FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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Flight.

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CONTENTS

EDITORIAL COMMENT.

Aviation as a Commonplace.

Very few people, outside those with an intimate connection with the movement, properly realise just how commonplace a part of the scheme of things aviation has become. It must, therefore, have been rather by way of surprise that the man in the street read the other day of an action in the High Court between two firms of aeroplane constructors, the root cause of the action being a collision between two aeroplanes in which material damage was caused. It was just an ordinary sort of action—one that was on all fours with the familiar action for damages arising out of collision between two taxi-cabs—and with an ordinary sort of ending. In fact, it was a case which, apart from its novelty, had no particular interest to anyone save the parties themselves. From the historical point of view, though, it certainly has an interest all its own, for the case of Pashley *v.* the British and Colonial Aeroplane Co. will go down to history as the first action of its kind to come before the High Court.

Aviators and "Trespass."

From one law case we pass to another. We have seen reported from time to time cases in which aircraft have been alleged to be in the wrong in some particular or other, but so nebulous is the state of the law of the air that really very little of interest has emerged from any of them. The case we are now to consider is scarcely one involving any law of the air, since it was one of simple trespass on land. It arose out of the race between Messrs. Hamel and Hucks in August last, and, according to the evidence, it appears that when Mr. Hucks landed at the Walsall control so many people flocked around his machine that Mr. Hamel found it impossible to alight within the prescribed area, and was compelled to descend in an adjoining field.

Naturally, large numbers of spectators rushed into the field, damaging, it was alleged, the fences and land. The judge before whom the case was tried in the Walsall County Court laid it down that the jury ought not to award general damages for trespass, unless it was shown that Mr. Hamel intended to wrong somebody by alighting in the field, and, he pointed out, there was no suggestion that he intended anything of the sort. In the result the jury found for Mr. Hamel, with costs.

The case is an interesting one, because of the judge's reading of the law of trespass. Assuming that his remarks have been correctly reported, we must say that his interpretation of that law appears to be a new one. We had imagined that it was not necessary to prove "intent to wrong," but that it was sufficient to prove damage for an action for trespass to succeed. For that reason, we do not advise aviators to pay too much attention to a decision which seems to us to be, to say the least, based on a somewhat doubtful premise.

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An Enterprising Polytechnic.

In our sister journal, the *Auto.*, we have more than once had occasion to commend the enterprise of the Northampton Polytechnic Institute, which from almost the earliest days of motoring manifested the keenest interest in the new movement, and made progressive provision for enlightening the young men of its classes upon all sides of the technical interest attaching to the car and its development. Now the Institute has opened up the same interest in aviation and the aeroplane. We are informed by the Secretary, in a letter which we

publish, that an aeroplane construction class is in process of formation, that a 30 h.p. motor and all necessary materials for building a machine have been purchased, and that as soon as the Institute opens after the holidays the pupils are to begin on constructional work.

This is the sort of enterprise we like. There is no doubt there are many young men of brains and capacity, interested in flying and aircraft construction, but to whom opportunity of acquiring proper scientific knowledge is wanting. They are engaged in trade or business during the day; they cannot afford to throw up their work on the off-chance of securing positions with any of the constructing firms, even if there were enough of such positions to go round and they themselves were properly qualified to fill them. Thus there is but one course open to them, and that is to acquire the necessary knowledge in their spare time. This is where such institutions as the Northampton are doing such useful work—they are giving the keen, intelligent worker the spare-time opportunity he requires, and are doing it well.

The Secretary informs us that there are still a few vacancies in the classes, and those desiring to fill them will do well to make early application to him.

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Flying by Night.

Quite a discussion is raging in France just now on the subject of flying by night, and many and diverse are the expressions of authoritative opinion with regard to its safety and advisability. The discussion has been produced by the amount of night flying that has been done in connection with certain of the long-distance and endurance prizes, of which so many have been put up for competition in France and Germany. We have no records before us to show that there have been accidents caused by night flying, so that the discussion itself is, to some extent, a purely academic one, and one in which sides must be taken out of pure conviction alone, without particular regard to any "lessons" of the past. For ourselves, we have quite an open mind in the matter, principally because we regard the question of to fly or not to fly during the hours of darkness as being eminently one to be decided by the pilot himself or by the particular exigencies of the case to be decided. So far as flying in the dark for prizes is concerned, we are against it if it can be shown that no more useful purpose is to be served than the mere winning of a prize. But there are many considerations which operate. First, if flying can only be carried out safely in daylight, then good-bye to aviation as a means of locomotion in competition with older and relatively slower methods. Further, in all flights there would have to be left a fair margin for delay, so that the pilot might be reasonably certain of reaching his objective before the falling of the shades, so that we should find the flying hours restricted practically to those lying between an hour before sunrise and sunset. If that is to be so—though we do not think it—then it is as well to know our limitations at once, so that the anticipations of the future may not be made on a scale which can only lead to disappointment. But, as we say, we do not think there is any need for such extreme views.

Granting for the sake of argument that the opinions expressed by airmen of the eminence of M. Beaumont—he is one of those who consider night-flying dangerous—are right, the value of the aeroplane in war must be seriously discounted. It must often be the case that it is vitally necessary for air-scouts, or an attacking aeroplane squadron, to get as near as possible to the enemy during the hours of darkness, and, unless the pilots are practised in navigation by night, how is this end to be achieved? Even more, on what we may call the commercial side of aviation, the usefulness of aircraft must be terribly limited in comparison with their real potentialities unless they and their pilots are practised in flying at night.

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H. R. BUSTEED.

PILOT-INSTRUCTOR.

IT was while acting as tester to one of the principal motor firms in Melbourne, Australia, early in 1910, that Busteed was attracted to aviation. A Wright machine and an Anzani-Blériot had arrived in Melbourne, and the latter took Busteed's fancy. He secured permission to practise upon it, but only got as far as a few hops, and many repairs; probably he would soon have made good, but the machine had to be sent out of the Colony, partly in order to save a big sum in duty, and also because no financial support was forthcoming. After his experience had been thus cut short, Busteed decided that he must go to England, to do the thing properly, and this resolution was emphasised later by a sight of Hammond flying the Bristol biplane. Eventually securing his ticket at the Bristol School at Salisbury Plain, in May, 1911, his ability was recognised, and he was appointed an instructor. Later in the year he was sent to Spain to test some Bristol machines, both monoplanes and biplanes, and to instruct Spanish officers to fly them, and a souvenir of his trip is the Avial Cup, which he won by making the first flight over Madrid. On returning to England he flew the Bristol monoplane in the Military Trials, securing the third British prize. Since then, although little has been heard of him publicly, he has been busily occupied testing all new types of Bristol machines, land and water, and putting machines through their reception tests for various foreign countries. Throughout his work has been in connection with the British and Colonial Aeroplane Co., and although he has not come into the public eye a great deal, he is recognised as one of the best pilots of the day.

THE HAWK.

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ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending December 6th:—

No. 1 Squadron.—The "Delta" was out on the 1st and 2nd inst. for instructional flights. Several free balloon runs for training purposes were also made.

No. 2 Squadron.—There was very little flying done during the week, as the squadron was occupied with revolver shooting, and in preparing for the move of the sheds, &c., to the new aerodrome.

No. 3 Squadron.—The pilots of "B" and "C" flights carried out reconnaissance flights during the week.

No. 4 Squadron.—"A," "B" and "C" flights were all at work daily. Several cross-country reconnaissances were made.

No. 5 Squadron.—The BE.'s and Maurice Farmans were flown most days. The detachment at Dover carried out reconnaissance flights over the surrounding district.

Flying Depôt.—Several of the Depôt machines were out during the week, and various experiments were continued.

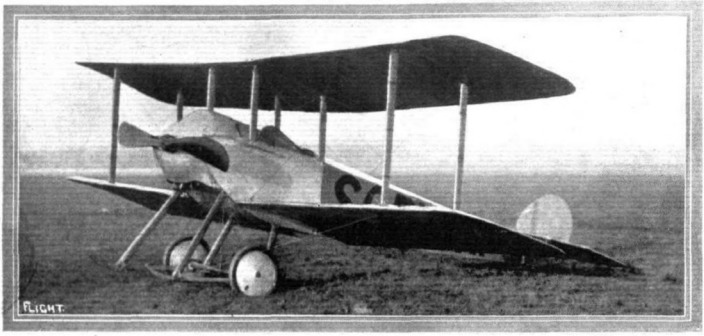
General News.—Machines are being handled in increasingly high winds. Several flights were made this week in winds of 40 miles per hour. The G.O.C.-in-Chief, Southern Command, inspected Nos. 3 and 4 Squadrons at Netheravon on the 3rd inst., and the Secretary of State for War visited that station on the 5th inst. and witnessed various flights. The G.O.C.-in-Chief, Aldershot Command, accompanied by General Sir Beauchamp Duff (the future Commander-in-Chief in India) paid a visit to the sheds and workshops at Farnborough on the 5th inst.

MEN OF MOMENT IN THE WORLD OF FLIGHT.

MR. H. R. BUSTEED.

THE NEW 80 H.P. SOPWITH BIPLANE.

WHEN the latest production of the Sopwith Aviation Co. made its bow to the public at Hendon a few Saturdays ago it did so like a bolt from the blue, and wasting no time in showing what it could do, immediately completed two circuits at a speed of about 90 m.p.h. The successes briefly describe its principal features. It has been designed with the intention of producing what might be called an exhibition machine, that is to say, a machine capable of performing all sorts of evolutions such as steep bankings, small circles, switchbacks, &c. This machine



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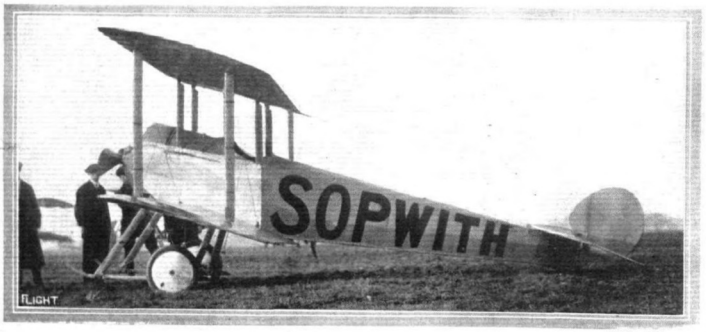
THE 80 H.P. SOPWITH BIPLANE.—Three-quarter view from the front.

of the former Sopwith machines—designed by Mr. T. O. M. Sopwith and Mr. Segrist—are, no doubt, still fresh in our readers' minds, and with this new 80 h.p. "baby" biplane, in the design of which Mr. H. G. Hawker, who piloted the former machines to success, has played an important part, it seems that further is therefore of small dimensions, having a span of 25 ft. 6 ins. and an over-all length of 25 ft. The total area of the main planes is 240 sq. ft., which gives a loading of 3 lbs. per sq. ft. light or 4·5 lbs. per sq. ft. fully loaded, the weight of the machine empty and with pilot and 3½ hours' fuel being 670 lbs. and 1,060 lbs.



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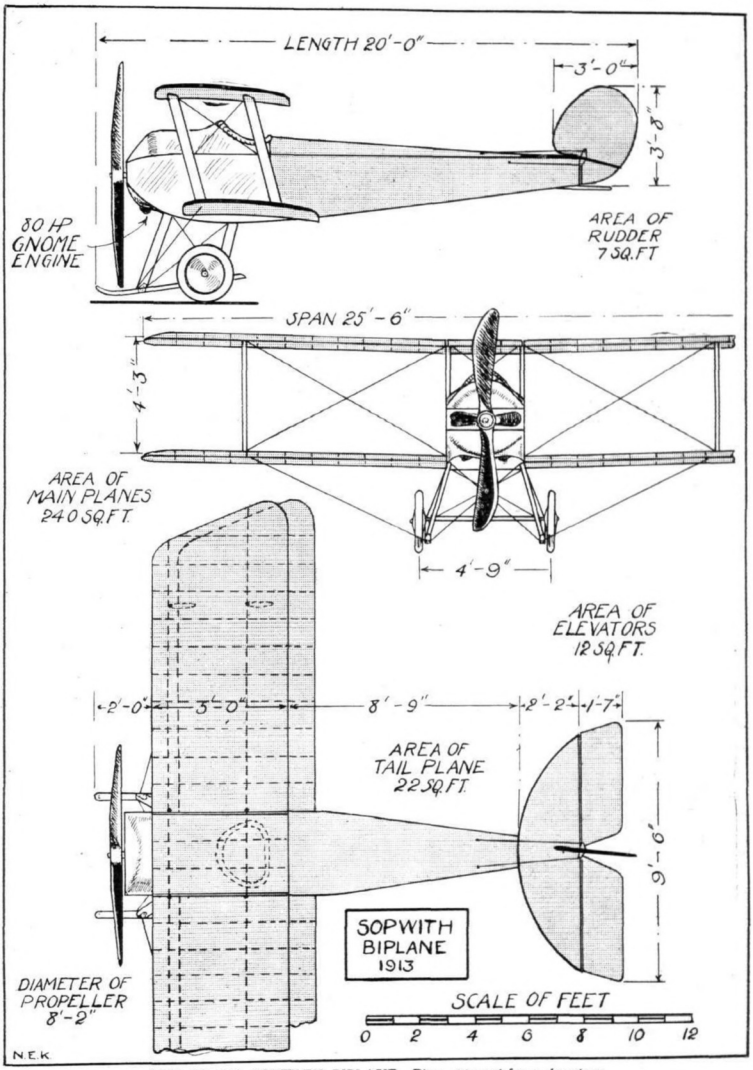
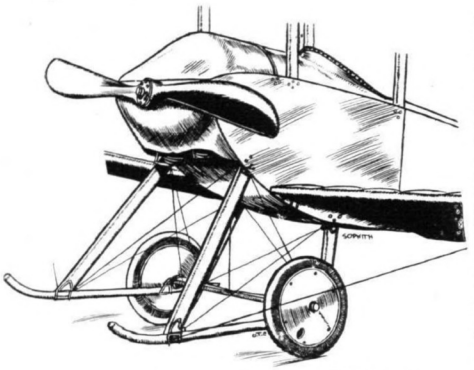
THE 80 H.P. SOPWITH BIPLANE.—Side view.

achievements will soon be added to the credit of this go-ahead Kingston firm.

The general lines of the new biplane are similar to those of the other Sopwith tractor machines previously described in FLIGHT, and so, with the help of the accompanying scale drawings and illustrations, we need but respectively. The main planes, which are comparatively flat, are set at a slight dihedral angle, and the top plane is staggered forward 1 ft. They are built up in two cellules, the lower planes being attached to the lower portion of the *fuselage*, whilst the top planes are secured to a centre panel supported above the *fuselage* by two pairs of



THE 80 H.P. SOPWITH BIPLANE.—Plan, side and front elevations.



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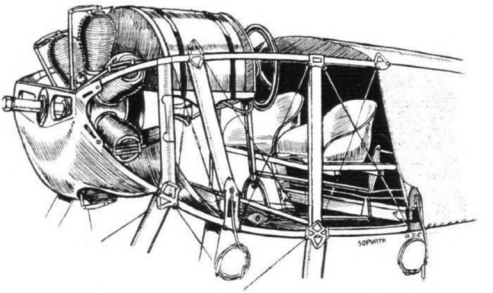
The landing chassis and engine housing of the new 80-h.p. Sopwith biplane.

aluminium cowl, but is nevertheless efficiently cooled by the stream of air passing through a narrow slit formed in the cowl by the front engine bearer; the lower extremity of the engine also projects slightly below the cowl. The latter is easily detachable, and hinges forward, giving easy access to the valves. The carburettor, to which the petrol is fed by gravity, projects within the cockpit, and can easily be got at by the pilot or passenger. The landing chassis has been considerably modified, and consists of two short skids, each connected to the *fuselage* by a pair of struts. At the rear the skids are connected by a streamlined cross strut, in the centre of which is hinged the divided axle, carrying at its outer extremities the covered-in running wheels. In its normal position, the axles lie in a groove formed in the cross strut, thus maintaining the streamline effect of the latter. The axle is sprung by means of rubber shock absorbers attached to the skids, and is held in position by two very short radius rods, hinged to the rear extremities of the skids. In order to prevent the cross strut from bending downwards in the middle, it is braced at this point to the *fuselage* by a wire. The whole of this arrangement is

struts; there are only two other pairs of struts separating the main planes near the extremities. The attachment of the rear spar of the lower plane to the *fuselage* is shown in one of the accompanying sketches. It should be noticed that the struts, including those of the chassis, are well streamlined. In plan form the planes have a greater length in the trailing edge, as on the Morane monoplane. The *fuselage* follows usual Sopwith practice, being rectangular in section, tapering to a vertical knife-edge at the rear. The pilot is seated in a small cockpit between the planes, whilst another seat for a passenger is provided on the pilot's right. The forward ends of the top and bottom *longerons* converge, forming an attachment for the front engine bearer. The 80 h.p. Gnome engine is mounted in the nose of the *fuselage*, and is almost completely covered by a neat



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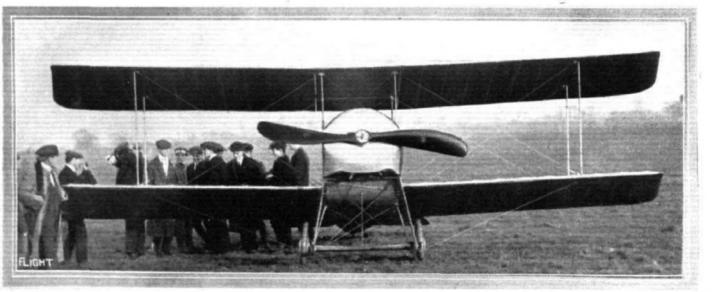
View of the cockpit of the new 80 h.p. Sopwith biplane.



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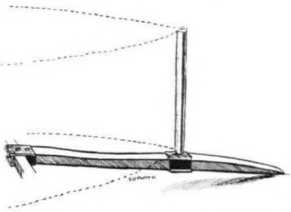
THE 80 H.P. SOPWITH BIPLANE.—View from the front.

clearly shown in one of our sketches. The tail consists of a semi-circular stabilizing plane, to the trailing edge of which are hinged two elevator flaps with a balanced vertical rudder, almost circular in shape, between them. The simple tail skid is shown in one of the sketches.



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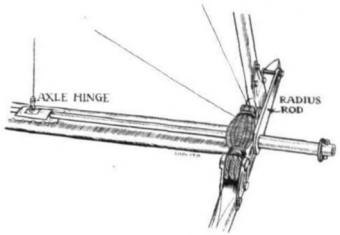
The simple and strong tail skid of the new 80 h.p. Sopwith biplane.

Lateral control is by wing warping, the movement being carried out by a wheel mounted on a vertical column, a fore-and-aft movement of which operates the rear elevators through a connecting rod and counter-shaft. The warp cables are led from a rockshaft to pulleys let into the uprights of the *fuselage* just above the rear spar attachments of the lower plane. From these pulleys the cables go to the top sockets of the rear outer struts. A continuous cable also runs from each of the outer rear strut sockets of the lower plane over pulleys on the tops of the two rear struts attached to the *fuselage*. The new tubular steel rudder bar forms the subject of one of our sketches, so needs no further comment here, other than we should think that its shortness has much to commend it on account of the sensitive nature of the control on a machine of this type. As regards the actual performances of this biplane, we referred to these last week, but they are worthy of repetition. Tested over the measured course at Farnborough, fully loaded with



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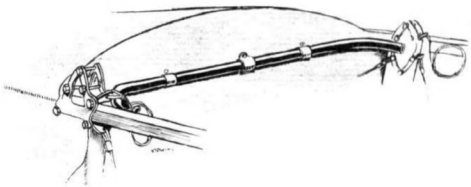
Detailed view of the Sopwith hinged axle and radius-rod on the landing chassis.

fuel for 3 hours, pilot and passenger, a maximum speed of 92 m.p.h. and a minimum speed of 36·9 m.p.h. were attained. The climbing speed was 1,200 ft. in one minute, also fully loaded—quite a credit to British aeroplane design. It was originally intended to take this biplane over to Paris during the Aero Show in order to demonstrate its wonderful capabilities in the home of aviation, so to speak. We understand, however, that this plan has been changed, and that the machine has been sent out to Australia, where Mr. Hawker will put it through its paces above his native soil, and endeavour to rouse the interest of the Australian Government.



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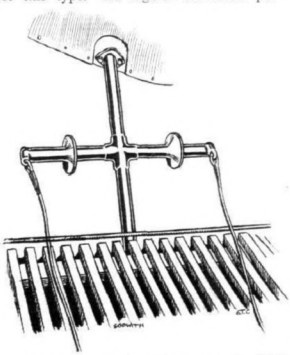
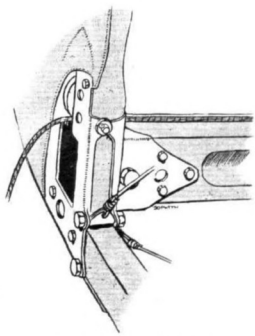
The combined back rest and *fuselage* cross-member of the 80 h.p. Sopwith biplane.





The new type of rudder-bar on the 80 h.p. Sopwith biplane; note the shortness and inclined position of the same. On the right detailed sketch showing the attachment of the rear spar to the *fuselage*.

After staying there some months, we may hope to see him back in England. Our readers will, we feel sure, join us in wishing both Mr. Hawker and the Sopwith Aviation Co. every success in this latest enterprise.

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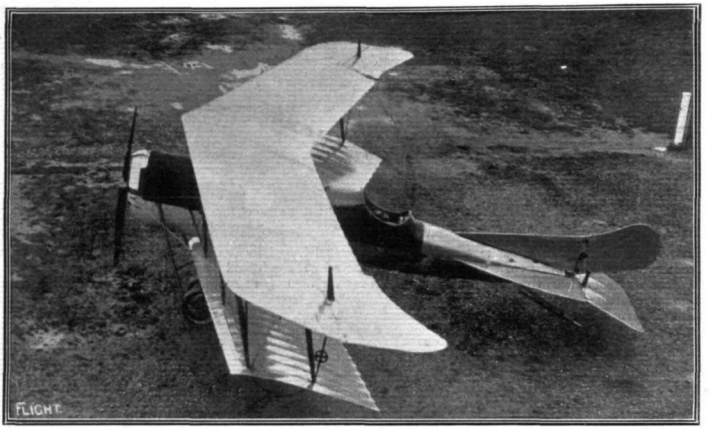
THE D.F.W. BIPLANE AT BROOKLANDS.

QUITE an interesting visitor to these shores is the D.F.W. biplane, which has been down at Brooklands for two or three weeks. Owing to the lack of space, we cannot at the moment do more than publish photographs of this machine, which is being exploited in this country by Mr. Kny's claim, to go and return, day in and day out, for weeks on end if necessary, as it is said to have done on the Continent. It looks immensely strong, and the 100 h.p. Mercedes engine, with its motor car front radiator, looks capable of doing all that is claimed for it.



A plan view of the D.F.W. biplane now at Brooklands.

Mr. G. Cecil Kny, who hopes, by demonstrating the capabilities of his machine as a reliable war plane, to get a share of Government orders. From a cursory glance round this very businesslike-looking aeroplane, it appears likely—though probably not being very fast—to justify We shall later be giving a detailed description of this machine, with photographs and scale drawings. The machine is constructed by the Deutsche Flugzeug Werke, who are the makers of the monoplane which was fully dealt with in FLIGHT on November 8th, 1913.

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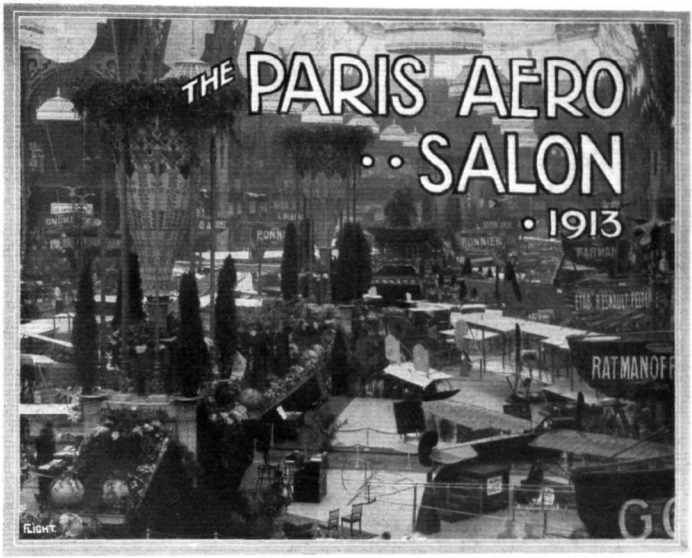
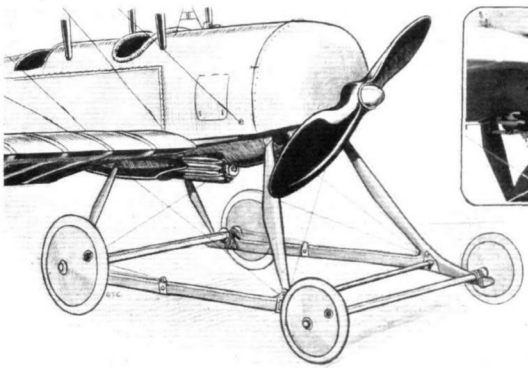
THE D.F.W. BIPLANE AT BROOKLANDS.—Side view.

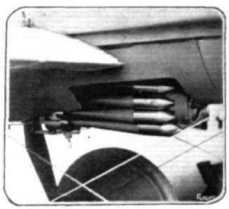


SECOND ARTICLE.

THE BRITISH AND COLONIAL AEROPLANE CO., LTD.

The very fine machine exhibited by the British and Colonial Aeroplane Co., Ltd., is a development of the biplane shown by this firm at the last Olympia Aero Show, and has incorporated in it a number of improvements suggested by tests in actual warfare carried out with several of these biplanes in the Balkans. From the accompanying illustrations it will be seen that the machine belongs to the tractor type, which possesses many advantages, and which, therefore, has been frequently adopted. Constructionally the





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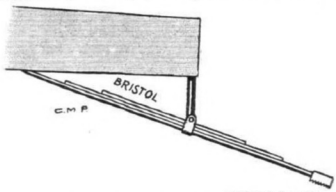
Half-tone sketch of chassis and engine of Bristol biplane. Inset: the bomb-dropping device.

machine is as interesting to the student of aeroplanes as its outlines are pleasing to the eye of the artistically minded.

The *fuselage*, which is of rectangular section, consists of four *longerons* of ash connected by struts and cross members of spruce, the whole being made rigid in the usual way by means of diagonal cross wiring. A turtle back which gradually flattens out towards the tail, and a boat-shaped structure underneath the *fuselage*, gives that member a good streamline shape. In the front portion of the *fuselage* is mounted on overhung bearings the engine, an 80 h.p. Gnome, which is partly covered in by an aluminium cowl. Under this cowl and behind the engine are the oil and petrol tanks, whilst another tank behind the pilot's seat contains an additional supply of petrol which is pumped to the service tank in front by means of a pressure pump. The seats are of the bucket type, and are sprung by means of bent malacca cane supports; they are arranged in tandem, the pilot occupying the rear seat. In front of him are mounted the controls, which consist of a rotatable handwheel mounted on a single tubular column. Rotation of the wheel operates the warp, whilst a to-and-fro movement of the column actuates the elevator. A foot bar is fitted for steering in a horizontal plane. Let into a very neat dash in front of the pilot are all the instruments for cross-country flying, such as compass, clock altimeter, petrol and oil gauges, revolution indicator, and air speed indicator. Well out in front, from where he has an excellent view, is the observer's seat. Mounted in front of this, and projecting down through the *fuselage*, is the apparatus by means of which the observer determines the speed of the machine in relation to the earth. It consists, roughly speaking, of a rectangular box pointing downwards. In the upper end of this box is a sight through which the observer looks at the ground and at two transverse lines running across the lower end of the box. The distance between these two lines, as well as the distance from the upper sight apparatus, situated in the floor of the *fuselage*, and consisting of a cylindrical drum on which are mounted twelve cigar-shaped bombs, is worked from the observer's seat by means of a small lever, so that the observer can release a single bomb, or, if necessary, all the twelve bombs with very short intervals. In order to steer the machine over any desired spot, two sights are mounted on top of



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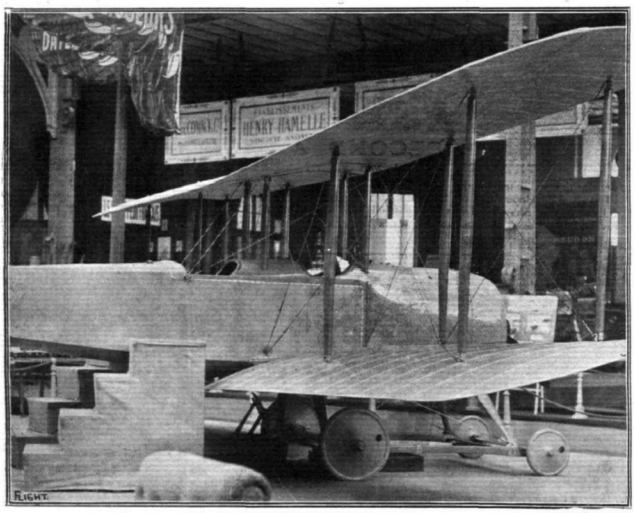
Tail skid of Bristol biplane.

the *fuselage* in front of the observer's seat. The rear sight can be moved sideways for a distance of about 6 ins. If the observer finds that steering a dead straight course for some prearranged landmark will not bring him right over the desired point, he can slightly alter the course by sliding the rear sight to one side or the other so that although the pilot sees the landmark and the two sights in line, the machine is not actually heading straight for the landmark, but slightly to one side or the other. For use at night when the



The Bristol biplane. "Flight" Copyright.

to the lines is known. From the altimeter the observer knows the height of the machine above the ground, and by determining by means of a stop-watch the time it takes for an object, such as a tree or a house, to pass from one of the transverse lines to the other, it becomes a matter of trigonometry to work out the speed of the machine. A small table giving the necessary figures is mounted on the apparatus so that the determination of the speed may be accomplished in less time than it takes to describe the, in reality, very simple device. A bomb-dropping pilot is unable to see the two sights, an electric signalling system is employed, consisting of a series of push buttons in the observer's cockpit and a series of lamps in front of the pilot. Pressing one button lights a lamp which indicates: turn to right whilst passing; another indicates: descend and so on. We have described what might be termed the military portion of this machine at some length because it appears to be the most complete and well thought-out arrangement that has yet been shown to the public.

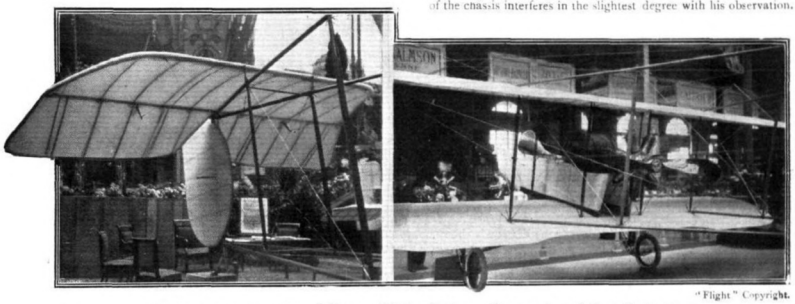
The chassis consists of four struts of spruce, carrying two ash

skids, from which the two pairs of wheels are slung by means of rubber shock absorbers. The wheel axles, which are of strong steel tubing, are streamlined, with wooden pieces lashed on. Stranded cables have taken the place of the usual radius-rods, and the band-brakes which, it will be remembered, were fitted on the machine exhibited at Olympia have been discarded. The extensions of the skids to the rear of the chassis struts have been done away with, and in their place is fitted a tail skid of laminated wood. The main planes, which are of a new section, which has been found to give a very good lift-drift ratio, are separated by six pairs of struts, cross-braced in the usual manner. Both main spars are hinged on the *fuselage*, and warping is employed for lateral control. The tail planes consist of a semicircular fixed tail plane mounted on top of the *fuselage*. To the trailing edge of this is hinged the elevator, which is undivided, as the rudder is situated wholly on top of the *fuselage*.

The workmanship is of the usual high "Bristol" quality, and altogether it would have been difficult to find a more worthy representative for this country, but one can only regret that the British and Colonial Aeroplane Co., Ltd., were the only British firm showing, as neither of our leading firms need have feared comparison with the French manufacturers.

BLÉRIOT.

THE Blériot exhibit is certainly the largest at the Show and one of the most interesting, consisting as it does of no less than six machines and *fuselages*. One of these is the well-known type XI, and the other the equally well-known tandem two-seater, of which we need give no description here, as they are already known to our readers. Of the other machines, probably the most interesting is the tandem two-seater *monocoque*. This machine, which has, as the name implies, a *fuselage* of the *coque* type, is one of the neatest at the Show, and, as far as comfort is concerned, it is one of the best thought out that we have ever seen. It would almost seem impossible to provide such comfort and protection for pilot and passenger in so small a space as is available in this type of machine. The pilot occupies the front seat, which is situated well forward, thus allowing of a very good view in all directions. The passenger's seat is situated in a separate cockpit on line with the trailing edge of the wings, and consists simply of a cushion placed loosely on the floor of the *fuselage*. By sliding the seat along, the passenger may squat down and lie fully stretched out on the floor, and may inspect the country underneath through an oval opening cut out of the bottom of the *coque*. By these means he obtains an absolutely unrestricted view in a downward direction, as no part of the chassis interferes in the slightest degree with his observation.



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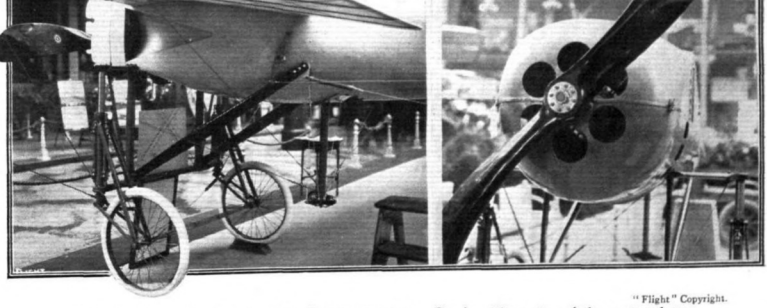
Three-quarter rear view of the new Blériot biplane. Nearer view of the tail planes.

For communication between pilot and passenger a speaking tube is provided, and it is fitted with a microphone which allows of conversation being carried on without the necessity of stopping the engine.

The engine, an 80 h.p. Gnome, is mounted on overhung bearings in the nose of the *fuselage*. It is partly covered in by an aluminium cowl, which has one opening on each side of the *fuselage*, thus allowing the air to escape. This should, we think, provide excellent

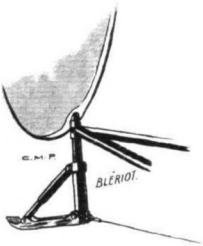


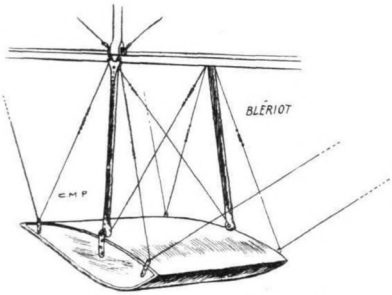
"Flight" Copyright.

Chassis and engine mounting of the Blériot *monocoque*. On the right a view of the armoured nose.

cooling for the engine, and at the same time prevent any oil from being blown back in the faces of the pilot and passenger.

The chassis is of the usual Blériot type, to which M. Blériot seems to return after having tried various other types, so that one must conclude that he has found it absolutely successful, and it is certain that for landing side to the wind it would be difficult to imagine a more suitable chassis. The tail skid, which is of V shape, consists of two flattened steel tubes, pivoted on the *coque* and sprung forwards and backwards by wires and shock absorbers, attached to the chassis and the tail, respectively. The tail planes are of the usual Blériot type, and consist of a fixed tail plane attached to the *coque*, and a divided elevator of the negatively cambered type.





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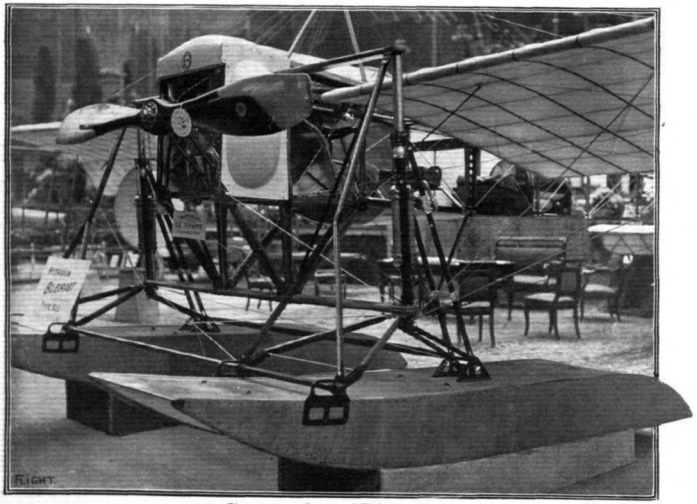
Tail skid of the Blériot biplane, and on the right tail float of Blériot hydro.

The main planes are attached to the *fuselage* by fitting the spars into two transverse tubes, and are braced downwards to the chassis and upwards to a very high *cabane*.

One of the other machines, of which only the *fuselage* is shown, is also of the *monocoque* type, but differs from the one just described in that it is a single-seater. The front portion from the nose of the *fuselage* to a point behind the pilot's seat is armoured with 3 mm. thick chrome nickel steel. During some experiments carried out it was found that rifle bullets fired from a distance of 400 yds. either glanced off or made but a small dent in the armour, while it was found that the rear wooden portion of the *fuselage* could be pierced with a great number of bullets without impairing the strength of that structure, so that for military purposes this machine ought to provide comparative safety for the pilot without necessitating flying at a very great altitude. Naturally the armour makes the machine heavier, and as a matter of fact the weight of the armour has been found to be equal to that of a passenger; hence the reason for making the machine a single-seater with the same engine.

The biplane exhibited has, we understand, been built with a view to comply with the requirements of the military authorities, for a machine which, while not particularly fast, will be lighter loaded, and, therefore, have a better climbing capacity than the more heavily-loaded monoplane. Superficially, it must be admitted, this



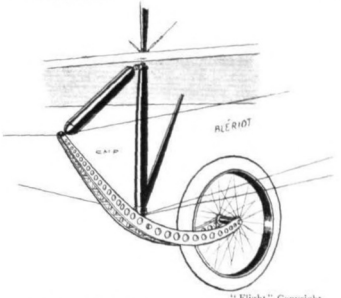
Chassis and floats of Blériot hydro. "Flight" Copyright.

machine resembles the well-known Henry Farman biplane, but aerodynamically it is quite distinct, the wing section, for instance, being absolutely different from that of the Farman. The main planes, of which the top one has a much greater span than the lower one, are connected by six pairs of struts of flattened steel tubes, cross braced in the usual way. The *nacelle*, which is of rectangular section, is built up of four *longerons* of ash, connected with struts and cross members of steel tube and spruce. The *nacelle* is secured to the lower main plane by means of bolts passing through the main spar. In the front portion of the *nacelle* are the pilot's and passenger's seats, arranged tandem fashion, the pilot occupying the front seat. The controls consist of a single central tubular column, which actuates the *ailerons* and elevator, while a pivoted foot-bar operates the rudder. In front of the pilot are mounted the usual instruments for cross-country work.

A tail outrigger, consisting of four steel tubes connected by tubular streamlined struts, carries the tail plane, which consists of a fixed cambered tail plane to the trailing edge of which is hinged the negatively cambered divided elevator. Pivoted round the rear upright strut is the rudder, which is of the Henry Farman type.

One of the most novel features of this machine is the landing chassis, which structure seems to have been reduced to its simplest possible form, and does not at first sight give the impression of being able to stand up to a very rough landing, but according to the manufacturers it has already been tested and found very efficient. It is illustrated by one of the accompanying sketches, which is, we think, self-explanatory.

The hydro-monoplane follows in its general lines the construction of the land machine, and a detailed description of the machine itself is therefore not necessary. Suffice it to say that it is driven by a 9-cyl. 80 h.p. Le Rhone engine, which has, owing to the light weight of the machine, been found sufficiently powerful for the purpose. The main interest attaches to the chassis and floats. These latter, which are of the plain, non-stepped type, are attached to the *fuselage* by means of the usual Blériot chassis, with the addition of a few extra struts, which support the front transverse steel tubes round which the floats are pivoted. Each float moves independently, the amount of upward travel being 35 centimetres, and they are orientable similarly to the wheels of the land machines. This impresses one as being an excellent feature for alighting on the water in a side wind, as it will probably allow the machine to slide along slightly sideways without upsetting it, thus acting in a similar manner as the swivelling wheels of the land machine. One gathers that the operation of substituting wheels for the floats, or *vice versa*, can be accomplished in a comparatively short time, thus changing it into a land machine.



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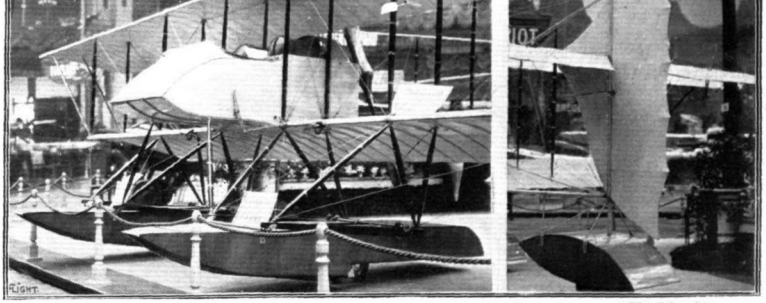
One-half of chassis of new Blériot biplane.

When the machine is resting on the water, the tail is supported by a tail float of three-ply wood, rigidly attached to the *fuselage*, and the rudder is extended some distance downwards to allow of steering on the water when taxying. The workmanship is of the highest quality in all of the exhibited machines, and one leaves this stand with a feeling of admiration for the activity and enterprise of the Blériot firm.

CAUDRON.

Of the two machines exhibited on the Caudron stand, the hydro-biplane, is, perhaps, the more interesting, as it is less known to our readers than the land machines, of which so many are to be seen daily at the London Aerodrome. The hydro-biplane is of the "pusher" type, having the engine—a 100 h.p. 9-cylinder Gnome—mounted between double bearings in the rear end of the *nacelle*. It drives through a 2 to 1 reduction gearing the propeller, which has been mounted on a long shaft in order to clear the trailing edges of the main planes.

In the front portion of the *nacelle* are the pilot's and passenger's seats, arranged side by side, the pilot occupying the right-hand seat. In front of him are the controls, which consist of a single wooden lever which works the warp and elevator, whilst the rudder is actuated by a foot-bar. The outrigger, which carries the tail planes, consists of four steel tubes connected by spruce struts. The tail planes comprise a slightly cambered fixed tail plane, to which is hinged the divided elevator. The rudder is hinged to the vertical rudder-post which joins the rear extremities of the tail



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The Caudron hydro-biplane, and a view of the rudder and tail float.

booms. A tail fin is provided in order to balance the side area of the floats. A small tail float is mounted on an extension of the vertical rudder-post, and protects the tail planes against contact with the water.

The main floats, of which there are two, are of the already well-

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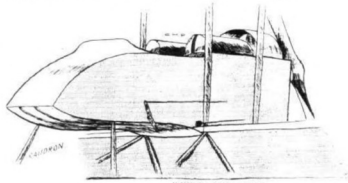
Chassis and *fuselage* of the Caudron military biplane.

known Caudron type, built by Mons. Tellier. The floats are pivoted round the lower extremities of the front chassis-struts, and are sprung from four short skids by means of rubber shock-absorbers at the rear. Mounted in an opening in the centre of the float is a wheel which projects slightly below the step of the float, so that the machine is really amphibious. The wheels are not sprung from the floats, but depend for their springing on the shock-absorbers, by means of which the rear part of the float is attached to the skids.

The main planes are of the usual Caudron type, having the two main spars fairly close together, and possessing the flexible trailing edge which characterises the land machines. The upper main plane has a considerable overhang, that is to say it has a much greater span than the lower plane. The main planes are connected by six pairs of vertical struts of hollow spruce, with the exception of the inner ones, which are made of ash. The thrust is transmitted from the *nacelle* to the wings by bolting the *nacelle* to the main spars of the lower plane and to the inner plane struts.

The other machine exhibited is a military two-seater land machine. It is driven by an 80 h.p. Gnome engine, mounted on the front of the usual type of Caudron *fuselage*. In the rear portion of the *fuselage* are the pilot's and passenger's seats, the pilot occupying the rear seat. The controls are as usual, consisting of a single lever for the warp and the elevator, and a foot-bar for the rudder. The chassis is of the familiar type, with the skids extended backwards to form the lower tail-booms. This



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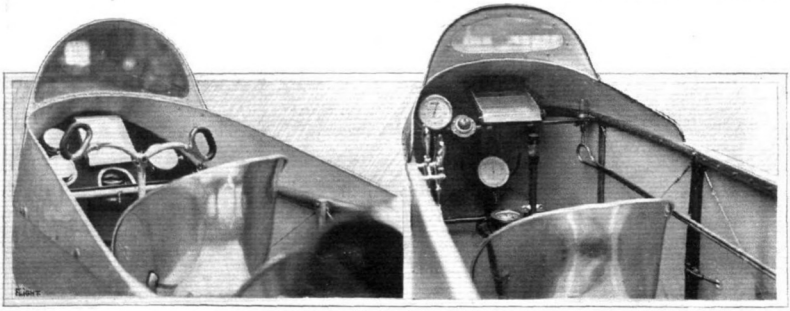
The *nacelle* of the Caudron hydro.

machine is similar in every way to those now in use in this country, but one notices that all the strut sockets are now made of steel instead of aluminium as on earlier machines. This, we think, must be considered a distinct improvement as steel sockets are very much stronger, weight for weight, than aluminium sockets.

FARMAN.

Although only two finished machines are exhibited this year by the Farman Brothers, their stand is nevertheless one of the most interesting at the Show, for so many alterations have been made and so many novelties are to be found that the lack of quantity is more than made up for. Of the two machines, the Henry Farman is the one which first attracts one's attention on entering the stand, for it is a much greater departure from previous types than is the M. Farman hydro-biplane.

In plan view, as seen from the gallery, the new H. Farman does not differ materially from the earlier type, but when seen from the floor the two main alterations become at once apparent. The first consists in the raising of the *nacelle* until that structure is immediately below the upper plane. As a matter of fact the *nacelle* is slung from the upper main plane by bolting it to the main spars, and the trailing edge has been cut away to clear the engine—a 100 h.p. Gnome—which projects some distance above the upper plane.



Maurice and Henry Farman *nacelles*.

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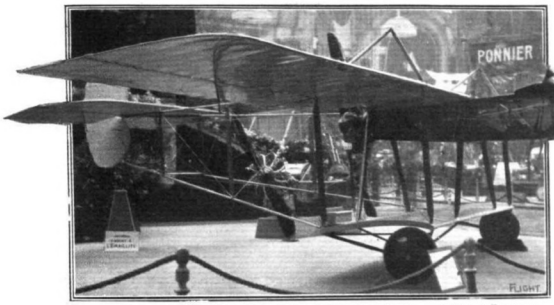
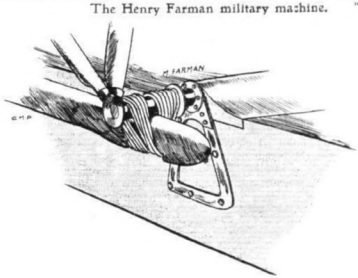
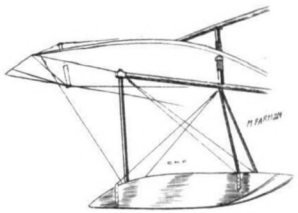


The Henry Farman military machine. "Flight" Copyright.

The extensions of the upper main planes are supported when the machine is on the ground, by wires passing over *cabanes* on top of the plane. The tail plane and elevator are of the same type as those on the ordinary H. Farman biplane, but the shape of the rudder as well as the tail skid have been slightly modified.

The chassis, which is really one of the most interesting features of the machine, consists of two stub axles pivoted at their upper ends from the point of attachment of the inner plane struts to the main spars, and working in a slot in the two guide tubes, which form the chassis struts. The wheel track is very wide —4 metres, to be exact—and one is inclined to think, that whilst a track of this width will of course prevent the machine from turning over on the ground, it will be found to render the machine practically unmanageable on a very rough surface, as in case of one of the wheels getting into a rut, the machine would have a tendency to spin around it. From





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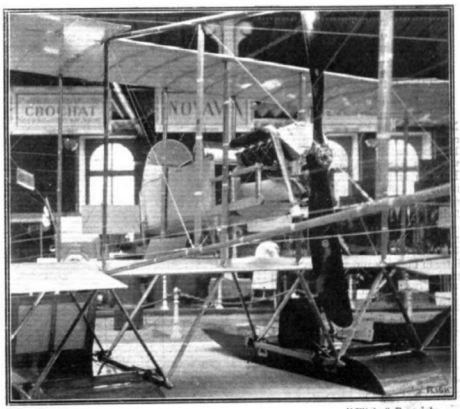
Attachment of main float on M. Farman hydro. On the right one of the tall floats.

The *nacelle* is of the usual H. Farman type, and is built up of four *longerons* of ash, on the rear ends of which are carried the engine bearers, and which converge in the front to form a good streamline entry for the air. The struts and cross-members are also of ash, and diagonal cross wiring gives rigidity to the whole structure. The *nacelle* is covered with thin oxydized sheet metal, which gives it a very business-like appearance. Inside the *nacelle* and immediately under the top plane which entirely covers them are the oil and petrol tanks. In order to facilitate the filling of the tanks a short length of tube projects forward and upwards until the filler cap is in line with the leading edge of the upper plane. One little point in connection with the mounting of the tanks illustrates the forethought and attention paid to details in the Farman machines. In order to prevent the tanks from springing a leak should the machine make a rough landing, these are sprung from the *nacelle* by means of rubber cushions or buffers introduced in the steel straps by which the tanks are attached to the *nacelle*.

The seating arrangement, as well as the controls are of the usual H. Farman type. A single central tubular column operates the *ailerons* and the elevator, whilst the rudder is actuated by a pivoted foot-bar. The lower plane is of so short a span that one is a little in doubt whether to call the machine a biplane or a monoplane. Perhaps in time a word will be coined which expresses this type of machine. The Germans already have a word for it: Anderthalb-decker (one-and-a-half-decker). Four pairs of ash struts connect the two planes, the outer pairs being vertical, while the inner pairs slope downwards and outwards from the joint of the *nacelle* to the upper main spars.



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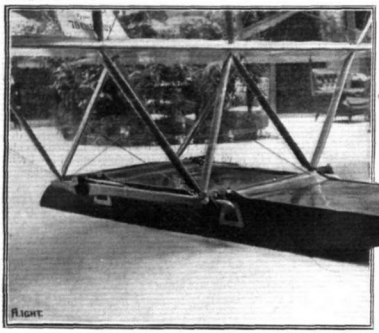
Nacelle and floats of the M. Farman hydro-biplane.

an observer's point of view—the purpose for which it was designed—the machine leaves nothing to be wished for, as it would be difficult to imagine a freer and more unrestricted view in all directions than that afforded from the *nacelle* of this new H. Farman.

The other complete machine exhibited on the Farman stand is a M. Farman hydro-biplane Deauville type, fitted with a 70 h.p. Renault engine.

The *nacelle*, which has been raised considerably until the centre of thrust is now roughly half way between the planes, is of the ordinary



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One of the main floats of the M. Farman hydro.

M. Farman type as are also the pilot's and passenger's seats and the controls. It is bolted to the inner plane struts, which have a small ledge cut in them to act as support for the *nacelle*. The chassis

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Tail planes of the Henry Farman.

consists of two sets of struts which in the front view resemble the letter *W*. Four short skids are attached to these struts, two to each set, and each float is slung from its two skids by rubber shock absorbers. The floats themselves are of the plain non-stepped type, and the whole chassis gives one the impression of being an immensely strong piece of work. The advantages of springing the floats have been pointed out in these columns so often, that repetition is unnecessary.

The tail planes, which now consist of a single fixed tail plane to which is hinged the elevator, and two rudders mounted wholly on top of the tail plane, are carried on an outrigger formed by four straight booms of spruce connected by hollow spruce struts. The angle of incidence of the fixed tail plane can be adjusted by means of a lock-nut working on a thread cut on the vertical tube which connects the upper and lower tail booms. Two tail floats support the tail planes when the machine is on the water, and the method of mounting these floats is shown in one of the accompanying sketches. Needless to say, the workmanship and finish is of the best quality, as is to be expected from so well known a firm as the Farman Brothers.

(To be continued.)

BRITISH NOTES OF THE WEEK.

Another Change for the Naval Wing, R.F.C.

TUESDAY next will see the transference of the headquarters of the Naval Wing of the Royal Flying Corps from the light cruiser "Hermes" to the Naval Sub-Depôt, Sheerness. The "Hermes" was commissioned as parent ship of the Naval Wing on May 7th last, and previous to that the torpedo ship "Actæon" had been used for the purpose. In future the officers and men will be borne in the depôt ship "Pembroke."

An Adventurous Cross Channel Trip.

FOGS made the trip from London to Paris last week-end by Mr. Salmet with the Hon. Mrs. Assheton-Harbord a very adventurous one. After a trip from Sunninghill Park, Ascot, to Hendon on Saturday morning M. Salmet set out on his Blériot, with his passenger, for Paris. Stops had to be made, however, at Lenham and Ashford, and when Folkestone was reached the fog rendered an attempt to cross the Channel inadvisable. A start was made for France on Sunday morning in clear weather, but after flying for about ten minutes, a thick fog was run into, and in consequence of this and the increasing wind, the trip across took 1 hr. 35 min. instead of about half an hour as anticipated. The French coast was sighted and a landing effected near Dieppe, and later in the day progress was made to Rouen, where it was decided to stay the night. Next morning the remaining distance to Buc was completed in 35 mins.

Mishap with the G.-W. Charabancs.

AFTER a fine flight from Hendon to Folkestone on Thursday of last week, the Grahame-White aerocharabancs was badly damaged when starting on a trip across the Channel. Piloted by Mr. Grahame-White, with the Earl of Drogheda, Mr. G. Villers and Mr. R. H. Carr as passengers and a full supply of petrol, the machine was starting when it failed to clear a fence and came down heavily. Pilot and passengers were unhurt.

The Handley Page Biplane.

LAST week the new 100 h.p. Handley Page biplane completed its final trials before being handed over to the purchasers. On Thursday week it carried pilot and two passengers with a full complement of petrol and oil up to an altitude of 3,000 ft., the climbing speed being just under 300 ft. per minute, and flew on a duration test thus for 20 mins. The machine was then tested for speed over a measured course, and a speed variation of over 70 m.p.h. down to 35 m.p.h. with full load aboard and a passenger was shown. In the afternoon a flight was made to Brooklands and from thence to Farnborough, where the machine stayed until Saturday morning, returning *via* Oxford and Princes Risborough to Hendon, landing at 3.30 in the afternoon. This cross-country test was carried out to try the landing and climbing properties of the machine. As it is destined for exhibition work it is essential that it should pull up in a very short distance and climb very quickly, and this it does exceedingly well. Some alterations are being made to the tail planes, so as to increase its speed range and improve the machine still more.

Looping the Loop at Shoreham and Aintree.

TO-DAY, Saturday, and to-morrow, Sunday, Mr. B. C. Hucks, will be giving exhibitions of looping the loop, &c., on his Blériot monoplane, at the Shoreham Aerodrome, and arrangements have been made for him to visit Aintree on Boxing Day for similar flights.

Bournemouth to Windsor by Salmet.

ON Wednesday of last week Salmet flew on his Blériot with Count Jacques de Fitz-James from Bournemouth to Windsor with one stop. Leaving Bournemouth at a quarter to ten, a stop was made about four miles from Basingstoke at 10.55 a.m. Twenty minutes later the Blériot was again in the air, and reached Sandhill Park, near Windsor, at 11.50 a.m.

Mr. Summerfield at Melton Mowbray.

IN anything but ideal weather Mr. S. Summerfield made a fine flight on his Blériot machine at Melton Mowbray last Saturday. For most of the time he kept about 1,000 feet up, and came down by a splendid spiral *vol plané*. There was one apprehensive moment when the machine side-slipped, but the pilot skilfully corrected that in good time.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday last, December 16th, 1913, when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Major J. D. B. Fulton, R.F.A., Prof. A. K. Huntington, Mr. Alec Ogilvie, Mr. C. F. Pollock, Mr. R. W. Wallace, K.C., and the Secretary.

New Members.—The following new Members were elected:—Harold Hartley Baron, Arthur Percy Bradley, Arthur Bray, Capt. Basil Henri Louis Hay, Lieut. Thomas Leonard Stanley Holbrow, Norman Spencer Roupell, Jack Hugh Stewart Sprot, Lionel Tatton Sutton, Lieut. George Theodore Temple, R.N. (Retired), Alfred Ernest Yates Trestrail, and Hans Voigt.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

699 Rolf Gustav Ugo von Segebaden (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 7th, 1913. (Subject to permission of Aero Club of Sweden.)

700 Capt. Maurice George Lee, I.A. (40th Pathans) (Vickers Biplane, Vickers School, Brooklands). Dec. 8th, 1913.

701 Sergt. Duncan Mitchell, (Maurice Farman Biplane, Central Flying School, Upavon). Dec. 11th, 1913.

702 Capt. Basil Henri Louis Hay (Bristol Biplane, Bristol Schools, Salisbury Plain and Brooklands). Dec. 11th, 1913.

703 Harold Richard Johnson (Caudron Biplane, Ewen School, Hendon). Dec. 11th, 1913.

704 Norman Howarth (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 11th, 1913.

705 Second Lieut. Thomas Leonard Stanley Holbrow, R.E. (Caudron Biplane, Ewen School, Hendon). Dec. 13th, 1913.

Re-Elections.—It was unanimously resolved:

"THAT those Members elected between November 1st, 1912, and October 31st, 1913, be re-elected under Rule 39."

F.A.I. Paris Conference.—Mr. Wallace presented a brief report on the Conference of the Fédération Aéronautique Internationale held in Paris on the 15th inst.

(Report appears under these notices.)

F.A.I. Cartographic Committee.—Mr. Griffith Brewer reported briefly on the work carried out by this Committee. Mr. Griffith Brewer and Prof. A. K. Huntington were appointed to represent the Royal Aero Club on this Committee.

Gordon-Bennett Aviation Cup.

RULES FOR 1914.

The Race for the Gordon-Bennett Aviation Cup will take place in France next year.

The Race will be over a distance of 200 kilometres on a course having a minimum distance of 5 kilometres.

Competing aircraft, before taking part in the Race, will have to pass the following preliminary test:—

A flight in a straight line out and back of about 2 kilometres, without touching the ground, at a constant height of not more than 30 metres. The speed of the test shall be the mean of the speeds of the flights out and back, which must not exceed 70 kilometres per hour. In this test the aircraft must carry sufficient petrol and oil to cover the whole course of 200 kilometres. Three attempts will be allowed to each competitor.

After the qualifying tests have been passed, no modifications may be made to the aircraft. Repairs will only be allowed with the permission and under the control of the Officials.

Each club affiliated to the Fédération Aéronautique Internationale has the right to challenge the holder, the Aero-Club de France, and such challenge must be sent in before March 1st, 1914.

The Committee of the Royal Aero Club will select the three competitors to represent the British Empire, and intending candidates are requested to notify the Secretary on or before Tuesday, February 24th, 1914, of their willingness to compete if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the entrant not be selected.

The Jacques Schneider Maritime Aviation Cup and Prize, 25,000 frs.

Mr. Jacques Schneider has given a trophy of the value of 25,000 francs and a cash prize of 25,000 francs for three years for international maritime aviation competition.

The Aero-Club de France, having won the prize last year, has organisation of the race for 1914. The Prize will be competed for over a distance of 150 nautical miles. The Contest will take place exclusively at sea, outside any port, and over a course of not less than 5 nautical miles. Further details will be announced later.

Each club affiliated to the Fédération Aeronautique Internationale has the right to challenge the holder, the Aero-Club de France, and such challenge must be sent in before March 1st, 1914.

The Committee of the Royal Aero Club will select three competitors to represent the British Empire, and intending candidates are requested to notify the Secretary on or before Tuesday, February 24th, 1914, of their willingness to compete, if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the entrant not be selected.

F.A.I. Conference.

A Conference of the Fédération Aéronautique Internationale took place in Paris on Monday, December 15th, 1913, under the chairmanship of Prince Roland Bonaparte, at which delegates representing the following countries were present:—United States, France, Germany, Great Britain, Argentine, Austria, Belgium, Denmark, Hungary, Italy, Holland, Sweden, Switzerland.

The meeting unanimously agreed that the closing of certain zones to aviators was an infringement of the liberty of the air and that the clubs of the Federation should urge their respective governments to modify their regulations on the subject. It was decided also that an extraordinary conference of the Federation should be called, to which the different governments would be invited to send representatives to discuss the matter with the Federation's delegates.

The other matters under discussion were the Gordon-Bennett Aviation Cup and the Jacques Schneider Maritime Aviation Competition.

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

Sub-Lieut. Rainey, R.N., has been flying the new Bristol tractor well during the past week. This machine has been fitted with a new chassis of simple design, which greatly facilitates landing.

M. Verrier arrived about noon from Hendon on Tuesday, accompanied by a passenger, on the De Dion-engined Maurice Farman, without front elevator, preparatory to putting it through the Admiralty acceptance tests.

In the gathering shadows on Wednesday, Asst.-Paymaster Finch Noyes on Henry Farman 31 made a brilliant flight under adverse weather conditions, completing a couple of circuits of the aerodrome, finishing up with a beautiful landing.

Lieut. Davis has been flying Sopwith 27 in his usual good style, and Sub-Lieut. Littleton on Deperdussin 7 has also been putting in some good work. Sub-Lieut. Marix on a S. 38 type during a cross-country flight was compelled to make a forced landing on the old Sheerness racecourse owing to engine trouble. Another engine having been sent from the school and fitted, he endeavoured to return to the aerodrome, but again had to land near the Minster Railway Station, the new engine this time giving trouble, and as darkness was approaching the machine was made secure. The following morning, the engine in the meantime having been attended to, Sub-Lieut. Marix flew the remaining stage of the journey.

Thursday, though rather windy, was a very busy day, and the machines in use included Shorts, Farmans, Deperdussin, Avro, Sopwith, &c., and the usual pilots. Friday was very windy and no flying took place.

Saturday proved to be a lovely day, cold and crisp, with little wind, and a good amount of flying was done, including a very fine flight by Commander Samson on a Deperdussin. Sunday was dry and a light breeze, but no flying.

To summarize, the following machines were in use. Shorts 3, 34, 62, 63, 64, 65, and the 100 h.p. tractor which has been given the official number of 10. Sopwith 27, Avros 16 and 41, Deperdussin 7, Bristols 24 and 43, Caudron 40, Maurice Farman 70, Henry Farman 31, and the pilots include Com. Samson, Lieut.

Davis, Asst.-Paymaster Finch Noyes, Capt. Courtney, Lieut. Clarke Hall, Sub Lieuts. Rainey, Marix, Littleton and Young, P.O. Telegraphist Hooper, P.O. Andrews, Ld.-Sm. Bateman, O. Telegraphist Stirling.

Brooklands Aerodrome.

On Monday, last week, Mr. Barnwell flew to Farnborough and back on the Martinsyde monoplane, with Mr. Guy Blatherwick as a passenger. Mr. Verrier arrived at Brooklands *en route* for Farnborough, and resumed his journey later after adjustments to engine.

Mr. Raynham was out on Tuesday testing the 50 h.p. Avro in a strong breeze in afternoon. Mr. H. V. Roe (pupil) was engaged in school work under Mr. Raynham.

Mr. Barnwell experimenting with new Vickers biplane with gun attached. On Wednesday Mr. Dukinfield Jones was on the Flanders biplane. Herr Roempler made further tests of the D F.W. biplane. Mr. H. V. Roe was engaged in school work under Mr. Raynham in the morning and afternoon.

On Thursday Mr. Barnwell made further tests with new Vickers gun-carrying biplane. Mr. Whitehouse came over from Hendon on the Handley Page biplane. Lieut. Wadham came from Salisbury on a tandem Blériot monoplane with passenger, returning again to Salisbury in the afternoon. Mr. Barnwell out on Vickers Blériot testing its speed over a measured course. Messrs. Raynham and Dunkinfield Jones made a number of flights on the Flanders biplane. Mr. Raynham was also out on the 50 h.p. Avro biplane, giving tuition to Mr. H. V. Roe. The Martinsyde monoplane was flying well. Herr Roempler was flying the D.F.W. biplane. Mr. Whitehouse resumed his journey to Farnborough on the Handley Page biplane. The latest acquisition to the ranks of private aeroplane owners is Mr. L. Davis, of Forest Hill, who has purchased the 50 h.p. Avro Gnome-engined biplane. This gentleman is no stranger to flying, having had some experience on a Valkyrie, and it is understood that he will have the advantage of personal tuition by Mr. Raynham. Mr. Boger (an old Bristol pupil), flew over to Ripley on his Parsons biplane, with the idea of breakfasting at the Talbot Hotel, and in landing had the misfortune to touch some tree tops, with the result that his machine made a nose dive to the ground, the pilot being severely injured and the machine wrecked. On learning of Mr. Boger's accident, Mr. Merriam at once flew to the rescue on a Bristol biplane, landing on the spot where the accident happened.

On Friday, Mr. Pixton was out testing a Sopwith biplane.

Mr. Barnwell, on Saturday, was flying the 70 h.p. Vickers biplane. Mr. Waterfall made several flights on the No. 5 Vickers monoplane. Mr. Dukinfield Jones was on the Flanders biplane and afterwards handed the machine over to Mr. Barnwell who took it up to a good height with a passenger, and made an excellent spiral landing. Mr. Pixton started on a Sopwith biplane with the intention of flying to Farnborough, but had to come down *en route*, making a very clever landing under difficult conditions in a ploughed field at Pyrford, from which place he experienced some little difficulty in re-starting. Mr. Jack Alcock was testing the new 100 h.p. Sunbeam engine on the Maurice Farman biplane on which he made some good flights over the surrounding country. Mr. Barnwell was flying the Martinsyde monoplane with Mr. Waterfall as a passenger. Mr. Merriam made some good flights, including one at midnight, by the light of the full moon, with one of his pupils—Mr. Macdonnell.

Mr. Maurice Bernal Blake, who recently took his *brevet* at the Grahame-White School, flying well at 700 ft.

Herr Roempler was flying well—solo and with passengers on the D.F.W. biplane. Another new Sopwith machine arrived for testing.

On Sunday the weather was delightful, a strong breeze gradually dying down. The Vickers 70 h.p. biplane was first out, Mr. Merriam following soon after on the Bristol biplane. Herr Roempler then made a number of good flights both solo and with passengers, amongst whom was the winner of the ballot for the free passenger flight, Mr. H. F. Crundall, Bank of Montreal, London. The Martinsyde monoplane made a number of excellent flights with and without passengers. The new Sopwith tractor biplane was also flying well. Messrs. Raynham and Dukinfield Jones made a number of flights on the Flanders biplane with and without passengers.

Avro School.—Monday, last week, Raynham for several tests on 50 Gnome-Avro, the machine flying exceptionally well in gusty wind; and next day Raynham up in strong wind giving instruction to Charlton.

Wednesday, Raynham for short tests, and then for two hours with Charlton for instruction with the dual control. At the end of this time the pupil succeeded in flying several circuits without assistance from his instructor.

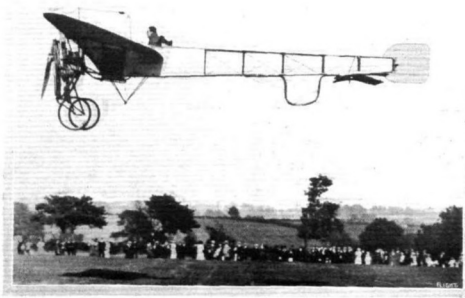
Raynham with Charlton for instruction Thursday morning, and later for a flight with Mr. L. Davis, who has purchased the machine.

Bristol School.—Weather too bad for flying on Monday and Tuesday last week.

Merriam testing on Wednesday, taking Mr. Don as passenger, and found bumpy, later up behind this pupil on straights, and found still very bumpy. Merriam (after testing again) decided not good enough for pupils to go alone.

On Thursday and Friday he also found it too bad for tuition.

Merriam for test on Saturday, afterwards behind Mr. Don on several straights and circuits. Lieut. Robertson made a good high flight, gliding down with engine off. Mr. Jaques following doing fine straights with good landings. After breakfast Merriam away, first with Mr. Don as passenger, afterwards behind this pupil on several straights. Left and right hand turns. This pupil is now nearly ready to go alone. Mr. Jaques making fine straights. Then all the pupils went for solos, straights and figures and circuits. Merriam finished with a very high solo.



Mr. S. Summerfield, flying at Melton Mowbray during the past season on his Blériot machine, with which he has done a lot of work in the district.

Vickers School.—Monday last week. Knight and Elsdon, with Messrs. Dawson and Monckton. Capt. Lee solo on biplane. Capt. Lee then for *brevet*. Mr. Hinshelswood straights on No. 3 mono. Messrs. Waterfall, Joubert de la Ferte, and Chataway circuits on No. 5 mono.

In morning, Wednesday, Barnwell, Knight, and Elsdon on biplane with Mr. Monckton. Barnwell test Blériot mono. and No. 5 mono. In afternoon, Barnwell testing gun-carrying biplane.

Instructors Knight and Elsdon on biplane with Messrs. Dawson and Monckton, Thursday. Mr. Hinshelwood straights on No. 3 mono. Barnwell doing climbing tests on gun-carrying biplane, then testing Blériot mono. In afternoon, Barnwell testing Blériot mono. and gun-carrying biplane. Knight on biplane No. 20 with Messrs. Dawson and Monckton. Capt. Dowding solo circuits.

Saturday, in morning Capt. Wood on biplanes Nos. 20 and 21, then on biplane No. 26, and again on biplane No. 21 with passenger. Mr. Duff solo circuits on biplane No. 20; Barnwell, with passengers, on biplane No. 26; Knight on biplane No. 21 with Mr. Dawson; Elsdon on biplane No. 20 with Mr. Dawson, and then solo on biplane No. 21.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday, last week, Messrs. Webb, Edridge-Green, Cowley, Norris, Kershaw, Bjorkland, Moore, straights with Instructor Strange, Mr. Cripps solo circuits, Mr. Howarth, solo circuits and figures of 8.

Mr. Webb solo straights, Wednesday. Messrs. Norris and Kershaw straights with Instructor Strange, Mr. Cripps solo circuits and figures of 8. Mr. Fenwick (new pupil) rolling with instructor.

Thursday, Messrs. Norris, Clarke, Cowley, Fenwick, Moore, Edridge-Green, Bjorkland and North straights with Instructors Strange and Birchenough. Mr. Webb straights and circuits. Messrs. Howarth, Cripps, Lilleywhite circuits and figures of 8. Mr. Howarth going in for *brevet* tests and gaining his certificate.

Messrs. Cripps, Lilleywhite and Webb solo circuits, Saturday. Messrs. Cowley, Kershaw, Clarke, Moore, Bjorkland, straights with Instructor Strange. Mr. Parker (new pupil) rolling with instructor.

W. H. Ewen School.—On Monday, last week, school out at 7.30 a.m. M. Baumann made test flight on *brevet* machine, after which Mr. Badgery did circuits, and Mr. Johnson figures of eight. Mr. F. W. Goodden after test flight on 35 h.p. Caudron No. 1 handed machine over to Messrs. Cooper and Murray who were doing straights, Messrs. Banks-Price and Freshney rolling and short flights, and Mr. H. A. Busk, a new pupil, rolling.

Tuesday and Wednesday were not favourable for practice. On Thursday the pupils were out at 9 a.m. After test flight by M. Baumann on *brevet* machine, Mr. McGregor did half-circuits Mr. Johnson figures of eight, and Lieut. Holbrow circuits in good style, making well-judged landings. At 10.45 Mr. Johnson started for his *brevet* tests, flying in good style to over 300 ft., and landing very steadily 5 yds. from observers. Mr. F. W. Goodden out on 35 h.p. Caudron No. 1. After test flight Messrs. Murray, Cooper and Lieut. Kinnear straights, Messrs. Bankes-Price, Busk and Freshney rolling.

There was no school work done on Friday owing to the strong wind, but on Saturday the pupils were out at 7.40 a.m. M. Baumann test flight on *brevet* machine, after which Lieut. T. L. S. Holbrow did circuits and figures of eight. He then went through his tests for the R.Ae.C. certificate in good style, rising to 200 ft. Mr. F. W. Goodden out on 35 h.p. Caudron No. 1. Messrs. Murray, Cooper and Lieut. Kinnear straights. Messrs. Bankes-Price, Freshney and Wiggett rolling and short flights, and Mr. Busk rolling.

Salisbury Plain.

Bristol School.—No flying was possible on Monday, Tuesday or Wednesday last week.

On Thursday, Voigt commenced first thing, and made a solo on biplane. Afterwards taking for tuition Capt. Fell, Lieut. Harman and Mr. Gilligan, each for two trips. After breakfast, Voigt again gave tuition to Capt. Fell, Lieut. Harman and Mr. Gilligan, two trips. Jullerot did a solo on biplane and then for a 35-minute tuition flight to Capt. Fell. Mr. Tod did a good solo on the tandem mono.

In the afternoon, Voigt gave one trip each to Capt. Fell and Lieut. Harman on biplane, and Jullerot a trip to Mr. Garnett on biplane. Rising wind prevented further work.

Too windy for tuition on Friday.

On Saturday, Voigt gave biplane tuition to Lieut. Harman, two flights, Mr. Gilligan one flight, and Capt. Fell two flights. Capt. Walcott and Mr. Garnett each one flight. In the afternoon Voigt again giving tuition to Capts. Fell and Walcott and Lieut. Harman and Mr. Gilligan on the biplane. Biplane solos by Mr. Garnett and Air-Mechanic Locker.

Shoreham Aerodrome.

BAD weather was responsible for the little outside work done at the Shoreham Flying School during last week, but Thursday and Saturday most of the pupils were out under Instructor Elliott, the improvement in the conditions being fully taken advantage of. Purnell and Thompson accomplished quite good straights on the 35 h.p. machine.

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FLYING AT HENDON.

Two splendid "turns" were presented by the London Aerodrome at Hendon last Saturday, a picturesque and exciting cross-country handicap, and another looping the loop demonstration by B. C. Hucks, who once more surpassed all his previous efforts, for he introduced a new form of loop. The weather conditions were perfect, the sun shining brilliantly all the afternoon and there was not much wind. Shortly before noon Henri Salmet, accompanied by the Hon. Mrs. Assheton Harbord, the well-known balloonist, left on his Blériot monoplane for Paris, getting lost in the fog in mid-channel as recorded elsewhere. At 2.15 L. S range and W. Birchenough on the 50 h.p. G.-W. 'buses, and Louis Noel with a passenger on the 70 h.p. Maurice Farman opened the proceedings with exhibition flights. R. Slack came out a little later and made a passenger flight on the 80 h.p. Morane Saulnier. W. L. Brock, also with a passenger, followed shortly after on the 80 h.p. Blériot, and put up a high flight lasting some 15 mins. Noel and Birchenough then took up passengers on their respective machines, whilst G. L. Temple and E. Baumann came out on the 50 h.p. Blériot and the 60 h.p. Caudron. The former put up some of his steep dives and the latter paid one of his usual visits to the stars. Some further flights were then made by Pierre Verrier on his 70 h.p. Maurice Farman, Philippe Marty on the 50 h.p. Morane-Saulnier, and Temple on his Blériot. The latter ascended to a height of 4,000 ft. and then descended, making a number of spirals. The machines were then lined up for the cross-country handicap, the course being to Bittacy Hill and back four times, a distance of about 16 miles. Eight pilots started as follows: L. Strange on the 50 h.p. G.-W. 'bus (11 mins. 17 secs.), R. H. Carr on the bi-rudder G.-W. 'bus (8 mins. 42 secs.), Louis Noel on the 70 h.p. Maurice Farman (5 mins. 20 secs.), Pierre Verrier on a similar machine (3 mins. 32 secs.), G. M. Dyott on the Dyott monoplane (1 min. 31 secs), W. L. Brock on 80 h.p. Blériot (1 min. 17 secs.), Philippe Marty on the 50 h.p. Morane-Saulnier (40 secs.), and R. Slack on the 80 h.p. Morane-Saulnier (scratch). All got away without incident, and the air being exceptionally clear each machine could be followed throughout the course. Whilst the race was in progress, Mr. Crawshay, one of our few owner-pilots, made a high flight on his Blériot, and E. R. Whitehouse, with a passenger, arrived on the 100 h.p. Handley Page biplane. The latter pilot had previously flown from Farnborough to Oxford, and from thence back to Hendon, stopping for lunch on the way at Risborough. On their arrival at Hendon they only just avoided colliding with the cable of two advertising kites over Colindale Avenue. In the meanwhile, the cross-country race was drawing to a close, and the competitors, with the exception of Verrier, who retired, were on their last lap in a bunch. Some idea as to the closeness of the finish may be gathered when it is stated that the seven machines crossed the line within 33 secs. The first in was Carr, Brock coming in next 3 secs. after, with Dyott only 1 sec. behind him. Slack followed 5 secs. after, and then at 6 secs. intervals came Birchenough and Marty with Noel in the rear. At the end of his third lap, Verrier left the course, and stopping his engine made an effective descent with a series of sharp turns and switch-backs without any sound other than the whistling of the wind past the stay wires. By this time it was nearly 4 o'clock and B. C. Hucks then ascended in his Blériot. After climbing to a height of between 1,000 and 2,000 ft. he made a loop in which instead of immediately bringing the machine to an even keel when at the top of the loop, he continued to fly in an inverted position for a short time before doing so. He then made two loops one after the other, and in each case the engine momentarily stopped at the top of the loop causing the machine to hesitate in its career in an unpleasant manner. After making a circuit to regain some height he made two more combined loops and *vols renversés*, during one of which he remained on his back for 14 secs., with the engine going all out, and hardly dropping at all. He then made two complete loops, which he followed up with a triple loop between 500 and 250 ft., making in all 10 loops. Before landing he executed several fine banks, one of which was consider-

ably over the vertical. It was now almost dark, and the proceedings were brought to a close by a few flights by Noel, Brock, &c., with only the light of the moon to help them.

Cross-Country Handicap (16 Miles) for the Hendon Cup.

		Handicap.	Handicap Time.
		m. s.	m. s.
1.	R. H. Carr (50 h.p. G.-W. biplane) ...	8 42	26 18
2.	W. L. Brock (80 h.p. Blériot monoplane)...	1 17	26 21
3.	G. M. Dyott (50 h.p. Dyott monoplane) ...	1 31	26 22
4.	R. Slack (80 h.p. Morane-Saulnier monoplane)	scratch	26 27
5.	L. Strange (50 h.p. G.-W. biplane) ...	11 17	26 33
6.	P. Marty (50 h.p. Morane-Saulnier monoplane)	0 40	26 39
7.	Louis Noel (70 h.p. M. Farman biplane) ..	5 20	26 51
8.	Pierre Verrier (70 h.p. M. Farman biplane)	3 32	retired

Sunday was favoured with another instalment of fine weather, and there was plenty doing up at the aerodrome. For the first time on record Mr. Claude Grahame-White flew "from home to business," for he came over from Orange Hill House on the Maurice Farman with Mrs. Grahame-White as passenger. Louis Noel had flown the machine over earlier in the day. The principal event of the afternoon, however, was an unexpected "show" by B. C. Hucks who ascended to 1,500 ft. on his Blériot and made two loops and some *vols renversés*. G. L. Temple came out on his Blériot and executed some very steep banks and spirals between 3,000 and 1,000 ft. W. L. Brock, also on a Blériot (80 h.p.) made a fine high flight, his barograph recording 7,000 ft. E. Baumann on the 60 h.p. Caudron also made a high flight, whilst Gustav Hamel did some fast flying, low-down, with a passenger on a Blériot. R. Slack and P. Marty were both out on the 80 h.p. and 50 h.p. Morane-Saulnier monoplanes respectively, the former looping the loop with a passenger—on the ground. This was the result of a "bump" on landing, which caused the machine to turn over on its nose and turn turtle. Pilot and passenger—and the machine, too, for that matter—came out of it smiling, however, much to everyone's relief. E. R. Whitehouse put up some very pretty flying on the 100 h.p. Handley-Page biplane. Other flights were made by W. Birchenough, R. H. Carr, and L. Strange on the G.-W. 'buses, whilst Louis Noel made "silent" flights on the Maurice Farman. Just at sundown the Willows airship made an ascent and with E. T. Willows as pilot and Mr. Robert Lorraine and another as passengers cruised about in a steady, noiseless fashion for 20 mins., and made a picturesque silhouette against a glorious, ruddy sunset, the huge rising moon also adding to the picture.

LEGAL INTELLIGENCE.

Collision Between Aeroplanes.

IN the King's Bench Division, before the Lord Chief Justice and a special jury, on Tuesday, Messrs. Cecil Lawrence Pashley and Eric Clowes Pashley, trading as Pashley Brothers, aviators, sued the Bristol and Colonial Aeroplane Co., Ltd., of Bristol, and Lieut. Crowford Kehrmann, of the Bristol Flying School, Brooklands.

Plaintiffs were the owners of a Sommer biplane which they used for the purpose of giving exhibitions and carrying passengers. Their case was that on the date in question their biplane was at the flying ground at Brooklands, when a biplane, owned by defendants, and driven and controlled by their servants, collided with plaintiffs' machine and seriously damaged it. Plaintiffs alleged that defendants' servants were negligent in the management of their biplane, in that they were driving it at an excessive speed, having regard to the fact that there was a ground fog, and that they did not turn to the right or rise to avoid the collision. Defendants, on the other hand, alleged that the accident was brought about by negligence on the part of plaintiffs' servants, and they counterclaimed for damages.

Mr. Thorn Drury, in opening the plaintiffs' case, said that so far as he knew it was the first time that an action involving a collision between two aeroplanes had been tried in the High Court. There was at Brooklands a flying ground for aeroplanes surrounded by a motor track, and certain persons, among whom were the plaintiffs and defendants, were allowed to hire certain sheds for storing their aeroplanes, and were afforded facilities for flying about the grounds. On January 18th, 1913, one of the plaintiffs took out an aeroplane for testing, and, having made several circuits of the track, found it quite satisfactory. He decided to come down, and alighted with his machine heading in a northerly direction. He then saw the defendants' aeroplane heading in his direction. He heard the engine of the other aeroplane shut off and then come on again. He expected the other aeroplane to turn to the right, but instead of that it came on and struck the plaintiffs' machine. The effect of the blow was to turn the machine right round, so that it was facing due south. At the time of the collision the aeroplane was being manœuvred by a pupil under the direction of one of the defendants' instructors.

Mr. Eric Clowes Pashley said he estimated that his speed was from five to six miles an hour when the accident happened.

Mr. Hollis Walker, for the defence, reminded the jury that the Brooklands flying ground was a place where people learned to fly, and was not a public road. Therefore they had to remember that a different standard had to be applied when dealing with the question of negligence in such a case.

Lieut. Kehrmann asserted that plaintiffs' machine was being driven in the wrong direction. He had not obtained his certificate at the time of the accident, but he had since.

Mr. Merriam, one of the defendants' instructors, said that the accident was caused by plaintiffs' machine being piloted in the wrong direction in the fog, and Lieut. Kehrmann did the right thing under the circumstances.

Without leaving the box, the jury found in favour of Messrs. Pashley, both on the claim and counterclaim.

Judgment was accordingly entered for them for £123—the agreed amount—and costs.

An Action for Trespass.

AT Walsall County Court on the 10th inst., John Heath Evans of Walsall sued Gustav Hamel for £25 damages for trespass on the occasion of the race between Hamel and Hucks last August.

When Hucks alighted at the Walsall control crowds surrounded him, and Hamel to avoid the people alighted on the plaintiff's ground, which adjoined the control. The plaintiff contended that this caused the crowds to rush on the ground and trample down fences, and also caused the race officials as well as men with supplies of petrol to trespass on his land. It was stated that Hamel had repeatedly written to the plaintiff's solicitor expressing his willingness to pay whatever damage was caused. He now, however, said that he was not responsible for damage done by other people to the field and fences.

The jury found that the defendant was not responsible for the damage done by the crowd, and they estimated the personal damage he had done at 10s., intimating that they thought that the plaintiff was entitled to some recompense from the promoters of the flying race.

Judge Howard Smith said the plaintiff had sued the wrong people, and he entered judgment for the defendant, allowing him the general costs of the action.

An Arbitration Award.

ARISING out of the flying exhibition, which was advertised to be given at the Leyburn Horticultural Show in August, a dispute arose, and the matter was submitted to Mr. Harold E. Perrin, Secretary of the Royal Aero Club, as arbitrator, who has just issued his award. Mr. Robt. Blackburn was the aviator engaged, and arrived late in the afternoon instead of the early morning as was expected and understood. After the company on the show field had waited several hours to see the flights Mr. Blackburn appeared on the scene, but shortly after alighting with his aeroplane ascended again, and to the disappointment of everyone, disappeared.

Mr. E. H. Wilkinson, the secretary of the Horticultural Society, appealed to have the money, £55, which had been paid over, refunded, or part of it.

The award sets out that the agreement provided that under reasonable circumstances Mr. Blackburn had to make exhibition flights at Leyburn on August 30th; that the exhibition was provided for only part of the day instead of one day; that the sum of £55 having been already paid to Mr. Blackburn he shall pay to the Leyburn Horticultural Society the sum of £25 on or before December 22nd, or to their solicitor, Mr. R. C. Davies, of Leeds (instructed by Messrs. Chapman and Wilkinson, solicitors, Leyburn), who appeared for the appellants; that this sum be paid in full settlement of all claims of the said parties against each other: that Mr. Blackburn bear his own costs attending the arbitration, and pay to the Leyburn Horticultural Society the sum of £10, their costs of attending the arbitration, and the sum of £6 6s. the costs of the award.

Aerial Propellers for Barges.

ALTHOUGH it has no direct connection with aviation, it is interesting to notice that a demonstration with barges fitted with aerial propellers, and adapted for use on canals and shallow waters was given on the Surrey Canal, Old Kent Road, on Wednesday last and attracted a good deal of attention.

"To Absent Friends."—A Yuletide Idyll.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

A Message of Goodwill.

BEFORE the next number of FLIGHT is in your hands Christmas will have come once more; many tokens of goodwill in the shape of little presents will have been given and received, and much turkey and many mince-pies will have been disposed of. Many of you who have children of your own, or little nephews and nieces, will have once again attempted the pretty farce of Santa Claus, and have filled many little stockings with good things, though it is extremely doubtful if there is a single child above the age of five years who will be taken in by your mumming. Nevertheless, Christmas is a time of goodwill, when all personal feeling of enmity should be placed on one side, never to be found again, and, so to speak, wiped off the slate of memory for good and all.

Speaking personally, I, your poor "Dreamer," have much forgiveness to hope and ask for from my readers. When I burst upon your gaze, in an otherwise sober journal, with my first "Reflections," somewhere about last March, I had no idea but to be amusing, and to provide a page in a highly-technical journal which should, by presenting a little light reading of a chatty nature, be as the olive at the festive board, and re-discover your palate for the better appreciation of the more instructive matter. There are some men, however, whose ignorance is so colossal, that they "get there" by the sheer dead weight of their own ineptitude, and I much fear that I am one of them. At any rate, one who set out to be amusing only, has, without any doubt been taken in deadly earnest, and I fear that a little feeling towards my insignificant self has been the result. If at times I have appeared to be rather severe in my criticisms, I have, I hope, at least been just, and where credit was due, have been just as lavish with praise. Whether or no I am in a position to judge, and so, whether my praise or otherwise matters one iota, is best left to others to decide, but judging from the tea-cup storms that have arisen on occasion, I have the greatest pleasure a journalist can possibly have—the knowledge that he is read.

A good many of my readers have written to me their appreciation of my page, but I am sorry in a sense that not one has written from the opposition benches; as I should like to receive such criticisms also, because I know they exist, and I like to meet all things eyes front right out in the open. Withal, I am a most perverse, not to say obstinate, person, and I am not going to say I am sorry for anything I have said, because I am not, and because subsequent happenings have proved that in a good many cases I was right, and betterment has been the result of my croakings; but I will say that I have no personal ill-feeling towards a single person on earth, and take this opportunity to wish one and all a merry Christmas, and, including aviation in all its branches, a very, very prosperous new year, and I only wish we could all join hands round the entire course at the London Aerodrome, and sing "Auld Lang Syne."

The Rush To Be First.

I never was a first-nighter; in fact the idea of being first in things generally never had any attraction for me. There are some instances, perhaps, where unless one is first one had better be out of it altogether—such, for instance, as racing for a gate with a bull for a competitor; but taking it all round I find it is better to let somebody else do the pioneer work, and only come in when things are somewhat certain: some people are so ready to jump at conclusions, that they fall over possibilities.

Just at the moment there is great excitement among the ladies as to who will be the first to loop-the-loop as a passenger, and Mr. B. C. Hucks is being inundated with letters from ladies hoping to be chosen for the premier occasion. Miss Trehawke-Davies is, I believe, very keen on it, and only for the fact that she is confined to her flat through illness at the present moment, would no doubt see to it that she gained this distinction, as she has gained many others in the world of aviation. The question to my mind, however, is—is it worth while? I was afraid when I saw Pegoud perform at Brooklands that he was sowing seed that would spring up everywhere like weeds, and would be hard to stamp out. Allowing for everything that can be said in its favour from a scientific point of view, it is not by any means necessary that all pilots should tackle it. I have seen Pegoud do it, and I have seen Hucks do it much better, and so far as is possible under the circumstances, I think these two are fairly safe; but I have also seen it attempted by two others, and, whether they did it or not, the exhibition was not what one might call nice. It has been done on the Continent with a passenger, I believe, and if a male has no responsibilities except those covered by his hat, I suppose he is at liberty to risk it, but somehow one does not seem to fancy a woman taking such unnecessary risks with her life, and I hope Mr. Hucks will firmly refuse to be persuaded to try it.

A Letter from Abroad.

One of the first lessons in the art of journalism, is to say what you have to say in plain straightforward language that can be read and understood by everybody. How far I, personally, have succeeded in this direction, may be judged by the following letter which I have received from a reader on the Gold Coast. My correspondent encloses his photograph, and—well, he is a gentleman of colour. I cannot of course disclose his name and address, but the letter printed below is exactly as received:—

> Dear Sir,—When I was reading a certain news paper at my sitting room I found your name and address on the back of the said paper of which I am pleased to write and ask if you will kindly send me your price list and samples copys of your photographs and oblige I have also sending you herewith a sample photo and I hope you will send me a samples for same together with prices as I am anxious to send you some orders against same and oblige, and also I wish you to send me a catalogue of the undermentioned goods, viz Hats caps B ots shoes
> shirts collars ties Stationerys
> watches clocks etc etc please if you have none of these goods in stock kindly ask a friend for his and will pass every indents through you and oblige Also return the photograph when sending quotations I am awaiting your early reply per returning mail and oblige
> I am yours faithfully

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Aerial Trips as Christmas Presents.

MANY people, young and old, have expressed a wish to have a ride in an aeroplane, and to such a very acceptable present should be a ticket for a trip at Hendon. Tickets may be purchased and arrangements made for them to be used at any time. For those who do not care to trust themselves on an aeroplane, trips in the Willows airship may be arranged.

A CONTROL RECORDER.

By G. M. DYOTT.

IN commenting upon the flying qualities of different aeroplanes, one not infrequently hears the remark that it is the pilot, not the machine, meaning that the personal element is largely responsible for good flying, irrespective of the peculiarities of the machine being flown. If now we try to ascertain how a good pilot handles his controls when in the air, we will find it very difficult to obtain precise information. In fact from my own experience I find it almost impossible to recall with any exactness the relative movements of, say, the elevator during a *vol plané*. When it comes to remembering a combination of the rudder and warp as well, I admit being hopelessly lost.

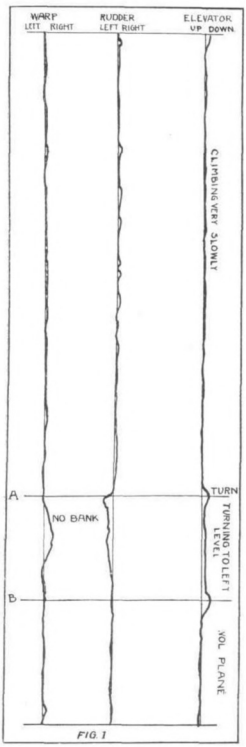

FIG. 1

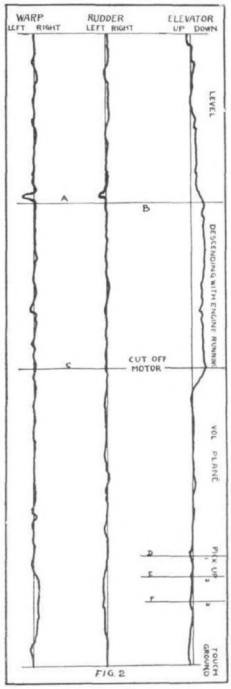

FIG. 2

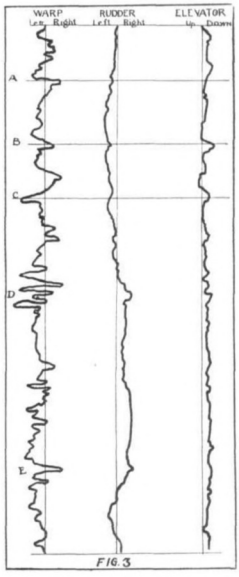

FIG. 3

It was with a view of studying this question a little more fully last winter that made me construct an instrument which would record graphically every movement of the controls of an aeroplane simultaneously. With it mounted in the *fuselage* of one of my own monoplanes and properly connected to the controls, it was a simple matter to ascend, making right or left-hand turns as the case may be, and then, on returning to earth, to study every manœuvre at leisure. In this manner some interesting facts came to light, the records showing how the efficiency of the machine could be improved, and affording an admirable check against its theoretical performance.

On this page are given three curves which are more or less typical of the results obtained, and from them it is possible to show how such an instrument can be employed with advantage in experimental work. Briefly, the instrument itself consists simply of a drum carrying a roll of paper, on which press three pens. The paper is moved by clockwork at the rate of about one foot in two minutes. The three pens are connected to the warp, rudder and elevator respectively, and so long as no movements are made three straight lines would result. But if any control is moved away from its central position, the line is curved in proportion to the extent of the movement so made.

Turning our attention to Fig. 1, we here see the movements employed in making a straight flight, rising very slowly to about 200 ft., then turning to the left on an even keel. As soon as the turn is complete the motor is stopped and a *vol plané* started. The points of interest

about this are, first of all, the start, which shows the elevator down to raise the tail, and at the same time pronounced rudder action. Although the rudder is being used to the right on account of a side wind on the left, this was for the purpose of balance rather than the maintenance of direction. Notice that the elevator is neutral, which shows that the normal position of the machine when allowed to have its head is a very gentle climbing attitude. At the point A a left-hand turn is started; the elevator is the first to move, which raises the tail; then the rudder is quickly pressed over to the left. The warp follows, first promoting a bank. This was an error, as the intention was to turn on an even keel. It is soon set right, however, and is brought over to the other side. In completing the turn, the warp overshoots the mark before returning to its central position. This is bad handling, although frequently done, as it causes unnecessary lateral oscillations. Another feature to notice is the position of the elevator, especially at point B, where the engine is cut off. Here the machine is nose down, but the elevator returns to a neutral position, in fact the same position as when climbing. This brings us to an interesting feature, more clearly shown in Fig. 2. The diagram shown here is of flying level, then descending with the motor running, followed by a *vol plané*. It is a straight flight, with no turns. At the point A we can see the effect of a sudden gust under the left wing. Warp and rudder are used in conjunction, and the recovery is rapid. At B the machine is forced downwards with the engine running, and in such an attitude the elevator is in a strained position. But see what happens on cutting off the motor. The elevator now returns to a neutral position. At B, E, and F we see the effort made to flatten out from a *vol plané*. This is not accomplished by a violent movement of the elevator, but by three gentle movements one after another. At the same time the left rudder is brought into play, but being near the ground it is essential to keep absolutely level, hence the warp is also used to counteract any banking tendency. Fig. 2 is particularly interesting in that it shows how far the aeroplane fulfils what was originally intended of it. It was supposedly built for climbing quickly and easily, and I think that this curve demonstrates that its natural tendency is to climb so long as the engine is running, but if the latter stops the aeroplane at once assumes a gliding angle.

So long as the motor is working, the slip-stream from the propeller keeps the tail level, but let this cease, and the tail at once rises into a gliding position. The advantages of carrying a negative pressure on the tail planes of such a machine are, I think, apparent. If it was designed for speed alone it would prove very inefficient, since the tail planes would be under continual strain, which would act as a drag against forward motion. Normal level flight can be secured by turning the motor over at about 900 revs.

As a contrast to Figs. 1 and 2 I give Fig. 3, which was taken on a moderately gusty day at Hendon, when describing a figure S close to the ground. It gives one a fair idea of the amount of work that a pilot may be called upon to do within a space of two minutes. The air was decidedly lumpy with up-trends in every direction, averaging approximately one in four seconds. Pronounced gusts can be seen at A, B, C, and E. D shows the effect of passing through the back wash from another machine. Note that on the left turn the warp is used to help the bank, whereas on the right it was used against it. The right turn, however, was of larger radius.

It is a pity that time and money are not forthcoming to obtain the graphic records of different machines under similar conditions, as I feel sure that some valuable data could be obtained. Nevertheless, the result of these somewhat crude experiments may prove of interest and be an incentive to others to follow along similar lines.

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FOREIGN AVIATION NEWS.

Swiss Cross-Country Record.

BY flying from Avenches to Dubendorf and back, a round distance of about 400 kilom., Borrer, on the 8th inst., won the prize of 3,000 francs offered by the Swiss Aero Club for a cross-country flight. He used a Ponnier monoplane fitted with two 80 h.p. Gnome motors coupled together, and during the trip he carried a passenger. The outward trip was made by Lyss–Soleune–Olten–Aarau–Lenzburg, while the return was by way of Zurich–Hasenberg–Berchoud–Kirchberg and Lorat. Later in the day Borrer returned with his passenger to his headquarters at Soleune.

A Ladies' Height Record.

COMPETING for a prize offered by Senator Reymond, Mdlle. Carmen Damedoz on a 50 h.p. Gnome-Saulnier monoplane fitted with a 50 h.p. Gnome motor went up to a height of 1,050 metres, which it is claimed is a world's record for ladies. The flight lasted 38 mins. and was made last week at the Vidamee aerodrome.

Pegoud Loops the Loop with a Passenger.

FOLLOWING up his looping the loop work, Pegoud last week succeeded in carrying out this evolution accompanied by a passenger on his Blériot monoplane. At Buc, on Thursday of last week, on a Blériot-Gnome of the military type, with M. Andre Guymon, he looped the loop four times in succession. Afterwards he took up a photographer named Mathieu and again looped the loop four times. Previously Pegoud had been up on a 50 h.p. single-seater Gnome-Blériot, and in the course of his flight looped the loop fourteen times, including nine successive loops.

On Sunday afternoon Pegoud was at Juvisy, and, although he did not start flying until somewhat late in the afternoon, he did some extraordinary work. First going up on a 50 h.p. Gnome-Blériot single-seater to a height of 800 metres. After executing several loops he turned the machine over and made a very fine spiral descent with wheels in the air, the machine flying upside down for 2 mins. 5 secs. In a subsequent flight, after making fifteen loops he made a tail slide and regained his original height, following this up by a spiral dive downwards, and then made a loop with the wheels *inside* the circle. These manœuvres were carried out during a flight which lasted just on an hour. Subsequently when it was almost dark Pegoud again went up with Andre Guymon and looped the loop three times. Prodigious!

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Mdlle. Marvingt has a Fall.

WHILE practising in the Champagne district with a view to making a flight for the Coupe Femina, Mdlle. Marvingt was obliged to land in a ploughed field near Painchault. The chas-is of her monoplane was damaged, causing the machine to turn over and get broken up, but fortunately Mdlle. Marvingt escaped without serious injury.

Death of M. Leon Bollee.

BY the death of M. Leon Bollee, which was announced from Paris on Tuesday, France has not only lost one of the earliest pioneer motor car manufacturers, but one who did much to give a real send-off to the aviation movement. It will be remembered that it was M. Bollee who was responsible for the introduction of Wilbur Wright to France in 1909.

Fatal Accident to Letort.

WHILE making an attempt for the Ae.C.F. Criterium, which it was planned should be a non-stop flight from Paris to Bordeaux and back, Letort met with a fatal accident on Wednesday of last week near Barbezieux, not far from Bordeaux. It appears that in landing, Letort's machine—a biplane—had one of its wheels damaged, and this led to the machine being overturned when the motor fell upon the pilot, who had been thrown out, and crushed him. The unfortunate man was rushed to the hospital, but died soon after arrival there. It will be recalled that in connection with the Pommery Cup he made two non-stop flights between Paris and Berlin, one with a lady passenger.

Models

Edited by V. E. JOHNSON, M.A.

Wheels and Chassis for Models.

Mr. F. Grattan (Hon. Sec. Leytonstone and District Aero Club), writing with reference to Mr. H. T. Holman's remarks in December 6th issue, makes the following criticism, which we have much pleasure in publishing as it is always as well to look at any question from more than one point of view; after all, nothing can be made so thin as to possess *less* than two sides:—"As secretary of the above club, where a number of so-called 'freak' r.o.g. models are flown, I shall be glad if you will publish this letter in answer to Mr. Holman's remarks concerning wheels and chassis. The twin screw r.o.g. is undoubtedly *the* most popular model for competition work, and while the chief test is duration, r.o.g. models *must* be lightly built. Mr. Holman says that his members always use sensible chassis and wheels. It would be interesting to know what weight the models average and what duration they are capable of.

"In defence of the so-called 'freak' I submit that the lighter the model the less the chance of a heavy landing, and speaking from personal experience of the models flown at Leytonstone I have no hesitation in saying that a wire chassis is quite strong enough for models up to 16 ozs. Further, wire is very springy, and although it will bend, it will never break. Referring to the wheels (2 in. disc with tyres) which Mr. Holman approves of, I may say that they are rather popular amongst the members of this club, but the tyres are useless. They only put on weight and make extra head resistance, and the wheels are decidedly better without them.

"I have seen r.o.g. models from 4 to 16 ozs. fitted with light wire chassis, and wheels from the size and thickness of a shilling up to the 2 in. disc (minus tyres), rise from grass both with and down wind, and fly for over two minutes. And if a model is correctly elevated, it will always *alight* on its wheels, although a strong wind will often turn it over when it comes to rest. In conclusion, if Mr. Holman can equal any of the British model records, his opinion will command more respect. It is easy to condemn a light model, but if Mr. Holman will try his hand at constructing a 3 ft. 6 in. r.o.g. model to weigh 5 ozs. in flying order, and try and equal our Mr. Louche's performance of 169 secs. off ground, I think he will alter his tone. Such a model calls for a careful selection of materials and scientific construction in order to obtain sufficient strength."

[Referring to the above, I quite agree with Mr. Grattan's remarks *re* rubber-tyred wheels and also wire chassis as well, provided the chassis really possesses something in the nature of design; undoubtedly for models up to a pound at least in weight a steel wire chassis is best—and for hydro-aeroplanes struts or connections as well. *Re* wheels, I think it would be a good thing to place some restrictions (not too severe) as to their size. Mr. Grattan refers to wheels the size of a shilling, but I have seen them as small as a threepenny-bit.—V. E. J.]

A Problem in Torque.

A correspondent sends us the following query, which we submit to our readers for solution, practical or otherwise:—"While in conversation with a friend recently we got into an argument with respect to [twin] geared rubber motors, advocated in your section to obviate torque in a single-screw machine. I argued that the force which tends to turn the machine was applied at the end where the rubber was fixed, and that if there was another skein of rubber of equal dimensions, only wound up in the opposite direction, one would counteract the other. His argument was that if when the motor was wound up, and the machine held, the propeller would revolve, and *vice versa*. This means to say that if the propeller is held the machine will untwist to unwind the rubber. Which is correct?"

Canada's First Model Aero Club.

"Being a constant reader of FLIGHT," writes Mr. J. W. Pope (hon. sec. Toronto and District Aero Club), "I should be p'eased if you would kindly publish the results of what is no doubt the first model aero club in Canada. A start was made on Saturday, November 22nd, and ten members contributed to a good afternoon's sport, the writer being first with a duration flight of 88 secs., made with a C-I-I-2½ type Houlberg monoplane. The Canada *v.* England contest was also won by the writer (England) with a hand-launched flight of 521 yds. Mr. H. Bridges, of Hamilton (Canada), was second with a flight of 306 yds. to his credit. The hand-launched competition, open to all-comers (8-oz. machines only), was won by J. Pope, Jun., with a B.P. monoplane, he being the only competitor to get his machine to work; he succeeded in covering a distance of 214 yds., and was declared the winner. It was a very good start taking into consideration the first trials of the club, and too much cannot be said of the Houlberg monoplane, which flew so well. It has been selected as the club's representative against all-comers in future competitions. Other types that were entered

Mr. J. Pope, jun.'s, model B.P. monoplane, fitted with small model Gnome for exhibition purposes.

in the competitions were Twining's No. 1 (two models), Bluebird (American) six models, the others being unnamed."

Stony Stratford Model Aeroplane Club.

We have received from the above club a printed copy of their annual report, 1912–13, on which appears a proper balance sheet of the income and expenditure of the club; we are very glad to see that the balance, though not large, is still on the right side. The report also quite candidly admits a decrease in membership of six in number. We are very sorry to see this, but we are sure that this is only temporary, because a club which issues a perfectly candid report of this kind, and a properly worked out balance sheet with full details, at once stamps itself as a *bona fide* and properly conducted club, and one which deserves support. We trust to see a large increase in membership during the coming season. The club has the following five classes for the purpose of registering performances, viz., Class 1, any type of model; Class 2, single propeller model; Class 3, tractors, hand-launched; Class 4, r.o.g. all types; Class 5, single propeller and tractor, r.o.g. In every case for both distance and duration. During the early part of the year the club was fortunate in receiving a presentation of a man-carrying glider from Mr. Lea Wynn, of Castlethorpe, and several towed flights, without a passenger, have been made, the greatest height attained being 75 ft. Arrangements have been made for the launching of a branch of the club at Buckingham with the commencement of the new season. The Hon. Sec. is O. Hamilton, junr.

Aero Models at Olympia.

"I have perused with pleasure," writes Mr. B. Trask, the "syllabus for the Model Section of the Olympia Aero Exhibition next March, and am pleased at the many innovations embodied therein. I think the loading rule rather severe, however. In your comments you intimate that you think there will be more models next year that look like aeroplanes. Now, a loading of 4 sq. ft. per lb. is never met with in full-sized machines; it is usually nearer 1 sq. ft. per lb. How then are we to get decent-looking machines if we have to provide simply colossal surface?

"In my opinion this rule will result in spidery sort of machines the constructors having to make large machines for a given weight to accommodate the large surface which is ruled essential. I think that if the Council of the K. and M.A.A. could see their way to altering this to 6 ozs. at least, or possibly 8 ozs., a far better lot of models wou'd result."

Referring to the above, we fail to follow our correspondent's deductions because, as we understand the rule, there is nothing to prevent Mr. Trask or anyone exhibiting a model loaded 2 lbs. to the sq. ft., but he must not go *below* 4 ozs.; as much above as he likes. The rule being inserted for the especial purpose of preventing the colossal surfaces referred to.

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

Sealed Handicap.—This will be held on Wimbledon Common to-day, Saturday, if entries are sufficient.

Subscriptions.—All members who have not yet paid their subscriptions for this year are asked to forward same without delay.

Prize Distribution and Discussion.—The date fixed for the *Model Engineer* Prize Distribution and Lecture has been fixed for Jan. 9th.

Mr. F. Handley Page, A.F.Ae.S., will give a lecture on "The Dependence of Aviation on Experimental Model Work," followed by a discussion. Time and place will be announced next week.

27, Victory Road, Wimbledon. W. H. AKEHURST, Hon. Sec.

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Leytonstone and District Aero Club (64, LEYSPRING ROAD).

DEC. 21ST, at 10 a.m., flying, Wanstead Flats, as usual. Dec. 25th, at 10 a.m., Section A, tractor competition; which will be followed by Section B, h.l. competition

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

DEC. 20TH, flying at Sudbury, r.o.g. handicap. Dec. 26th, inter-club contest at Sudbury with Wimbledon Aero Club, 11 a.m. Dec. 27th, return match on Wimbledon Common, 2.30 sharp.

Sheffield Ae.C. (50, SPRINGHOUSE RD., WALKLEY, SHEFFIELD).

DEC. 26TH, at Standhouse Aerodrome. Tractor biplanes for Mr. Manton's silver medal competition, to commence at 10.30 a.m. (weather permitting).

Wimbledon and District (165, HOLLAND ROAD, W.).

DEC. 20TH and 21st, flying as usual. Contest with the Paddington Aero Club, Dec. 26th, at Sudbury. Dec. 27th, on Wimbledon Common. Dec. 28th, r.o.g. sweepstake.

UNAFFILIATED CLUBS.

Dover Model Ae.C. ("OAKVILLE," GODWYNE ROAD, DOVER).

THE above club are holding their annual Exhibition during the week, Dec. 20th–26th, at No. 3 New Bridge, Dover. Prizes will be given for the following items, viz., scale machines, power-driven, hydro-aeroplanes, tractors, r.o.g., and hand-launch. The flying tests will take place on Saturday, Dec. 27th, on the Northfall meadow (behind the Castle), starting at 2.30 p.m. Competitions for the following types have been arranged, viz., tractors, r.o.g., and h.l. machines. Further particulars from H. D. Davis (hon. sec.), "Oakville," Godwyne Road, Dover.

Edinburgh Ae. Soc. (Model Section) (13, HERMAND TERRACE).

A PEATH meeting will be held on Saturday, 27th inst., when the team will be picked to represent Edinburgh in the inter-city contest to be held on New Year's Day. Members meet at Balgreen Road (Gorgie Car Terminus and old entrance to Exhibition), at 2.15 prompt. A suitable field has been obtained in this district for this occasion.

Finsbury and District (85, UPPER TOLLINGTON PARK, N.).

DEC. 20TH, flying, Finsbury Park, 3 p.m. Boxing Day, championship meeting.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).

DEC. 20TH, flying, Woolwich Common, 3.30 p.m. until dusk. Dec. 21st, Blackheath, 7.30 to 10 a.m. Exhibits for the first annual exhibition must be ready in another two weeks.

Willows Airship Now Running.

VISITORS to Hendon may now indulge in a new sensation as the Willows airship is now running, and passenger trips may be booked. The vessel is similar in size to the "Beta."

City Offices of Mr. H. Barber.

MR. H. BARBER, who is aeronautical adviser to Lloyd's, owing to the growth of his insurance connection has taken City offices at Capel House, 54, New Broad Street, E.C., so as to be nearer Lloyd's. Mr. Barber attends in the City generally between 12 and 3 p.m., and at other times may be consulted at his West-End chambers at 25, Ryder Street, St. James, S.W.

Cellon, Ltd.

FOLLOWING the success which has attended Cellon dope, a limited company has now been formed to manufacture Cellon solutions for Great Britain and the Colonies. The directors are Messrs. Thos. Tyrer, F.I.C., F.C.S., Albert Mond, Ph.D., F. W. A. Luboldt, A. J. A. Wallace Barr, Dr. A. Eichengrün (the inventor), and C. Mijnssen, while Mr. A. J. A. Wallace Barr is also the secretary of the company. The registered offices of the company are at 17, Old Broad Street, E.C., the telegraphic address "Ajawb, London," and the telephone No. 5359 London Wall. Immediate delivery of Cellon can now be given from stock at the factory, the Stirling Chemical Works, Stratford, London, E.

CORRESPONDENCE.

A Students' Club for Practical Work.

[1816] There are many engineers and others engaged in aviation who are keen to take up the practical side of the subject and fly machines, but are unfortunately precluded from doing so by the cost. The students of the Aeronautical Course at the Northampton Polytechnic, St. John's Street, London, E.C.—which is believed to be the only complete course at present being given in England—are forming a club so that they may build and, with proper safegards, fly an aeroplane of their own construction.

The governing body of the Institute has already purchased the necessary materials, including a 30 h.p. engine, tanks, wheels, wood and fabric, &c., and has also placed at the disposal of the students all the necessary tools, and a room in which to build the machine.

The constructional work of such a machine already forms part of the laboratory and workshop course of the Aeronautical Section, and the qualification for joining the club is that the students join this course.

The club will open its proceedings by commencing immediately the construction of the machine after Christmas, and it is proposed to start operations on January 5th, 1914.

Anyone desirous of joining should communicate with the Hon. Sec. of the club at the Polytechnic, from whom further particulars can be obtained. HAROLD POSNER, Hon Sec.

Northampton Polytechnic Institute,
St. John's Street, Clerkenwell, E.C.
December 16th, 1913.

IMPORTS AND EXPORTS, 1912-13.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see FLIGHT, January 25th, 1912:—

	Imports.		Exports.		Re-Exportation.	
	1912.	1913.	1912.	1913.	1912.	1913.
	£	£	£	£	£	£
January	619	12,097	2,412	4,005	—	1,510
February	3,110	17,361	36	3,147	—	690
March ...	640	20,425	950	1,924	600	1,042
April ...	4,820	15,593	72	5,524	50	1,413
May ...	7,494	51,241	1,350	3,726	154	830
June ...	7,928	14,905	419	1,408	300	1,106
July ...	13,794	14,469	5,376	3,812	967	1,250
August ...	8,559	17,993	1,342	2,805	2,040	510
September	6,575	19,409	2,885	6,263	1,626	1,470
October	6,836	21,041	3,128	3,674	605	2,163
November	8,455	16,607	2,002	3,306	405	1,449
	68,830	221,141	19,972	39,894	6,837	13,433

Aeronautical Patents Published.

Applied for in 1912.

Published December 18th, 1913.

12,130. I. BELL. Aerial machines.
27,062. H. A. GREGORY AND J. W. HOWLETT. Aeroplanes.

Applied for in 1913.

Published December 18th, 1913.

19,805. O. CADEL. Vehicles for transportation of aeroplanes.
20,905. F. HESSE. Parachutes.
21,688. LUFTSCHIFFBAU-ZEPPELIN-GES. AND C DORNIER. Airship shed.

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SPECIAL NOTICE.

CHRISTMAS HOLIDAYS.—Owing to Christmas Day and Boxing Day falling on Thursday and Friday this year, it is necessary for FLIGHT for December 27th to close for Press on December 20th. All copy, Editorial or Advertisement, must therefore be at the Office, 44, St. Martin's Lane, not later than first post December 20th.