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2.11 an aerodrome is properly balanced while it has headway, it will become unbalanced when headway is lost. The head then turns down, with a tendency to continue the turning movement until the head points vertically downwards towards the ground.

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Both are dangerous conditions, but there is a noteworthy difference between themi-

3. We can correct the climbing tendency by steering down with the front control, because there is headway; but we cannot correct the diving tendency by steering up, because there is no headway.

You cannot steer a beat without headway far less a flying machine. The first condition is far safer than the second.

When there is no headway the front control can no longer exercise its function as a horizontal rudder. When turned up at a positive angle to the horizon it is no longer pushed up by the pressure of the wind of advance. For the same reason there is no air pressure against it to push it down when turned at a negative angle. It is merely passive in its action and resists the very upward and downward turning movements it would cause in its active condition.

Where the machine is head-heavy when headway is lost, as in the second case noted above, the machine tends to turn downwards at the head, and the surface of the front control resists this turning tendency.

At first sight it would appear that by increasing the surface of the front control we could prevent a dive, but consideration will show that this is not so.

When headway is lost, the presence of a front control will not provent the tendency of a head-heavy machine to turn head downwards, however large its surface may be, or however