

they aim. They require to combine, with the twisting action of the aeroplanes, a steering movement of the vertical rudder at the rear.

Our lateral rudders by themselves accomplish the desired result without any co-operation with the vertical rudder.

This seems to be an important point of difference worthy of elaboration. The Wrights say (page 4, line 16 to 35).

***When the lateral margins of the aeroplanes are so turned in the manner herein before described as to present different angles of incidence to the atmosphere that side presenting the largest angle of incidence, although being lifted or moved upward in the manner already described, at the same time meets with an increased resistance to its forward motion, and is therefore retarded in its forward motion, while at the same time the other side of the machine, presenting a smaller angle of incidence, meets with less resistance to its forward motion and tends to move forward more rapidly than the retarded side. This gives the machine a tendency to turn around its vertical axis, and this tendency if not properly met will not only change the direction of the front of the machine, but will ultimately permit one side thereof to drop into a position vertically below the other side with the aeroplanes in vertical position, thus causing the machine to fall.

This is a confession by the Wrights themselves that the twisted aeroplanes do not accomplish the object they had in view. They require to include another element (the vertical rudder) in their combination in order to obtain our result. They say (p. 4, line 54 to 64).

***We do not limit ourselves to the particular description of rudder set forth, the essential being that the rudder shall be vertical and shall be so moved as to present its resisting-surface on that side of the machine which offers the least resistance to the atmosphere, so as to counteract the tendency of the machine to turn around a vertical axis when the two sides thereof offer different resistances to the air.