

Nov 5

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A. M. Herring Esq

Dear Sir.

Press of occupations, and the desire to send you a drawing, have prevented an earlier answer to your very interesting letter of Oct 18~.

I now enclose a blue print showing the full sized cross section of the wings of 6 soaring birds, and 3 flapping birds. They were obtained by bending strips of tin around the wings of sundry stuffed birds now hanging in my library. You will note the radical difference between the flappers and soarers, and the latter may be of use to you in designing the profile of your spars. This confirms your experience and I shall be glad to have your comments, if any suggest themselves.

I think your idea of using a working fluid with a high condensing point is better than my suggestion about Ammonia. I would advise your testing vaseline again, and experimenting with similar substances. I should be half inclined to spending some money in such experimenting myself, but as I have already indicated to you, I believe that the first problem to solve is that of stability and safety, and that the question of the machine is assured.

I sent to M~ Forney the translation of an article by Lilienthal in N° 261 of Prometheus, which I think you will like to see in advance of its publication if you have time to call. He brings out very clearly the difficulties he has to contend with, and gives a glimpse of his 1894 experiments. Ask M~ Forney also to let you see the items I have gathered about Lilienthal's imitators.

Concerning soaring in calm air; during the five weeks which I spent on Pine Island in Florida watching the buzzards, there was but one forenoon during which there was a dead calm, and that forenoon the buzzards exclusively made their way by flapping. I had previously a similar experience with gulls at San Diego and they did not soar in faint breezes because they require more wind than buzzards. My whole experience therefore convinces me that wind is requisite but I should very much like to have your theory as to the source of energy which would make a bird

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to soar in a dead calm, for I infer from your description of the rotation of the soaring gulls, that you consider their action as very slight and an assisting rather than a direct power.

I have lately begun the revised plans of a soaring apparatus, quite different from Lilienthal, from which I expect automatic equilibrium.

Can you advise me where I can have it built? It is very simple, but it requires some care in arranging the surfaces, making the joints &c. I had thought to go to a manufacturer of bicycles, but I should be glad to have your advice before deciding.

Please advise me whether you read German, I have a number of papers in that language which might interest you. Some also in French.

Yours Truly

O. Chanute.