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THOUGHTS CONCERNING PROPULSION FROM THE STAND-
POINT OF PURE PHYSICS: By A. G. Bell.

Jan. 11, 1909:- All flying machines depend for their propulsion upon the inertia of the air.

The usual method of propulsion consists in pushing air backwards by means of an extended surface, or propeller blade. The reaction then pushes the machine forwards.



In order to typify the essential action in its simplest form, imagine a couple of balls with a compressed spiral spring between them. In this conception one ball represents the machine, the other the air that is pushed backwards, and the spiral spring between them typifies the engine power employed. Release the spring, and the balls are pushed apart, the machine going one way, and the air the other.

Relatively to one another, each ball moves with the same velocity. That is: One ball moves away from the other just as fast as the other moves away from it: But, relatively to the surrounding quiescent air or to the earth, they move with different velocities dependent upon their mass or weight, the heavier body moving with slower velocity. They move in opposite directions with equal momenta (not equal velocities), which is simply another way of saying that "action and reaction are equal and opposite".