FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

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. 647 (No. 20, Vol. XIII.) MAY 19, 1921 [Weekly, Price 6d. Post free, 7d.

Flight
The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828
Annual Subscription Rates, Post Free:
United Kingdom .. 30s. 4d. Abroad .. .. 33s. 0d.*
These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates
* *European subscriptions must be remitted in British currency*

CONTENTS

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

May ...	**Seaplane Contests on Lake Garde, Italy**
May 21 ...	**U.S.A. National Balloon Race, Alabama**
June ...	**Imperial Air Conference**
June 10 ...	**Race, Lugo–Trieste–Triente–Lugo**
July 2 ...	**Aerial Pageant (Hendon) for R.A.F. Memorial**
July 6 ...	**Entries close for Aerial Derby**
July 16 ...	**Aerial Derby**
July 29–31	**Jacques Schneider Cup, Venice**
Aug. 27 ...	**Entries Close for Coupe Deutsch**
Sept. 4–11	**Brescia Races**
Sept. 5 ...	**Pulitzer Trophy, Detroit, U.S.A.**
Sept. 18 ...	**Gordon Bennett Balloon Race**
Sept. 25–Oct. 2	**Aero Exhibition, Prague**
Oct. 1 ...	**Coupe Deutsch de la Meurthe**
Nov. ...	**Paris Aero Salon**

EDITORIAL COMMENT

ALTHOUGH for the moment the cross-Channel flying services are being carried on by the aid of a Government subsidy, and are thus being given a chance to popularise themselves, they are still a long way from being out of the wood. As a matter of fact, they are doing very well in them atter of passenger traffic, and, without knowing exactly how they stand in relation to the subsidy, it is quite possible that the Government may not be called upon immediately to extend any great financial assistance to them. We say immediately of intent, because it is the future rather than the present with which we are concerned now. In conversation recently with Mr. Instone, whose firm is carrying on one of the existing services, he outlined his ideas of the future of overseas flying, and there is much food for serious thought in his appreciation of the position.

The Future of Cross-Channel Flying

For the present, there is plenty of passenger traffic to keep the services in being. That is only to be expected, for the travelling public have come to know that the aerial services furnish the best and quickest method of getting from London to Paris, Amsterdam, or Brussels. It is summer, and the conditions for passenger-flying are at their best. Therefore, if one desires to make the journey across the Channel by air, it is advisable to apply early for a booking. This condition of things will certainly persist from now until, at least, the end of September, but it is when winter comes that for perhaps a year or so the services are likely to feel the pinch of altered conditions. Although there are very few days now when machines cannot satisfactorily maintain the services, travellers, for obvious reasons, will not be as keen to go by air in the winter as they are at other seasons of the year. We may take this as read.

The question then arises: How are these services to be carried on? The answer seems to us to be that, as no other form of transport makes dividends on passenger traffic alone, so aviation must in the future depend upon the conveyance of goods for its principal revenue. It is well known that neither in the case of rail nor sea transport does passenger traffic alone

pay. The same is true, to a somewhat less extent, of road transport. Assuming, as we are bound to do, that the same conditions affect aviation, we are forced back upon the conclusion that in order to make aerial services pay as an all-the-year-round proposition, it is goods traffic to which we must look mainly for their support.

* * *

A Difference in Conditions

When we speak of goods traffic we are by no means thinking of leviathan machines, capable of carrying the cargo of an Atlantic liner, but of practical loads as we are able to visualise them in the light of present knowledge and development. Loads of from three to five tons are quite practical even now, and we doubt not that before long we shall have machines which are capable of carrying as much as twenty tons. But it is not so much the question of the carrying capacity of machines with which we are concerned, as of where such loads as are practical are to be obtained. Obviously, we cannot expect services to be maintained on mail carriage entirely. Even if the postal authorities adopted the course we have so often urged, and put the whole of the mail matter for the Continent into the air, we should still be a long way off the volume of traffic necessary to support such services as we must have if aviation is to take a serious place in the transport world. Where, then, is this traffic to be obtained? We believe the answer to be quite simple in itself, but whether the whole solution is going to be as simple as the answer is a matter that only time can decide.

Now, there is an enormous parcel traffic between this country and the Continent, and we seriously suggest that if the great commercial houses, such as Harrods', Selfridges', Whiteleys' and others, were to go seriously into the question of conducting the whole of their Continental parcels transport by air, we should at least have arrived at the beginning of the solution for which we are looking. It should be urged upon them that not only are the services perfectly safe—they have now more than two years of success behind them to indicate that—but they possess advantages far and away greater than other forms of transport. It must surely appeal to them, if the case is properly presented—as we have no doubt it will be—that parcels despatched from London or Paris can be delivered in the other capital in less than four hours and at little if any higher cost than by rail and steamer. That must have a tremendous appeal to firms who have built up enormous connections by reason mainly of the facilities they possess for rapid delivery—for that is, when all is said and done, at the root of the success of the big retail houses.

Naturally, the thing need not stop there. It will extend in time to other houses and other descriptions of businesses, but it is to those we are discussing that we look to give the thing a start. It goes without saying that they must be properly approached, and the whole advantage of air transport brought home to them. If that is done, we believe that the outstanding advantages of aerial transport will before long come home to the commercial community in a way that will ensure permanent success to the movement generally and to the overseas services in particular.

* * *

Where the Shoe Pinches

In the foregoing we have laid stress upon the necessity for securing a large volume of traffic for the existing services. It might be argued that if these services can pay their way on passenger traffic alone during the summer months, an equivalent amount of goods and passenger traffic during the rest of the year would enable them to stand on their own feet. In answer to this, it must be remembered that there is a difference between merely paying and making a commercial profit such as will induce people with capital to come in with a view to extending existing services and instituting new ones. Where the shoe pinches at the moment is in the matter of the very heavy overhead charges essential to the conduct of any service at all. For example, take ground staffs alone. At each terminal air port a staff of anything up to thirty men must be maintained whether the number of machines leaving and arriving daily is one or a dozen. Obviously, if that number is twelve the expense incurred is only one-twelfth per trip in comparison with the minimum of one machine per day, and if we are to see aerial transport brought up to the level of other methods of transit, it is these heavy overhead charges which must be equalised. The only way in which they can be satisfactorily reduced is by obtaining more traffic and, consequently, running more and more machines on each route. That is why it is so essential that there should be a concerted campaign to induce the commercial community to make use of air services for the carriage of the lighter and more valuable classes of goods. Properly conducted by men who know what they are talking about, we believe such a campaign would be highly successful. In any case, it is perfectly plain that if commercial aviation is to be successful more "goods" traffic will have to be secured before the end of the present summer.

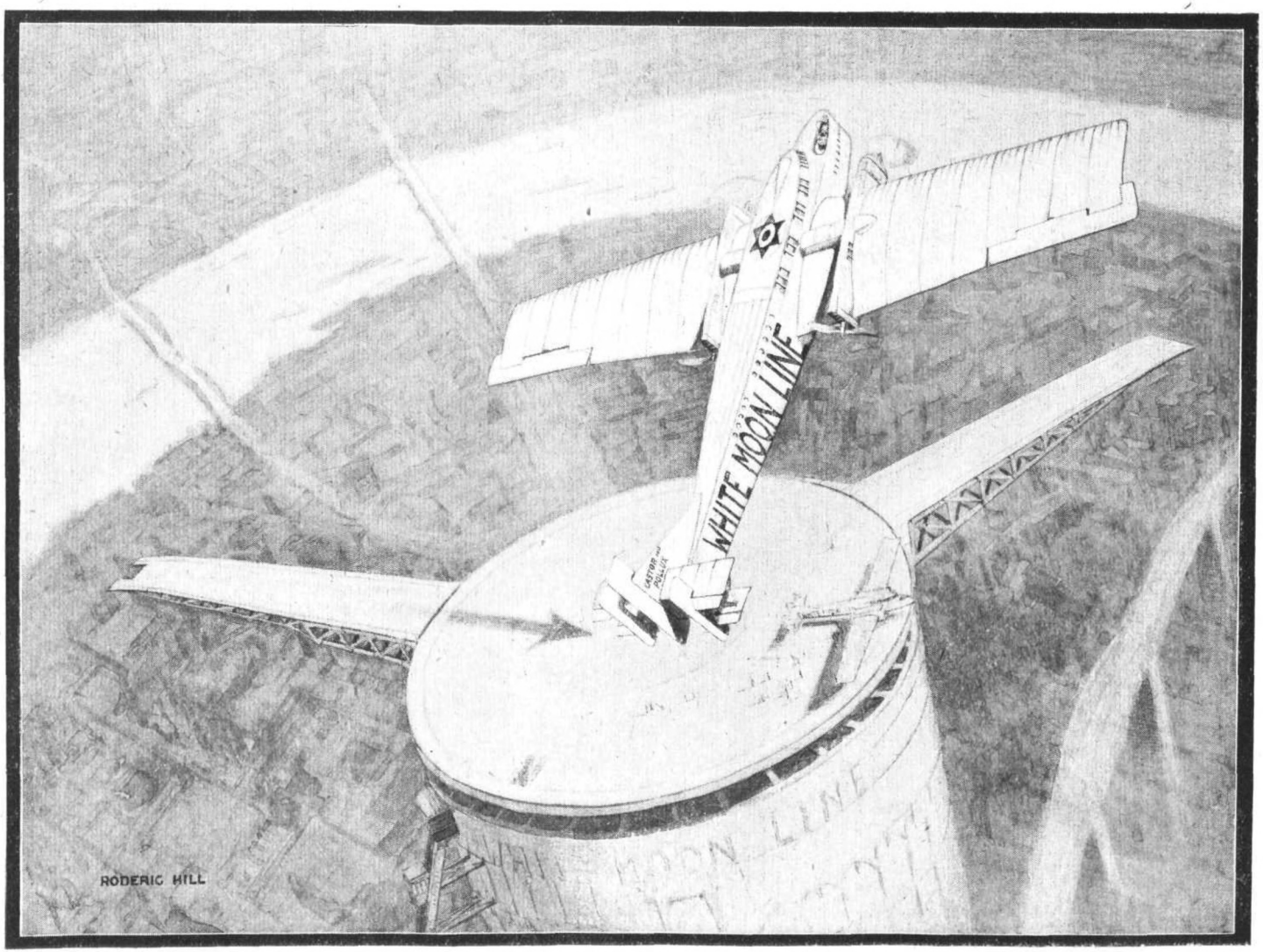
* * *

A National Corporation

In a long letter to *The Times* recently Mr. Holt Thomas returns to his ideal of a great national corporation to run the cross-Channel services, and to generally put British civil aviation on its feet. It will be remembered that, in March last, Mr. Holt Thomas put his idea before Lord Londonderry, who was at that time in charge of the Air Ministry in the absence of Mr. Churchill, and actually received promises of support from bankers, large trading corporations and financial institutions, who guaranteed to find at least £1,000,000 and to form a corporation whose directors should be men of the highest standing, who would act without remuneration. On the adoption of the present temporary scheme of subsidies, Mr. Holt Thomas, as he says, regrettably felt himself compelled to withdraw the offer to form the national corporation. He still thinks, however, that the money would be forthcoming again in a patriotic spirit for a really national company from which a solid national benefit would be obtained.

He writes, he says, because he is afraid that invaluable time is being lost, time which is vital if we are to regain the lead in the air which we once had and have lost. He says that a national corporation seems, if a national subsidy is to be paid—as it must be so long as foreign Governments are paying subsidies—the ideal way of furthering, not only British air services, but British design and British construction. If such a corporation could be founded it would be a very great national advantage.

In the main, we quite agree with Mr. Holt Thomas's point of view, but we are not at all clear from his letter to *The Times* what the position is at present



From the Original by Roderic Hill

"TRAVELLING OF THE FUTURE: THE WHITE MOON LINER 'CASTOR AND POLLUX' AWAITING THE SIGNAL TO ALIGHT"

(*See page* 338.)

or what it is he really wants. It would be presumptuous to criticise without knowing all that has happened since Mr. Holt Thomas made his original offer to Lord Londonderry. As we have pointed out before, we understand that it *was* an offer. But it really seems to us that if the money is to be had and if the names of those to be associated with the proposed national corporation are such as will satisfy the Air Ministry, as we are assured they will, then the course to be pursued is to approach that Department with a concrete, cut-and-dried scheme for making effective the hopes that Mr. Holt Thomas expresses in his letter to *The Times*. Surely, if the complete proposition is a really business one, the Air Ministry must at least consider it, and, if it is not acceptable, must say so and give its reasons. At least the temporary measures adopted by the Government are carrying on the cross-Channel services, not, perhaps, as we should all like to see them flourishing, but carrying on nevertheless. We do seriously suggest that Mr. Holt Thomas should put forward his proposals to the Air Minister for consideration, and secure a last official pronouncement upon them. The constitution of the Ministry has been changed since Lord Londonderry's action caused Mr. Holt Thomas to withdraw his offer to form a national corporation, and it may very well be that his proposals would receive a more sympathetic hearing. But that cannot be ascertained until those proposals are re-submitted, and the course to be adopted is, therefore, obvious, unless there are facts in the background of which we know nothing.

"TRAVELLING OF THE FUTURE:* THE WHITE MOON LINER 'CASTOR AND POLLUX' AWAITING THE SIGNAL TO ALIGHT."

(*See page* 337).

"I was taking an airing on my 400 h.p. pleasure scout 'Jacinth,' when I was privileged to see the new White Moon Liner 'Castor and Pollux.' She was manœuvring over the terminus,* awaiting the signal to alight. In the inimitable handling of her I at once recognised that of Air-Captain Joseph Turnbuckle, an old friend and colleague of mine, known in the Line as 'Sideslip Joe.' He had to circle for ten minutes or so to allow the outgoing liner to get clear. Then he alighted magnificently. I happen to be in with the Directors, so I landed my little scout on the smooth upper level of the terminus. By the way, there isn't any too much room for a scout like mine without slow-landing devices; but still, in spite of my years, my hand has not lost its cunning. I caught sight of old Joe slowly coming down the aft control station ladder, and we shook hands warmly.

"'What do you think of her?'

"'Think!' he said; 'why, she's absolutely *it*. She's fitted with the duplex gyro stabiliser, auxiliary lift turbines, long distance controls, and everything an air-navigator could wish for. They've let the navigation experts loose on this design, and, by Jove, making your course in the fiend's weather is mere child's play. She wouldn't let her crew down if they were all dead drunk.'

"He then took me to see the disappearing chassis, a marvel of neatness, to which the sand of Egypt was literally still adhering. Up and down the slim silver body we went, admiring her exquisite rig. I found it hard to tear myself away, but I had an appointment in Rome that evening; so I had to hurry back to the 'Jacinth,' swing off the great circular platform, and go full out all the way, which I hate doing."

(Tapped from a King's Air-Messenger's Airogram to his Chum.—May, 1931.)

*** Described and illustrated in FLIGHT of January 6, 1921.**

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN MAY 8 AND MAY 12, INCLUSIVE

Route‡	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
						h. m.		
Croydon-Paris	15	39	2	12	15	2 38	Spad F-CMAV (1h. 20m.) ...	B. (3), D.H.18 (1), G. (3), Sp. (4), V. (1).
Paris-Croydon	19	77	10	14	17	2 40	Spad F-CMAY (1h. 59m.) ...	B. (5), D.H.18 (1), G. (3), Sp. (6), V. (1).
Cricklewood-Paris ...	3	26	2	2	3	3 25	H.P. G-EATN (3h. 20m.) ...	H.P. (2).
Paris-Cricklewood ...	2	19	—	2	2	2 55	H.P. G-EATN (2h. 40m.) ...	H.P. (2).
Croydon-Brussels ...	8	3	3	4	8	2 2	D.H.4 O-BADP (1h. 45m.) ...	Av. (2), D.H.4 (2), D.H.9 (2).
Brussels-Croydon ...	5	9	3	3	5	2 33	D.H.4 O-BARI (2h. 16m.) ...	D.H.4 (2), D.H.9 (2).
Croydon-Amsterdam ...	4	1	4	4	4	3 26	Fokker H-NABJ (3h. 19m.)..	D.H.9 (1), F. (2).
Amsterdam-Croydon ...	4	8	3	3	4	3 14	Fokker H-NABN (3h. 8m.)..	D.H.9 (1), F. (2).
Totals for week ...	60	182	27	44	58			

* Not including "private" flights. † Including certain journeys when stops were made *en route*.
‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. N. = Nieuport. P. = Potez.
Sa. = Salmson. Se. = S.E. 5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijkie Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

FLIGHT

BRITAIN'S FIRST PASSENGER AIRSHIP

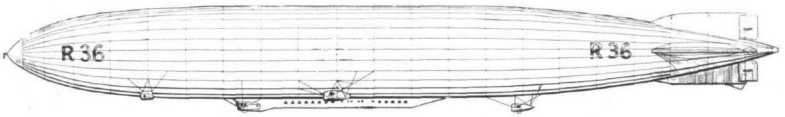
The "R. 36" (G-F.A.A.F.)

LAUNCHED a few weeks ago, as recorded in FLIGHT at the time, the "R. 36," built at the Inchinnan works of Messrs. Wm. Beardmore and Co., Ltd., is of more than ordinary interest inasmuch as she is the first British airship adapted for passenger carrying on a generous scale. In the detail design of the airship there is little new to record, the designs having been got out as long ago as 1918, and there is little doubt that with the experience gained during the intervening years considerable improvements could be effected. This is in no way a reflection on the skill of the designers or on the capability of the constructors, but merely a result of the rapid progress which characterises all aircraft design.

When the change occurred in the airship policy of the Government, the construction of the "R. 36" was not sufficiently far advanced to preclude her conversion into a passenger airship, and consequently it was decided to do this, and to use in this manner an airship which had cost large sums of money to build, and which would otherwise have to be wasted. It is to be hoped that some sound scheme for making practical use, not only of the "R. 36," but also of our other airships, will be put forward in time to avoid the destruction of these excellent crafts, and to provide at the same time some valuable and much-needed experience and data for the running of commercial air services under conditions similar to those which would obtain in practice. There is little doubt that for long-distance non-stop journeys the airship scores over the heavier-than-air type of craft, and while to organise an "all-red" route to India and Australia or South Africa would be a difficult undertaking with aeroplane and/or seaplanes, a few mooring masts and one or two more permanent bases would be practically all that would be required to start an airship service to these Dominions overseas. To discard the airship entirely without giving it an opportunity of "making good" as a commercial craft would be folly, even if those in authority have come to the conclusion that the type does not justify its existence for naval and military purposes.

Capacity

With an overall length of 672 ft. and a maximum diameter of 78 ft. 9 ins., the "R. 36" has a cubic capacity of close on 2,200,000 cubic ft., the hydrogen being contained in 19 gas-bags. The gross lift is about 64 tons under standard conditions. The structure weight of the airship is approximately 35 tons, which leaves a lift of about 29 tons for water ballast, fuel and oil, crew, passengers and cargo. At a cruising speed of 50 m.p.h., the fuel and oil consumption would probably amount to slightly under 700 lbs./hour, or approximately 1,450 lbs. per 100 miles, allowing for a slight head wind. This gives a fuel and oil consumption of 0.65 ton per 100 miles, and the duration of the journey will then, of course, depend upon the number of passengers and the amount of cargo carried.

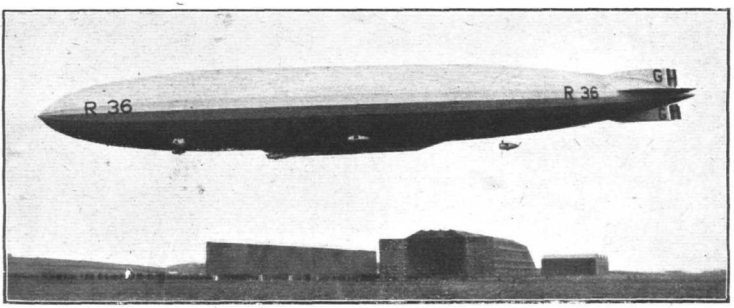


THE "R. 36": Side elevation, approximately to scale. The overall length is 672 ft. 2 ins., and the diameter 78 ft. 9 ins. The height from the bumping bags under the cars to the top of the hull is 91 ft. 7 ins.

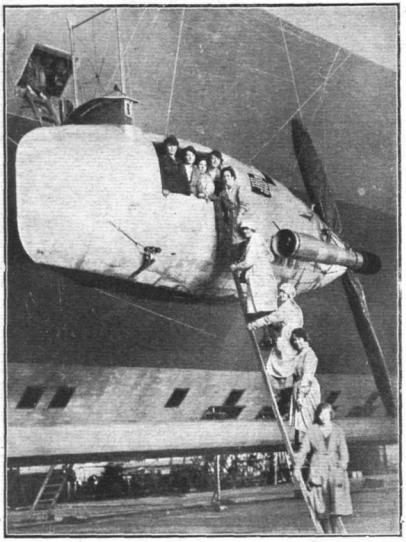
General Construction

As already mentioned, there is little that is new in the detail construction of the airship, owing to the fact that it is of fairly old design. The hull is of a good streamline form, with well-shaped ends and a short parallel centre portion extending from frame No. 13 to frame No. 23, or approximately 200 ft. in length. In cross section the ship forms a polygon with 25 sides, all except the bottom being of equal dimensions. These 25 sides are formed by longitudinals built up lattice fashion of Vickers "Duralumin." Alternately the longitudinals are secured to the corners of the main transverse frames, and to king-posts crossing the sides of the frames at right angles. The bottom of the polygon is formed by the base of a triangular section girder running the whole length of the hull and forming a keel or corridor giving access to all parts of the ship. Between each pair of main transverse frames is an intermediate frame, which has no king-posts projecting inward, and which, therefore, does not interfere with the gas-bags. These occur between consecutive main frames, and are separated by the transverse wiring in the plane of the latter.

In order to prevent the gas-bags from touching the outer



FIRST BRITISH PASSENGER AIRSHIP: "R. 36" on her trial flight from the Inchinnan works of Messrs. Beardmore and Co., Ltd.



THE "R. 36" (G-F.A.A.F.): Port amidship power car. The employés going up to work on the airship give a good idea of the size of the power "egg." Note the retractable radiator, and the trap door in the side of the hull, through which the engineers in charge of the engine gain access to the hull during flight.

covering, netting is placed in the rectangles formed by the longitudinal girders and sides of transverse frames. The whole outer surface of the airship is covered with a very fine Egyptian cotton fabric, thoroughly impregnated with dope and painted, to withstand all weathers and afford the greatest protection for the gas against sun rays.

In addition to the usual ropes, frames, etc., for handling by a ground party, the "R. 36" is provided with mast mooring gear, the front bays of the structure having been specially reinforced and strengthened for this purpose. A trap-door in the extreme nose gives access to the interior, a corridor running from the nose along the keel to steps leading down into the passenger cabin and front control car. This corridor also communicates, through trap-doors in the sides, with the five engine cars slung from the hull on cables and struts.

The Engine Installation

The power plant consists of five engines installed in five separate engine cars. The arrangement of these may be gathered from the accompanying illustrations. Between the nose and the control car, and slightly nearer the latter, are two power cars, slung from the hull by cables and braced by struts, each containing a 260 h.p. Maybach engine. These cars are spaced widely apart laterally, being in fact approximately under the longitudinal girder on the side of the ship. About half-way between nose and stern are another two power cars, similarly placed, each housing a 350 h.p. Sunbeam "Cossack" engine. Finally, some distance aft of the cabin, and on the centre line of the airship, is a fifth car, also containing a Sunbeam "Cossack." The two Maybach engines have direct drive to their airscrews, whereas in the case of the other three engines reduction gearing and clutches are incorporated in the installation.

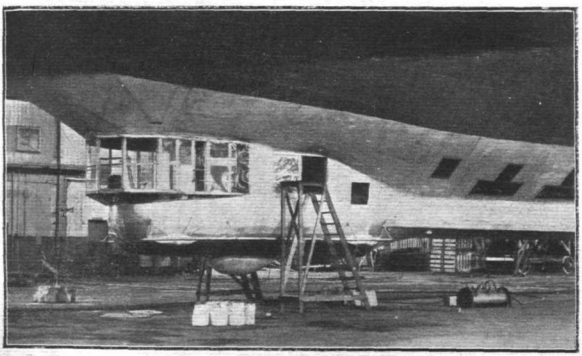
Petrol System

The petrol tanks are carried in the central keel or corridor, and the petrol leads are so arranged that any or all engines may be supplied from any tank. Two petrol mains run from the nose of the airship through the whole length of the hull, and from these mains filling lines run to each tank, which can be filled from either of the two mains. From each tank in turn petrol leads run to gravity tanks in the power cars, pumps being provided for transferring the fuel from tanks to cars, and also, for purposes of trimming, from one tank to another. The whole system is designed with a view to ensure that any local damage will not interefere with the regular supply of petrol to any of the power units.

A water main also runs through the airship, by means of which ballast bags, as well as the containers for the radiator water, can be filled from the water main on the mooring mast, thus greatly facilitating filling up. The water-bags are placed in the central keel, so distributed as to allow of trimming the airship under any conditions. In conjunction with trimming by discharging ballast, the gas-bags are provided with automatic gas-valves, and some of them with hand-operated gas-valves, so that it will be seen that ample means exist for maintaining the trim of the ship: Discharge of water ballast, discharge of gas from ballonnets, and transfer of petrol from one tank to another.

Tail Unit

Although in the illustrations the tail of "R. 36" appears similar to that of older airships, there is a considerable



The "R. 36" (G-F.A.A.F.): The control car forms part of the forward portion of the passenger cabin, some of the windows of which can be seen on the right.

structural difference. The fins, vertical as well as horizontal, are built as cantilever beams, calculated to support their loads without the aid of external bracing. Anyone who has seen the tail of "R. 33" must have been impressed by the great amount of exposed wiring which supports the fins and tail plane. In the "R. 36" this external wiring has been done away with, and has, we believe, resulted in a very considerable saving in resistance.

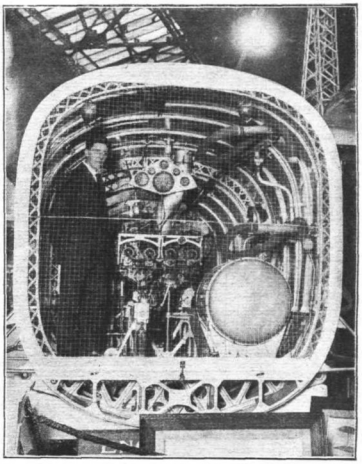
The Control Car

As already mentioned, the front portion of the large passenger cabin is formed by the control car, which is well provided with windows so as to give the Commander as unhindered a view as possible. In this car are situated all the controls, such as those of the elevators and rudders, the hand-operated gas-valves, etc., as well as all the instruments necessary for communication between various parts of the airship, navigation, etc. The wireless cabinet is also installed in this car, with the most up-to-date wireless telegraph and telephone instruments, including direction-finding sets. It might be mentioned that, after the manner of surface ships, there is an auxiliary set of rudder and elevator controls in the stern of the airship, by means of which the ship could be controlled in case anything went wrong with the standard controls from the "bridge." Altogether, the impression one receives in going over "R. 36" is that everything possible has been done to duplicate all essential functions so as to reduce to a vanishing point any risk of total breakdown. In this respect it cannot be denied that the airship has a great advantage over heavier-than-air craft. There is not only ample room, but comparatively speaking ample time for any repairs or adjustments which it could reasonably be expected to effect during a journey.

The Passenger Accommodation

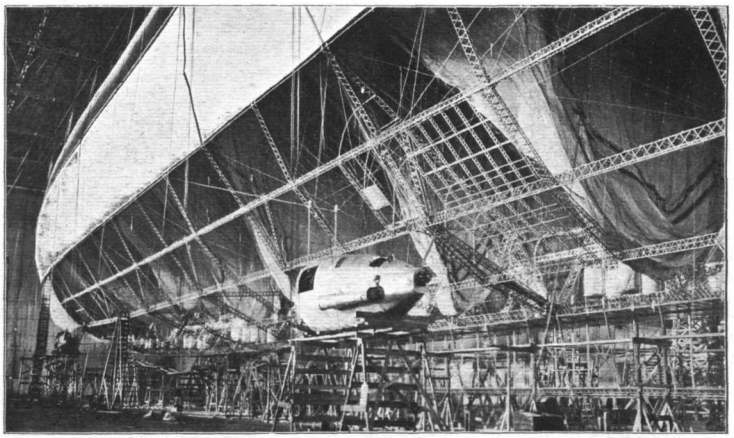
We now come to what is, perhaps, the most interesting feature of the "R. 36," the passenger accommodation, the most interesting because this is the first airship built in this country to be designed with all the luxuries of modern long-distance travel. As will be seen from the illustrations, the passenger car is situated below the hull proper, attached to it but isolated from it in every way so that the risk of fire from the striking of matches or similar causes is to all intents and purposes eliminated, provided, of course, that ordinary care is exercised.

The passenger car is arranged somewhat on the lines of a Pullman car. A passageway runs down the whole length of the car, with the cabins on each side. Each cabin has a table



The "R. 36" (G-F.A.A.F.): Front view of one of the power cars with streamline cowling removed The engine is a 350 h.p. Sunbeam "Cossack."

and two comfortable chairs. At night the cabins are divided off into compartments by curtains, and the beds, which are designed to fold flat against the walls in the daytime, are let down, providing very comfortable sleeping-quarters for the 50 passengers for whom the cabin is designed. Needless to say, there are all "modern conveniences," and large pantries



The "R. 36" (G-F.A.A.F.): View showing forward part of the hull partly uncovered, with one of the port wing engine cars in place.

and galleys are situated conveniently amidships, whence the serving of meals can be carried out with the maximum of efficiency. The car is fitted throughout with electric light, and switches are placed in convenient positions in each cabin.

The carpets, hangings and upholstery-work have all been tastefully carried out in light blue, and the whole effect is very pleasing. Large windows are provided in way of each cabin, so that all the passengers obtain an excellent view. This is further improved by the fact that the sides of the cabin slope outwards, and that, therefore, it is particularly easy to look downwards, much more so than if the walls had been vertical.

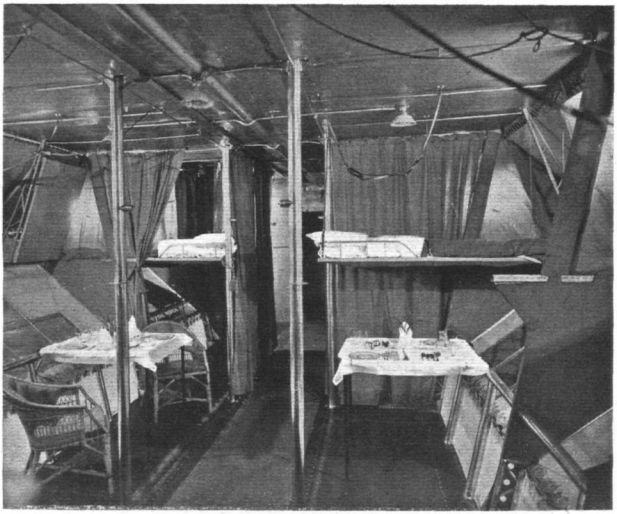
In addition to the passengers the airship carries a crew of 4 officers and 24 men, whose quarters are in the keel. The officers are: The Captain, First Officer (pilot), Second Officer (pilot), and Engineer Officer. The crew is composed as follows: Two coxwains, seven riggers, thirteen engineers, and two wireless operators.

It may be of interest to mention that in large airships such as the "R. 36" the crew is divided into watches, as is the old-established custom of the sea. The only exception to this is the Captain, who is not necessarily continuously on duty. Thus when the flying is difficult he remains on duty, in the same way as the captain of a steamship remains on the bridge in bad weather or when near the coast.

Performance

It may be of interest to examine briefly some of the journeys which could be performed by the "R. 36," fitted as she now is with five engines of a total power of 1,570 h.p. and assuming a cruising speed of 50 m.p.h. with a maximum speed of about 65 m.p.h. For instance, the journey to Stockholm could be made in 20 to 24 hours with two tons of mails or goods and 30 passengers, allowing 100 lbs. of luggage for each passenger. Under the same conditions the trip to Marseilles could be made in 15 to 18 hours, and London to Cairo in about 72 hours. Later, when mooring masts and other facilities have been provided, it should be possible to make the journey from England to India in about six days, as compared with the 21 days taken by the ordinary overland route.

In view of these figures, which are not the result of guesswork, but are based upon facts, it is scarcely to be doubted that sooner or later airship travel will occupy a prominent place, especially over long-distance routes where aeroplanes or seaplanes would have little reserve lift for paying load, even granting that their engine reliability were such as to make the journey possible. We have heard from several people who should be in a position to know, that on a properly organised route it should be possible to carry passengers at a rate very little higher than that charged for first-class steamer travel. If this prove to be so, it is not to be doubted that airship travel will become very popular, for surely it would be impossible to imagine a more delightful method of covering long distances under the most comfortable conditions than that afforded by the modern passenger airship, of which the "R. 36" is the forerunner as far as this country is concerned.



"R. 36": Interior of the passenger car, showing the method of suspending beds and of unfolding mirror so as to make a table for the day-time. Bed folded away is seen on the extreme left of the picture.

The French Grand Prix

FROM Paris it is reported that two Farmans have been entered for the second stage of the Grand Prix (May 20, 21 and 22). These are a twin-engined machine of the Goliath type, which will be piloted by d'Or and Bossoutrot, and an F.70, to be piloted by Bernard. The winner will be the competitor who has accomplished the fastest trip over the whole course. The machines are to carry 480 kilos. to represent passengers and 200 kilos. of freight.

The Austin Life Float

IN reference to the sketch of the Austin life float which appeared in our last issue, we would like to point out that this sketch was, of course, only diagrammatic and intended to show the general principle of the raft, and not as it actually is.

For the sake of clearness we omitted to show such "accessories" as handlines, netting, etc., which are fitted to the actual rafts.

FLIGHT

NOTICES TO AIRMEN

France: Flying of Captive Balloons on the St. Inglevert-Paris route discontinued

1. Notice to Airmen No. 32 of April 1, 1921, is cancelled, the experimental flying of captive balloons on the French section of the London-Paris route having been discontinued as from May 1, 1921.

(No. 42 of 1921.)

Switzerland: Air Navigation on and above Swiss Waters; Geneva Customs Aerodrome

1. REGULATIONS FOR CIVIL FLYING

(*See also* Notice to Airmen No. 117 of 1920.)

The following Regulations govening Aerial Navigation on and above Swiss waters have been issued by the Swiss Federal Council:—

A. *Flight above the water*

(1) Aircraft flying above water must not approach within 200 metres (220 yards) of steamers and large motor-boats carrying passengers. Flight above these watercraft at an altitude of less than 200 metres (660 feet) is likewise prohibited.

(2) Aircraft flying at an altitude of less than 200 metres may not cross the path of such watercraft at a distance of less than 300 metres (330 yards).

As a general rule aircraft should pass behind watercraft at a distance of at least 200 metres.

(3) Aircraft must not manœuvre in company with these watercraft or carry out turns above them.

All acrobatic flight above and within a radius of 1 km. (1,100 yards) of these watercraft is prohibited.

B. *Navigation on the water.*

(1) Hydro-aeroplanes may only navigate at night on the lakes and navigable waterways on condition that they are provided with navigation lights (the same as for motor-boats).

(2) Hydro-aeroplanes must, moreover, observe the following rules:—

(*a*) A hydro-aeroplane must keep out of the way of all watercraft, of no matter what category, which it may encounter on its course. If for any reason a hydro-aeroplane is incapable of manœuvring, and if it is in danger on account of the proximity of a large watercraft, it must notify the latter by means of the alarm signal (seven short blasts in rapid succession repeated several times on a fog horn).

(*b*) Watercraft may only be passed or crossed on the right side at a minimum distance of 50 metres (55 yards) and at a speed entailing neither danger nor difficulty to the watercraft. Passing on the left side is only permitted if rendered necessary by the proximity of the shore or by some other cause.

(*c*) If the path of a watercraft and that of a hydro-aeroplane cross at right angles or almost at right angles, the hydro-aeroplane shall manœuvre so as to pass behind the watercraft.

(*d*) A hydro-aeroplane in distress shall ask for assistance by means of the signal of distress (seven prolonged blasts in rapid succession repeated several times on a fog horn, and at night, in addition, a rapid succession of flashes made with the navigation lights).

C. *Departure and arrival of hydro-aeroplanes*

(1) Departure and arrival may only take place if the space in the direction of departure or arrival is free, and shall in no case take place in the direction of departure and arrival of steamers or large motor-boats carrying passengers.

For departure, there must be a sufficient free area of water for the hydro-aeroplane to take off and attain a sufficient altitude and speed to permit it to avoid all obstructions.

During departure or arrival no watercraft shall cross the path or crowd upon the course of a hydro-aeroplane.

(2) At night, departure or arrival of hydro-aeroplanes will only be permitted on certain areas of water marked by lights or closed to navigation by surface vessels.

(3) In case of fog on the water, taking off or alighting on the lakes and navigable waterways is prohibited. Exception to this rule is made in the case of aircraft compelled to alight in emergency.'

(4) The areas of waters to be marked with lights will be designated and the slipways for use of hydro-aeroplanes will be determined by the Cantonal Authorities in conjunction with the local authorities and approved air navigation companies.

In case of disagreement between the parties, the decision of the Railway Department shall be final.

2. GENEVA CUSTOMS AERODROME

Notice to Airmen No. 117 of November 4, 1920, is amended as follows:—

The aerodrome at Geneva (St. George's) should be deleted from the list of Swiss Customs Aerodromes, the aerodrome of Cointrin having replaced it as the Customs Aerodrome for Geneva.

The following particulars are available:—

GENEVA (COINTRIN). Civil Customs Aerodrome

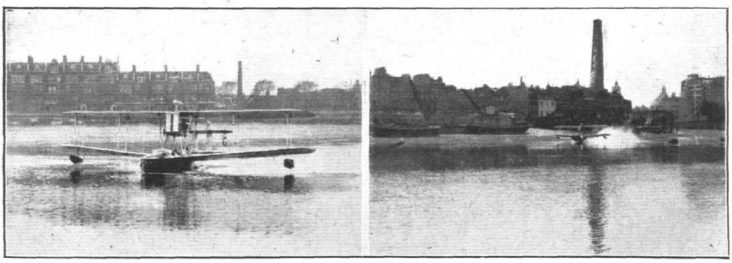
Position.—Latitude 46° 14' N., longitude 6° 6' E. (approx.). Situated about 4½ kms. (3 miles) N.W. of Geneva at a height of approximately 1,430 ft. above sea level.

Description.—Dimensions 1,200 by 300 metres, suitable for all types of machines; sloping gently from the centre to the boundaries in all directions.

Telephone No.—Geneva 5900.

Customs facilities.—As no personnel is at present available, pilots intending to use this aerodrome must give previous notice of their intended arrival or departure to Mr. Latour, manager of the aerodrome. Telegraphic address: Latour, Journal de Genève. Telephone No.: Geneva 20.10.

(No. 41 of 1921.)



SEINE TO THAMES IN TWO HOURS: On the right the Vickers "Viking III" alighting near the end of Lambeth Bridge last week. On the left the machine is seen taxying toward the Hard at Doulton's, with its wheels lowered ready for beaching.

THE NEW AIR PORT OF ROTTERDAM

A New Link in the Chain

THE development of commercial air routes will be largely dependent upon the provision of proper air stations equipped with repair sheds, fuel storage, wireless equipment, etc., and until the ground organisation is in working order the regularity of an air mail or passenger service cannot easily be maintained. Among the smaller nations which have for several years taken an active interest in flying, not the least progressive is Holland. Not only has that country several aircraft manufacturers who have turned out machines that compare very well with those produced by countries which have had many years' experience in this branch of industry, but Holland has also been quick to see the advantages of commercial aviation. To this end services have been inaugurated between England and Holland, and also between Holland and the Scandinavian countries *via* Germany. The Dutch were ever a maritime nation, and as there is a considerable similarity between maritime navigation and air navigation, it is, perhaps, not surprising that Holland should quickly appreciate the significance of the new mode of transit.

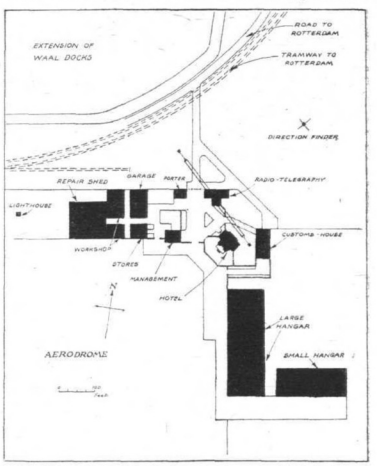
Among the Dutch ports Rotterdam has for centuries held a prominent place, and it now appears that the ancient city is determined to win for herself a place in commercial aviation, commensurate with that which she has so long occupied in the world of seaborne traffic. The City Council, with commendable foresight, decided that the first step toward this end would be the provision of a good aerodrome near Rotterdam, and consequently, on October 8, 1919, a resolution was passed, selecting a site to the south of the Waal Docks, about three miles from the centre of the town. This piece of land had already some years previously been raised to the requisite level.

On December 4, 1919, the council voted the sum of 450,000 florins for the purpose of commencing the preliminary work of laying out the aerodrome and the construction of roads. The levelling, draining and sowing of the site—the area of which is 2,460 by 3,300 ft.—undertaken by the Netherlands Moor Lands Reclamation Company, was completed in June, 1920. On July 26, the first aeroplane of the Royal Aerial Navigation Company of the Netherlands and Colonies landed on the Aerodrome to pick up the London mail.

In the meantime the elaboration of the plans for the complete equipment of the aerodrome was being proceeded with. A study of aerodromes abroad having been made, the buildings shown in the accompanying illustrations were designed.

For the erection of the buildings shown on the ground plan, the city council on August 26, 1920, voted a further credit of 863,000 florins. The following buildings are now accordingly in course of construction:—Office for the management, in which the meteorological and medical services will also be accommodated; a restaurant for the convenience of travellers landing and embarking. In the upper story of this building simple sleeping accommodation and baths will be provided, of which pilots can also make use; a customs house with residential quarters for the porter, and a workman's dining-room upstairs; a storeroom for aeroplane parts; a small building for the wireless telegraph and telephone service; a motor garage; a porter's shelter; a hangar 72 by 125 ft. in area and lofty enough to admit aircraft 36 ft. in height; a second hangar 79 by 165 ft., taking aircraft 20 ft. in height.

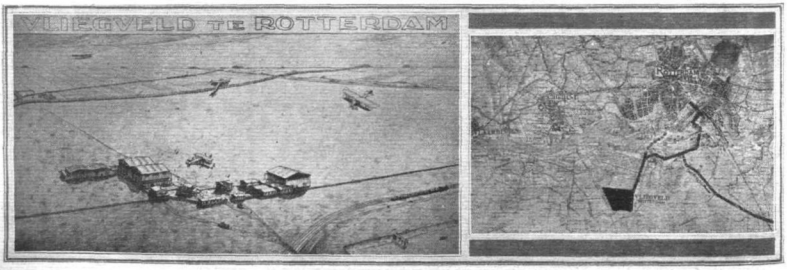
Workshops adjoin each hangar, which are centrally heated. The aerodrome will be illuminated at night, and provision is made for motor-spirit storage. There will be a wireless



Plan of the new Municipal aerodrome at Rotterdam which is now being constructed, and, it is hoped, will be finished during the present summer.

plant, including a complete direction-finding apparatus, which is now being installed.

The execution of the work described above is proceeding apace, so that it is hoped that during the summer of 1921 Rotterdam will be in a position to offer all the facilities which may be demanded of a centre of international aerial traffic. It may be stated that the Rotterdam Municipal Aerodrome is one of the stations on the air routes from the Netherlands to London, Paris, Brussels, Hamburg and Dortmund.



THE NEW MUNICIPAL AERODROME NEAR ROTTERDAM: On the left, a view from above of the aerodrome and sheds as they will appear when completed. The small map on the right shows the location of the aerodrome in relation to Rotterdam. The distance from the centre of the town is about three miles.

FLIGHT

LONDON TERMINAL AERODROME

Croydon, May 16, 1921

THE holiday air traffic through Croydon has been exceptionally heavy, and had the Continental services not been dislocated by Channel fog all last year's records would have been broken. No fewer than 64 passengers travelled to and from the Continent by air on Saturday alone. On Sunday, although there are no scheduled services, a special 'plane was chartered from Messrs. Messageries Aériennes by members of the cast of "The League of Notions" to fly to Paris. They returned by the ordinary service on Monday in time for that day's performance. The Instone Air Liner "City of Cardiff," piloted by Mr. Powell, made a double journey on Sunday.

On Friday members of the air conference visited the air-port. It was unfortunate that, although the weather at Croydon was perfect, a heavy fog hung over the Channel, spreading a few miles inland on either side, and entirely dislocating the service. Instead of starting at 10 a.m., the Amsterdam and Paris machines were still waiting outside the Custom's offices for more favourable weather reports when the 12.30 machines for Paris and Brussels came taxying round from the sheds. Soon there were nine machines of various types lined up. The K.L.M. Amsterdam machine, piloted by Mr. Olley, was first away, followed closely by the others. M. Eynac travelled with twelve other passengers in the "Goliath."

The Instone air-liner "City of Paris," with eight passengers, came to grief in northern France on Friday, owing to slight engine trouble. Although the machine was badly damaged in landing the passengers escaped with slight cuts and bruises. This accident left the Instone line short of machines, and, in order to cope with the passenger bookings, Mr. Barnard made the double trip on the Vickers "Vimy" on Saturday. This, and Mr. Powell's return journey on Sunday brought back memories of the days when Aircraft Transport and Travel were doing double trips as a matter of daily routine.

The Anglo-American Oil Company have started to instal their bulk storage petrol plant. They promise it in working order in a week or ten days' time.

Mr. Coleman and Mr. White, the two foremen of the aerodrome traffic hands, now look very smart in their new blue uniforms. It is hoped that the whole of their staff will be similarly equipped before long. There are large quantities of brand-new blue R.N.A.S. uniforms lying at Kidbrooke, and a few of these might be made use of in this way.

There is a force of police on the aerodrome, and they have constructed a vegetable and flower garden round their quarters. This is now in a very flourishing condition, and Sergeant Burrows, who is in charge, is very proud of it. It is quite on the cards that the "bright lads" of the aerodrome will consider it a good "rag" to appropriate some of his choicest vegetables on a dark night. Sergeant Burrows tells me, in fact, that he has already missed some cabbages.

The K.L.M. are now bringing a daily consignment of milk from Holland. It is understood that this milk is from special cows, and is brought to London by air for an invalid.

The Messageries Aériennes suffered from the dislocation of the service by the Channel fog on Friday and Saturday. Capt. Greig, their London manager, tells me that he had to turn-down quite a number of bookings.

Air Express, Ltd., of Pall Mall, arranged for special aeroplanes to carry evening newspapers to the east and south coasts on Whit Monday, when the train service was inadequate for their delivery. The De Havilland Aircraft Company, of Stag Lane, provided the machines and pilots.

Capt. Muir, of the Surrey Flying Services, flew one of that company's "Avros" from Coventry to Croydon on Friday. This machine has been at Coventry for some time, being used for aerial photographic work by Aerofilms, Ltd., Hendon. A machine owned by the Leatherhead Aviation Company flew to Torquay on Monday to bring Lord Offerington to London.

Joy-riding was not a success on Saturday. The crowds did not gather as had been expected, local people evidently going farther afield, and the skeleton transport services keeping others away. Sunday was spoilt by the rain, but a fair crowd gathered on Monday, and Capt. Muir was busy from an early hour.

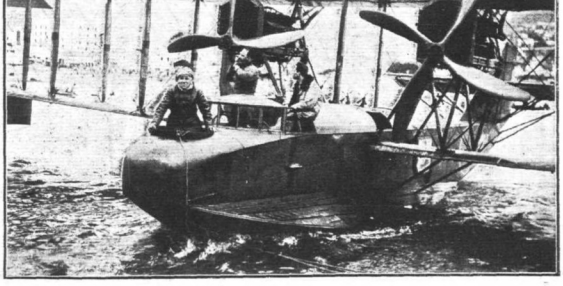
On Monday morning two D.H.6's, owned by the Brompton Motor Company, arrived on the aerodrome *en route* for the Isle of Wight, where they are to be used for "joy-riding." Mr. Tebbit, late of Aircraft Transport and Travel, is fetching a third D.H.6 from Castle Bromwich, and is to fly it direct to the Isle of Wight.

The Trust House provided open-air teas during the holidays, and I understand this is to be a regular feature during the summer. There is now quite a revival of tennis. Some enthusiasts rise at an unearthly hour to get in a few sets before breakfast.

New Canadian Ae.C. Activities

THE Aero Club of Canada has just organised what they call "The Aeronautical Development Section." The work of this section will be to collect, record and distribute all kinds of information of aeronautical interest, and they will probably issue information through special bulletins. The Club, therefore, would greatly appreciate copies of catalogues, aeronautical periodicals, copies of any proceedings of aeronautical societies or organisations, in fact anything in aeronautics.

They also gladly offer their services to manufacturers of aircraft corresponding with them.



Lisbon to Madeira in a flying-boat: As announced in FLIGHT some time ago, a fine flight of 540 miles was made by Portuguese Naval Air Service officers between these two places. Our photograph shows the machine, a British-built F.3, in which the flight was made. The engines are, of course, Rolls-Royce "Eagles." The machine was taken over by the Portuguese Government in May of last year, when it was flown from Calshot to Lisbon, crossing the Bay of Biscay.

AIRISMS FROM THE FOUR WINDS

IT was bound to come. From New York a report is to hand that Laura Bromwell, a 23-year-old "air woman," has looped the loop 199 consecutive times at a flying exhibition at Mineola, Long Island. In the words of one correspondent, she began looping at a height of 8,000 ft. and descended to 4,000 ft. Climbing again to 6,000 ft., she continued to loop until only 400 ft. from the ground, which looks like asking for it. The claim that it is a looping record for a woman may well be, although Fronval, about this time last year, put up the senseless record for a male pilot of 962 loops in 3 hours 52 minutes 10 seconds. It is to be hoped other women emulaters of Miss Bromwell's feat will rest content with being able to say a woman can loop a couple of hundred times if she sets about it. So, there!

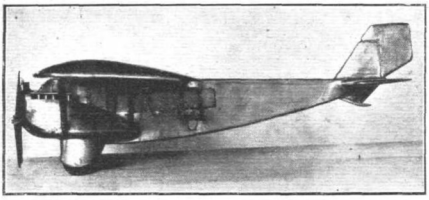
\- - -

LEST you forget, today, Thursday, May 19, the Royal Tournament opens at Olympia, King George attending the inaugural ceremony in person. From the programme, the show promises to be even more thrilling and interesting than before. The Tournament as a whole may be said to be the Envy of the World, and reflects the *esprit de corps* of our Navy, Army and Air Force.

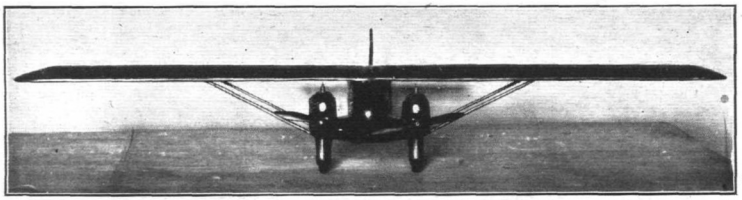
\- - -

WHEN the King opens the Tournament today, he will arrive at the Hammersmith Road entrance about 2.50 p.m., and there will be a guard of honour of the Royal Navy and Brigade of Guards, with band and King's Colour. On May 20 the Duke of Connaught will be present, and probably also the Crown Prince of Japan. On this day a large number of the seats will be allotted to sailors and soldiers wounded in the War who are still receiving treatment in the hospitals. At different times throughout the Tournament it will be visited by the Ambassadors or Ministers from foreign countries and members of the Government.

UNDER the title "L'Indicateur Aérien" our French competitors have just issued an aerial "Bradshaw" for May, No. 1. This sign of the times is due to the enterprise of M. G. Roche d'Estrez, a director of our brilliant French contemporary *L'Air*. This time-table booklet gives particulars of current international services, and is to be published monthly, is clearly arranged for reference, gives all necessary information in regard to times, fares, luggage allowed, etc., and contains a key-map to the routes. Moreover, it is put up in a coloured cover, and costs the modest sum of 50 c. Congratulations to our friends across the Channel.



A NEW ZEPPELIN-DORNIER TWIN-ENGINED AEROPLANE: The keen competition between the Friedrichshafen and Staaken Zeppelin works appears to continue. In our issue of March 17 we published a photograph of the wind-tunnel model of a Staaken twin-engined monoplane. Above is seen the model of Herr Claude Dornier's reply. This machine, it will be seen, has a *fuselage* practically identical to that of the single-engined land machine shown in our issue of March 31, 1921, and single-engined flying boat published on April 21, 1921. The new machine is characterised by a very low position of the engines, in fact one would imagine that they are placed too low. They are mounted on the ends of the usual Dornier wing roots growing out of the sides of the *fuselage*. From the outer lower corners of the engine *nacelles* bracing tubes run to the monoplane wing. Each of the landing wheels is enclosed in a streamline casing.



THE NEW ZEPPELIN-DORNIER TWIN-ENGINED MONOPLANE: This front view of the wind-tunnel model gives a good idea of the clean appearance of the machine.

LIEUT. PARER is reported to be keeping things aviatic to the fore in Australia. He proposes to start on a flight round Australia this month, accompanied by an observer, a mechanic, and a cinematograph operator. His object is to raise money to buy a machine for an attempt to fly across the Pacific.

\- - -

IF reiteration has any real merit, having regard to the continuous warnings which are being sounded by our French allies, Germany should not be allowed to obtain the upper hand in the air. M. André Michelin, the Ae.C. of France President, last week added his views upon the same subject when addressing the members of the club in Paris. He expressed the conviction that Germany was making every effort to build up a powerful aerial fleet. The occasion was the presentation to M. Flandin, a former Under-Secretary of State for Aeronautics, of a gold medal in recognition of his services in the development of French aviation.

The experts were agreed, said M. Michelin, that if Germany could succeed in constructing aeroplanes for commercial purposes without supervision by the Powers, her factories would be capable of manufacturing 42,000 machines yearly. It was known that their so-called commercial aeroplanes

SEINE TO THAMES IN TWO HOURS: On the left General Sykes is seen assisting M. Laurent Eynac from the Vickers "Viking III," and, on the right, Capt. Guest is chatting with General Sykes, while M. Eynac shakes hands with Lord Londonderry.

were being constructed with a view of the possibility of using them as machines of war. The French flying authorities must be on their guard lest some fine night these "aeroplanes of peace" be transformed for use in the further bombardment of the French capital.

\- - -

THE story told last week in such minute detail of how a supposed swindler was chased over the sea by and captured through the assistance of an aeroplane, is worthy of a niche in the progress of aviation. On May 4, it is related by a *Times* correspondent, "a German calling himself Stürmer entered the office of the Copenhagen bankers, Baring and Company, saying he wanted to buy 1,000,000 Austrian crowns (about £600) and offering to pay with a cheque drawn on the "Mitteldeutsche" Bank of Berlin. When the bankers demurred, Stürmer asked them to telegraph to the "Mitteldeutsche" Bank, the telegraphic address of which he gave. This address was telegraphed to, and a reply was received to the effect that the cheque was all right, and the Austrian crowns were paid over.

\- - -

LATER Stürmer went to another banker, M. Bergenholz, who, in addition to telegraphing to the address given by Stürmer, communicated with his own Berlin representative. The latter replied, intimating that Stürmer's cheque should not be honoured.

While at the Bergenholz bank Stürmer had mentioned that he had had business with the firm of Baring. This firm was communicated with by M. Bergenholz, with the result that M. Baring went to the police, who, on making enquiries, learned that Stürmer and another German had left his hotel and gone to Berlin by the morning train.

\- - -

Believing that Stürmer and his friend were engaged in swindling, M. Baring asked the Lundtoffte Aerodrome to supply an aeroplane. In this M. Baring and his partner M. Larsen started for the Gjedser Ferry Harbour, where they arrived in time to see the ferry some distance off the shore. They consequently went on to Warnemünde. Meanwhile the German police were informed by telephone from Gjedser. They took M. Baring and M. Larsen in a motor-car from the Warnemünde Aerodrome to the ferry harbour, where Stürmer and the other German were arrested as they were leaving the Custom House. The two men were searched, and all the Austrian notes were found and given to the Danish bankers, who returned to Copenhagen in their aeroplane.

\- - -

HOLLAND and Poland are both about to issue special air mail stamps, the former stamps, depicting a bird in flight over the sea, being designed by Mr. C. Lebeau, and of 10, 15, and 60 cents denomination; the latter stamp is for the Warsaw-Lodz-Danzig service, and is for 50 marks. The Free Port of Danzig, by the way, has just issued a "permanant" set of air mail stamps—previous issues being "provisionals." These consist of five values:—40 pf. (green), 60 pf. (purple), 1 mk. (carmine), 2 mk. (brown) and 5 mk. (blue), the latter being double size. In each case the design shows a monoplane (Sablatnig ?) zooming over the City of Dantzig.

Crown Prince of Japan Visits Kenley

ON Monday, May 16, His Imperial Highness the Crown Prince of Japan, accompanied by his suite, paid a visit to the Kenley aerodrome, where an impressive display of flying was given. The Crown Prince was received by the Duke of York, who had motored down to Kenley for the occasion. On his arrival the Crown Prince inspected the Guard of Honour, and then made a tour of inspection of the establishment. After the inspection lunch was served in a marquee specially erected for the occasion. Capt. Guest, Secretary of State for Air, presided, and proposed the health of His Imperial Highness. In the afternoon the Crown Prince witnessed a fine display of formation flying, stunts, trench bombing, etc., and expressed himself very pleased with his visit, especially admiring the skill and daring of the pilots. Four members of his suite afterwards were taken for flights, and at three o'clock His Imperial Highness took his departure amid the cheers of several thousand people who had gathered at the aerodrome.

On Tuesday the Prince visited Aldershot, and then motored on to Farnborough, where he witnessed another flying demonstration. Some seven 'planes took part, some very clever evolutions being performed by the smaller fry, a special feature being the upside-down flying, which has been of late a study at the establishment. A parachute descent from a Vickers-Vimy was neatly carried out, and at the close the machines "paraded" into position for inspection by the Crown Prince.

THE ROYAL AIR FORCE

London Gazette, May 3

Memoranda

The following officers are restored to the active list for temp. duty :—

Wing Commander.—R. F. Stapelton-Cotton ; April 14.

Flight Lieutenants.—H. W. Capener, G. P. Powles, F. H. E. Reeve, M. Le B. Smith ; April 9. R. E. Darnton, J. F. Horsey, N. M. MacGregor, H. H. Maddocks, F. J. W. Mellersh, C. N. Russell, W. Smith, M.C., G. F. Smylie, D.S.C. ; April 10. H. Barker, R. S. P. Boby, R. S. Carroll, S. Cockerell, A.F.C., W. H. K. Copeland, H. D. Harman, M.C., B. C. Rice, M.C., L. de G. Sieveking, D.S.C. ; April 11. D. R. Baylis, K. T. Dowding, D.F.C., G. H. Walker, H. S. Ward, F. G. Saunders ; April 12. T. A. Gladstone, A.F.C., L. H. Rochford, D.S.C., D.F.C., S. D. Scott, W. H. N. Shakespeare, C. T. Vachell, M.C. ; April 13. T. C. Chamberlin, A.F.C., R. M. Clifford, R. B. Freeland, W. Huggan, J. Kerr, A.F.C., P. H. Martin, J. M. McAlery, S. J. Sibley ; April 14. L. N. Glaisby, G. V. Leather, R. T. Leather, A.F.C., M. S. Maresden, I. M. Matheson, M.C., A.F.C., M. D. Nares, A. C. Wilson ; April 15. L. P. Scott-Paine, D.S.C. (previously gazetted as "Paine") ; April 16. T. C. Pattinson ; April 17. B. R. Millar ; April 20.

Flying Officers.—E. E. Arnold, D.F.C., H. Arnold, A. K. Bamber, W. F. Knight, P. A. Marriott, A. Storey, A. R. Turpin, W. F. Warner, A. W. Wood ; April 9. D. J. Allardice, J. G. Argles, S. H. Atherly, C. D. Barnard, L. W. Beal, P. A. A. Boss, C. H. Cooper, H. A. D. Currie, W. F. Davenport, J. M. Drysdale, D. S. Glover, B. Hackforth, C. F. P. Haslegrave, G. W. Higgs, W. L. Hope, H. V. Jellicoe, D. E. Nicolle, S. A. Oades, M.C., D. Shanks, J. N. K. Shepherd, A. P. Snelling, E. D. Soar, W. H. Statham, J. L. Waugh, F. F. Wessel, A. S. White, L. D. R. Monier-Williams, E. B. Wilson, O. E. Worsley; April 10. J. L. Airey, P. D. Baker, G. R. Beck, W. Beer, R. D. C. Blake, D.F.C., F. C. G. Broome, H. D. Davis, A.F.C., A. W. Day, W. H. Farrow, D.F.C., A. C. Guyer, H. Haycock, M.C., J. L. Henry, L. W. E. Leage, G. A. Lingham, D.F.C., K. MacKenzie, B. Martin, J. L. Mayer, D.F.C., P. W. Spurr, A. W. Stevenson, D.F.C., C. B. Stringer, C. E. Stuart, F. S. Symondson, M.C., F. C. Troup, W. D. Vernon-Knibbs, O. H. D. Vickers, D. L. Walker, G. T. Williams, E. Wilson ; April 11. C. A. B. Beattie, E. J. N. Brown, J. C. FitzMaurice, C. B. J. Gledhill, F. J. Haney, M.C., D.F.C., H. W. Hollands, R. Hunt, C. E. Kelly, P. D. S. Milnes, S. N. Pike, D.F.C., A. R. M. Scrace-Dickens, R. M. C. Smith, C. C. T. Turner, A. C. Weeks ; April 12. G. F. Bradly, J. W. Grose, A. C. Lutyens, R. K. Morris, W. S. Philcox, E. L. Raworth, L. G. Robinson, S. W. Watson ; April 13. L. C. Burcher, L. Butler, E. H. P. Cave, N. Clemence, T. D. Cole, A. S. Colley, W. R. Coventry, B. F. G. Cunliffe, W. E. Davies, C. H. Graham, D. P. Hadow, C. W. Hamilton, W. B. Long, N. E. Maitland, D. V. D. Marshall, R. K. Muir, E. E. Stammers, T. F. Steele, B. S. Wilcox, D.F.C., P. Wilson, M.C., A. B. Wright, A.F.C. ; April 14. W. M. Ackeby, D.F.C., W. J. Buchanan, D.F.C., F. W. Clark, F. L. Collison, E. C. Dickens, D. A. Hansard, E. F. Haylock, E. L. Ives, T. G. Jefferies, D.F.C., L. L. King, H. G. Mackintosh, C. O. Meeke, C. H. Miller, J. H. Page, S. F. Pickup, W. G. Pudney, A. W. E. Reeves, D.F.C., C. H. Sands, J. S. Stubbs, S. E. Taylor, G. N. Trace, G. V. Wheatley, R. S. Wimpenny ; April 15. T. H. French, D.F.C., A. V. Hurley, C. A. Pike ; April 16. G. T. Griffith ; April 17. J. Hart, A. R. MacDonald ; April 18.

Pilot Officers.—T. G. Braine, L. C. Hillman, A. H. Partner ; April 9. C. H. E. Coles, D. I. M. Kennard, S. A. Lane, A. J. R. Murray, E. A. D. Watmough ; April 10. H. C. E. Adlard, K. R. Angus, H. E. Brenack, K. D. Foster, W. V. Thomas, J. F. L. Wood ; April 11. G. R. S. Browne, F. J. Brunton, A. Glen, G. F. Taylor ; April 12. S. B. Atkinson, L. G. Lucas ; April 13. F. A. Douglas, H. W. Lester, L. W. Thres, A. F. Wallace ; April 14. P. Allden, H. S. R. Burt, V. W. Helps, W. L. Lewis, H. D. McLaren, F. G. Reid, J. S. Smith, E. H. B. Weatherall ; April 15. A. E. Cuthbert, H. R. McL. Reid ; April 16. E. B. Fox Auld ; April 18.

London Gazette, May 6.

Permanent Commissions

Flight Lieut. H. G. Hutchinson, M.B.E., is restored to the active list from half-pay ; April 29 (substituted for *Gazette*, May 3).

Flying Branch

Lieut. D. R. Morgan is transfd. to the Unemployed List ; Jan. 18, 1919 (substituted for *Gazette*, Feb. 4, 1919, March 28, 1919, and April 5).

Technical Branch

Capt. A. J. W. Giles is transfd. to the Unemployed List ; Oct. 10, 1919 (substituted for *Gazette*, Nov. 30, 1920).

Medical Branch

C. A. E. I. Brownlee, M.B., is granted a temp. commn. as a Flight Lieut., with effect from and with seniority of ; May 9. Capt. C. E. Lowe is transfd. to the Unemployed List ; April 1.

Memoranda

Hon. Sec. Lieut. G. W. Keeble relinquishes his hon. commn. on joining the T.F.

London Gazette, May 10

The following appointment is made at the Air Ministry :—

Dep. Dir., Class 1.—Group Capt. J. A. Chamier, C.M.G., D.S.O., O.B.E. ; Jan. 1.

Permanent Commissions

Wing-Comdr. R. G. Blomfield, D.S.O. is placed on half-pay, Scale A ; May 4. Flying-officer R. J. Rodwell is placed on half-pay, Scale B, from March 3 to March 31, inclusive (substituted for *Gazette*, April 22).

Stores Branch

Flying-officer A. J. Briddon is granted a permanent commn. retaining his present substantive rank and seny. ; June 17, 1920 (since promoted).

Short Service Commissions

The following are granted short service commns. as Pilot Officers on probation with effect from and seny. April 28 :—S. R. Boldero ; A. D. H. Foster* (substituted for *Gazette*, March 29) ; W. J. Gayes, A. E. L. Scott-Atkinson, D. J. Hugh-Jones,* E. A. Slater,* K. R. Thomas* (* previously served in R.A.F.).

Gazette, Oct. 24, 1919, appointing Flying-Officer G. F. Moody to a short service commn. is cancelled.

Re-Seconding

Lieut. J. S. Windsor, M.C., S. Wales Bord., is granted temp. commn. as Flight-Lieut., retaining his original seny. in that rank, on re-seconding for four years' duty with R.A.F. ; April 21.

Flying Branch

Gazette, Sept. 6, 1918, relating to Prob. Flight-Officer H. Woodruff, is cancelled.

Administrative Branch

Lieut. P. H. S. Tozer (unempld. list) relinquishes his temp. commn., and is permitted to retain his rank.

Technical Branch

Transfd. to unempld. list.—Maj. M. C. Rousseau, Capt. W. G. Chapman May 1.

PERSONALS

Married

Wing-Commander SIDNEY SMITH, D.S.O., A.F.C., of the Air Ministry, London, was married on Wednesday, May 11, at St. Wulfram's Church, Grantham, to WINIFRED POOLE BERRY, only child of Dr. and Mrs. H. Poole Berry, The Priory, Grantham.

To be Married

The engagement is announced between Flight-Lieut. VINCENT BUXTON, O.B.E., R.A.F., late the Leicestershire Regt., only son of Mr. and Mrs. W. H. Buxton, of "Bryn Coed," St. Asaph, North Wales, and VIOLETTE GLADYS, elder daughter of Mr. and Mrs. ALFRED H. D'COSTA, of "Asgarth," Jamaica, and 2, Montagu Mansions, Portman Square, W. 1.

The engagement is announced between Flying Officer E. P. DAMPIER, R.A.F., Felixstowe, son of Mr. and Mrs. W. C. Dampier, of Gillingham, Kent, and MURIEL, elder daughter of Mr. and Mrs. ARTHUR WEBB, of Altnacealgach, Colchester.

The engagement is announced between Flying Officer Wm. GREVILLE M. NICHOLL, R.A.F., third son of the late Mr. William Nicholl, F.R.A.M., and SYDNEY JESSIE, only child of the late Mr. CECIL B. GEDGE and Mrs. GEDGE, of Bracondale, Strawberry Hill, and grandchild of Mr. Sydney Gedge, of Mitcham Hall, Surrey, and the late Mr. Benjamin Bickley Rogers, Litt.D.

Pilot Saved by Parachute

THE advocates of parachutes for life saving on board aeroplanes will be pleased to learn that at last there is a *bona fide* case of the life of a pilot having been saved by jumping from his machine on a parachute. The pilot in question is Mr. C. C. Eversole of the American Air Mail Service, who was flying a twin-engined machine a few miles out of Minneapolis. At a height of about 2,500 ft., the starboard engine developed trouble, and the resulting vibration was so great that the alignment of the machine was upset and she became uncontrollable. First the machine would dive, then nose up, then get into a dive again. Mr. Eversole tried to regain control, but unsuccessfully. As the machine had lost a good deal of altitude during these evolutions, he made up his mind to "step off," which he successfully did. The machine crashed. Evil-minded persons suggested that it was not really necessary for Mr. Eversole to have abandoned ship, and he has now proceeded to Washington to report to the officials. The parachute used was manufactured by the Floyd Smith Company.

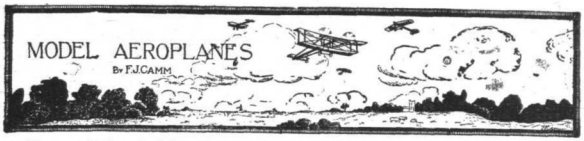
Mine-Laying from Aeroplanes.

THE American naval authorities are reported to have been carrying out in Chesapeake Bay experiments in mine-laying from the air.

The apparatus comprises the mine and its anchor and cable, and a special form of weight-supporting parachute.

When the aircraft has flown to the spot indicated, the mine, it is explained, is released, and its descent towards the water kept at a reasonable speed by the retarding influence of the parachute. Directly the mine strikes the water the parachute is detached automatically and floats away to sink some distance off, leaving the mine duly laid at the required point and depth. In this way squadrons of aeroplanes, it is claimed, could drop mines so as to form a mine-field quickly at any required point.

FLIGHT



NOTE.—*All communications should be addressed to the Model Editor. A stamp should be enclosed for a postal reply.*

A Built-up Fuselage Tractor Monoplane

THE *fuselage* of this model is a solid block of balsa wood, rather lighter than a similar *fuselage* built from spars and fabric; it is 3 ins. deep and $\frac{1}{2}$ in. thick. A portion of it is cut away as shown in the drawing to admit the rubber motor.

The screw has a pitch of 22 ins. and a diameter of 8 ins., and although the model is of small dimensions, it is capable of 50 secs. duration.

A bearing of the form shown in the side and plan views is cut from 18-gauge brass. Only 10 ft. of $\frac{1}{4}$-in. strip rubber is required to supply motive power.

The chassis is composed of thin bamboo, bound and glued to the *fuselage* in the position shown, an 18-s.w.g. axle passing from the apex of the two vees; wheels are 2 ins. diameter.

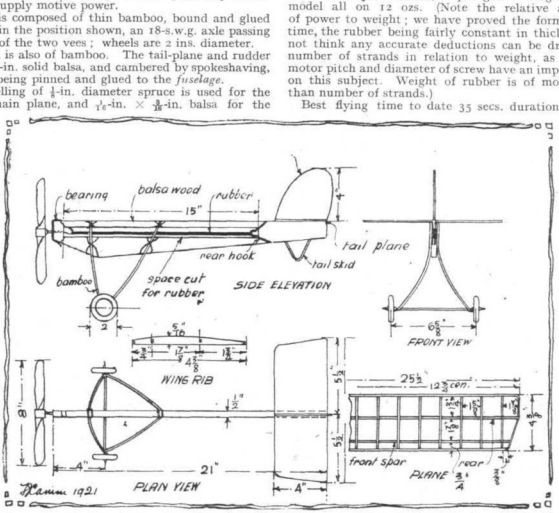
The tail skid is also of bamboo. The tail-plane and rudder are cut from $\frac{3}{16}$-in. solid balsa, and cambered by spokeshaving, the tail plane being pinned and glued to the *fuselage*.

Round dowelling of $\frac{1}{4}$-in. diameter spruce is used for the spars of the main plane, and $\frac{1}{16}$-in. $\times$ $\frac{1}{16}$-in. balsa for the ribs, bamboo being used for the swept ends. The lightest silk should be used, preferably the cream transparent variety, sold by advertisers in these pages.

The plane is fastened to the *fuselage* by a rubber band. The *fuselage* should be covered with fabric to render it waterproof and to prevent splitting.

Length of 'bus overall, 2 ft. 6 ins.; length of *fuselage*, 2 ft.; wing span, 3 ft. 6 ins.; tail span, 12$\frac{1}{2}$ ins.; chord, 6 ins.; plane chord, 6$\frac{1}{2}$ ins.; aspect ratio, 6$\frac{1}{2}$ to 1; fin area, 12 square ins. The machine is a monoplane, and the wing section is American No. 15, double surfaced. (The only difference to the actual American section is that the under surface is dead flat.) *Fuselage*, bamboo constructed, V-shaped or triangular under section, with turtle back; seats, etc., complete; geared motor, with 12-in. diameter prop., 18-in. pitch, driven by 12 strands $\frac{1}{4}$-in. rubber, 6 per gear: weight of complete model all on 12 ozs. (Note the relative approximation of power to weight; we have proved the formula time after time, the rubber being fairly constant in thickness. We do not think any accurate deductions can be drawn from the number of strands in relation to weight, as the length of motor pitch and diameter of screw have an important bearing on this subject. Weight of rubber is of more importance than number of strands.)

Best flying time to date 35 secs. duration, approximate distance 400 yards (not measured exactly). Repeated flights have been made round about this figure, but we shall have more to say regarding this 'bus later.



Another machine, not quite so elaborate in construction, but nevertheless a really fine semi-scale Parasol mono., has been built and flown by Mr. Colehatch, this being made more after the style of the real body, but with ply-wood formers instead of braced bays; it has a single-surface plane and tail (*all of wood*), twin gear and detachable motor rod.

It is a very neat little 'bus, the c.g. being brought well forward by a lead plate let into the front of the machine. This model has only one square foot of supporting surface. *It carries a loading of 10 ozs.*, power ratio is under that of Mr. Coleman's 'bus, being only 4 strands per gear, 10-in. prop., 10-in. pitch; approx. duration of this 'bus up to date 30 secs.

The most remarkable thing concerning this model is the long flat glide, almost equalling the length of flight.

This ends the experiments with this type of model for the present, but when we have our private ground (as we hope to shortly), they will be considerably extended, as there are several more waiting to come out, and as many more being built.

Other members, too, with the usual hollow spar tractor, have been keeping up the sporting side of the Club,

Finsbury and District Model Research Association

SINCE sending the last report the weather has been rather against any flying of a spectacular nature. However, we have managed to experiment to some extent, chiefly in regard to the enclosed *fuselage* models. A duration of 34 seconds with a very small motor rod possessing only 16 inches rubber run has been obtained with one of these machines. This model is fitted with the thick section wing peculiar to the Junker.

Another 'bus flown by Mr. Coleman, and shown at the Aero Show last year, has been giving some excellent performances, which is all the more remarkable when one realises that this is the real thing in miniature.

A few general dimensions of this 'bus may be useful to an intending builder, and will, perhaps, help the reader to understand just how far the club has advanced with this type of model.

while others have been experimenting. Mr. Whelpton being specially worthy of mention in this direction, consistently flying a small tractor that seems likely to break the altitude record, with a slightly larger prop. (10-in. is fitted at present). This 'bus also has a long steady glide, very little variation in speed being apparent.

Another old member, Mr. Richards, has turned up recently, and is likely to get going again soon. Mr. Richards, by the way, has already brought out his first model of the season, and was making rings round some of the other members' machines. He is also building an enclosed 'bus, with several ideas of his own worked in, and we hope soon to see this out and in flying trim.

Another 'bus worthy of mention is a large one by the writer, with 4-ft. span high aspect ratio, and high left wing. It is very slow in flight, but a splendid climber, descending to a point where it could be just reached up to and pulled down ready for another wind. This too will give a good account of itself later with the better weather.

Old aeromodellists will be interested to know that Mr. A. B. Clark and Mr. Ripon of the old Black Heath Club are again taking up model flying, and are expecting to join the Association. With the help of the old members and various prospective new ones, we hope to put the old Club in the front rank of Research Associations in this country; indeed, we hope to become the premier club in the United Kingdom.

Mr. Ripon has already made a start by bringing out a smart little enclosed machine. Many novel fittings are included in this model. The most important is a swivelling arrangement for the prop., which allows it on contact with any hard object to bend over and avoid breakage. This is only one of many innovations, and I hope to be able to describe this 'bus and give some particulars as to flying shortly.

C. J. BURCHELL, Hon. Sec.

63, Belmont Street,
Kentish Town, N.W. 5.

Air Force Dress at the King's Levée

THE Lord Chamberlain is authorised to state that the King intends to hold a levée, if circumstances permit, at St. James's Palace, on Monday, the 30th instant, at 11.30 a.m. Officers in possession of full-dress uniform, full dress. Officers not in possession of full-dress uniform, service dress.

Hendon Aerodrome Re-starts

IT has been decided once again to open Hendon Aerodrome for week-end flying. It is a helpful decision of Mr. Grahame-White, and it is to be hoped his enterprise will be rewarded by generous public support. This move should serve to get the 'drome into smooth working order against the time the scheduled sporting events start in earnest down Hendon way.

Bells in Memory of Airman

ALDERMAN WILLIS and his wife have, in memory of their R.F.C. son, raised the peal of bells in Rochester Cathedral to ten. These were dedicated on May 14. In addition the eight original bells have been re-cast, one by the U.S. ship "Pittsburg," in memory of her visit to Chatham.

Another Newspaper Uses the Air-Route

WE welcome the enterprise of the *Chemist and Druggist*, who last week dispatched the Netherlands section of its Continental issue to Holland by aeroplane. The consignment was carried by the K.L.M. Air Line (for which Handley Page Transport, Ltd., are the London agents), and in this way most of the readers of the journal in Holland receive it within 12 hours of printing, and at least 48 hours earlier than by ordinary post.

Pilots and Duty

FROM Paris is reported an example of great devotion to duty shown by an airman named Marcel Slitcher, who was piloting a postal aeroplane in Spain. As the result of a failure of the motor near Alicante, the machine began to come down rapidly. When the pilot saw that there was no chance of making a safe landing, he threw overboard the bag of letters. The machine crashed and the pilot was killed, but the letters were recovered undamaged.

Whilst thoroughly appreciating the spirit breathed in this paragraph, we should like a few details, as we hardly appreciate the necessity for jetsoning the mail bags, as they could hardly have run much greater risk of damage had they been left in the machine. Perhaps the possibility of fire following a crash was in the mind of the pilot.

IMPORTS AND EXPORTS, 1920-1921

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; and for 1920, see "FLIGHT" for January 13, 1921.

	Imports		Exports		Re-Exportation	
	1920.	1921.	1920.	1921.	1920.	1921.
	£	£	£	£	£	£
Jan. ...	2,323	4,459	32,752	87,128	697	2,285
Feb. ...	9,320	2,379	68,932	59,829	—	19
Mar. ...	2,092	14	67,600	118,199	—	1,565
April...	5,918	1,370	148,484	138,983	—	450
	19,653	8,222	317,768	404,139	697	4,319

PUBLICATIONS RECEIVED

Rules of Golf. The Royal Insurance Co., Ltd., 24-28, Lombard Street, London, E.C.3.

Technical Note No. 41. Influence of Span and Load per Square Metre on the Air Forces of the Supporting Surface. By A. Betz. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. internal combustion; m. = motors

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1917.

Published May 19, 1921

2,760. H. FOWLER and A. L. BIRD. Carburettors for aero-engines. (161,991.)

APPLIED FOR IN 1920

Published May 19, 1921

2,687. E. HOGHTON and PORTHOLME AIRCRAFT CO., LTD. Wireless telegraphy and telephony. (162,097.)

3,304. D. J. MOONEY and E. E. BROWN. Metal spars, longerons, etc. (162,208.)

5,658. S. MORIL. Airship mooring masts. (162,135.)

15,084. A. H. BATES. Clinometers. (162,205.)

15,606. A. HEINEN and BALLONHULLEN GES. Parachutes. (144,676.)

18,281. GOODYEAR TYRE AND RUBBER CO. Suspension patch for balloons. (146,339.)

NOTICE TO ADVERTISERS

All Advertisement Copy and Blocks must be delivered at the Offices of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, not later than 12 o'clock on Saturday in each week for the following week's issue.

FLIGHT

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.
Telegraphic address: Truditur, Westcent, London.
Telephone: Gerrard 1828.

SUBSCRIPTION RATES

"FLIGHT" *will be forwarded, post free, at the following rates*:—

UNITED KINGDOM	s.	d.	ABROAD*	s.	d.
3 Months, Post Free...	7	7	3 Months, Post Free...	8	3
6 " " ...	15	2	6 " " ...	16	6
12 " " ...	30	4	12 " " ...	33	0

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates.

* *European subscriptions must be remitted in British currency.*

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, *and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.*

Should any difficulty be experienced in procuring "FLIGHT" *from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.*