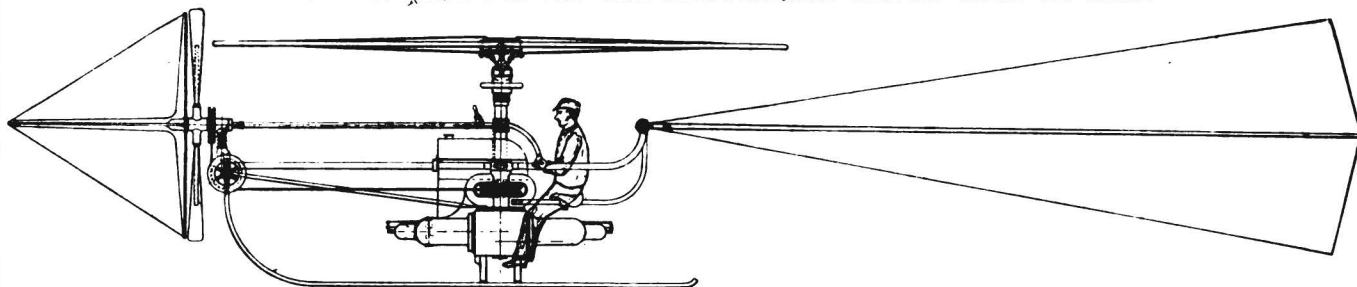
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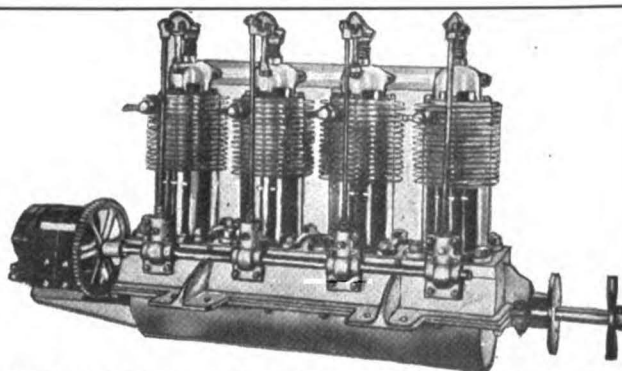
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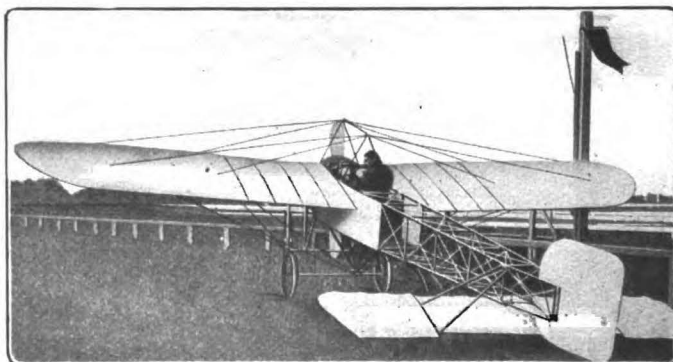
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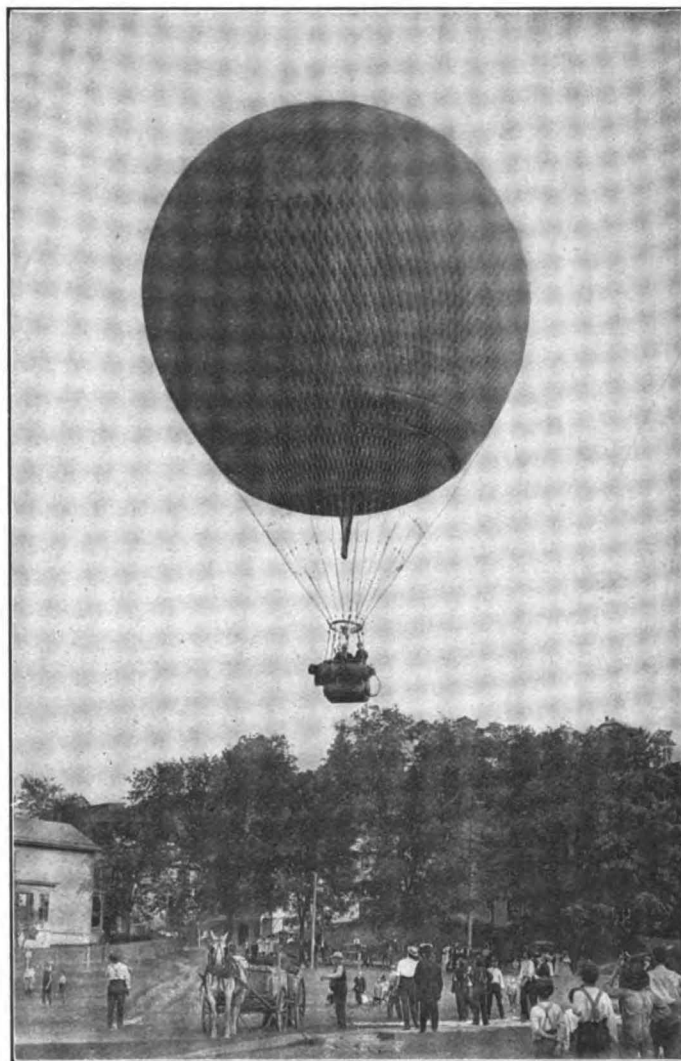
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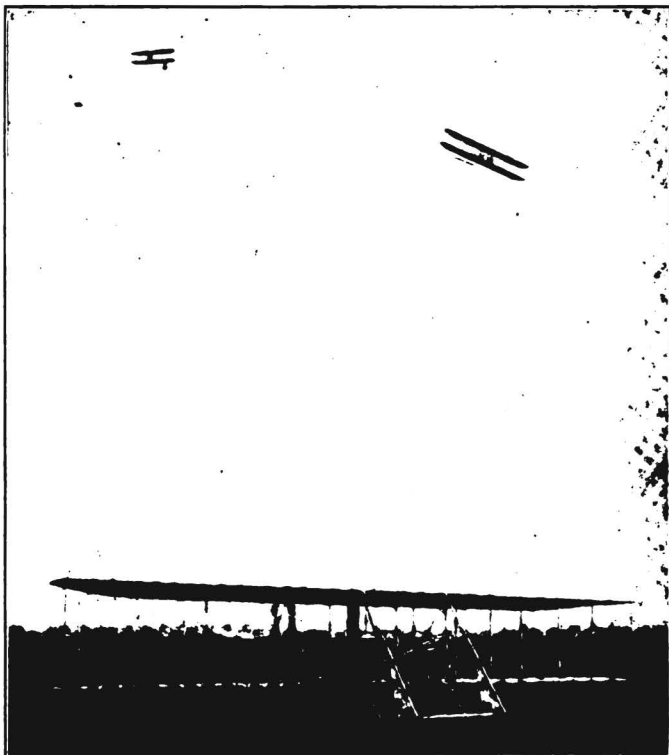
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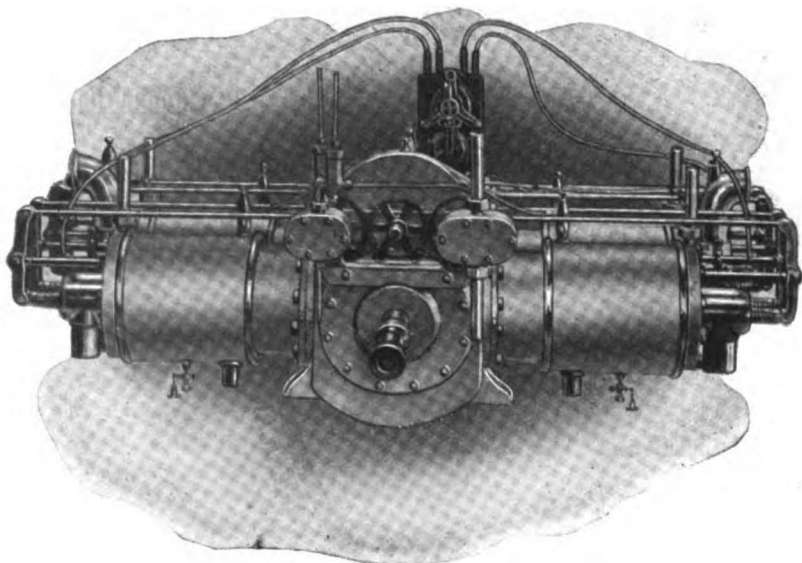
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