

Introduction to Propulsion

Having addressed the issues of drag and lift in the preceding set of sections, it is natural to progress into a discussion of the ways humans have devised to propel themselves through air or water. Most of the early devices they used for this purpose were simple and used the drag force on a oar or sail to propel a ship across the sea. In the next three sections (Ddb), (Ddc) and (Ddd) we examine the efficiency of such a propulsion strategy and show how much more efficient it is to use lift rather than drag for propulsion and show that, at least at high Reynolds number, evolution came to that conclusion long ago in producing natural propulsion techniques based on the lift force.

We then end this set, with three sections on the principal techniques devised by humans to propel themselves or their machines through fluid environments, namely propeller propulsion (section (Ddd)), jet propulsion (section (Dde)) and rocket propulsion (section (Ddf)).