Extracts from "Marine Propellers": By F.W. Baldwin .

A few points taken from Mr. Barnaby's book on Marine Propellers* seem to be directly applicable to aerial propulsion. F.W.B.

(p.1) The principle upon which nearly all marine propellers work is the projection of a mass of water in a direction opposite to that of the required motion of the vessel.

If the weight of the mass of water acted upon by the propeller in pounds per second $= W$, and if the sternward velocity in feet per second imparted to it in relation to still water $= S$, then the reaction which constitutes the propelling force is

$$\frac{WS}{g}$$ where $g = 32.2$ feet per second; and this is

independent of the form of propelling apparatus altogether. S is commonly known as the real slip, but will here be generally referred to as the rate of acceleration, or more shortly, as the acceleration.

When the vessel is in motion at a regular speed,

the reaction $\frac{WS}{g}$ is equal to the resistance.

So long as there is a resistance to be overcome by the propeller, there is no possibility of reducing the real slip or acceleration S to zero, since a necessary condition would be that W, the weight of water acted upon, was infinitely large.

* Marine Propellers by Sydney W. Barnaby (Spon and Chamberlin, 12 Cortland St. N.Y. 1900).