

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.

No. 290. (No. 29, Vol. VI.)

JULY 17, 1914.

[Registered at the G.P.O. as a Newspaper.] [Weekly, Price 3d. Post Free, 3d.]

Flight.

Editorial Office: 44, ST. MARTIN'S LANE, LONDON, W.C.
 Telegrams: Truditur, Westrand, London. Telephone: Gerrard 1823.

Annual Subscription Rates, Post Free.

United Kingdom ... 15s. od. Abroad ... 20s. od.

CONTENTS.

Editorial Comment:	PAGE
London-Paris-London ...	747
Another Landmark in Flight ...	747
"The R.A.F. and the Private Constructor" ...	747
London-Paris-London Air Race ...	750
Royal Aero Club Official Notices ...	755
Flying at Hendon ...	756
From the British Flying Grounds ...	757
Flying at Shoreham ...	758
Eddies. By "Æolus" ...	761
The East German Race ...	764
The Langley Machine Tests ...	765
British Notes of the Week ...	766
Foreign Aircraft News ...	767
The Flying Machine from an Engineering Standpoint. By F. W. Lancaster ...	766
Models. Edited by V. E. Johnson, M.A. ...	770
Correspondence ...	772

Another Landmark in Flight.

We had almost made up our mind to allow the ordinary records of flight to pass unnoticed save to note them in our columns as simple matters of news, so prolific has been the recent past in new figures relating to all phases of aviation. Once, however, that has been set up during the past few days calls, we feel, for exception from the rule. This is Herr Böhm's really wonderful feat of flying for over twenty-four hours without descending. Ascending from the flying ground at Johannisthal shortly before six o'clock on Friday evening of last week on an Albatros biplane, he made short excursions to Berlin and Potsdam, but for the most part contented himself with circling the aerodrome, and finally landed at five minutes past six on Saturday evening, having been in the air for just twenty-four hours and twelve minutes.

Such a marvellous feat of endurance must give one to think that the possibilities of such flights as that across the Atlantic are not, after all, so remote as many imagine. In fact, the possibilities of flight appear to be almost illimitable.

EDITORIAL COMMENT.

London-
Paris-
London.

Although there is a disposition to allow the almost day-to-day records of aviation to pall upon the imagination, it is impossible to allow the result of the race from

London to Paris and back last Saturday to pass without some remark. To our mind it was one of the most useful events that has taken place for a very considerable time, since it served to bring home very vividly the tremendous possibilities of aircraft for the purposes of international communication, and the manner in which the development of aviation has to all intents and purposes eliminated the artificial barriers of frontiers. Over and above that, we have seen how enormously superior in speed is the aeroplane to all other modes of locomotion. When we regard the fact that the fastest time in which the single journey from London to Paris can be accomplished by the more orthodox means is six and three-quarter hours, while Brock's net time for the double journey was only a trifle over seven hours—less than twenty minutes over the single trip time by train and boat—the reflection cannot be avoided that the aeroplane is destined to play a far greater part in the future of rapid communications than is imagined by most people.

Apropos our comments under the above heading in last week's issue of FLIGHT, we have received the following letter from Mr. Mervyn O'Gorman, with explicit permission to publish it. He says:—

"I am surprised at the Editorial in FLIGHT of 10/7/14, and that the official organ of the Royal Aero Club should take no steps to verify and should build up a structure of prejudice on the bare statement of an unnamed constructor who, as you say, 'for obvious reasons' desires oblivion and he deserves it.

"In repudiating his statements you will perhaps quote with name and date some of the 'many statements of responsible ministers' whom you allude to; you will mention that the Director General of Military Aeronautics and his Staff who alone control the Factory's output, as well as myself as Superintendent of the Royal Aircraft Factory, have always been accessible to you, and explain how it is that no enquiry was made of any of these before you imputed bad faith to them all in an article which you close by saying that you 'suspend judgment.' In a weekly journal there can scarcely be such urgency as to excuse and still less warrant this neglect of verification.

We are rather at a loss to know why Mr. O'Gorman should be annoyed, as he appears to be. We submit that no impartial person who reads our article to which exception is taken could possibly impute to us any desire to "build up a structure of prejudice" or to "impute bad faith" to the Aeronautical Staff of the Army or to

Mr. O'Gorman himself in his capacity of superintendent of the R.A.F. On the contrary, we simply put a question for the single purpose of giving the authorities an opportunity to deny the statement which was being made regarding the construction of the R.E.'s at the R.A.F.

The letter suggests that we failed to take all proper steps before giving currency to a rumour which was, admittedly by ourselves, wanting in confirmation. We did not seek any information from the authorities at the War Office or the R.A.F. before our article was written, and for this we had what we conceive to be a very good reason. In the past so many rumours have gained credence regarding the policy of the R.A.F., rumours which we ourselves, be it said, have always combated, and which in course of time have been magnified into grave misstatements of fact, that in this present instance we considered that the fullest justice would be done to everyone concerned by stating exactly how the report had reached us and giving to the authorities the fullest possible chance to deny its truth. Thus, and thus only, in our judgment could the lie—if it were a lie—be prevented from circulating and being magnified in process of circulation. In the eyes of Mr. O'Gorman this may have been an error of judgment, but we still think the best

method of running a false statement to earth is to give it publicity in the plainest of possible ways.

In regard to names and dates of statements of responsible Ministers as to the functions of the R.A.F. we hardly think it is necessary for us to go into details, as, unless Mr. O'Gorman suggests that the Ministers making such statements were not "responsible," the utterances referred to by us have appeared in the pages of *FLIGHT* and are no doubt well in the mind of most of our readers who have followed the development of the official side of aviation.

After all, the very best justification of our having acted as we did in the matter is contained in the fact that we have now received from an absolutely authoritative quarter a most unqualified statement that our informant was entirely wrong in his supposed facts. We are able to say that so far from it being the intention to construct the machines in question at the R.A.F., tenders have been—or shortly will be—issued to the trade for their construction. Thus we see that a false report, which might easily have obtained the widest currency and credence under other circumstances, has been run to earth as a result of its ventilation in our columns. Which, to our way of thinking, is a very satisfactory outcome of the incident.

ROYAL FLYING CORPS.

THE following announcement appeared in the *London Gazette* of the 10th inst.:

R.F.C.—Military Wing.—Capt. Charles Darbyshire, 4th Batt. Lancashire Fusiliers, from a Flying Officer, to be appointed to the Reserve; July 4th, 1914.

ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending July 11th:

No. 2 Squadron, Montrose.—The Officers, N.C.Os. and men of this Squadron had a few days' leave prior to leaving Netheravon on the return journey to Montrose on Monday, the 13th inst. The journey will be made in the same way as the journey down, viz., aircraft, M.T. and personnel moving together by daily stages. The actual route, however, will be slightly varied.

Nos. 3 and 4 Squadrons, Netheravon.—The week has been occupied with cross-country reconnaissances and in observation of artillery fire. On Monday, 13th inst., a class of 10 officers will commence the first of a series of courses of instruction in observation. These officers are drawn from various branches of the service, and many of them have served on the Staff.

No. 5 Squadron, Fort Grange.—No. 5 Squadron moved to their new quarters at Fort Grange, Gosport, on the 6th. The Squadron is gradually getting settled in. A few of the machines are there and the remainder will be flown over from Farnborough and Netheravon in the course of a few days as the tents are erected to accommodate them. The construction of the permanent sheds and workshops will be commenced shortly. The new station is an excellent one from every point of view.

No. 6 Squadron, Farnborough.—Reconnaissance work across country was carried out daily. This squadron is approaching its complement of personnel, having received parties of recruits and transfers during the week.

Nos. 1 and 7 Squadrons, Farnborough.—The week was chiefly directed to the technical instruction of recruits recently posted.

Aircraft Park, Farnborough.—Repair work to aircraft and M.T. was carried out, also the technical instruction of recruits.

Headquarter Flight, Farnborough.—Experiments on various lines were continued and a quantity of flying carried out.

Recruit Depot, Farnborough.—A squad of 21 recruits were passed off the square by the Commanding Officer on the 8th inst., and were posted to various squadrons. Recruiting has been good during the last few weeks, and the advantages which the corps offers are beginning to be better realised in the manufacturing districts.

Aircraft at the Naval Review.

AIRCRAFT will figure largely in the Naval Review at Spithead this week-end, and the official programme calls for the employment of 4 airships, 25 seaplanes and 13 aeroplanes. To-morrow, Saturday, the aeroplanes will fly from Calshot to moorings off Fort Monketon, afterwards returning to Calshot, while on Monday all the seaplanes are to "fly past" the Royal Yacht.

THE NEW HEIGHT RECORDS.

AFTER remaining at 6,120 metres, where it was set by Legagneux on December 27th last, the world's altitude record was improved on by no less than 480 metres on the 9th inst., by Linne-kogel, while on Tuesday last Oelerich put on another 900 metres, so that, subject to verification, of course, the record now stands at 7,500 metres.

For his record Linne-kogel started from Johannisthal at 3.15 a.m. on the 9th inst. on a Rumpler monoplane with 100 h.p. 6-cylinder Benz motor and Integral propeller. He was out of sight for a long time, and when he emerged from the clouds on his descent, he was above the Tiergarten, and he landed on the Tempelhof parade ground. His barograph recorded that he had ascended to an altitude of 6,600 metres.

Oelerich's record on Tuesday was made at Lindenthal, near Leipzig. He used a D.F.W. biplane, fitted with a 120 h.p. Beardmore Austro-Daimler engine and Integral propeller.

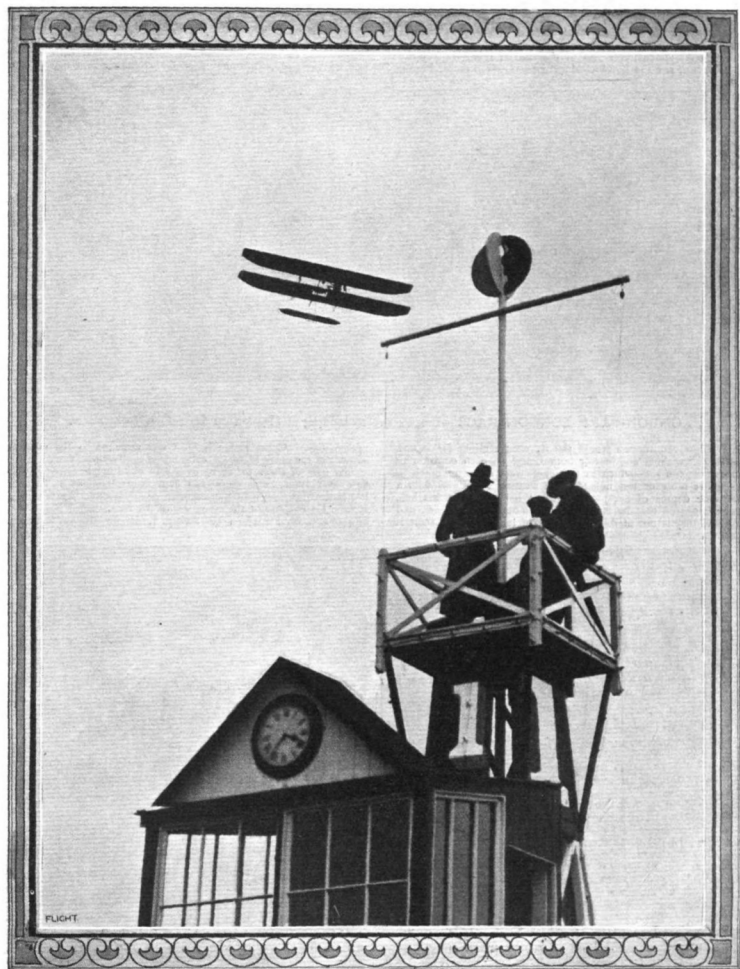
24 Hours in the Air.

USING the same Albatros biplane, fitted with a 75 h.p. 6-cyl. Mercedes engine and Integral propeller, which was used by Landmann in making the previous duration record of 21h. 48m. 45s., Reinhold Böhm on Friday and Saturday last succeeded in remaining in the air for over twenty-four hours at a stretch. He set out from Johannisthal at 5.52 p.m. on Friday evening, and eventually landed at 6.4 p.m. on Saturday afternoon, having been in the air for 24 hrs. 12 mins. The machine carried at the start 600 litres of fuel and 50 litres of oil. For the first few hours Böhm circled slowly at a low altitude round the aerodrome, not going above 100 metres. Then he gradually went higher, and just before midnight varied the monotony by excursions across the German capital to Potsdam. Then for another twelve hours the machine regularly and monotonously circled round the Johannisthal ground, until in order to try and get into a cooler atmosphere Böhm went up to an altitude of 2,000 metres. Having completed twenty hours in the air the machine was gradually brought down to 300 metres for the remainder of the flight. The record wins for Böhm one of the national prizes of 5,000 marks.

New Passenger Records.

FLYING a Voisin biplane fitted with 130 h.p. Salmson engine, at St. Petersburg, Laporte on the 12th inst. made a new passenger duration record by flying with two passengers for 9 hrs. 16 mins.; the previous best was Schirmeister's 6 hrs. 16 mins. 30 secs. On the 7th inst. Laporte made a new Russian record by taking two passengers up to 2,650 metres in 27 mins. and he improved on this on the 11th by taking two passengers to 3,850 metres in 36 mins.

On the 11th inst. at Issy, Rugere on a similar Voisin machine to the above, took up three passengers to a height of 3,400 metres, thus beating the French record of Garais for pilot and three passengers by 150 metres.



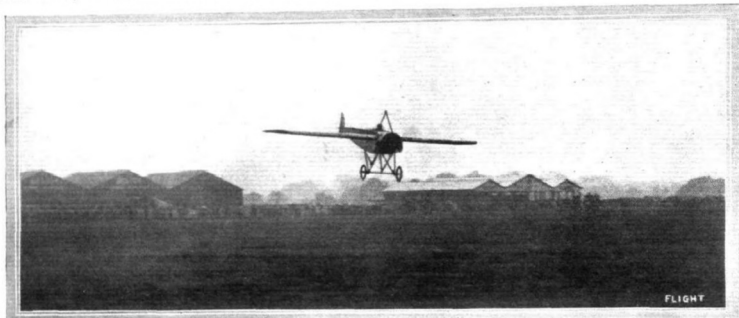
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E. Baumann at Hendon Aerodrome passing over Pylon I on the Wright biplane.

THE LONDON-PARIS-LONDON AIR RACE.

ONCE more has Walter L. Brock "chewed" his way to victory, for the third of our big aviation events this year has fallen to this remarkable American flyer. As in the case of the Aerial Derby round London, and the London-Manchester-London races, Brock,

and Garros alone completed the double journey the same day. Although only these two finished—with Renaux classed third on Sunday—it was none the less an interesting race, with several exciting incidents, whilst not a single serious accident marred the



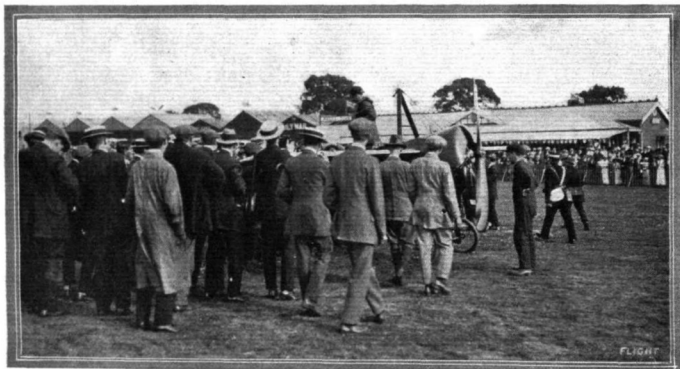
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LONDON-PARIS LONDON RACE.—Brock's superb landing at Hendon on his return from Paris.

as "his fellow countrymen would put it, went straight for it and "got there" without any fuss or bother, and on each occasion he flew over the courses—which in two cases were quite unknown to him—under more or less unfavourable weather conditions with a remarkable degree of accuracy. This "hat trick" of his has, therefore, proved that he is undoubtedly a master of his art, and that his victory is not merely a question of luck alone. Credit is

proceedings. Considerable interest was attached to the race on account of the entry of seven well-known continental flyers.

The first of these to arrive over here was Eugene Renaux, who flew over from Paris on a 120 h.p. Renault-Maurice Farman ("headless" type) with a passenger on Thursday, the 9th inst. Roland Garros, one of the favourites of the race, started from Paris at 4.20 a.m. on Friday on his 80 h.p. Le Rhone-Morane Saulnier,



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LONDON-PARIS-LONDON RACE.—Brock standing up in his machine immediately on his return to Hendon after his splendid achievement in the Paris flight.

also due to his 80 h.p. Gnome-Morane-Saulnier and its makers, the Grahame-White Aviation Co. Although following the general design of the French machines, Brock's Morane—which, by the way, has done over 1,000 miles without any extensive repairs—possesses several modifications, mostly as regards dimensions. Brock's win is also remarkable in that out of the six actual starters he

arriving at Hendon at about 10 a.m., after having made descents, owing to engine trouble, at Calais and in Kent. Helmut Hirth, of Albatros fame, also started off on an 80 h.p. Le Rhone-Morane-Saulnier in company with Garros, and he too had engine trouble and descended near Surbiton, arriving at Hendon in the afternoon. The machine flown by Garros differed somewhat from the other



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Brock being congratulated by Lady Reid on his London-Paris-London flight, and on the right by Sir George Reid.

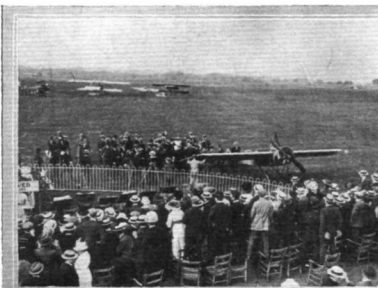
Morane-Saulniers in the race, having a slightly modified chassis and a peculiar wing section not unlike that of the Nieuport, whilst Hirth's machine was similar to the one flown over here by Brindejonc de Moulinais. P. Dacourt, flying the 80 h.p. Clement Bayard monoplane, got as far as Crotot, but was unable to continue to London. Lenoir on the 80 h.p. Ponnier monoplane damaged his machine at Courtenay on his way to London, whilst M. A. Parmelin on the 80 h.p. Deperdussin monoplane, after departing from Villacoublay for London, fell and smashed his machine when only just outside the aerodrome, fortunately without injury to himself.

Several test and speed flights were made at Hendon on Friday last by Garros, Carbery (80 h.p. Le Rhone-Bristol scout biplane), R. H. Carr and W. L. Brock. The former's machine developing engine trouble, mechanized, superintended by M. Saulnier himself, worked on the engine up to a late hour. R. R. Skene left Brooklands for Hendon on the 120 h.p. Martinsyde, but descended at Potter's Bar owing to engine trouble. Early in the afternoon, whilst Louis Noel was looking over his machine, he discovered that the petrol tank was leaking, and the rest of the evening was spent in putting it right.

Everyone was agog early on Saturday morning, and by 5.30 a.m. a good many people were on the ground. The weather was not at all promising, and it looked as though the elements were going to be unkind for the third time. Although there was a slight breeze and the sun was making every effort to show itself, a thick mist and clouds hung around the aerodrome at a low altitude, so low, in fact,

that when Garros went up for a test flight at 5.45 a.m. he disappeared among the clouds at an altitude of scarcely more than 100 ft. Shortly before 6.30 a.m. Hirth made a test flight on his Morane-Saulnier, but his engine was running so badly that on landing it was partly taken down in order to locate the trouble. As there was but little improvement in the weather, the start was postponed to 7.30, and even at this hour it was as bad as ever. Reports from Dover being favourable, however, it was decided to make a start. Skene was expected at any moment, but by now there was little hope of any of the missing continental pilots arriving. The starting times and handicaps of the remaining competitors were as follows:—

No.	Pilot and Machine.	Handicap.	Clock Start (a.m.).
14.	T. E. Hearn, with Mrs. Hearn as passenger (80 h.p. Blériot monoplane) ...	3 18	7 30
12.	E. Renaux, with Miss Unwin as passenger (120 h.p. Maurice Farman biplane) ...	2 21	7 35
7.	Louis Noel (80 h.p. Morane-Saulnier mono.) ...	1 43	7 40
6.	W. L. Brock (80 h.p. Morane-Saulnier mono.) ...	1 30	7 45
8.	R. H. Carr (80 h.p. Morane-Saulnier mono.) ...	1 30	7 50
3.	H. Hirth (80 h.p. Morane-Saulnier mono.) ...	1 18	(non start)
10.	R. R. Skene (120 h.p. Martinsyde mono.) ...	0 32	(non start)
2.	R. Garros (80 h.p. Morane-Saulnier mono.) ...	0 32	8 5
1.	Lord Carbery (80 h.p. Bristol biplane) ...	scratch	8 10



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LONDON-PARIS-LONDON RACE.—Brock's reception at Hendon after winning the race. On the left, the Pilot, the Press and the People; on the right Brock being "carried" round the enclosures after his victory.

Hearn, who employed a Rubery Owen quick release, did not get more than a few hundred yards before his engine stopped, and after a short interval he made another start, but descended on completing a couple of circuits of the aerodrome, and retired from the race. Renaux and his passenger were soon lost to view in the mist, but

appeared to give trouble. The last to go off was Carbery on the Bristol, and he got away in a very shaky manner, the machine being heavily loaded with petrol and oil. With the exception of Renaux and Garros all the starters wore Boddy life-saving jackets, which made them look somewhat like skippers of flying life-boats.



The presentation of the cup to Brock by Lady Reid for his win in the London-Paris-London Race. "Flight" Copyright.

he had not been gone very long when he was seen returning. On landing he informed us that he was unable to find his way, as he could not see the ground at all, and so he decided to return. He made a second start, however, about an hour later. Carr, Brock and Noel

The last of the competitors having gone, it remained but to await news of progress along the route, and in the meantime to partake of breakfast, which, thanks to the excellent catering arrangements on the ground, was an easy and pleasant matter.



THREE CHEERS FOR THE WINNER.—Brock being toasted by Mr. Claude Grahame-White, Mr. R. T. Gates, and Hendon enthusiasts after his splendid win in the London-Paris race. On the right "the men in overalls" who, unseen, do so much to contribute towards success in flying races, join in the congratulations to Brock. "Flight" Copyright.

all got away in fine style, but Hirth still had trouble with his engine, and so retired. The next man to start, therefore, was Garros, as Skeene had not turned up. Garros misunderstood the signal to start, and lost a few seconds in getting away, whilst his engine still

By now the weather was clearing, and giving promise of a hot and sunny day. Very shortly news came to hand that Brock had passed over Epsom at 8.2 a.m. and was flying well, whilst Garros was seen circling over Epsom Downs as though he was uncertain of his

direction. A little later we heard that Carr had lost his way and had descended at Kenton, near Harrow, and that Noel had come to grief at Camber, near Rye. Noel had already started on the Channel trip when the petrol pipe broke, so he immediately turned and glided back to shore, just managing to land some 300 yards from the sea. After waiting about an hour at Kenton, Carr resumed his journey and descended once more near Dymchurch, near Hythe, where he decided to abandon the race and return to Hendon, and on landing at Ashford (Kent) on the return journey he damaged the landing chassis. There were now only four in the race, and many began to doubt if any would get to Paris, let alone return to Hendon.

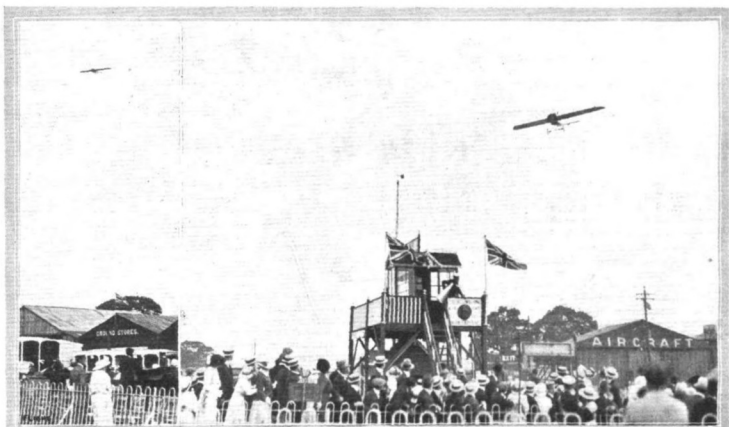
Renaux landed at Epsom to enquire his way, and also at Gravesend. Brock passed over Boulogne at 9.15 a.m., Garros at 9.50 a.m., and Carbery at 10.19 a.m. Brock landed at Hardelot at 9.24 a.m. to fill up with petrol, and departed 15 mins. later, arriving at Buc 11.18 a.m. Carbery was the next to reach Paris, landing at 12.4, five mins. ahead of Garros. Brock got away immediately his two hours' compulsory stop was up, but Garros lost some considerable time in starting on the return journey, as the engine had to be overhauled (a new magneto and propeller were fitted). On the return journey Brock reached Hardelot at about three o'clock, where he stayed 12 mins. in order to fill up with petrol, and passed over Folkestone at 3.45 p.m., Epsom at 4.28 p.m., arriving



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Garros in his machine in which he obtained second place in the London-Paris-London Race.

of the trophy, for Garros started that much behind him, and so the Frenchman had a chance of winning if he reached Hendon within that time. However, it soon became apparent that Garros would not be able to get in soon enough, for it was announced that he had passed over Folkestone at 5.12 p.m., and so Brock was presented with the trophy by, Lady Reid, the

at Hendon at 4 h. 48 m. 6 s., his average speed for the whole journey being 71 m.p.h. Needless to say, the reception he got was tremendous, and the scene immediately after his landing was one to be remembered. Long before the machine came to rest it was surrounded by an enthusiastic crowd that overwhelmed him with greetings and questions. The machine at last came to rest close to No. 1 pylon, and Brock stood up in his seat, silent, but smiling and chewing. First he took off his "Boddy" jacket, and then felt in his pocket and produced a letter, which he delivered to someone in a casual sort of way. His next procedure was to return his small pocket camera, which together with his foot rule he always carries with him wherever he goes, to its case. He then produced a large packet of records, and another letter, which he duly handed over to an official, and then surrendered himself to those awaiting to chair him. All this time he was silent, smiling, and chewing! Brock, guess you're some marvel! Although Brock was the first home, it was still a matter of 15 minutes before he could be declared the winner



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LONDON-PARIS-LONDON RACE.—Garros, the second man, arriving from Paris. On the left he is seen coming into the aerodrome on his first return, when, being informed he had missed the turning point at Harrow Church, he at once took wing again and flew back and rounded this point. On the right he is returning after this little episode, and thus formally ranking as second in.

wife of Sir George Reid, High Commissioner for Australia. Speeches were made by Claude Grahame-White, Sir George Reid, and—a very, very short one—by Brock. Grahame-White referred to the nationality of the event, a British-built machine of French design piloted by an American, and said that this kind of flight would in a very short time be quite a common occurrence—lunch in Paris and back in London for tea. He also made brief reference to the all-British attempt for the Atlantic flight.

An amusing and perhaps alarming incident occurred whilst the speech-making was in progress, for Verrier, who was "stunting" on his Maurice Farman, suddenly swooped down over the presentation group, causing several to scatter in all directions. At about 6.20 p.m. Garros was sighted approaching in the direction of the Welsh Harp, which seemed to indicate that he had not passed Harrow, so when he landed he was asked if he had, and not being sure, he started off immediately to do so, returning soon after, and crossing the line at 6 h. 28 m. 47 s., thus obtaining second place. In the meanwhile it had been announced that Carbery had left Harelot at 4.55 p.m., and should arrive at Hendon at about seven o'clock. News also came to hand that Renaux had arrived at Paris at 2.48 p.m., having passed Folkestone at 11.8 a.m., and Boulogne at 11.39 a.m. After a stop of two hours he resumed his journey, and landed at Boulogne at 7.45 p.m., still with his passenger. For some time after the hour at which he was expected, there was no news of Carbery, and some considerable anxiety was felt as to his safety. The Admiralty was communicated with, as it was feared that he had fallen into the Channel. Shortly before nine o'clock it was ascertained that this was the case, but before nine o'clock it was happily the pilot was safe and sound. It appeared that whilst

crossing the Channel, engine trouble developed, so the pilot made for a tramp steamer, and as he did so his engine gave out. He planned down and alighted on the water as close to the steamer as possible, and was soon picked up by the latter dry and unhurt. The machine, in a damaged condition, was also salvaged. Later Lord Carbery was transferred to H.M.S. "St. Vincent," where he was well looked after by the officers, and eventually landed on Folkestone Pier.

E. Renaux, with Miss Unwin as passenger, left Boulogne on Sunday at 9.30 a.m. for Hendon, via Calais, arriving at Hendon at 12.25 p.m. He was thus the third pilot to return, and was therefore allotted third prize in the handicap. Thus ended the first London-Paris-London Air Race.

Notes of the Race.

Each of the starters carried a letter from the French Ambassador in London to the British Ambassador in Paris. Brock brought back from Paris a reply which was delivered to M. Morand.

On arriving at Paris, Brock handed over a number of postcards, stamped and addressed, and asked someone to post them for him. He soon found an old friend in Sabelli, and had a chat with him over old times whilst partaking of some refreshment. Throughout the whole journey, Brock never flew higher than 2,300 ft.

At Buc aerodrome there were many well-known personages connected with aviation, amongst whom may be mentioned M. and Mme.

Blériot, MM. C. T. Weymann, P. Prier, Jules Védrines, Molla, Deutsch de la Meurthe, Farman (sen.), and Sanchez, &c.

The following is a complete time-table of the race from start to finish, whilst elsewhere will be found further particulars of the flying at Hendon on Thursday, during the race, and on the Sunday following:—

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Three Officials of the London-Paris-London Race.—From left to right: Mr. Douglas W. Thorburn, Major F. Lindsay Lloyd (Stewards), and Mr. Harold E. Perrin.

Result of First London-Paris-London Air Race.

Prizes.—Fastest Time; Trophy and £500 presented by the International Correspondence Schools.
W. L. Brock (80 h.p. Gnome-Morane-Saulnier monoplane).

Handicap.—1st, £300, presented by the Royal Aero Club; 2nd, £150; and 3rd, £50. Presented by the International Correspondence Schools.

Times of Competitors.

	Hendon Dep.	Paris Epsom.	Paris Boulogne	Paris.		Paris Folkestone.	Paris Epsom.	Hendon Arr.
				Arr.	Dep.			
W. L. Brock	7 45	8 5	9 15	11 18	18	3 45	4 28	4 48
R. Garros	8 5	8 27	9 50	12 10	35	5 12	5 55	6 33
J. Carbery	8 10	10	10 19	12 4	42	†		
E. Renaux	7 35	9 15	11 9	2 49	49	†		

* Actually started at 8.23 a.m. † Descended in mid-Channel.
‡ Landed at Boulogne, 7.45 p.m.

Handicap Time. Flying Time. Average Speed.

	h. m. s.	h. m. s.	m.p.h.
1. W. L. Brock	5 27 6	7 3 6	71.5
2. R. Garros	7 56 47	8 28 47	58.8
3. E. Renaux	24 34 0	26 55 0	—

Flying Times Between London and Paris.

	London-Paris.	Paris-London.	Total.
	h. m. s.	h. m. s.	h. m. s.
W. L. Brock	3 33 24	3 29 42	7 3 6
R. Garros	4 5 42	4 23 15	8 28 57
J. Carbery	3 54 0	—	—
E. Renaux	7 14 50	19 40 10	—

An Aeroplane for Australia.

FOLLOWING on the efforts which resulted in the presenting of a Blériot monoplane to the New Zealand Government, Lord Desborough, as President of the Imperial Air Fleet Committee, has issued an appeal to all former or present members of Oxford University to contribute towards the cost of an aeroplane which it is proposed to name "Oxford," in honour of the oldest university of the Empire, and to present it to Australia. Sir George Reid—the High Commissioner—has stated that such a gift will be enthusiastically welcomed by the Australian Commonwealth. The amount required is £2,000, and subscriptions should be sent to the Imperial Air Fleet Committee, 12, Norfolk Street, Strand, W.C.

The Art of Reconnaissance.

THIS book, which is now in its third edition, is deserving of notice in FLIGHT, for the reason that its author (General Henderson, Director of Military Aeronautics) has recently included a chapter dealing with aerial reconnaissance.

The author gives a comparison between airships and aeroplanes, pointing out their relative and potential military qualifications and methods of employment; indicating the manner in which cavalry and aircraft may be mutually supporting and most effective. As showing how important has been the advent of the aeroplane, it is stated that a fairly detailed observation of an enemy's force at a distance of three days' march can be completed within three hours from the time at which the order is issued until the information is delivered at headquarters. The qualities that render the aeroplane so valuable in reconnaissance are then examined, their probable actual duties are specified, and the methods of attack both from the ground and in the air are referred to.

The book is published by John Murray at the price of 5s. net, and although the chapter relating to aircraft will be read with interest and profit by all who are interested in aerial warfare, in order that the position of aircraft in war may be viewed in its true perspective, a study of the remaining portion of the book will prove attractive to many of our readers.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

- July 18 ... Flying Meeting, Hendon Aerodrome.
Aug. 10-22 ... Daily Mail £5,000 Circuit of Britain Race. Starting from Southampton Water.
Aug. 22-29 ... Gordon-Bennett Eliminating Trials. Upavon, Salisbury Plain.
Sept. 27-28 ... Gordon-Bennett Aviation Race. Buc, France.

HENDON AERODROME.

Members of the Royal Aero Club are admitted free to the Hendon Aerodrome on presentation of their Club Membership Cards. The Membership Card admits the Member only—motor cars must be paid for.

DAILY MAIL £5,000 CIRCUIT OF BRITAIN RACE.

This Race will be open from 6 a.m. on Monday, August 10th, 1914, the starting place being Southampton Water.

The following are the entries, with the official numbers to be displayed on each aircraft:—

- (1) Sopwith Aviation Co., Ltd. (Pilot: V. Muhl.)
- (2) Wm. Beardmore and Co., Ltd. (Pilot: To be nominated.)
- (3) Sopwith Aviation Co., Ltd. (Pilot: C. Howard Pixton.)
- (4) Grahame-White Aviation Co., Ltd. (Pilot: To be nominated.)
- (5) Eastbourne Aviation Co., Ltd. (Pilot: F. B. Fowler.)
- (6) White and Thompson, Ltd. (Pilot: Capt. Ernest C. Bass.)
- (7) A. V. Roe and Co., Ltd. (Pilot: F. P. Raynham.)
- (8) Blackburn Aeroplane Co., Ltd. (Pilot: Sydney Pickles.)
- (9) White and Thompson, Ltd. (Pilot: A. Loftus Bryan.)

The Official Controls have been fixed as follows:—
Southampton (starting place), Ramsgate, Yarmouth, Scarborough, Aberdeen, Fort George, Oban, Kingstown (Dublin), and Falmouth.

Arrangements at Southampton.

The Royal Motor Yacht Club has kindly postponed the moving of the "Enchantress" until Monday evening, August 10th. Members wishing to witness the start of the Race on Monday morning may do so from the "Enchantress." A number of cabins are available for the week-end commencing August 8th, and members wishing to stay on board are requested to apply to the Secretary of the Royal Aero Club at the earliest possible moment.

COMMITTEE MEETING.

A Meeting of the Committee was held on Tuesday, July 14th, 1914, when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. John Dunville, Major F. Lindsay Lloyd, Mr. Mervyn O'Gorman, C.B., Mr. C. F. Pollock, Mr. A. Mortimer Singer, and the Secretary.

New Members.—The following new members were elected:—William Campbell Adamson, Capt. G. C. Buckland, I.A., Hugh Burroughes, Earl of Carnwath, Capt. Alistair James Henryson-Caird, Denis George Murray, and Evelyn Ronald Whitehouse.

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

- 827 Capt. Gerard Percy Wallace (S.A. Defence Force) (B.E.3 Biplane, Central Flying School, Upavon). July 29th, 1914.
- 828 Lieut. Gilbert Lindsay Farie, H.L.L. (Maurice Farman Biplane, Central Flying School, Upavon). June 30th, 1914.
- 829 Dennis Gwynne (E.A.C. Biplane, Eastbourne School, Eastbourne). June 30, 1914.
- 830 William Henry Charlesworth (Bristol Biplane, Bristol School, Brooklands). July 1st, 1914.
- 831 John Edmund Burnett Thornley (E.A.C. Biplane, Eastbourne School, Eastbourne). July 5th, 1914.
- 832 Lieut. Edwin Cheere Emmett (S.A. Defence Force) (Maurice Farman Biplane, Central Flying School, Upavon). June 9th, 1914.
- 833 Sub-Lieut. Frederick Barr, R.N.R. (Maurice Farman Biplane, Central Flying School, Upavon). July 9th, 1914.
- 834 Capt. John Francis Aloysius Kane (2nd Devonshire Regt.), (Vickers Biplane, Vickers School, Brooklands). July 9th, 1914.

The Next German Aero Show.

ARRANGEMENTS are now well in hand for the Second International Aero Show which is to be held, in the Kaiserdom, Berlin, from October 31st to November 10th next, under the auspices of the Kaiserlicher Aero and Automobile Clubs and the German

- 835 William Harold Treloar (Bristol Biplane, Bristol School, Brooklands). July 9th, 1914.
- 836 Charles Cayley Godwin (Bristol Biplane, Bristol School, Brooklands). July 9th, 1914.
- 837 William Donovan South (Blériot Monoplane, Blériot School, Brooklands). July 9th, 1914.

London-Paris-London Race.—Major F. Lindsay Lloyd, who was one of the Stewards in Saturday's Race, submitted a report of the results. The Observers' and Timekeepers' reports were also considered, and the official placings were confirmed as follows:—

- 1st ... W. L. Brock.
- 2nd ... R. Garros.
- 3rd ... E. Renaux.

The prizes were awarded as follows:—

£500, presented by the International Correspondence Schools, to the Grahame-White Aviation Co., Ltd., as the entrants of W. L. Brock, who completed the course in the fastest time.

£300, presented by the Royal Aero Club, to the Grahame-White Aviation Co., Ltd., as entrants of W. L. Brock, who completed the course in the fastest handicap time.

£150, presented by the International Correspondence Schools, to Messrs. Morane-Saulnier, as the entrants of R. Garros, who completed the course in the second fastest handicap time.

£50, presented by the International Correspondence Schools, to E. Renaux, who completed the course in the third fastest handicap time.

	Left Hendon.	Arrived Paris.	Left Paris.	Arrived Hendon.
W. L. Brock	7.45 a.m.	11.18.24 a.m.	1.18.24 p.m.	4.48.6 p.m.
R. Garros	8.5 a.m.	12.10.32 p.m.	2.10.32 p.m.	6.33.47 p.m.
E. Renaux	7.35 a.m.	2.49.50 p.m.	4.49.50 p.m.	12.25 p.m. (Sunday).

A Vote of Thanks was unanimously passed to the following Officials who assisted in the Race:—

Stewards:—Major F. Lindsay Lloyd, Mr. D. W. Thorburn, Mr. A. W. Ruthven-Stuart.

Observers at Turning Points:—

- Mr. C. Parry Williams and Mr. E. T. Willows (Harrow).
- Mr. A. J. A. W. Barr and Mr. L. Brotherton (Epsom).
- Mr. H. DelaCombe (Folkestone).
- Mr. C. G. Grunhold (Boulogne).
- Capt. W. Oswald Watt (Irac).

Memorial to the late Mr. Gustav Hamel.—Correspondence from Members and others, suggesting a memorial to the late Mr. Gustav Hamel was considered, and it was decided to obtain some particulars relating to the endowment of an aviator's bed at a hospital.

Suspension by the F.A.I.—Letter was read from the F.A.I., notifying the suspension by the Aero-Club de France of M. Maurice Letellier, an aeronaut, for one year from May 21st, 1914.

Hedges Butler Challenge Cup.

The Long-Distance Balloon Race for the Hedges Butler Challenge Cup took place at Hurlingham on Saturday last, and resulted in a win for Mrs. John Dunville, who was accompanied by Mr. C. F. Pollock and Capt. B. Corbet.

Mrs. Dunville descended at Nesscliffe, near Shrewsbury, in the early hours of Sunday morning. This being Mrs. Dunville's third consecutive victory in this race, the Cup now becomes her absolute property.

Paris Aeronautical Exhibition.

The Sixth International Aeronautical Exhibition will be held at the Grand Palais, Paris, opening on November 21st and closing on December 6th, 1914. Particulars can be obtained from the Royal Aero Club.

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

Motor Manufacturers Association. Ample space is available in the new building, and it is proposed to make the show a most comprehensive one. A uniform scheme of stand decoration will be adopted. Application forms for space and other particulars can be obtained from "Ala," Allgemeine Luftfahrzeug-Ausstellung, 12, Unter den Linden, Berlin W. 8.

FLYING AT HENDON.

OVER thirty flights were made at Hendon on Thursday afternoon of last week, and a number of passengers were taken up. Louis Noel on the 70 h.p. G.-W.-Maurice Farman made the greatest number, his total being about ten. N. Howarth and A. E. Barrs also put up several flights, the former on the 50 h.p. G.-W. bi-rudder 'bus and the Maurice Farman, and the latter on the 80 h.p. Blériot and the bi-rudder 'bus. R. J. Lillywhite flew both the 80 h.p. Blériot and the bi-rudder 'bus, and the latter machine was also flown by F. G. Dunn and M. Osipenko. R. H. Carr gave a looping demonstration on the 50 h.p. G.-W. tractor biplane "Lizzie," making two loops and a tail-slide, and concluding his exhibition with a number of stunts such as switchbacks, slow flying, and spirals. P. Bjorklund flew over to Brooklands on his 50 h.p. Blériot, completing the journey in about 30 mins. E. Baumann also made several flights on the Wright biplane.

On Saturday afternoon whilst the London-Paris race was in progress, several exhibition and passenger flights were made by the Hendon pilots. The first up was K. J. Lillywhite on the bi-rudder 'bus, on which he performed quite a number of fancy evolutions. He was followed by A. E. Barrs with a passenger on the 80 h.p. Blériot. After this Lillywhite, Claude Grahame-White and P. Verrier gave exhibitions on the bi-rudder 'bus, and the two Maurice Farman respectively. A 6-mile speed handicap for the "Teofani" Trophy was then flown in a single heat of six laps. Four started as follows:—R. J. Lillywhite on the bi-rudder 'bus (3 mins. 31 secs.); Claude Grahame-White on the G.-W. Maurice Farman (1 min. 38 secs.); P. Verrier on the Aircraft-Maurice Farman (1 min. 8 secs.); and A. E. Barrs on the 80 h.p. Blériot (scratch). Grahame-White overhauled Lillywhite on the last lap and crossed the line first, 14 secs. in front, and Barrs came in third 15 secs. behind Lillywhite. Verrier retired after completing five laps. Flying was then suspended for a time as Brock was announced to be nearing home. Brock arrived at 4.48 p.m., as reported elsewhere, and shortly after his arrival two balloons sailed past just outside the aerodrome. Just before Garros arrived F. G. Dunn ascended on the bi-rudder 'bus to about 500 ft. and from this height he saw Garros trying to locate the aerodrome. After this a few more passengers were taken up before the proceedings were brought to a close.

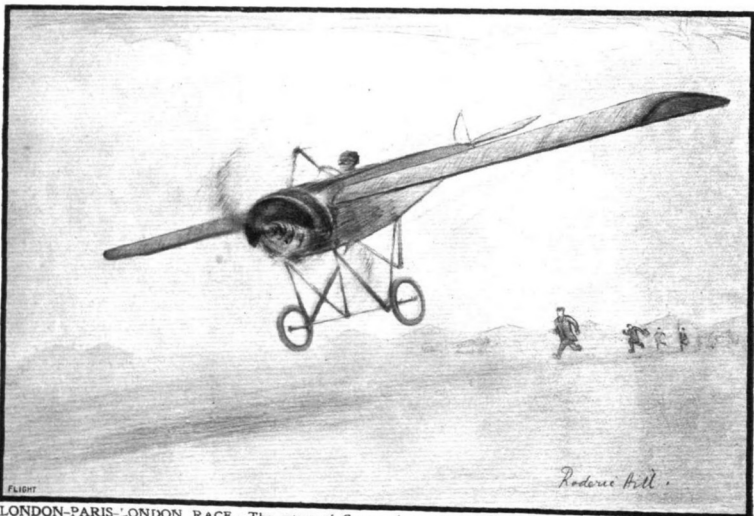
Heavy rain fell during Sunday morning, but in the afternoon it cleared up and a good afternoon's flying was witnessed by a fairly

large attendance. Brock, the winner of the previous day's race, made a fine altitude flight on his Morane-Saulnier, reaching an altitude of 9,500 ft., being out of sight behind the clouds above 3,000 ft. R. H. Carr gave a very pretty looping demonstration amongst the low lying clouds on the G.-W. tractor biplane "Lizzie."



Miss Ethel Levey watching the London-Paris Race.

Other Hendon pilots out were R. J. Lillywhite on the bi-rudder 'bus and the Maurice Farman, Louis Noel with passengers on the Maurice Farman, A. E. Barrs on the 80 h.p. Blériot and the bi-rudder 'bus, N. Howarth, F. G. Dunn, E. F. Norris, and R. T. Gates also on the latter machine, P. Verrier on the Aircraft-Maurice Farman, and E. Baumann on the Wright.



LONDON-PARIS-LONDON RACE.—The return of Garros; he swept into the aerodrome only to find that he was—second! From an original drawing by Roderic Hill.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

Naval Flying.—Monday, last week, fine. There were only two machines up, 188 Maurice Farman and 152 Short Sociable, both being up a number of times.

Tuesday fine, rather windy. Nos. 152 Short Sociable, 64 Short, 188 Maurice Farman.

Wednesday, fine afternoon. Wet morning; Nos. 150 Avro and 188 Maurice Farman only machines out.

Thursday fine; Nos. 64 Short, 150 Avro 50 h.p., 1 Short.

Friday fine. Lieut. Spencer Grey on 152 Short Sociable to Isle of Grain and back. Com. Samson to Isle of Grain on 65 Short "converted"; this machine has had floats fixed on as well as wheels, so that it can be used for both land and water. 43 and 153 Bristol tractor, and 31 Henry Farman were also out.

Saturday fine, rather windy. No. 65 Short converted, Com. Samson pilot, to Isle of Grain.

Civilian Flying.—Saturday. Mr. Leo Jezzi was up about half an hour on his 35 h.p. Jap; also up three times on Sunday evening.

Brooklands Aerodrome.

ON Monday morning last week the Martinsyde engine was being tested; in the afternoon further test of Martinsyde engine, and a test of engine of new Vickers gun 'bus.

Bristol, Blériot and Vickers pupils out Tuesday morning, also Mr. Merriam on Bristol biplane, Mr. Dukinfield Jones solo and with passengers on D.F.W. biplane, and Mr. Barnwell, with Mr. Knight as passenger, across country on new Vickers gun 'bus; in the afternoon Mr. Hawker to Farnborough on Sopwith "Scout," Mr. Dukinfield Jones testing new propeller on D.F.W., and Mr. Skene on Martinsyde.

Wednesday morning, Vickers pupils out; Mr. Merriam on Bristol. In the afternoon a fine display of "looping" and "upside-down" flying by Mr. Hucks on his Blériot monoplane; Mr. Jullerot on Bristol found it too "bumpy" for pupils.

Blériot, Bristol, and Vickers pupils out Thursday morning. Mr. Merriam on Bristol, Mr. Barnwell to Croydon and back on Vickers gun 'bus, Mr. Skene on Martinsyde, Mr. Gower over surrounding country on 50 Blériot, and Mr. Dukinfield Jones on the D.F.W. In the afternoon, Lieut. Lawrence (with Lieut. Roche as passenger) in from Farnborough on B.E. 348, returning to Farnborough after a short stay; Mr. Barnwell across country in Vickers gun 'bus, Mr. P. Bjorklund in from Hendon on Blériot and then to Staines, Mr. Skene on Martinsyde, and Mr. Dukinfield Jones on D.F.W.



Mr. Ronald S. McGregor, who has just passed his *brevet* tests at the British Caudron School, Hendon.

Bristol, Vickers, and Blériot school work. *Brevet* tests in excellent style on Bristol biplanes by Messrs. W. H. Treloar (altitude, 950 ft.) and C. C. Godwin (altitude, 2,500 ft.) on Vickers biplane by J. F. A. Fane (altitude, 800 ft.) and on Blériot monoplane by Mr. W. D. South (altitude, 450 ft.).

Friday morning, Blériot, Vickers, and Bristol school work, Mr.

Merriam on Bristol, Mr. Skene left for Hendon on Martinsyde, Mr. Laurence Hall on 50 Avro called on his way to Shoreham, Mr. Gower across country on 50 Blériot, Mr. Barnwell to Dartford on Vickers gun 'bus; in the afternoon, Mr. Barnwell from Dartford with passenger on Vickers gun 'bus, Messrs. Jullerot and Stutt on Bristol biplanes, and Jack Alcock on 100 Sunbeam. Too "bumpy" for school work.

Mr. Jack Alcock with Mr. Harold Lane as passenger flew on Saturday morning to Shoreham in 39 mins. on 100 Sunbeam, Mr. Skene from Potter's Bar on Martinsyde, Mr. Sippe testing Mr. Creagh's 80 h.p. Bristol tractor biplane. Mr. Hawker's machine arrived back from Australia. Mr. Barnwell with passenger on Vickers gun 'bus. In the afternoon, Mr. Hawker "looping" on



Mr. L. Gresley, who has just taken his *brevet* at the Bristol Flying School, Brooklands.

his machine, Mr. Mahl on 80 Sopwith, Mr. Sippe with Mr. Creagh on latter's Bristol biplane, Mr. Stutt on Bristol biplane. Mr. Alcock back from Shoreham [where he started scratch and finished third in race] in 30 mins.

On Sunday afternoon, two fine "looping" exhibitions by Mr. Hawker on his Sopwith biplane, Mr. Mahl solo and with passengers on the 80 h.p. Sopwith, Mr. MacGordon also going up on same machine and flying well, Mr. Dukinfield Jones solo and with passengers on D.F.W. biplane, Mr. Sippe with Mr. Creagh on latter's Bristol tractor biplane went up to 6,000 ft., and came down with engine off in a fine spiral glide. The winner of the ballot for the free passenger flight—Miss Gwen East, of the "Hand and Spear" Hotel, Weybridge—was taken up by Mr. Sippe on Mr. Creagh's Bristol biplane.

Blériot School.—Rolling and straights on Penguin and 28 h.p. Anzani-Blériot: A. Crick, 6 mins.; G. Pitt, 18 mins.; Lieut.-Col. Fraser, 12 mins.; Compton FitzJames, 10 mins. Circuits on 45 h.p. Anzani: H. O'Hagan, 10 mins.; W. South, 10 mins. W. South took his certificate at 450 ft. E. C. Gower cross-country flights on 50 h.p. Gnome.

Bristol School.—Monday, last week, tuition impossible owing to high wind.

Tuesday, Mr. Collins taken as passenger twice, and solos by Mr. Godwin, Mr. Treloar and Mr. Adamson. The wind and rain prevented any further tuition.

Wednesday, school work impossible. Thursday, passenger tuition to Mr. Hay, Mr. Lucas (2 flights), Lieut. Sanders, Mr. Adamson and Mr. Collins (3). Solos by Mr. Godwin, Mr. Adamson, Lieut. Coles, Mr. Treloar and Mr. Lucas. Certificates taken by Mr. Treloar and Mr. Godwin at 1,000, ft. and 2,500 ft. respectively.

Friday, passenger tuition to Mr. Collins (2), Lieut. Sanders (2) and Mr. Lucas. Soles by Mr. Adamson, Mr. Rutledge and Mr. Hay. Wind stopped further tuition. Saturday, too windy and misty for school work.

Vickers School.—Tuesday, last week, with instructor: Capt. Kane, Lieuts. Clemson, Gillman, Wells and Warrant.

Thursday, with instructor: Lieuts. Clemson, Gillman, Warrant and Wells. Capt. Kane, Lieuts. Warrant, Gillman and Clemson solos. Barnwell on new gun-carrying biplane, and testing new box-kite.

Friday, with instructor: Lieuts. Haskins, Wells and Clemson. Lieut. Warrant solo. Barnwell on new gun-carrying biplane with passenger.

Liverpool Aviation School, Waterloo.

THURSDAY last week, Melly on two-seater and Birch on "Y" Anzani flew round Alcar at a height of 1,500 ft. Birch terminated his flight with a fine spiral. Groves took school machine out, but in attempting a hop in a side wind came down badly on one wing and overturned the machine.

Monday last, Birch again out on "Y" Anzani, doing figures of eight and banked turns for a quarter of an hour.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Tuesday, last week, Messrs. Murphy, Stalker and Haines (new pupils) rolling with Instructor Barrs. Messrs. Upton, Liu, Gruning, Courtney, Toolis straights with Instructor Barrs. Mr. Shepherd solo straights.

Wednesday, Messrs. Gruning, Liu, Stalker and Toolis straights with Instructors Barrs and Howarth. Mr. Shepherd solo straights.

Thursday, Messrs. Gruning, Courtney, Haines, Liu, Murphy, Stalker, Upton, Toolis and Wyles, straights with Instructors Barrs, Howarth and Lillywhite. Mr. Palmer solo straights, Mr. Shepherd solo circuits. Mr. Howett solo straights and circuits, and Mr. Lowe solo circuits and figures of eight.

Friday, Messrs. Courtney, Wyles, Liu, Haines, Gruning and Toolis straights with Instructor Barrs. Mr. Shepherd solo circuits.

Beatty School.—Monday last week, although weather was bad, Mr. Ruffy was out doing straights on monoplane.

Messrs. Bentley (10) and Allen (4) up with Baumann Tuesday morning, and Mr. Kuffy out by himself on monoplane. Tuesday evening Mr. Kelly (new pupil, 10) and Lieut. Paterson out with M. Baumann.

Wednesday, Messrs. Cheung (10), Elverson (10) and Kelly (3) up with Baumann. Watts out testing 40 h.p. Wright, afterwards taking MacLachlan up for 4 mins.

Thursday morning, Messrs. Kelly (15), Allen (8) and Cheung (5) and Lieut. Maguire (15) up with Baumann. Thursday evening, Capt. Bass (20), Lieut. Maguire (13), Messrs. Allen (5), Cheung (5) and Lieut. Paterson (5) up with Baumann and Messrs. Cheung (5) and Bentley (3) and Lieut. Paterson (5) and MacLachlan (10) up with Wills.

Friday, Lieut. Maguire (10), Messrs. Bentley practising landings (14), Kelly (10), and Cheung (10) up with Baumann.

Saturday. No school owing to Paris race. One passenger taken up.

Sunday. Two passengers taken up.

British Caudron School.—Monday last week, too windy for school to go out.

Tuesday evening, R. Desoutter on 60 h.p. Caudron biplane for 10 mins. with passenger.

Wednesday, school was out at mid-day under the instruction of W. T. Warren and Rene Desoutter. Mr. Valazzi doing rolling practice. In the evening R. Desoutter on 60 h.p. for quarter hour.

Thursday, school out at 5 under instructors. Messrs. Abbott and Valazzi doing straight flights. W. T. Warren and R. Desoutter flights, afterwards giving passenger flights to Messrs. Valazzi and Abbott.

Friday, school out at 5. After trial flights by Instructors W. T. Warren and R. Desoutter, Mrs. Buller on 35 h.p. for 20 minutes. Messrs. Abbott and Valazzi doing straight flights.

Saturday, too windy for school work.

Hall School.—Tuesday, last week, D. W. Clappen testing No. 2 Caudron, Miss Clifford doing straights later.

Thursday and Friday, school out under Messrs. Clappen and Virgilio. Clappen out testing Caudrons 1 and 2. Miss Clifford doing straights, improving greatly. Messrs. Arcier, Brooks, Gearing, Haines, Gibson and Rose doing straights on No. 2 Caudron. Arcier couple of circuits at 100 ft. 50 h.p. Avro overhauled during week. Thursday evening J. L. Hall out on Avro, finishing with complete loop at 2,000 ft. Friday morning J. L. Hall started for Brighton for exhibition flights.

Shoreham Aerodrome.

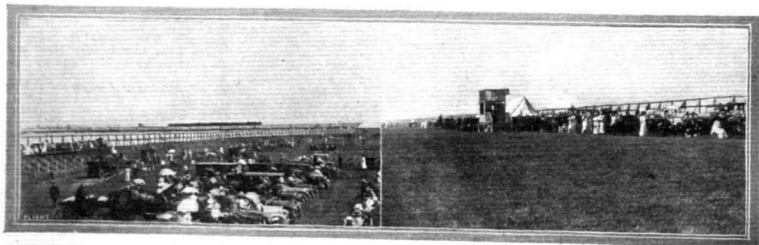
Pashley School.—New pupil, E. P. Roberts, up with instructor, controlling very well. W. Mortimer circuits and 8's ready for the *brevet* tests.

The tests of the new pusher biplane were quite satisfactory. The Brighton Cup was won on Saturday and the speed race on Sunday. Mr. Pashley piloted the machine above the clouds, and was completely lost to view.

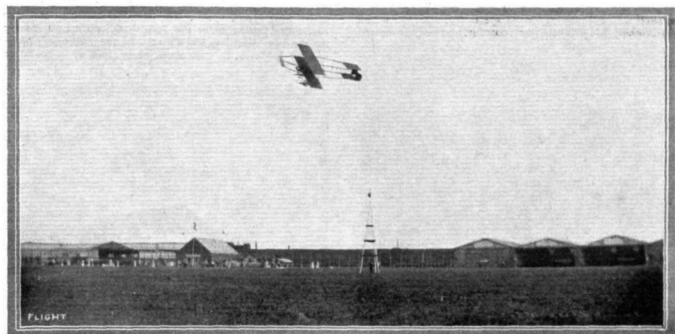
FLYING AT SHOREHAM.

ALREADY the new management of the Brighton Shoreham aerodrome have found time to effect quite a number of improvements in the arrangements at the ground, and the weekly flying meetings which are to be held during the present season should make this aerodrome very popular indeed. The ground itself is particularly adapted for the purpose, as it is absolutely level and as smooth as a lawn. The course itself, which is marked off by pylons, is a little over 12 miles long, and the last pylon before the home straight is so situated that in speed races round the pylons the competitors bank very steeply in fairly close proximity to the enclosures, so that an excellent view of the various ways in which the different pilots

handle their machines can be obtained. Several new sheds have been erected to accommodate visitors' machines. In addition to the excellent flying, other attractions provided include well-appointed tennis courts and tea gardens, and on race days a military band provides a very good programme of music. The headquarters of the Sussex County Aero Club are situated on the flying ground adjoining the hangars. For the opening meeting of the season which took place on Saturday last the management were fortunate in having favourable weather conditions. That the efforts to improve the aerodrome are appreciated was shown by the large crowd which arrived from various parts of the



SHOREHAM AERODROME.—On the left: View showing one end of motor car enclosure; and on the right: The enclosures, showing refreshment tents and judges' stand.



"Flight" Copyright.

Cecil Pashley banking one of the Farmans round a pylon in last Saturday's speed race at the Shoreham Aerodrome.

country by road or rail, and it must be recorded that the meeting was exceedingly well organised. The officials were: Directors, Messrs. G. Arthur Wingfield (chairman), H. V. Fabrin, H. Wingfield, W. Pettett; General Manager, Mr. John Bellham; Secretary, Mr. W. C. Littlewood; Aerodrome Manager, Capt. C. A. Tyrer, L.F.; Judges, Mr. W. B. Gentle and Mr. R. Brodric; Clerk of the Course, Mr. H. Gonne; Stewards, Col. Hudson, Col. A. Woolley, J.P., and Messrs. J. T. Musgrave, T. Blair, G. T. Richards and O. Mellersh.

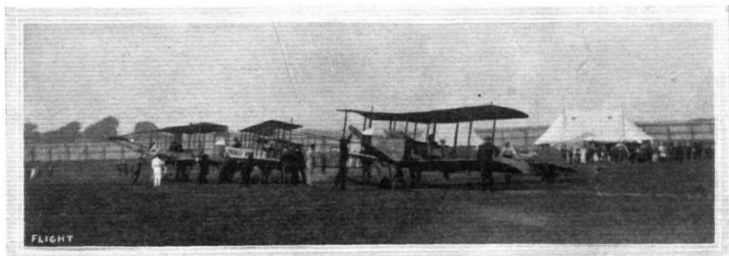
Among the pilots who were flying on Saturday may be mentioned J. L. Hall, Eric and Cecil Pashley, J. Alcock, W. H. Elliott and G. J. Lusted. Jack Alcock flew across from Brooklands on Saturday morning accompanied by a passenger, in his 100 h.p. Sunbeam-engined Maurice Farman biplane, completing the journey in 38 mins. J. L. Hall had arrived from Brooklands the previous evening on his Avro biplane. The proceedings of the day commenced with test flights by Hall on his Avro, Alcock on the M. Farman, and E. Pashley on a new small biplane of the pusher type, built by the Pashley brothers. This machine, although following standard lines in its general arrangement, is an extremely neat job, and the Pashley brothers are to be congratulated on their skill as constructors as well as pilots. The machine has been built quite recently, in fact it was only erected on the previous Sunday, and it was Thursday before the engine was fitted, and it may be mentioned that the Pashleys did most of the constructional work themselves.

At four o'clock Mr. Hall got into his machine, and starting off with a very steep climb soon climbed to about 2,200 ft. Having reached this height, Mr. Hall put the nose of his Avro biplane

downwards and made a vertical dive of several hundred feet, to gain speed, and then pulling back his elevator, he made one of the cleanest loops we have seen, afterwards landing with a beautiful spiral *à la* *plane*. Shortly after the speed race was started, this race including two heats of four laps each and a final of six laps, the prizes being the Brighton Cup, and cash prizes aggregating £100, presented by the proprietors of "Shell" motor spirit.

In the first heat Cecil Pashley on an old-type Henry Farman biplane, received a start of 3 mins. from Jack Alcock who was flying his M. Farman. Competing unofficially was W. H. Elliott, also on an old-type Henry Farman biplane. Although banking his machine round the pylons at alarming angles, Alcock did not succeed in beating Cecil Pashley, who won by 31½ secs. In the second heat, J. L. Hall was scratch on his Avro biplane, whilst Eric Pashley on the new Pashley biplane received 1 min. start. Competing unofficially was G. J. Lusted on a Henry Farman biplane (2 mins. 45 secs. start). This heat was won easily by Eric Pashley by 1 min. 3½ secs.

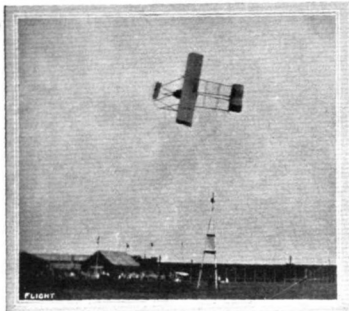
Four machines were entered in the final: (1) Eric Pashley on Pashley biplane (2 mins. 25 secs. start); (2) J. L. Hall, Avro biplane (30 secs. start); (3) J. Alcock, M. Farman biplane (scratch). Cecil Pashley on one of the Farmans competed unofficially and received 3 mins. 45 secs. start. All the pilots handled their machines in excellent style, but although Hall's and Alcock's experience at Brooklands and Hendon stood them in good stead, they did not succeed in beating Eric Pashley, who won by 39½ secs. There appeared to be very little difference between the speed of the Avro and that of the M. Farman, as Alcock finished 27 secs. behind



"Flight" Copyright.

The machines lined up for the start of the second heat of the speed race at the Shoreham Aerodrome.

Hall, whose handicap allowance was 30 secs. Eric Pashley's fine win was greeted with enthusiasm by the spectators, amongst whom the Pashley brothers are evidently very popular, and he thus secured



"Flight" Copyright.

A fine bank by J. Alcock on his M. Farman biplane, 100 h.p. Sunbeam engine, at the Shoreham Aerodrome.

the Brighton Cup and £70, whilst Hall, who was second man home, received £20 and Alcock £10.

On Sunday the heavy rain in the morning was followed by a very

fine afternoon, during which numerous exhibition and passenger flights were given. J. L. Hall and Eric Pashley had another try round the pylons under the same handicap conditions as those in the race on Saturday, but whereas in the Saturday's race Pashley won by 39½ secs., he only managed on Sunday to get home 8 secs. ahead of Hall.



"Flight" Copyright.

An old aeroplane wing makes an excellent awning in the Sussex County Club's enclosure at Shoreham Aerodrome.

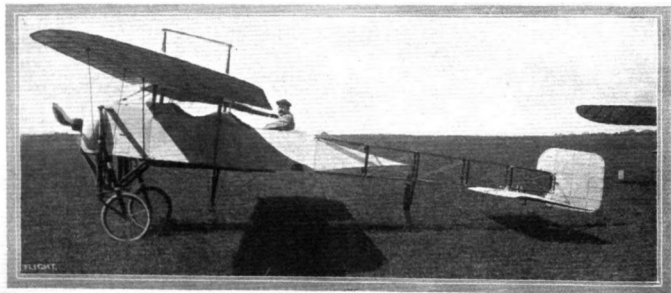
In the evening, in the presence of a good number of spectators, Mr. Hall went up again and repeated his performance of looping the loop.

A NEW TWO-SEATER TYPE BLÉRIOT.

AMONG the machines exhibited by the Blériot firm at the last Olympia Aero Show was, it will be remembered, a single-seater with the wings mounted a slight distance above the fuselage, so that the rear spar came practically on a level with the eyes of the pilot. The object of this arrangement, as explained at the time of the Show, is to give the pilot an unobstructed view in all directions. This type of machine has proved so successful after thorough tests that M. Blériot decided to bring out a two-seater of the same type, and the accompanying photograph gives a good idea of its general

machine can be fitted with a 9-cylinder 90 h.p. Rhone engine or with a 100 h.p. *monosoupape* Gnome.

As it has been chiefly designed for military purposes, the question of dismantling has been carefully studied. The landing chassis can be lowered in ten seconds, thus letting the machine as a whole down close to the ground to facilitate removing or fitting the wings without the use of any trestles. The top pylon is hinged, and by undoing a single wing-nut the pylon can be brought down close to the fuselage without interfering with any of the wires or cables



arrangement. As in the ordinary Blériot two-seater, pilot's and passenger's seats are arranged tandem fashion, the pilot occupying the rear seat. The observer's seat is placed immediately above the centre of gravity thus making it possible to fly the machine minus a passenger without any adjustments of the tail plane. Should it not be desired to carry a passenger, an auxiliary tank can be fitted in its place thereby increasing the range of flight of the machine. The centre portion of the wings has been cut away in order to provide an unobstructed view in an upward direction for the observer. This

supporting the wings, so that no readjustment has to be made in erecting the wings again. As it is fitted with spring hinge-clips the rudder can be removed instantaneously, a safety lock preventing the clip from coming undone.

The width of the chassis of the new two-seater, is slightly greater than that of the standard type, being, in fact, exactly the same as the diameter of the propeller, so that there is no necessity for removing the latter for packing—a valuable feature in a military machine, which may have to be frequently transported on a lorry.

EDDIES.

I HEAR very good accounts of the work done with the fleet of Caudron biplanes which were sent out to China some time ago. They are daily putting in a great amount of useful flying, and have fully justified the Chinese Government in selecting this type of machine on account of the ease with which they are mastered by pupils and their suitability for landing on the roughest ground, in addition to the other excellent qualities possessed by the products of the Caudron brothers. The accompanying photographs showing Pekin and Tientsin from above were taken by Mr. René Caudron, who, thanks to the stability of his mount, was able to let go of the control lever for considerable periods, in order to secure the snap-shots.

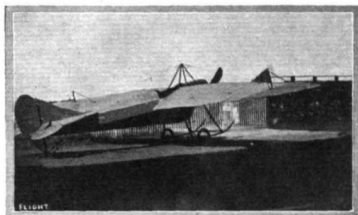
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A welcome addition to the ranks of private aeroplane owners is Mr. Richard P. Creagh, one of Mr. Barnwell's old pupils at the Vickers school, who passed his *brevet* tests in good style in February last. Having purchased a particularly fine Bristol tractor biplane fitted with an 80 h.p. Clerget engine, he intends to keep it at Brooklands and compete in the principal competitions of the season. He has already entered it for the August aeroplane handicaps. Mr. Creagh is to be congratulated on having secured the services of the well-known Bristol pilot, S. V. Sippe, to instruct him in the handling of the machine. With Sippe as pilot, Mr. Creagh went up to 6,000 feet recently, finishing in a fine spiral with the engine cut off.

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A rather exciting experience befell Mr. J. L. Hall at

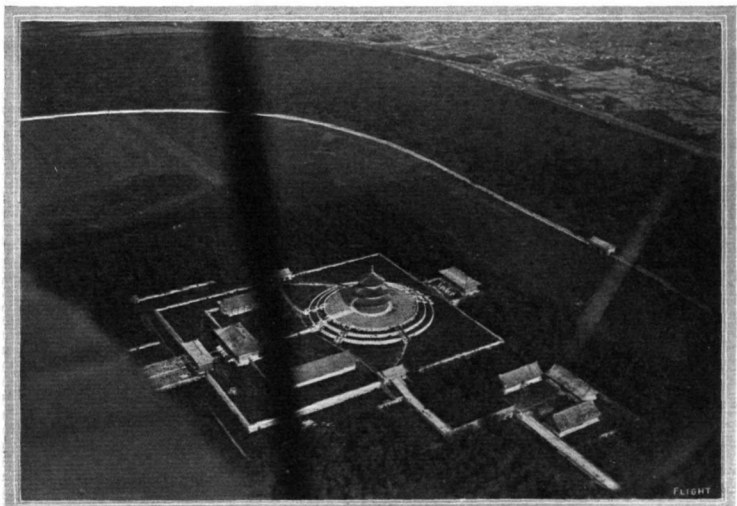
Shoreham on Sunday last, when flying with Capt. Tyrer as a passenger, at an altitude of about 3,000 ft. After circling about for some time, they got lost in a sea mist and could not locate the aerodrome. Coming down cautiously with the engine switched off, the aerodrome



Flight Copyright.

The Handley Page monoplane which has been partly reconstructed for the use of pupils at the Beatty Flying School, Hendon. Note the new type chassis which has taken the place of the original central skid type with which the machine was previously fitted. Another alteration has been effected by shortening the fuselage.

was not discernible until it was too late to land there, and so Hall was forced to alight on the flats alongside the river which runs by the ground. Fortunately very little damage was done to the machine, and both pilot and passenger were none the worse for their adventure.



The "Temple of Heaven," Peking, China. A photograph by René Caudron from a Military 80 h.p. Caudron biplane.

A mechanic having started his engine, he managed to get back into the flying ground again, but minus his passenger. As Hall's mechanic was rushing to the rescue, the car he was driving nosedived into a ditch at the end of the aerodrome, fortunately without injury to the occupants, and but little to the car. The rest of the evening was spent in getting the car out of the ditch, and after several unsuccessful attempts this was at last accomplished, with the assistance and advice (mostly the latter), of a crowd of natives.

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It seems that our cousins from "down under" possess a wonderful faculty for acquiring the "knack" of piloting an aeroplane. Mr. Harold Treloar of Ballarat obtained his ticket—and a very good one it was too—at the Bristol school, Brooklands, on July 9th, after only three weeks' tuition, under very unsettled weather conditions. He has now arranged to take an extended course at the Blériot school at Brooklands in order to familiarise himself with the handling of monoplanes. Mr. Treloar, who intends to go back to Australia in the middle of August, will probably take a British-built machine with him. Good luck to him!

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To have won three such races as the Aerial Derby, the London-Manchester-London and the London-Paris-London is what might be termed the "hat trick" of aviation, and I shall expect to see Brock's helmet adorned

with a tassel in future—he deserves it. To have beaten such a famous aviator as M. Garros is a feat of which



Brock
"still chewing."

Brock has every reason to be proud, especially as both were mounted on practically identical machines. The objection may be raised that perhaps Garros had bad luck in losing his way, but then it must be remembered that it is just in this ability to find his way that an aviator shows his capabilities as a cross-country pilot. Brock had never been over the course, whereas Garros had, although it was in the European Circuit of three years ago. As I have already said, Brock may be justly proud of his victory, and it is fortunate that he is so level-headed a man, otherwise he might have to change the size of his head-gear. In congratulating him on his success, the best wish for the future that I can think of is: "May you always be free from engine troubles."

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Running up against Mr. Cecil Kny, managing director of the British D.F.W. firm, the other morning, I found him highly elated at the news that the German pilot, Oelerich, has established a new world's altitude record by taking his all-steel military D.F.W. biplane, fitted with a 120 h.p. Beardmore Austro-Daimler engine, up to an altitude of 7,560 metres at Leipzig. We may hope to see the record-breaking machine before long, as arrangements have been made for it to leave Leipzig for Brooklands shortly.

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Apart from the collection of mascots, which goes on automatically, Manton's private hobby is the collection of socks and ties of strange hues and designs. A sock of a particularly riotous color-scheme was spotted by a spectator at Taunton, who approached Manton and claimed him as an old Winchester boy. On three other occasions his hobby has led to similar misapprehension, but each time a different school has been mentioned.

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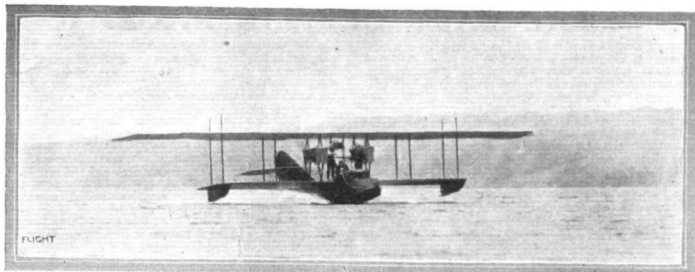
It is nothing new to receive letters emphasising the fact that FLIGHT is jolly good value at 3d., but a North-country reader, who happens to be over in New York on business, puts the matter in a novel and convincing way. He says: "Papers over here are so dear, an aeronautical paper with just about 10 pages of reading matter costing 25 cents, while one with four pages costs from 10 to 15 cents; so according to size FLIGHT should sell at about \$1.50."

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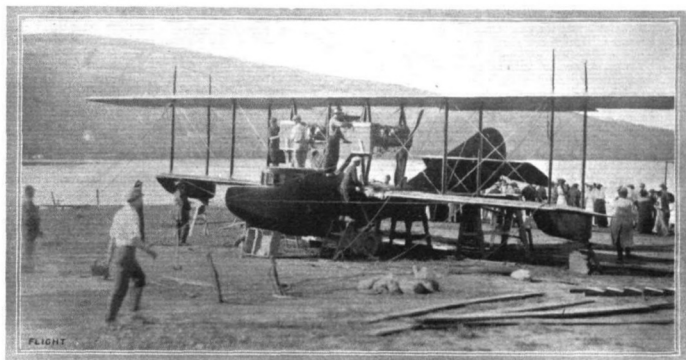
Some details will be found on another page regarding the fine flights made by Mr. Sydney Pickles last week-end. Although it was his first acquaintance with the Blackburn, Mr. Pickles found no difficulty with it, and reported that it was flying excellently. Incidentally it is interesting to note that this is the sixteenth type of machine that this versatile pilot has flown. "ÆOLUS."



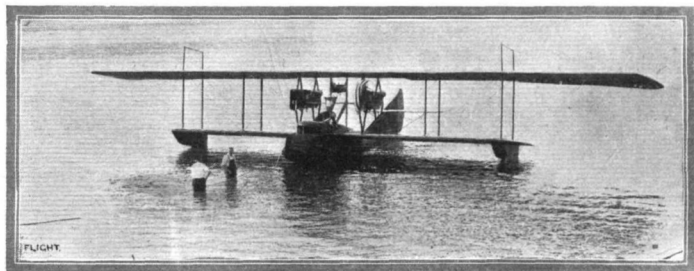
The French quarter of Tien-Tsin, China. A photograph taken by René Caudron from a Military 80 h.p. Caudron biplane.



The "America" hydroplaning.



THE "AMERICA," THE CURTISS TRANS-ATLANTIC FLYING BOAT.—The following are the chief dimensions: Length over all, 34 ft.; length of hull, 30 ft.; width of hull, 4 ft.; depth of hull, 6 ft.; length of cabin, 7 ft.; height of cabin, 5 ft.; width of cabin, 4 ft.; span of upper plane, 74 ft.; span of lower plane, 46 ft.; chord, 7 ft.; gap, 7 ft. 6 ins.; weight, empty, 3,000 lbs.; weight, fully loaded, 6,000 lbs.; speed, 62-65 m.p.h.



The Curtiss flying boat "America," at rest on the water.

THE EAST GERMAN RACE.

THIRTY-SEVEN competitors were entered for the East German race, the three stages of which were completed on June 20th, 22nd, and 24th. Sixteen of the entrants were military pilots, and the remainder civilians. The start for the race took place on June 20th from Breslau, and the first stage included a flight to Posen, via Frankenstein, Liegnitz, Gorlitz, Glogau, and Lissa. The names of the starters and their machines will be found in our table at the end, the times in brackets being the aggregate times taken by those competitors finishing. At 3.30 a.m., 28 of the machines entered were ready to start, and at 4 o'clock the first man got off, being followed within 25 mins. by 26 of the machines. Half an hour later Scherff, who had omitted to be weighed-in in time, made a good getaway. Of the 28 machines which started from Breslau, 25 reached Posen between 8.4 and 10.38. Markgraf damaged his chassis at Liegnitz, and so was temporarily out of the race. Scherff had to come down at Oberlangenbeilau. Eckardt also had to give up owing to engine trouble. The first three to arrive at Posen were: Langer, whose flying time was 3 hrs. 43 mins.; Lieut. von Freyberg, 3 hrs. 54 mins.; Sedlmayr, 3 hrs. 59 mins. After the arrival of the competitors at the Lawica flying ground, near Posen, the military pilots went up for test flights.

The second stage from Posen to Königsberg was flown on June 22nd. A compulsory stop of at least 30 mins. had to be made at Graudenz. The start for the second stage was set at 4 a.m., and within a few minutes after that time 23 of the competitors were on their way to Graudenz. Lieut. von Karstedt returned again very shortly, having damaged a wing, and made a second start at 5.45. Stiefwater was unable to start in time, as his Prince Siegmund monoplane was not ready. All the competitors who left Posen succeeded in reaching Graudenz, and were on their way again after having spent the compulsory stop of half an hour at Graudenz. Luther had to make a forced landing at Lessen owing to engine trouble, and in doing so damaged his machine so badly that he had to retire from the race. The first to arrive at Königsberg was G. Hans, who landed at 9.50 and was followed six minutes later by Schüler. Lieut. von Hiddessen, who, like Schüler, was competing unofficially, also arrived at 9.56, whilst of the official competitors, Lieut. Engwer was second, landing at Königsberg at 10.6, followed three minutes later by Lieut. Freyberg. Markgraf who had dis-

mantled his machine at Liegnitz, received the order to continue the race, and so had his machine erected again. However, on starting from Posen for the second time, he again damaged his machine, this time breaking the *faucets* and so having perforce to give up the race. Surén had to make a forced landing at Insterburg owing to a leaky petrol tank.

On June 24th the third stage from Königsberg to Dantzig was flown. The first part of this stage, from Königsberg to Tilist and back to Königsberg again, was devoted to reconnaissance trials. The start on the morning of June 24th had to be postponed for an hour owing to fog. Between 5.14 and 6.13 a.m., twenty-one official competitors and four pilots competing unofficially, got away. The first to pass the reconnaissance trials was Steffen, who was back in Königsberg again at 8.30. In Dantzig the arrival of the competitors was anxiously awaited, the Crown Prince and Crown Princess being among the large crowd of prominent personages present. Steffen was again the first to arrive, landing at 9.46, followed later by the other competitors at short intervals.

The Kaiser's prize for the military pilots was won by Lieut. Freyberg, whilst the prize of the Crown Prince for civilian pilots was secured by Georg Hans. Among the official competitors the three shortest aggregate times for the race were: G. Hans, 10 hrs. 25 mins.; F. Laitsch, 10 hrs. 44 mins.; Lieut. Freyberg, 10 hrs. 46 mins.; whilst the two pilots competing unofficially, had the following aggregate times: Lieut. von Hiddessen, 11 hrs. 49 mins.; Max Schüler, 12 hrs. 24 mins.

Military Pilots.

1. Lieut. von Freyberg (L.V.G. biplane). Observer, Lieut. Kempe. (10 h. 46 m.)
 2. Lieut. Engwer (L.V.G. biplane). Observer, Capt. v. Deward. (10 h. 46 m.)
 3. Lieut. Parschau (L.V.G. biplane). Observer, Lieut. Müller. (11 h. 15 m.)
 4. Lieut. von Karstedt (Albatros biplane). Observer, Lieut. Beckers. (12 h. 3 m.)
 5. Lieut. Behrens (Albatros Taube). Observer, Lieut. Zimmer-Vorhaus. (12 h. 11 m.)
 6. Corp. Steindorf (Gotha Taube). Observer, Lieut. Aumann. (12 h. 18 m.)
 7. Corp. Tornack (Gotha Taube). Observer, Lieut. von Lyncker. (12 h. 53 m.)
 8. Lieut. Lütke (Albatros biplane). Observer, Lieut. Menzel. (13 h. 22 m.)
 9. Sergt. Kromm (Albatros biplane). Observer, Lieut. Rosenstein. (13 h. 26 m.)
 10. Sergt. Granewald (Aviatik biplane). Observer, Capt. Herber. (13 h. 46 m.)
 11. Lieut. Schäfer (Rumpler Taube). Observer, Lieut. Hasecke. (16 h. 3 m.)
 12. Lieut. Serno (Albatros Taube). Observer, Lieut. Körner. (18 h. 32 m.)
- Sergt. Reichart (Aviatik biplane). Observer, Lieut. Hahn.
Sergt. Markgraf (Albatros biplane). Observer, Lieut. Voelckers.

Civilian Pilots.

1. Georg Hans (L.V.G. biplane). Observer, Lieut. Kolbe. (10 h. 25 m.)
 2. Felix Laitsch (L.V.G. biplane). Observer, Lieut. Turner. (10 h. 44 m.)
 3. Bruno Langer (Albatros biplane). Observer, Lieut. von Dewitz. (10 h. 51 m.)
 4. Gerh. Sedlmayr (L.V.G. biplane; System Schneider). Observer, Lieut. Aumann. (10 h. 53 m.)
 5. Lieut. A. D. Steffen (Erich Taube). Observer, Lieut. von Weihe. (11 h. 30 m.)
 6. Benno Schüler (Hansa Taube). Observer, Lieut. Eysner. (12 h. 16 m.)
 7. Wilhelm Krummick (Hansa Taube). Observer, Lieut. Plagemann. (12 h. 18 m.)
 8. Lieut. A. D. Surén (Gotha Taube). Observer, Lieut. Ulrich. (10 h. 5 m.)
- Otto Stiefwater (Prince Fr. Siegmund of Prussia monoplane). Observer, Lieut. Zimmermann.
Georg Luther (Gotha Taube). Observer, Lieut. von Renesse.
Willy Eckardt (Gotha Taube). Observer, Lieut. Felzoy.
Scherff (Kriegor monoplane).

Competing Unofficially.

- Lieut. von Hiddessen (L.V.G. biplane). (11 h. 49 m.)
Max Schüler (D.F.W. biplane). Passenger, Lieut. z. S. Edler. (12 h. 24 m.)



Map showing course of East German Race.

THE LANGLEY MACHINE TESTS.

BEING in the United States on a visit to the Wright Bros., Mr. Griffith Brewer made a special trip to Hammondsport to get at first hand details regarding the trials which were recently made by Mr. Glenn Curtiss with the Langley machine. According to Mr. Brewer's enquiries opinion seems to be very divided as to whether the machine did actually rise so that all the floats were completely clear of the water. Mr. Brewer, in sending the photo. of the machine in flight, which he says is the best secured from a boat by the local photographer, writes:—

"The tail float is in the water, and it is doubtful if the front floats are really off. I also enclose two photos. taken by myself, one showing the old restored machine standing out in the open, where it is daily exposed to thunderstorms except for a cloth over its middle, and the other showing one of the Curtiss mechanics sewing extra pieces of wood stick on to the tail ends of the ribs, in order to improve the curvature ready for the next trials to be made when the weather is again absolutely calm."

Apocryph of his visit to Hammondsport Mr. Griffith Brewer admitted, under date June 21, to the *New York Times* the following letter upon the subject of the Langley machine, which will doubtless be of interest to many of our readers:—

"In view of the statements that have been appearing in the American newspapers since I arrived over here ten days or so ago, I should like to give a few facts for the benefit of aviation in America:

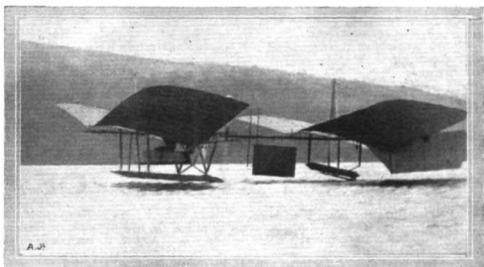
"1. The Langley machine did not fail to fly in 1903 for want of power. It had 52 horse-power to drive it, and weighed about 750 pounds, whereas the Wrights had only 12 horse-power, and their machine weighed 741 pounds. Langley, therefore, had four times the power that the Wrights had, yet he failed where they succeeded. The reasons Langley did not succeed were as follows:

"2. The machine was inefficient. Langley was under the mistaken impression that it was necessary to have extreme lightness and large surface in order to fly. The result was that he designed wings of very small strength, which were extremely inefficient in lift, and also which possessed unnecessary resistance.

"3. The propellers designed by Langley were very inefficient. The propellers made by Langley gave an efficiency considerably less than 40 per cent., compared with the 66 per cent. efficiency given by the propellers constructed by the Wrights, and used on their first

machine in 1903. The original Wright propellers have since been copied on the best machines to-day, and form the standard from which modern propellers are designed. More than 80 per cent. of the propellers in use on modern machines to-day are less efficient than the propellers designed and used by Wilbur and Orville Wright on their first machine.

"4. Langley had no practical means of balancing an aeroplane in the air during flight. Langley employed wings fixed at a



The Langley machine over the surface of Lake Keuka.

dihedral angle to each other in order to maintain balance, and this method had been suggested by others many years before. Many experimenters have tried this system of balance and failed because the first side gust of wind will upset the machine and cause it to drift to the ground. The Wrights did not use the dihedral angle for maintaining balance, but they invented and used means for altering the angle of the ends of the wings, and this method or an equivalent is employed to-day on all machines which fly in the air.

"5. Langley had no practical means of launching his machine. The first attempt to launch it resulted in a portion of the machine catching in the launching apparatus, and the second attempt resulted in another portion catching, with the same result of plunging the machine into the water below. The Wrights succeeded in producing a practical launching apparatus which launched their machine successfully the very first attempt, and which repeated this successful launching thousands of times afterward.

"6. Even if Langley's machine had been successfully launched, and had been able to sustain itself in the air with its inefficient surfaces, and had been able to maintain the necessary flying speed by means of its inefficient propellers, it could only have been flown in the calmest of air, because the first gust would have upset it. The Wright machine, on its very first flight, was flown in a 27-mile-an-hour wind, which would have upset any machine ever thought of



Photo by Mr. Griffith Brewer.

The machine, minus its wings, in its open-air "garage," and on the right, one of the wings of the old Langley machine being strengthened at the Curtiss works at Hammondsport.

then or since which was not fitted with the adjustable wing control invented by the Wrights.

"Langley is very richly credited with having made a number of scientific experiments with miniature wings and surfaces, in order to ascertain data of 'lift and drift.' This is greatly to his credit, but it should not be forgotten that the Wrights also made independent experiments and obtained a number of readings from which they compiled scientific tables and drew diagrams of pressure curves far more complete and accurate than any previously made, either by Langley or by any other scientist. Unfortunately, the Wrights have been unable to publish these data hitherto, owing to the tardy protection afforded by the patent laws, which necessitate the guarding of exclusive knowledge, to supplement the incomplete patent protection of new inventions.

"Why, in view of all these facts, are the American newspapers making such a fuss of what Langley might have done had his machine been built differently and had he known more facts on the subject of flying?

"Why has Langley's most interesting machine been taken out of the Smithsonian Institution and altered from its original historic state to try to make it fly?

"Why, if such a demonstration were considered desirable, was

not the old historic relic left untouched and a copy made to satisfy an insane curiosity?

"Why, if such a demonstration were decided on, was not some impartial, unprejudiced person chosen to make the tests instead of the person who has been found guilty of infringement of the Wright patent?

"Why, if the Langley flying machine was a practical flying machine, did not those in charge of the machine try to make it fly without alteration? With the knowledge gained during the past ten years this should have been easy if the machine as invented by Prof. Langley was really capable of flight.

"Why were Langley's old propellers taken off and propellers of more modern shape substituted?

"Why, if the tests have been successful, are there no photos available of the old machine in flight?

"All these things are incomprehensible to me, especially as I have just arrived from England, where the Aeronautical Society of Great Britain has only last month been paying its annual tribute to the memory of its honored member, the late Wilbur Wright, whom it regards as the joint inventor with his brother Orville of the first actual flying machine.

"GRIFFITH BREWER."

BRITISH NOTES OF THE WEEK.

Mr. Pickles Files the New Blackburn.

ON Thursday, last week, Mr. Sydney Pickles had the new 80 h.p. Blackburn, military type, out for the first time. A brief test flight across the Knavesmire ground at York showed that the machine was in excellent flying trim, and Mr. Pickles then took it for a ten minutes' spin over the outskirts of the city. Later another flight was made, and the machine reached an altitude of 3,500 ft. On Friday morning four trips were made with passengers, and in the afternoon, with a passenger, a spare two-gallon tin of castor oil, and two suit cases aboard, Mr. Pickles started off for a 60-mile trip to West Auckland. After going splendidly for three-quarters of an hour, a dense fog was run into just after passing Darlington, and it was necessary to land in a very small field. On Saturday morning the journey to West Auckland was completed, and exhibition flights were given there during the afternoon, and four passengers, including a lady, were taken up. On Sunday morning Mr. Pickles started off to fly back to Harrogate, but after 10 miles he encountered fog, and as the machine was not fitted with a compass he decided to return. As the conditions did not improve, the start had to be postponed to Monday morning, when, after a short trial flight, Mr. Pickles flew with a passenger to York, taking an hour for the trip. A 20-min. flight with a passenger was made on Monday afternoon.

Mr. Manton in Devon and Somerset.

ON Wednesday week Mr. Marcus Manton flew at South Molton in a 40-mile wind, and looped many loops. According to the arrangements each flight was to last at least 10 mins., but after one fine flight in a bumpy wind, a committee-man gravely informed Mr. Manton that he had only been up 8½ mins. If it was scarcely tactful it showed a supreme faith in the aeroplane's reliability. Next day Mr. Manton appeared at Taunton. He experienced some trouble with his engine and new plugs were fitted. No improvement was noticeable, however, so the old plugs were put back, and then the Gnome ran splendidly. At exactly nine o'clock, with a gorgeous sunset background, Mr. Manton looped his tooth loop, creating immense enthusiasm. On Friday and Saturday he gave further looping demonstrations, totalling 20 for the visit. On the Saturday afternoon the air was simply full of *remains*, and the looping was frequently accompanied by startling sidelaps.

Mr. B. C. Hucks at Scarborough.

ON Saturday last Mr. B. C. Hucks commenced a week's engagement at Scarborough, where he is flying twice a day over the North and South Bays. In the morning Mr. Hucks gave a very thrilling display indeed, and the many thousands of people who have been attracted to spend their holidays at Scarborough by Mr. Hucks' promised demonstrations were well repaid for their choice. In the afternoon, however, the engine on the new 60 h.p. looper developed slight trouble, so that Mr. Hucks decided to get his 50 h.p. reserve machine from Brooklands.

After amusing the hordes of visitors on his 80 h.p. passenger-carrying Blériot on Monday, the looper was brought out, and it was while flying on this machine that both Mr. Hucks and the on-lookers had the thrill of the day.

While recovering from a splendid loop it was noticeable that the engine was running badly, and a sharp descent was unavoidable.

Thanks to Mr. Hucks' skilful piloting and presence of mind, however, the machine was brought to a standstill within a few feet of a large stone groyne, and both the pilot and the looper escaped without injury.

Blackburn Developments.

THOSE who take an interest in the progress of the aeroplane industry in this country will have noted with pleasure that a new company—the Blackburn Aeroplane and Motor Co., Ltd.—has now been formed to take over the manufacture of Blackburn aeroplanes, propellers and accessories. The capital is £20,000, and the directors are Messrs. R. Blackburn and J. E. Jackson. The registered offices are at Olympia, Leeds, while the Company have lately acquired new and extensive premises, which, we understand, are to be developed into one of the largest works of the kind in Great Britain.

Emallite in the London-Paris-London Race.

IN connection with the completion of Brock's "Triple Event" by his winning of the London-Paris-London race, it may be recalled that the planes of his Morane-Saulnier are doped with a combination of Emallite of Grades 2, 3 and 4. In the Aerial Derby, the London-Manchester-London and the London-Paris-London, ignoring for the moment the flying which it has done at Hendon, the machine has completed over 1,000 miles, but when it landed at Hendon on Saturday, the condition of the doping was almost perfect, in spite of the varying climatic conditions through which it had passed. Every portion of the planes was "as tight as a drum," and the surface was quite unaffected. The average speed attained on the last flight speaks eloquently for the air friction reduction obtained by this dope combination.

Mr. Prosser at Nuneaton.

SOME fine flying was done by Mr. Edwin Prosser at Nuneaton on his Caudron biplane on Saturday evening. His first flight was made at half-past-eight. A second flight was made after dark, the machine being lit up by electric light, while a powerful searchlight was operated over the ground, and there was a firework display.

More Records for Integrals.

IT may be noted that the magnificent records which have recently been achieved in Germany have been carried out with the aid of Integral propellers. They were fitted to the Albatros machine on which Landmann and Böhm made their duration records and the Rumpler and D.F.W. machines on which Linnekegel and Oelerich accomplished their height records.

Fuel and Oil in the London-Paris Race.

AS in the other two great races recently won by him, Mr. W. L. Brock relied upon Pratt & Motor Spirit in the London-Paris-London race, while the only lubricant used on the machine was Wakefield Castrol.

The London-Paris Map.

IN connection with the little sketch map in our last issue, which clearly showed the route of the London-Paris-London race, it should have been mentioned that it was the work of Messrs. Geographia, Ltd., 33, Strand, W.C.

FOREIGN AIRCRAFT NEWS.

A Belgian Record.

On the 9th inst., Capt. Dechamp, with Lieut. Peterman as passenger, flew from Brasschaet to Arlon in two hours, thus making a new Belgian distance record for pilot and one passenger.

Paris to the Sea and Back.

On his 80 h.p. Rhone-Bleriot, Baron Pasquier on the 10th inst. flew from Buc to Deauville for lunch. With a following wind, the machine, which also carried the mechanic, made the trip in 1 hr. 20 mins., but the return journey in the afternoon, with an adverse breeze, occupied an hour longer—2 hrs. 20 mins.

Good Flight by Champel.

On his big Anzani-engined biplane, Champel on the 10th inst., with M. Dussot as passenger, flew the 260 kms. from Juvisy to Angers in 3 hrs. 45 mins., keeping at an altitude of 1,800 metres for the greater part of the way. Subsequently he went on to Nantes, and gave some exhibition flights in connection with the local fête. During one of the flights Mme. Cayat de Castella descended from the biplane by means of a parachute.

On Tuesday, Champel flew back to Juvisy, covering the 410 kms. in 3 hrs. 15 mins., not counting a 20-min. call at Chartres on the way. It is stated that, up to date, Champel has taken up over 2,065 passengers.

M. Farman's Aerial Tours.

Using one of the latest model M. Farman's, fitted with an 80 h.p. De Dion engine with a silencer, Maurice Farman on Friday last made his usual trip to Etampes with a passenger, but instead of flying direct when returning to Buc he made a detour to Dourdan, Rochefort, and along the Vaux-de-Cernay and Chevreuse valleys.

Experiments with Pigeons.

An interesting experiment was carried out at Buc on the 9th inst. at the request of the Federation Colombophile. A hamper containing a number of carrier pigeons was taken up on a Bleriot monoplane, when at an altitude of 1,500 metres it was opened, the birds flew off without any hesitation. The first two birds arrived back at their loft at Agen at 6 p.m., having taken eight hours for the journey of 530 kms.

A Monument to Frey.

On Saturday last a memorial to Andre Frey was unveiled at Virelady by Senator Raymond, who gave a most stirring patriotic address on the subject of aviation.

Voisins for Russia.

At Issy, on Sunday last, a batch of five Voisin military

biplanes, fitted with 130 h.p. Salmson-Canton-Unne motors were put through their official tests before being despatched to Russia.

Pegoud a Chevalier.

It is announced that the French Minister of War has nominated Pegoud as a Chevalier of the Legion d'Honneur, in recognition of his work in demonstrating the great controllability of the modern aeroplane.



A NEW CAUDRON BIPLANE.—This machine, it will be noticed, is fitted with a fuselage similar to that of the small Caudron monoplane on which Mr. Even crossed the Channel in 1912. The span is comparatively short, and the usual overhang of the upper plane has been greatly reduced. Instead of the flexing tail a hinged divided elevator is fitted. The engine is a 100 h.p. Anzani.

Pau to Paris on a Bleriot.

STARTING from the military ground at Pau, Lieut. Brule, on his Bleriot tandem monoplane on the 9th inst., flew to Villacoublay, only making a short stop near Poitiers to change a faulty plug.

French Aviation Centre in Mediterranean.

LAST week a French naval commission, composed of Capt. Roques, Engineer Herck and Lieut. Destrem, spent some time in Corsica inspecting various sites with a view to finding one suitable for the establishment of an aviation centre. It is probable that the centre will be near Ajaccio.

A Belgian Fatality.

AFTER landing at the conclusion of a flight at the aerodrome near Kiewit, an aeroplane piloted by Lieut. Hubert could not be

pulled up in time and dashed into one of the hangars. The pilot was severely injured that he died in the hospital at Hasselt the next day, but the observer—Lieut. Pool—escaped practically unhurt.

A Chavez Memorial.

UNDER the patronage of the Aero Clubs of France, Italy and Switzerland, a fund has been started for the purpose of erecting a memorial to Chavez at Brigue, Switzerland, from whence he started on his ill-fated flight across the Alps, on September 23rd, 1910.

Fatal Collision in Russia.

TWO military aeroplanes collided in mid-air at the St. Petersburg aerodrome on the 10th inst. The pilot of one—Lieut. Chenchin—was killed, while the other pilot—Lieut. Nagorny—was seriously injured.



TWO OF THE LATEST GRADE MONOPLANES.—Top: The new 100 h.p. Grade monoplane, which is fitted with a 4-cyl. air-cooled Grade engine. In spite of the small number of cylinders this engine is said to be remarkably free from vibration. The oil consumption is $\frac{1}{2}$ gal. per hour, and petrol consumption 7.7 gals. per hour. The speed of the machine is 75 m.p.h. Below: The 16-24 h.p. Grade monoplane, which weighs 285 lbs. only, and for which a speed variation of 50 per cent. is claimed.

THE FLYING MACHINE FROM AN ENGINEERING STANDPOINT.

By **FREDERICK WILLIAM LANCHESTER, M.Inst.C.E.**

(Concluded from page 739.)

The work that has been done on the Continent on the subject of stability does not in sum amount to much, moreover it frequently appears to suggest complete ignorance of what has been done in this country; in this particular matter it would seem that the Continent has become insular and our island cosmopolitan. For example, we find the work of Georges de Bathezat, "*Etude de la Stabilité de l'Aérophane*" (Dunod, Paris, 1911), described by Mr. Painlevé as "the first to give an exact and complete discussion of the stability of the aeroplane," and when we examine the work so described we find the subject not more than half dealt with, and at that in so ineffective a manner that scarcely one of the conclusions can be regarded seriously. R. Knoller ("*Über Langstabilität der Drachenflugzeuge*," 1911) and Reissner ("*Einige Bemerkungen zur Seitenstabilität der Drachentiger*," 1912), though interesting, do not materially advance the subject. R. Soreau deals with the subject of longitudinal stability under two distinct headings, *equilibrium*, and *stability*; so far as the former is concerned his conclusions as formulated will be found in their entirety published by me in 1897, with the rationale clearly set forth. (Patent Specification 3608, 1897, or compare also *Aerial Flight*, vol. ii, p. 353.) Soreau, however, scarcely carries the matter as far as in my previous publication. Incidentally Soreau gives two propositions, i.e., minimum tractive force, and minimum horse-power, which, except for differences of notation, appear to be identical with two propositions previously given by me in *Aerodynamics*, 1907, § 164. When we come to the question of stability it will suffice to state here that his conclusions on the subject of longitudinal stability are gravely at fault; briefly, Soreau states that the moment of inertia must not be too small for fear of oscillations becoming too rapid, whereas the only oscillation of importance—my "phugoid oscillation"—is virtually independent for its period on the value of the moment of inertia. On the questions of lateral stability and directional stability, Soreau's views (as pointed out by Bryan) are entirely at fault; the whole question of asymmetric or rotative stability is lost sight of, and the fact that in directional stability the centre of gravity cannot be treated as a static pivot (compare *Aerial Flight*, vol. ii, §§ 95 to 100) also Bryan, *Stability in Aviation*, chap. vii) is ignored.

The work of Captain G. A. Crocco ("*Sulla stabilità laterali degli aeroplani*," also "*Perfezionamenti nella stabilità longitudinale degli aeroplani*," also "*Rendiconti della Esperienze e degli Studi eseguiti nella Stabilimento di Construzioni Aeronautiche del Genio Anno II*") is of interest. In the main he follows established mathematical lines of treatment; I have made no attempt to follow his work in detail.

In general the work has, in the past, been treated on too closely mathematical lines to be of immediate service to the engineer; in many cases the writers have clearly suffered from their want of appreciation of the real conditions. It is my deliberate opinion that there is very little room for useful work to-day on the subject of stability unless it be rigidly and directly supported by experimental work, and from our standpoint as engineers I think we may in the future confidently look to the excellent work being accomplished at the National Physical Laboratory, and at the Royal Aircraft Factory, to keep us in touch with that which is essential in this important branch of the subject.

APPENDIX I.

The subject of skin friction where air is concerned has been one of considerable controversy. The quantities to be measured are so small and the apparatus employed until recent years has been so insensitive that until the work of Zahn in 1904 very little was known on the subject. Langley in his *Experiments in Aerodynamics*, 1891, asserted skin friction to be a negligible factor in its relation to flight. Dines about the same date expressed the same view; in my *Aerial Flight*, vol. i, which appeared in 1907 (not at that time aware of the work that had been done by Zahn), I published some determinations of skin friction and attacked Langley's views, pointing out that skin friction is one of the controlling factors in the economics of flight. I also introduced the practice of expressing skin friction as a coefficient representing the resistance of a thin lamina in tangential motion in terms of its resistance at 90 degrees; the coefficient so expressed is the *double surface coefficient*, and in my work is represented by the symbol E . In the greater part of my experimental work planes or laminae of mica were employed of but a few square inches area; the largest area used by him in any of his determinations was approximately $\frac{1}{2}$ square foot. Now it is well established that the coefficient of skin friction in a plane of small area is sensibly greater than in one of large area, consequently my values were on the whole considerably higher than those of experimenters working to a larger scale; however, the following passage may be cited as the summary of experiments made with planes of about $\frac{1}{2}$ square foot area and of smooth surface: "It is therefore to be concluded that for a well-varnished surface or for polished metal, under the conditions of experiment, the effective value of E is approximately 0.0007 with a probable error of less than 10 per cent., plus or minus." (*Aerial Flight*, vol. i, p. 389.) According to the best estimate that can be made to-day the actual value of the double-surface coefficient under the conditions of the experiment in question should be 0.0081, showing an error of precisely the 10 per cent. which I allowed myself.

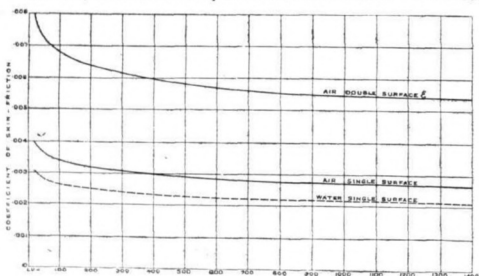


Fig. 38a.

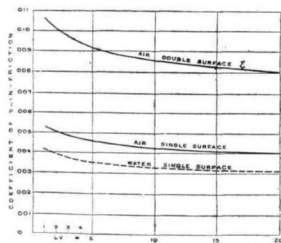


Fig. 38b.

Captain Crocco's conclusions on the whole appear to be far sounder than those of most Continental writers; his work is evidently worth careful study.

The above may be taken as a brief summary of the existing literature of the subject. Excellent abstracts of the work of the foreign authors cited will be found in the appendices to the various reports of the Advisory Committee; excepting in the case of the French writers, which have been consulted in the original, I have relied on the abstracts in question for the summary here given.

It has been frequently stated that my results were in entire disagreement with those of Zahn; sometimes those making this statement ignored my lower values and took his highest, which admittedly were too high; in other cases they read his double-surface coefficient as a single-surface coefficient, and so made his values twice as great as they really are.

In a communication to the Advisory Committee (Memo. No. 15, June, 1909), I pointed out that my own results and those of Zahn for air, and the results obtained many years ago by W. Froude for

water, are in substantial agreement—in fact, in very close agreement—provided that they are put in their proper perspective, with due consideration to the laws of dynamic similarity. (Compare memorandum cited, also addendum to same by Lord Rayleigh.) The final conclusion given in the memorandum under discussion is expressed in graphic form in Figs. 38a and 38b, in which abscissæ represent the quantity LV (the product of the linear dimension *

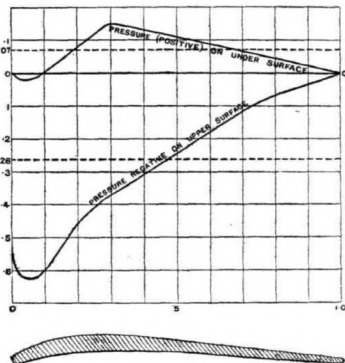


Fig. 39.

in feet by the velocity in feet per second), and in which ordinates represent the coefficient of skin friction. Three curves are shown; the upper curve is the double-surface coefficient for air, for which I employ the symbol ξ , the lower curve (solid line) is the single-surface coefficient (half the value of the former), the dotted curve is the coefficient for water. In Fig. 38a, LV values may be read from 20 to 1,400. In Fig. 38b is given a graph for lower values.

It is a point not without interest that, for geometrically similar aerofoils, the weight sustained varies as $(LV)^3$, consequently for any given value of LV the weight is constant. In other words, as already shown, for least resistance $P = C_p V^3$, where C is a constant whose value is found about 0.32, or if $k L^2$ represents the area, and $W = \text{weight}$, $W = 0.32 k (LV)^3$. Therefore assuming good design (max. lift/drift), and some definite value of aspect ratio (to fix the value of the constant k), the coefficient of skin friction is determined by the weight of the machine, and is the same whatever the designed velocity may be.

Skin-friction has a habit of playing an elusive part in actual resistance phenomena, and the subject in practice is full of pitfalls. In the case of a plane moving edgewise, it may frequently happen that skin frictional resistance will virtually disappear, the leading edge of a plane such as used by the late Professor Langley will by its bluntness set in motion a certain quantity of air, and this moving air subsequently washing the surfaces of the plane will reduce the skin-frictional resistance to something immeasurably small; as pointed out by me in discussing Langley's work, this was one of the causes that led him into error.

Another case where the coefficient of skin friction may be abnormally low is that of the inclined plane at a small angle of incidence; in *Aerial Flight*, vol. 1, the matter is dealt with on page 264, article 182; it is pointed out that as a deduction from gliding experiments made with the ballasted plane, and calculations based on same, the coefficient of skin-friction is in effect less than in ordinary the case, and the explanation is offered that the upper surface of the plane being to a certain degree a "dead-water region" the coefficient may in this case be only that of the single surface. This conclusion has received striking confirmation in connection with some experimental work recently carried out at the National Physical Laboratory.

I consider it probable that in the case of the pterygoid aerofoil, that is to say, the aerofoil of arched section, such as shown at the foot of Fig. 39, the skin friction may in effect be abnormally high.

* Ordinarily the linear dimension, represented in the laws of dynamic similarity by L , presupposes geometrical similarity, i.e., geometrical form as an invariable. In the present usage, owing to the thinness of the layer of air affected, L may be taken as the linear dimension of the plane in the direction of motion.

owing to the augmented velocity with which the air flows over the upper surface. This, speaking generally, is not altogether compensated by the lower velocity on the under side. The velocity of the air in the vicinity of the aerofoil can be deduced approximately from the ordinary laws of fluid motion from the local pressure. Now pressure curves have been made of several different sections of aerofoil by the N.P.L.; the curve shown in Fig. 39 may be taken as

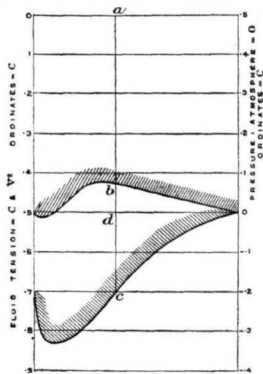


Fig. 40.

roughly typical of the pressure graph for mid section of any well-shaped aerofoil at or about its angle of least resistance. The ordinates downwards from the zero datum line being the negative pressures on the upper surface of the foil, and the ordinates measured upwards from the said datum line being the positive pressures on the under surface, in both cases measured above and below atmosphere. Plotting the same curve in Fig. 40 and taking a datum line corresponding to zero motion, ordinates will represent fluid tension (negative pressure) and the velocity at every point is represented by the square root of its ordinate; hence the skin friction will vary as the ordinate itself, and therefore to Fig. 40, the effective coefficient of skin-friction will be greater than normal in the relation of the mean of the ordinates a to a' to the ordinate a . Referring again to Fig. 39, it may be observed that the mean pressure increase on the under face is approximately one-fourth of the mean pressure decrease on the upper face; taking this proportion as a basis, I give, in Fig. 41, graphs

of the augmentation of the augmentation of the skin friction as a function of the aerofoil pressure constant; the normal coefficient proper to the LV value in question being read on the ordinate corresponding to pressure constant = zero, on the left hand of the Figure.

In the case, for example, of the normal value of the coefficient being 0.008, it will be seen that for a pressure constant = 0.32 the augmented coefficient will be nearly 0.01.

We thus begin to obtain values approaching those that I have found to apply in connection with the theory of least resistance. If, in addition to the above, we allow an addition to represent form resistance, as has been found by Prandtl in the case of the ichthyoid body, and which is due to the degeneration of the stream-line system consequent on the appearance of the frictional wake, we might expect the effective direct resistance of the aerofoil expressed in terms of skin friction equivalent to a coefficient of 0.0175, which is in full and complete agreement with experience. The assumption here is that the proportion of the added form resistance bears the same ratio to the true skin friction, approximately 3 : 4, as commonly found in the case of the ichthyoid body.



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

The Steering Competition for Models.

THIS competition, which was held on Wimbledon Common on July 11th, was an extremely disappointing one, so far as the number of competitors was concerned. The tests were: (A) Straight flight ahead. (B) Figure of eight. The last really amounted to two consecutive circles, one right-handed and the other left-handed, or vice versa.

Only one competitor, Mr. J. E. Louch, was successful in accomplishing both tests. Mr. Louch made a very fine straight flight of at least 150 yards before the model turned at all; only 50 yards was necessary to qualify; his first attempt at a figure of eight was unsuccessful, the model quickly coming to the ground, but his second attempt was quite successful.

The mechanical device adopted by Mr. Louch was very neat and simple but quite efficacious, and struck us as being the best we have yet seen.

The model was of the canard type, and the most reliable and efficacious way of steering such a model is, in our opinion, by means of canting the elevator; the machine is supposed to be like Mr. Louch's one with twin propellers. Presuming the propeller thrust equal and the wings free from warp, &c., then with the elevator (preferably of the dihedral angle type) set symmetrical, *i.e.*, without cant to either side, the machine will fly straight. Cant the elevator in either direction, and the machine makes a right or left handed circle according to the direction in which the cant is made. Let us assume the machine started with the elevator so canted as to cause the machine on rising to make, say, a right-handed turn, then if the elevator be suddenly pulled over so as to have an opposite cant the model will at once commence to describe a curve in the opposite direction, and will continue circling in this sense so long as the elevator suffers no further alteration, until the motive power runs down.

The final setting of the elevator at a given angle of cant presents no difficulty, if we imagine a certain restraint against which it is held fairly tight by means of some form of stretched spring. A further extension will place the elevator in a normal lateral position, and a still further extension pull the elevator over so as to have a cant in the opposite direction.

Let us suppose that it is held in this latter position by means of a wire bolt or pin, which when withdrawn permits the spring to pull the elevator over to the other side.

This again presents no difficulty so long as the pin is pulled out and the elevator spring released after the model has risen and completed a circle in one direction, either clockwise or anti-clockwise, as seen from below.

The manner in which Mr. Louch drew out the pin was as follows:

A thread was attached to the pin, and this thread was wound round the thin axle of a cogwheel about an inch in diameter and containing therefore a good number of teeth, this cogwheel was turned by means of a worm or thread on a wire axle, one revolution of the latter causing the toothed wheel, the axle of which was transverse to the *fuselage*, to turn to the extent of one tooth. The axle carrying the worm ran fore and aft of the *fuselage*, and was rotated by a twisted band of rubber whose speed was checked or "braked" by a little fan or propeller. This propeller, if we remember correctly, was further reduced in speed by its turning the opposite way, to which its travel through the air would cause it naturally to turn, if free to rotate in either direction. When the machine was released to run along the ground and rise, the little fan brake and motor was also released, with the result that after a certain time the elevator spring over as already stated.

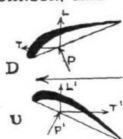
The time, no doubt determined by trial, can obviously be controlled by the motor, size of fan brake, size of cog wheel axle, &c. Mr. H. Bedford also succeeded in making his machine describe the requisite figure of eight, but failed to obtain the requisite 50 yds. straight flight in the three trials permitted.

Mr. Bedford's method of control was by means of a movable fin in the rear, actuated by means of a small rubber motor and propeller brake. The movement of the fin or rudder in this case was gradual.

Mr. H. W. Sykes' Aero Show Ornithopter Model.

The principle upon which this machine is based is that in order to obtain flight in a horizontal straight line the pressure on the underside of the wings must remain constant during both up and down strokes.

This is brought about, in the case of a bird, as follows: During



the down stroke the wings are set at a negative angle, as at D in the accompanying figure, in which the arrow shows the direction of flight. The wind pressure forms, at right-angles to the wings, a pressure, P , which may be resolved into vertical and horizontal components, L and T . The former produces the "lift" or sustentation against gravity and the latter the forward impulse. At the bottom of the down stroke the wings are turned to a positive angle as at U in the diagram.

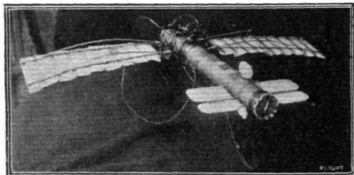
The bird is carried along by the kinetic energy acquired during the down stroke, and the (relative) wind striking the under side of the wings produces a reaction, P' , at right-angles. This reaction, P' , resolves into vertical and horizontal components, L' and T' . T' is the "drift" or resistance to forward motion, and must be overcome by the kinetic energy of the bird, and L' is the "lift."

This force, L' , lifts the wings without any muscular effort being exerted, and if they were left limp they would be raised without doing any useful work in sustaining the bird, but if the upward movement is resisted, muscularly or otherwise, the result is a sustentation of the whole bird in proportion to this resistance. And, instead of being a mere braking force, this resistance consists of the stretching of an elastic cord, or some other means of storing energy, the energy so stored can be given out during the down stroke, thus materially assisting the muscles. This appears to be the function of the "pectoral cords" of a bird—a most important organ of flight and one which does not seem to be possessed by non-flying creatures.

In the case of the model the turning of the wings is brought about by driving the two spars thereof by two cranks, the forward one of which has a certain angular advance on the rear one; consequently the front spars reach the top and bottom of their stroke and begin the reverse movements before the rear ones, with the result that the front edge of the wing is below the rear one during the down stroke and above it during the up stroke, or, in other words, the wing is inclined downwards towards the front during the down stroke and upwards towards the front during the up stroke. The wings assume a helical form, and are, in fact, two one-bladed screw propellers going in opposite directions, and their direction and pitch are constantly "alternating" periodically. During the down stroke the "propeller torques" furnish the lift, and during the up stroke the negative torques, or resistance to rotation, produce the lift.

The duty of "pectoral cords" is performed by springs. The engine power should be shut off during the up stroke, a thing which is impossible with a rubber motor, but which would be quite easy with a petrol one.

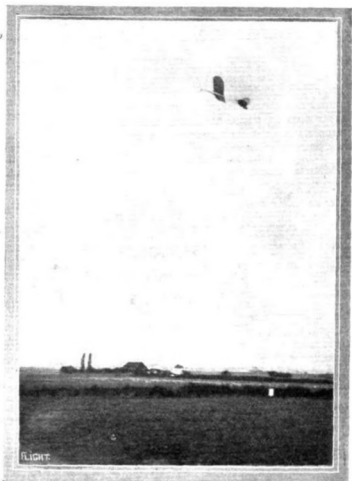
In this model the front wing spars are pivoted at a point below the horizontal centre line and the rear spars above it, imparting a



Mr. M. W. Sykes' Olympian ornithopter model.

backward and forward component to the motion of the wings—a rowing action—to assist in the propulsion. The down stroke of the wings should be faster than the up stroke to generate the kinetic energy requisite to carry on with during the up stroke, but it is impossible with an ungoverned elastic motor, whose speed depends solely upon the resistance with which it meets.

A simple balance gear, analogous to that in the back axle of a



Two excellent photographs of a model in flight by P. Rolfe.

motor car, is provided, allowing the wing on the outside of a curve to flap harder than the inside one—equivalent to automatic warping. Also by this arrangement either wing would yield to a gust.

The tubular construction, though perhaps not the happiest arrangement, was adopted for experimental purposes to allow of alteration of the centre of gravity if necessary. The wings and all the machinery are attached to the outer sleeve, which can be slid along the inner tube to adjust the balance.

Model Aviation in Germany.

"I enclose you two photographs taken here of two models I have finished lately," writes Mr. P. Rolfe (Nürnberg, Germany). "The smaller view is of an 'Excelsior' tractor, which has not more than 18 ins. of rubber. The model with rounded wings is larger, 2 ft. 2 ins. span, but they both have 8-in. diameter propellers, and they fly equally well. Both rise without a push in less than 6 ft., and hand-launched fly about 150 to 200 yds. The climbing angle of the larger model is really extraordinary, and the glide, too, is extremely flat. As far as I know the Excelsior is the most efficient, practical model of its size, and I am really astonished at the height and distance attainable for so large a weight and so little rubber. [Our correspondent omits to state either the *weight* of the model, of the rubber, or of the *duration*, a much safer test than distance.] "The people here, speaking generally, are not the least bit

interested in models, and there are very few firms who make models in South Germany. All the models I have seen are Erich's 'pigeons,' and very roughly made; but now there are several firms beginning to specialize in cheap, power-driven models which have great promise, and a better market (here) than the rubber-driven models. Of course, all model material is exorbitantly dear, and not very good at that. There are no model clubs here whatever, though I believe in North Germany the model is more popular than here in Bavaria. The photos are both genuine, and not 'faked' to appear flying."



Mr. H. Bedford's very neat device for raising and lowering the wheels on his hydro-aeroplane Olympia model.

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Single screw, hand-launched	Duration	J. E. Louch	... 95 secs.
Twin screw, do. ...	Distance	K. Jacobs	... 390 yards.
Single screw, rise off ground	Duration	G. Hayden	... 137 secs.
...	Distance	W. E. Evans	... 290 yards.
...	Duration	J. E. Louch	... 66 secs.
...	Distance	L. H. Slater	... 365 yards.
...	Duration	J. E. Louch	... 2 mins. 40 secs.
Single-tractor screw, hand-launched	Distance	C. C. Dutton	... 266 yards.
...	Duration	J. E. Louch	... 29 secs.
Do., off-ground	Distance	C. C. Dutton	... 190 yards.
...	Duration	J. E. Louch	... 54 secs.
Single screw hydro., off-water	Duration	L. H. Slater	... 35 secs.
...	Duration	C. C. Dutton	... 29 secs.
Single-tractor, do., do.	Duration	L. H. Slater	... 60 secs.
Twin screw, do., do.	Duration	L. H. Slater	... 60 secs.
Engine driven off grass	Duration	D. Stanger	... 51 secs.

Official Trials.—The monthly official trials take place to-morrow, Saturday, on the Leytonstone Ground.

Competition.—The sixth annual contest for the Baden-Powell Shield for the

best kite of the year takes place on Wimbledon Common at 3.10 p.m. on Saturday of this week (18th). Also two entries have been received for the Altitude Challenge Trophy; for this trophy attempts can be made also on August 22nd and September 5th.

Result of Competitions.—The Steering Competition for Models took place on Saturday, July 11th, at Wimbledon. The result was: 1st, J. Louch, K. and M.A.A. and Leytonstone, winner of cup; 2nd, H. Bedford, K. and M.A.A. and Leytonstone, winner of silver medal of the Association. The Junior Duration Contest also took place, and the result was: 1st, Scout Mason, 1st Wanstead Slip Troop B-P. Scouts and Leytonstone Club, winning the r.o.g. model presented by Mr. A. F. Houlberg; 2nd, J. Powley, winning the r.o.g. model presented by Mr. H. Bond; 3rd, Mr. Blake, winning the r.o.g. model presented by Murray, Son and Co. Messrs. Akehurst, Lyche, and Jannaway acted as judges.

Royal Aero Club Hydro Competition.—To be held at Welsh Harp, Hendon, August 8th, at 3 o'clock; entries close first post August 1st; for hydro-aeroplanes rising off water (open to the world). Prizes: 1st, £5 5s. (presented by the Royal Aero Club) and certificate of the Association; 2nd, £2 2s. (presented by Major Sir Bryan Leighton, Bart.); 3rd, £1 (presented by Mr. Reginald Balston). Tests: A, duration; B, stability; marks, duration actual seconds; stability 25. Additional rules governing this competition: 1. Competitors must be at the judges' flag at 2.45; any competitor not present at that time will be disqualified. 2. Models must not weigh less than 1 lb. 3. All competitors must launch their machines in the same direction, and one trial to be

launched with the wind. 4. Extra marks will be awarded at the discretion of the judges for the best run down wind. Non-competitors admission to ground, 3d. Payable only at gate.

The Lady Shelley Hydro Competition.—To be held at Welsh Harp, Hendon, August 8th; entries close last post August 5th. For power-driven hydro-aeroplanes rising off the water (open to the world). Prizes: 1st, silver cup (presented by Lady Shelley); 2nd, silver medal of the Association; 3rd, bronze medal of the Association. Marks: Design 100; duration actual seconds; minimum duration 35 seconds. The design of models submitted must be applicable to full-size machines.

27, Victory Road, Wimbledon. W. H. AKEHURST, Gen. 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.

Aero-Models Assoc. (30, CORRINGHAM RD., GOLDERS GREEN). Flying Saturdays, 3.30, at Hampstead Garden Suburb Fields, Golders Green. For r.o.g. machines, Sunday morning, at 10 o'clock.

Bristol and West of England Aero Club (Model Section) (42, ROYA YORK CRESCENT, CLIFTON, BRISTOL).

Bristol International Exhibition.—It has been decided to postpone the Summer Model Aeroplane Competition until Saturday, August 1st, when it will be held in the Paget Ground (a slightly smaller ground than the field originally proposed). The exhibits from Bristol and Bath will be on view in the International Pavilion for one week previously. Copies of the amended programme may be obtained on application to the above address. 3d models have been entered in the various events.

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

JULY 18TH, K. and M.A.A. official trials, Wansstead Flats, 3 p.m. Route for visitors, Liverpool Street to Forest Gate. On leaving station follow tramlines to left hand. Wansstead Flats will be reached in four or five minutes. The trials will be on the right-hand side, about five minutes from the road. July 19th, flying on Wansstead Flats, 6.30 to 10.30 a.m.

Paddington and Districts (77, SWINDERY ROAD, WEMBLEY). JULY 18TH, competition for single-propeller models, minimum weight and loading, 4 ozs. Average of three flights, r.o.g. duration.

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

JULY 18TH, flying 2 p.m. July 19th, flying 11 and 2. July 25th, competition for tractors, r.o.g., average of three flights. 1st prize, 15 shillings worth lion's goods, presented by Mr. H. Lyche; 2nd, 10s., and 3rd, 5s., same presented by Messrs. J. Bonn and Co.

UNAFFILIATED CLUBS.

Finsbury Park and District (66, ELPORT ROAD, HIGHBURY, N.).

JULY 18TH, r.o.g. duration tractors, 5 p.m. Exhibition flying from 3 p.m.

THE "HI-FI" KITE.

An interesting demonstration was given in Hyde Park recently of a new type of kite, introduced by Messrs. Gamage's, Ltd. This new kite, which has been given the name of "Hi-Fi," is chiefly remarkable on account of the fact that it is fitted with a propeller, or, more correctly speaking, with a small windmill. The advantage claimed for this new kite is good stability, said to be due to the gyroscopic action of the propeller. In addition to this action, the propeller is claimed to increase the stability of the



Messrs. Gamage's new kite, the "Hi-Fi."

kite by breaking the force of gusts before they reach the kite, as the greater part of the gust is absorbed in turning the propeller. During the demonstration the kite reached a great height, and appeared remarkably stable, whilst the angle of the string was at times about 80°. Constructionally the kite consists of a longitudinal stick, to which are fastened, by means of a short piece of brass tube, the two short lengths of bamboo which provide the necessary stiffness transversely. The propeller revolves round a short length of string coming from the central part of the stick.

CORRESPONDENCE.

Brakes for Aeroplanes.

[1879] In answer to the suggestions contained in two letters which have just appeared in FLIGHT, advocating the reversing of the engine of an aeroplane in order to exercise a braking effect, and of employing reversing gear, I should like to make a few remarks upon the subject.

I certainly cannot agree with "Mechanics'" method of comparing the cases of reversing the engines to stop a ship, and applying the same principle to an aeroplane with a similar object. The two cases are obviously widely apart; and your correspondent appears to forget that the elements through which the ship and the aeroplane are travelling are of a totally different character, and other equally important points.

The direct result of reversing the engine (and propeller) of an aeroplane would, in my opinion, upset the equilibrium of the machine, and certainly entail disaster in some form, probably causing the aeroplane to veer sharply from its course, and lurch over to one side, with resulting damage to the wing (I think that this would specially apply in the case of a monoplane).

No such device as reversing the engine, or having reversing gear fitted, would fulfil the requirements of an aeroplane brake, two of which might be enumerated as under:

1. It should be capable of enabling the pilot to start the engine and to get away without any outside assistance.

2. Keep the aeroplane from running back when landing on an incline (say in the case of a sudden descent upon unsuitable ground).

The brake I have designed (prov. patented) would fulfil these above-mentioned requirements, and I intend to arrange for the manufacture of same, and should be glad to hear from any constructors, &c., with a view to that end.

Other opinions of your readers as to the effect of reversing the engine, or the employment of reversing gear, on the stability of the aeroplane would be of interest.

Walthamstow, July 7th.

VINCENT H. MAIR.

PUBLICATIONS RECEIVED.

Nouvelles Recherches sur la Résistance de l'Air et l'Aviation. In 2 volumes. By G. Eiffel. Paris: H. Dunod et E. Pinat, 47-49, Quai des Grands-Augustins. Price 50 frs.

"Time and Tide": *Sunset and Tide Tables for 1914.* Markham and France, Dudley House, Southampton Street, Strand, W.C.

Guide to Patents, Trade Marks, and Designs. London: J. S. Withers and Spooner, 51-52, Chancery Lane, W.C.

Bibliographie de "La Conquête de l'Air." No. 1. *La Transverse Aérienne de l'Atlantique.* By A. de la Hault and A. Bracke. Paris: H. Dunod et E. Pinat, 47-49, Quai des Grands-Augustins. Price 45 centimes.

"To the Continent." London: The Continental Manager, Great Eastern Railway, Liverpool Street Station.

The Art of Reconnaissance. By Col. D. Henderson, K.C.B., D.S.O. London: John Murray. Price 5s. net.

Catalogue.

"Camcar" Carburettor. W. J. Bithell, Ltd., 46, Cannon Street, London, E.C.

Aeronautical Patents Published.

Applied for in 1912.

Published July 16th, 1914.

22,229. C. G. E. TRUMBLEY-FABER. Parachute life-saving devices.

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