

BULLETINS

OF THE

Aerial Experiment Association

Bulletin No. XXXI Issued MONDAY, FEB. 8, 1909

MR. McCURDY'S COPY.

BEINN BHREAGH, NEAR BADDECK, NOVA SCOTIA

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Bulletins of the Aerial Experiment Association.

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BULLETIN NO. XXXI ISSUED MONDAY FEB. 8, 1909.

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Beinn Bhreagh, Near Baddeck, Nova Scotia.

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1. Mr. Blanchard's drawings, Figs. 1, 2, 3,
illustrating his remarks about sustaining
surfaces.

PATENT MATTERS.

Jan. 28, 1909:-Attention is directed to the correspondence with Messrs. Mauro, Cameron, Lewis & Massie relating to the pending application for a patent on the Hammondsport work of the Association. The application has not yet been filed in the Patent Office and will not be filed until we have decided upon the names to be appended to it as inventors. We will take this matter up for decision as soon as Mr. Curtiss arrives. Mr. and Mrs. Curtiss are now on their way here. A telegram from Mr. Curtiss from Bangor, Maine led us to expect their arrival at Iona last night but they have not yet appeared. A.G.B.

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Feb. 5, 1909:-Mr. and Mrs. Curtiss arrived at Beinn Bhreagh Friday, Jan. 29. A formal meeting of the Aerial Experiment Association was held the same evening, and the following members were present:- A.G. Bell, F.W. Baldwin, J.A.D. McCurdy, and G.H. Curtiss; also present by invitation Mr. Gardiner H. Bell. The subject of the inventership of the various claims was discussed. The discussion was continued Monday, Feb. 1, until all the claims had been taken up seriatim. My letter to Mauro, Cameron, Lewis & Massie of Feb. 2 giving the results of our investigation (see this Bulletin) has been unanimously approved. A.G.B.

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Mauro, Cameron, Lewis & Massie to Bell.

To A. G. Bell,
Baddeck, N.S.

Washington, D.C., Jan. 19, 1909:- We herewith enclose carbon copy of the specification in the Aerodrome case for consideration of yourself and your associates, and particularly for you to discuss and determine as to who are to be included as the joint inventors of the subject-matter of the claims.

Mr. Cameron is very clearly of the opinion that the entire specification has been much improved as the result of the suggestions which you have offered, and also feels that the claims have been much strengthened particularly by the addition of the present claims 13 to 16 inclusive, and by omitting from many of the claims the suggestion that the lateral rudders are necessarily balancing rudders; the omission of this word from the claims and the clause in the specification which points out that these rudders may perform other functions materially increase the scope of the application.

As soon as we receive instructions from you as to who are the inventors of the subject-matter claimed we will prepare a power of attorney for execution and send it to you together with the copy to be officially filed in the Patent Office.

We presume that you are aware of the requirements of the law as to what constitutes joint inventership, but in order that there may be no misunderstanding on this subject,

we have to say that whenever two or more persons jointly collaborate to produce a given invention, even though one of the parties contributes but a very small proportion thereof, he is nevertheless a joint inventor with the others if his contribution entered in the invention to be covered by the patent. And the invention to be covered by the patent is, as you will understand, to be determined by the claims.

For the purpose of determining whether or not Lieut. Selfridge was a joint inventor of any part of the subject-matter claimed, we would suggest that the members of the A.E.A. get together and carefully read each of the claims in turn and decide whether Lieut. Selfridge in any way contributed to the perfection of the invention defined by any of said claims. If he did, then he was a joint inventor. If he did not, then he was not a joint inventor. The same of course is true in regard to every other member of the Association.

Awaiting your decision on this question and thanking you for the patience you have displayed and the helpful suggestion which you have offered, we remain,

Yours very truly,

(Signed) Mauro, Cameron, Lewis & Massie.

Bell to Mauro, Cameron, Lewis & Massie.

Messrs. Mauro, Cameron, Lewis & Massie,
620 F Street, Washington, D.C.

Baddeck, N.S., Jan. 25, 1909:- Your note of Jan. 19 was received in due course together with a copy of the amended specification for the consideration of the members of the Aerial Experiment Association.

I have postponed the discussion of the names to be appended to the application as inventors, until the arrival of Mr. G.H. Curtiss from Hammondsport, so that all the surviving members of the Association may be together at the time.

Mr. Curtiss has not yet arrived but is expected here very soon. In the meantime, while waiting for him, Mr. Baldwin and Mr. McGurdy have gone over the specification with me to see whether we can suggest any amendments; and I enclose a few points that have come up during our discussion for your consideration.

I should be much obliged if you could send a telegram for our guidance in deciding the matter of inventorship concerning the following points on which we need light.

(1) If a member has contributed the subject-matter of some of the claims and not of others, is he entitled to sign the application as a joint inventor of the whole?

(2) If he has contributed suggestions described in the body of the specification but not claimed, is he a joint inventor?

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(3) If he has contributed suggestions embodied in our machines, but neither described nor claimed in the specification, is he a joint inventor?

(4) My own impression is that a joint inventor must have contributed some of the matter claimed; and that if he has contributed to one claim he is a part inventor of the whole. Suppose however that this claim should not be allowed by the Patent Office what would his status be? Would his name have to be removed from the list of signers after the patent has been allowed?

Yours sincerely,

(Signed) Alexander Graham Bell.

SUGGESTIONS.

(Jan. 25, 1909)

Claim I:- Would it be advisable to specify that the supporting surfaces are concave or convex "in the lateral direction".

We use surfaces which are concave-convex both in the fore-and-aft direction, and in the lateral direction. They are placed with their lateral concavities towards one another but not their fore-and-aft concavities. I presume that the claim, as expressed, would cover the latter case also, although we make no reference in the body of the specification to the possibility of arranging surfaces with the fore-and-aft concavities towards one another; nor to any advantages that might arise from the arrangement, unless the last paragraph on p. 3 can be interpreted to apply to curvatures

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in both directions (fore-and-aft and lateral). Can we interpret a claim to cover cases not specified or alluded to in the body of the specification?

On p. 12, line 18 allusion is made to the "spar like" tapering of the machine. An ideal "spar" would be cylindrical in cross-section, thick in the middle and tapering gradually towards the ends.

If the superposed supporting surfaces formed portions of the surface of such a spar, the concave sides of both surfaces would be towards one another in whatever direction we measured the concavity. Such an arrangement presents advantages from a structural point of view, permitting of bow-string trussing in both the lateral and fore-and-aft directions.

The opposed fore-and-aft curvatures would also minimize the disturbing effects of sudden gusts of wind from the front or rear just as the opposed lateral curvatures minimize the disturbing effects of side gusts. We have not however employed this construction in our machines because the lifting-power of a supporting surface is greater when its concave side is below than when it is above, so that we have preferred to have all our supporting surfaces concave below in the fore-and-aft direction.

If you consider it desirable to change the language of the claim so as to refer only to surfaces curved "in the lateral direction" then the word "concave-convex" should be also limited in claims, 2,3,5,6,7,8,9,10,11,12,18,19,32 & 42.

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I am by no means certain that any change would be an improvement, but if unchanged it might be well to make some reference in the body of the specification to the possibility of utilising opposed fore-and-aft concavities.

Specification p. 15 line 3:- "have as their sole function". Cut out the word "sole" so as to read:- "Have as their function". It seems to be unnecessary to limit the function here especially as we point out later that these rudders may have other functions. A somewhat similar expression occurs on p. 19 lines 4-5:- "when the balancing rudders are employed solely for maintaining or restoring the equilibrium of the machine etc". This is unobjectionable for the function is not limited:- It is only "when" they are employed solely for this purpose etc.

Claim 13:- This is a broad claim of great importance if it can be sustained. Mr. Baldwin suggests that a still broader claim might be added:-

"In a flying-machine a truss-like structure containing members thin in cross-section in one direction, and means supporting said members against deflection in that direction".

Mr. Baldwin thinks that none of the claims so far prepared covers an important case he has in mind to remedy certain defects found in the Phillips flying-machine.

In this machine a large number of superposed wooden supporting surfaces somewhat resembling the slats in a Venetian Blind, are employed. Theoretically the surfaces, which

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are aero-curves of a good design, should have great lifting power; but the machine did not, as a matter of fact, develop the efficiency expected.

Mr. Baldwin thinks that the trouble lay in the large number of vertical struts required to hold the horizontal slats in position, which by their weight and head resistance reduced the efficiency of the machine as a whole. Most of these vertical struts could he says, be replaced by vertical tension wires producing rigidity without much weight or head resistance.

In this case the members requiring support against deflection would be horizontal instead of as in our case vertical; and the tension wires would be vertical instead of horizontal as in the cases alluded to in our specification. Claim 13 would cover the case if the horizontal slats could be considered as "compression" members, which is doubtful. In claims 14 and 16 the members to be supported are distinctly stated to be vertical; and in claim 15 the members are supported against "lateral" deflection. It thus appears that none of the claims, with the possible exception of 13, covers the case Baldwin has in mind.

Claim 14:- There is a mistake in the wording of this claim. It says that the vertical compression members are thin in "a fore-and-aft" direction. It should read "thin in the lateral direction".

Claim 20, line 5:- The claim states that the lateral rudders are each mounted to turn "on a horizontal axis".

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This is not clear; for a rudder mounted with its axis parallel to the fore-and-aft medial line of the structure might be horizontal, but would not constitute the kind of rudder we use, in which the axes are substantially at right angles to the medial line of the structure.

Mr. McCurdy also points out that the axes actually shown in the specification are not horizontal, but only approximately so, following the general curve of the front edge of the machine.

I would point out that horizontality is not a necessary feature either of the axes or surfaces of the rudders.

In their normal position the surfaces are driven edgewise through the air; fore-and-aft lines in the planes of the surfaces being parallel to the line of advance, or line of thrust. The axes are substantially at right angles to the line of advance or line of thrust, but are not necessarily horizontal. We aim to make them radial to the central longitudinal axis of the machine but considerable divergencies from the radial direction would not materially interfere with their operation.

How would it do to amend claim 20 lines 4-5, "each mounted to turn on a horizontal axis" by cutting out the words "on a horizontal axis" and substituting "upon an axis at right angles to the said fore-and-aft medial line of the structure and substantially radial thereto"; or "upon an axis radial to the said fore-and-aft medial line".

I do not think that any of the claims for the balancing rudders cover a case in which the radial axes are oblique or vertical; for, claims, 17, 18, 19, 20, 21, 22, 23, 24, 25(?) 26, 27, 28, 29, 30, refer to the balancing rudders in such a way as to indicate that their surfaces are normally horizontal. In some of them they speak of "a zero angle of incidence", that is horizontal. In others the axis of rotation is horizontal etc. I don't think any of them would cover a rudder placed above the machine with its radial axis vertical and its surface vertical. So that none of the claims seem to me to cover the essential idea involved that the axis should be at right angles to the medial line of the structure and substantially radial thereto.

Claim 31: Should I think be amended so that no portion of a balancing rudder should be described as constituting "a part" (line 3) of the supporting surfaces, in view of the Wright patents. The projection forming the axis for the rudder should be described as something added on, and distinct from the supporting surfaces, and not "a part" of them.

Claim 34, line 5: Mr. McCurdy points out that the shaft referred to does not revolve but only the wheel attached to it.

Claim 36: Same remark. A "revolvable" shaft is incorrect. It is only the wheel attached to it that revolves.

Claim 42: Mr. Baldwin thinks that this claim should be omitted, as some detail of the method employed in rendering the truss members adjustable was not original with any of

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the members. I have pointed out to him that we do not claim this by itself, but only as an element in a combination which is new and original with us or some of us, so that I personally see no necessity for cutting it out, although I have no objection to doing so if thought best. A.G.B.

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Telegram.

Mauro, Cameron, Lewis & Massie to Bell.

Washington, D.C., Jan. 30, 1902:- Answer to your first question yes. Second and third questions no. Fourth question new application would have to be filed.

(Signed) M.C.Lewis & Massie.

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Bell to Mauro, Cameron, Lewis & Massie.

To Messrs. Mauro, Cameron, Lewis & Massie,
620 F Street, N.W., Washington, D.C.

Baddeck, N.S., Feb. 2, 1909:- Many thanks for your telegram of the 30th ult.

Messrs. McCurdy, Baldwin and Curtiss are here, and have gone over very carefully with me your specification on the Hammondsport work of the Aerial Experiment Association; and, in accordance with the recommendation contained in your note of Jan. 19, we have taken up the claims seriatim to ascertain who had, and who had not, contributed the subject-matter of each claim.

As the result of our investigation we have unanimously come to the following conclusions:-

- (1) McCurdy, Baldwin, Curtiss, Selfridge, and Bell have each contributed to the subject-matter of some of the claims.
- (2) Mr. F.W. Baldwin alone has contributed the subject-matter of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15 & 16.

Under these circumstances we should be glad to have your opinion as to whether it would be better to make this a joint application in the names of all the members of the Aerial Experiment Association, including Lieut. Selfridge; or to make two applications, one in the name of Mr. F.W. Baldwin alone, and the other a joint application.

We should be much obliged if, in deciding this matter, you would consult with Mr. Charles J. Bell who will act as Trustee of the Association; and to whom, as such Trustee, the patents should be assigned. (Signed) Alexander Graham Bell

Blanchard to Bell.

To A.G. Bell,
Baddeck, N.S.

Baddeck, N.S., Feb. 2, 1909:- Please find enclosed a short illustrated article which may commend itself to the "Bulletin".

(Signed) H. Percy Blanchard.

DISTRIBUTION OF SUSTAINING PLANES.

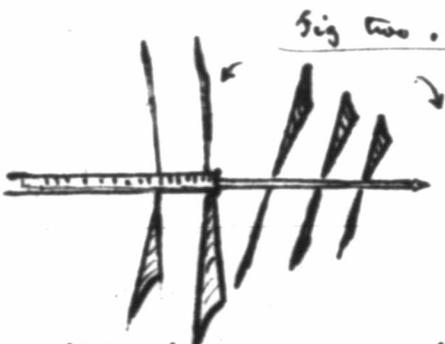
The accompanying sketch, Fig. I, combines two thoughts. Dr. Bell has found that a large single surface has not the sustaining power of the same surface broken up into distributed units. This is one of the distinguishing features of the tetrahedral cell. Following out the same thought and applying it to the single or double decker Wright machine or its like, it might be possible to eliminate more than half the surface friction by subdividing the plane into "slats". These for more efficiency might be concaved on the bottom. It is possible that a very thin pine or spruce slat combining rigidity with lightness might be more practicable than silk considering the "backing" it would need. As this slat would need to be manufactured as moulding is made, a ribbed edge and fluted back (as Fig. 3) could be given for strength.

Fig. I shows an end of a wing of a combined slatted aeroplane, with a three way "nest" of tetras. The view is from below. An open space of its own size is left between each "nest". In this way also is equalized the air resistance above with below.

Fig one -



Fig 3
cross section of
strip.



Combination "Leta" with planes.
 This "double disk" of planes is
 somewhat from usual in that
 it is made of thin strips of pine,
 concave plowed shaped by machinery,
 and the strips about double their
 own width apart, with air space between

Several light blades for propellers
 instead of one large blade -
 three small (front) blades to right
 2 hinder ones to left - Concentric all.

H. P. B.

Feb 17/09 -

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In Fig. 3 there is shown the same thought of distributed surfaces. With the blades mere knife blades and distributed a high speed might be maintained with great efficiency and yet avoid "cavitation". The picture shows the two sets of propellers rotating contra as driven by the turbine referred to in a previous article.

H. Percy Blanchard.

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Bell to Blanchard.

To H. Percy Blanchard, Esq.,
Baddeck, N.S.

Baddeck, N.S., Feb. 2, 1909:- Many thanks for your note and interesting article entitled "Distribution of Sustaining Planes".

Your are mistaken in supposing that I have found "that a large single surface has not the sustaining power of the same surface broken up into distributed units".

The contrary is the case. The advantage of the breaking up of the surface has reference to increase of stability produced by limiting the possible change in the position of the center of pressure to a small surface instead of a large one.

The "sustaining power" seems to be greater with a continuous surface than with the same surface cut up into smaller pieces.

(Signed) Alexander Graham Bell.

REPORT CONCERNING SHIPMENT OF THE "SILVER-DART:

By the Secretary of the A. E. A.

Beinn Bhreagh, Feb. 5, 1909:- We have not yet received any acknowledgment of receipt of the cheque for \$86.91 sent to the Express Agent at Iona as full payment of the expressage on the "Silver-Dart" as by his bill of Jan. 15, although we know that he did receive it, from Mr. Curtiss who happened to be there at the time, and from Mr. Dave Dunlap the mail-carrier.

In order to find out whether the Company has accepted the cheque the following telegram has been sent to Bell & Company, Bankers, Washington, D.C., upon which bank the cheque was drawn.

Telegram.McCurdy to Bell & Co.

Baddeck, Feb. 4, 1909:- Please wire me when cheque number seventy-two payable MacDonald, Agent Canadian Express Co. is received.

(Signed) J.A.D. McCurdy.

Mr. David Dunlap has handed to us a copy of a telegram from J. Bryce to the Express Agent at Iona, dated Jan. 27, which reads as follows:-

Telegram.Bryce to Agent Can. Exp. Co. Iona.

Montreal Jan. 27, 1909:- Graham Bell wires he is prepared to pay regular rate but will not pay for special car. Right charges from Suspension Bridge to Iona, even if all of shipment handled in regular cars would be double rate, or one hundred and sixty dollars and twenty-eight cents. Deliver on payment of this amount. Advise if delivery accepted and rush empty car back.

(Signed) J. Bryce.

After conference with Mr. Bell I have to-day sent the following telegram to the Express Agent at Iona:-

Telegram.McCurdy to MacDonald.

Baddock, Feb. 5, 1909:-Please wire acknowledgment of receipt of cheque mailed you Jan. 28, and state whether we can have delivery at once.

(Signed) J.A.D. McCurdy.

This brings the matter up to date.

(Signed) J.A.D. McCurdy,
Sec. A.E.A.

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LANCHESTER'S COMPARISON OF THE WRIGHT MACHINE WITH THE VOISIN MACHINE: By J.A.D. McCurdy.

Bainbridge, Feb. 3, 1909:- In the British Aeronautical Journal for Jan. 1909, Mr. F.W. Lanchester institutes an interesting comparison between the Wright machine and the Voisin machine.

The Wright Machine:- The Wright machine of the present day weighs complete, when mounted by the aviator, 1100 lbs., and has a total supporting surface of 500 sq. ft. approximately, which gives a flying weight of 2.2 lbs. to the sq. ft. The ordinary velocity of flight is 40 miles an hour, or 58 feet per second. The surfaces are approximately 40 feet long, 6.2 feet wide, the plan form being nearly rectangular, the extreme ends only being partially cut away and rounded off. The total area of auxiliary surfaces, including front control, rudder, and vertical half-moon fins, is about 150 sq. ft. The motor used, four cylinder vertical type $4 \frac{1}{4} \times 4$; total weight of the motor is 200 lbs., and its power 24 B.H.P. at a speed of 1200 R.P.M.

Mr. Wright has stated to the author, Mr. F.W. Lanchester, that he could fly with as little as 15 or 16 H.P., carrying no passenger. His gliding angle he reported to be about 7° .

The Voisin Machine:- The Voisin machine, as exemplified by that of Mr. Farman, weighs complete, with Mr. Farman, 1540 lbs., and has a total supporting surface of 535 sq. ft. which gives a flying weight of 2.879 lbs. per sq. ft.

The ordinary speed of travel is 45 miles per hour, or 66 ft. per second. The total area of his vertical surfaces is approximately 255 sq. ft. These are described as members whose function is to preserve and control the direction of flight and to give lateral stability. The main surfaces are rectangular in plan form 10 m x 2m, which gives a ratio of length to depth equal to 5. The tail in this machine is approximately square in plan form.

The motor is an 8 cylinder Antoinette 4.35 inches by 4.15 inches, which is stated to give 49 B.H.P. at about 1100 R.P.M. Its weight is 265 lbs. The angle of flight of this machine owing to recent improvements has been reduced from 11 to 9°.

Comparison.

Weight:- The Voisin machine is 40% heavier than that of the Wright Brothers. The passenger capacity of the two machines is identical. There is however one feature in which the machines differ, and which is unquestionably responsible for much of the difference in weight. The Voisin machine is fitted with a chassis with four wheels mounted to swivel freely. The front wheels are provided with a spring suspension to diminish the shock of landing. The Wright machine has no such provision but possesses instead a pair of wooden runners of comparatively little weight. The difference in these two methods is favorable to the Wrights from a weight standpoint to the extent of 60 or 70 lbs.

Horse Power:-The next point of comparison is that of the horse power employed as related to the weight and

velocity, thus touching on the question of relative efficiency of the two machines. The author has shown that for equal perfection of design the resistance to flight of two machines of equal weight is approximately independent of the velocity of flight consequently the horse power will vary directly as the velocity of flight, and the Veisin machine is entitled to more power not only on account of its greater weight but also on account of the greater velocity. In the absence of more exact information we may take the velocity of the Veisin machine as being 10% greater than that of the Wright. This is roughly in accordance with the figures given.

The declared B.H.P. of the motors is sometimes not very reliable, it is customary to use the expression in a rather elastic manner. From theoretical formulae, assuming a mean pressure of 72 lbs. to the square inch we have at the speed corresponding to the B.H.P.

Wright @ 1200 revolutions 24.7
Veisin @ 1000 revolutions 49.2

On the above basis the Wright machine is fitted with 1 B.H.P. for every 45 lbs. sustained while the Veisin machine only sustains 31 lbs. for every B.H.P. Providing the Veisin machine was as efficient as the Wright machine 38.5 B.H.P. would place the machine on equal footing; in other words the Veisin machine has an excess in B.H.P. of 25%. This loss of efficiency Mr. Lanchester thinks is not so much due to the machine itself but rather to the propeller employed.

Propellers:- The Wright machine is driven by two propellers 8 ft. 6 inches in diameter having an effective pitch of about 9 feet 6 inches. These propellers are mounted on parallel shafts 11 feet 6 inches apart and are driven in opposite directions by chains direct from the motor shaft, one chain being crossed. The gear ratio is 10:33.

The Voisin machine is propelled by a single screw of 7 ft. 6 inches in diameter of which the effective pitch is approximately 3 1/2 ft. This propeller is driven direct being keyed to the crank-shaft of the engine. The pitch ratio or the diameter in terms of the effective pitch is in the two cases, Wright .88 and Voisin 2.1. Mr. Lanchester has found the efficiencies corresponding to these pitch ratios and including the 5% loss owing to chain drive in the Wright machine; Wright .63, Voisin .54.

Mr. Lanchester finds that the theoretical gliding angle should be 7° for the Wright machine, and 7° 40' for the Voisin machine. It would thus appear that in addition to being considerably less efficient in its screw propeller the Voisin machine is also slightly less efficient considered as a glider. That is to say, its gliding angle is not quite so good as that of the Wright machine. He suggests that this may be due to the greater depth of surface in proportion to its length of the Voisin machine compared with that of the Wright Brothers.

A table comparing the resistance of the two machines shows that while the thrust of 155 lbs. would suffice in the case of the Wrights 225 lbs. is required in the Voisin machine

Mr. Lanchester concludes his theoretical remarks by saying:-

"On the whole the advantage certainly rests with the Wright machine from the aerodynamic standpoint".

Longitudinal stability:- From his remarks on longitudinal stability Mr. Lanchester seems to think that the Voisin machine is just as stable as the Wright machine if not a little more so.

Lateral Stability:- In the case of lateral stability, Mr. Lanchester says as long as the flight is preserved in a straight line the stability of the one machine is as good as the other .

The fact is that the secret of stability is contained in the one word "velocity". In negotiating a turn the Wright machine, on account of its construction which allows the operator to warp the surfaces at will, undoubtedly has a great advantage over the Voisin machine. This warping enables Mr. Wright to turn with his wings canted to nearly 30° on a radius of perhaps not more than 60 or 70 yards. Farman on the other hand must necessarily turn in a leisurely manner employing a circle of considerable radius. Mr. Lanchester says:-

"Summarizing the comparison from an aerodynamic standpoint, the author is inclined to think that the Voisin machine has the advantage as containing more of the features that will be embodied in the flying machine of the future".

As regards propulsion Mr. Lanchester thinks that the Wright disposition of propellers is a source of danger.

FURTHER REPORT CONCERNING SHIPMENT OF THE "SILVER-DART":

By the Secretary.

Bainn Bhreach, Feb. 6, 1909:- I have just received the following telegram from the Express Agent at Iona regarding the shipment of the "Silver-Dart":-

Telegram.MacDonald to McCurdy.

Iona, N.S., Feb. 6, 1909:- Received cheque and forwarded same to Company together with receipt which you enclosed. Will be pleased to deliver balance of shipment on payment of Eighty dollars and fourteen cents.

(Signed) M. A. J. MacDonald

In reply I have sent the following note to the Agent at Iona:-

McCurdy to MacDonald.

Bainn Bhreach, Feb. 6, 1909:- Just received your wire in reply to our telegraphic enquiry stating that you had received our cheque for \$86.91 and would deliver flying machine shipment on payment of an additional charge of \$80.14.

As the Canadian Express Co., by their voluntary action in reducing the charge from over \$500.00 to the amount now demanded, namely \$167.05, have implied that they wish to act fairly in the matter, we will pay the additional charge of \$80.14 under protest.

If you will be kind enough to let me have the name of the proper man in the Express Co. to confer with, we will take the matter up directly with the Head Office of the Company and hope that they will see fit to settle the matter of charge equitably.

We take this stand because if we do not have immediate delivery of the goods they will be absolutely valueless to us in a very short time.

In accordance with the above statement I therefore enclose cheque for the amount of eighty 14/100 dollars (\$80.14) for which I request receipt.

Please deliver the two crates into the charge of Mr. David Dunlop or his agent for immediate transportation to Baddeck.

We thank you for the trouble you have personally taken in the matter of adjustment.

(Signed) J.A. Douglas McCurdy.
Sec. Tress. A.R.A.

Mr. David Dunlop and some of the Laboratory Staff go to Iona this afternoon for the machine and we hope that the "Silver-Dart" with the exception of the engine will arrive at the Laboratory this evening.

Mr. Curtiss has telegraphic advise that the engine was shipped from Harmondspert, Feb. 4, so we expect to receive it on Monday Feb. 8.

(Signed) J.A.D. McCurdy,
Sec. A.R.A.

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THE OUTLOOK ON AVIATION: By the Asst. Editor.

The Officers chosen for the Aero Club formed not long ago in Washington are as follows:- Truman H. Newbury, Secretary of the Navy, was elected President, Robert Shaw Oliver, Asst. Secretary of State was elected First Vice President, Thomas H. Page, Second Vice President, Butler Ames, Third Vice President; corresponding Secretary, Dr. Allerton Cushman, recording Secretary Dr. A. F. Zahm, Treas. Mr. Charles J. Bell.

Hichenfels, an architect of Minneapolis has a model of an aeroplane on which he has been working for five years. In appearance it resembles the "June Bug". The top plane is arched in the shape of a hood as the inventor believes that this form of structure will give the greatest lifting power.

W.R. Tinken a wealthy Canton Manufacturer is said to have offered to W.H. Martin Civil Engineer and Farmer a prize of \$100,000 if the latter can successfully negotiate the distance of a hundred miles in his aeroplane.

On Jan. 29 H. Zipfel who owns a Voisin biplane attempted to make a flight. He was unsuccessful, however, probably being due to the fact that his engine was not in good working order.

Aldershot, England, Jan. 20, 1909:- The aeroplane with which the balloon corps of the British Army is conducting experiments again came to grief here to-day.

On Jan. 16 the French Cabinet requested President Fallieres to confer upon distinguished foreign and French aeroplaneists including the Wright Brothers 16 crosses and one decoration of commander of the Legion of Honor.

There is given in the Aeronautical Journal for Jan. a comparison between the Wright and Farman type of aeroplane.

It takes up each feature of each machine and gives comparisons and remarks. It is probably one of the most interesting articles of its kind which we have had. G.H.B.

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