

have.

Mr. Bell's simile of a pendulum does not seem to me to be very well chosen in as much as the axis about which an aerodrome tends to turn is not fixed.

Mr. Bell says:-

"When headway is lost, the presence of a front control will not prevent the tendency of a head-heavy machine to turn head downwards, however large its surface may be, or however far out it may be placed in front of the main supporting aeroplanes. The most it can do is to retard the turning movement. It cannot prevent it. The machine retains a tendency to turn completely over until the head points vertically downwards towards the ground".

This would undoubtedly be true were the center of surface (or whatever point the machine tended to turn about as an axis fixed in the air) but is this the case. Let the machine lose headway and fall in this way. If it be only slightly head-heavy the turning action will then be slow. It will quickly acquire headway due to the horizontally resolved component of pressure being a propelling force. The machine, axis and all will then move forward, the center of pressure regain its position vertically above the center of gravity and balance be restored without the machine showing a continued tendency to turn completely over until the head points vertically downwards towards the ground.

Mr. Bell's general conclusions are of course correct and should guide us in not producing a badly balanced machine. I do not quite agree with what he says about the axis for a front control. To pivot it at the center of surface would give us a still more dangerous arrangement. The center of pressure would be in front of the axis at high speeds, a posit-