and the dynamics of dolphin flying are well understood. There are indications that more satisfactory instruments together with rules for their use may emerge from these considerations. The optimisations considered here are not the only ones to have received recent attention. There is, for example, the whole matter of using cloud streets when they are at some angle to the desired mean track eg, 21.

REFERENCES

[1] The Arm-Chair Pilot, "Dynamic Polars", S&G, Feb, 1980, pl0. [2] Gibson, J., "Platypus and Arm-Chair Pilot", letter to S&G, April, 1981. [3] Irving, F.G., "The effect of erros in the inter-thermal speed on the average cross-country speed", OSTIV Publication XIII. [4] Litt, F.X. and Sander, G., "Optimal flight strategy in a given space distribution of lifts with minimum and maximum altitude constraints", OSTIV Publication XI. [5] Reichmann, H., Cross-country Soaring, Thomson Publications (1978). [6] Edwards, A.W.F., "The Arm-Chair Pilot", S&G, Oct, 1964. [7] Irving, F.G., "Cloud Street Flying", Technical Soaring III, 1, (1973) and OSTIV Pulbication XIII. [8] Arho, R., "Optimal dolphin soaring as a variational problem", Technical Soaring, III, 1, (1973) and OSTIV Publication XIII. [9] Metzger, D.E. and Hedrick, J.K., "Optimal flight paths for soaring flight", Proceedings of the Second International Symposium on the Technoogy and Science of Low-Speed and Motorless Flight, MIT, 1974 (published by The Soaring Society of America). [10] Irving, F.G., "The energy loss in pitching manoeuvres", OSTIV Publication XV and S&G, June 1978, pl21. [11] Gedeon, J., "Dynamic analysis of dolphin style thermal cross-country flight", Technical Soaring, III, 1 and III, 3, (1973) and OSTIV Publications XII and XIII. [12] Gegeon, J., "The influence of sailplane performance and thermal strength on optimal colpnin flight transition piloting techniques", OSTIV

Publication XIV. [13] Pierson, B.L. and de Jong, J.L., "Cross-country sailplane flight as a dynamic optimisation problem", Inst. J. Num. Math Eng, Vol 12, pp1743-1759 (1978).[14] Pierson, B.L. and Chen, I., "Minimum-time soaring through a specified vertical wing distribution", presented at the 9th IFIP Conference on Optimisation Techniques, Warsaw, Sept, 1979. [15] Pierson, B.L. and Chen, I., "Minimum altitude-loss soaring in a specified vertical wind distribution", NASA conference publication 2085, Part II, pp305-318, (1979). [16] de Jong, J.L., "Instationary dolphin flight: the optimal energy exchange bewtween a sailplane and vertical currents in the atmosphere", Eindhoven University of Technology Memorandum COSOR 80-12, (Sept, 1980). L17] de Jong, J.L., "Optimisation in soaring: an example of the application of some simple optimisation concepts", Eindhoven University of Technology Memorangum COSOR 80-10, (July, 1980). L18] Dickmans, E.D., "Optimaler Delphin-Segeflug", presented at the XVII OSTIV Congress, Paderborn, 1981. [19] Gorisch, W., "Load variation flight style and its implications to the theory of soaring", presented at the XVII OSTIV Congress, Paderborn, 1981. [20] Gorisch, W., "Energy exchange between a sailplane and moving air masses under instationary flight conditions with respect todolphin flight and dynamic soaring", Aero Revue 1975/11 and 1976/12 [21] de Jong, J.L., "The further development of the optimal-zigzagging disc", presented at the XVII OSTIV Congress, Paderborn 1981.

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