Transkription eines Briefes von Chanute an Merrill Id: **18485**

Original: nicht bekannt

Transkript: Otto-Lilienthal-Museum

Nov. 1, 1896

A. A. Merrill, Esq.

Dear Sir.

I have your letter of 28 Inst. I ought to have been more explicit in explaining my figures, for I see that you have drawn an erroneous inference from them. The percentages which I gave are those of equivalent thickness, producing head resistance, to sustaining surface producing lift, but in calculating the angle of descent additional factors have to be used, because to the head resistance the drift must be added, and because while the head resistance is equal to the rectangular air pressure due to the speed, the lift is that proportion of the pressure due to the angle of incidence. Thus, if we take the Lilienthal co*efficients in Moedebeck's "Taschenbuch" and apply them to the two winged machine, which requires a speed of 22 miles per hour, and a corresponding rectangular pressure of 2.42 lbs. Per sq. ft. to float it, we have for an angle of 3 degrees incidence:

Lift 3°=1.34 sq.ft. X 2.42 lbs. x 0.546 co-ef.Lil.=177 lbs. sustained
Drift 3°=177 lbs. x 0.0523 (sin 3°) =[?].05 lbs.
Head Resis. 3° = 9.05 sq. ft. x 2.42 lbs. = 21.82
Reverse action
on tail 19 " " x 2.42 x 0.0523 =2.40 lbs.
33.27 lbs. resist.

Whence 177
33.27= l in 5.3 for line of descent = the facts.

We would get the same results, although less accurately, by starting from the percentage given thus:

0.546 coefficient for 3°
0.0675+(0.546 x 0.0523) = l in 5.6 for line of descent.

This is about what we get in a horizontal wind, but with an ascending trend we get more.

For the gull, if the coefficients which I have assumed are correct we get, at the same speed:

Lift 3°=2.015 x 2.42 x 0.546 = 1.34 lbs. or more than needed.
Drift 3° = 2.188 lbs. x 0.0523 (Sin 3°) = 0.1144 lbs.
Body = 0.126 + 10 = 0.0126 x 2.42 = 0.0305 "

Wings = 0.098 + 3 = 0.0330 x 2.42 = 0.0798 “

Whence 2.188
0.2247 = l in 9.7 which also agrees with facts.
or of we start from the percentages, we have:
0.546 coefficient
0.023 + (0.546 x 0.0523) = l in 10.6

This indicates, as you say, the desirability of diminishing the resistance by encasing the man's body, but in order to give him room to move, the car may have to be made so large as to increase the resistance through grater cross section. I tried something like that you propose by affixing a seat of net work with a stout board for a front edge to the frame of the 12 winged machine, and a pair of pivoted pendent sticks with stirrups, or rather brackets, on which the operator could brace his feet so as to assume the position which you sketch. This could not be given a trial in consequence of the shortness of the glides, which were only from 7 to 10 seconds, but in a long flight, if such be safely practicable, it could come into play.

The proposal to hang the man so that he can shift his weight with small effort had also occurred to me, and I should like to see it worked out in a full sized apparatus, but I thought it preferable to arrange for the wings to move, so as to make the balancing automatic. I have partially succeeded in this, and think I can improve on my practice by a little different arrangement.

I shall be glad to hear from you again, and to discuss your design more in detail, when you get it settled in your mind.

Yours Truly

O. Chanute