We may now say, therefore, that the turn indicator will not be affected by differences of air pressure due to the action of gravity or to the angle of bank.

The reading of the indicator will depend on the centrifugal force as explained by Sir Horace on page 624.

The statement on page 618 that "inequality of pressure is because it is impossible to make both static heads absolutely similar" does not accord with the writer's experience. The calibration of a static head of N.P.L. form on the whirling arm at the Laboratory* showed it to read the true pressure to within one-tenth of one per cent., which was the order of accuracy of the experiment, and later calibration of various forms of head shows that considerable modification in design is permissible if certain simple precautions are observed. It is probable that in ordinary use the static tube reads the true pressure to an order of accuracy higher than that of present methods of measurement.

Finally, on page 623, line 18, occurs "*Pitot tubes* (the italics are the present writer's) for this reason also, are better than Venturi tubes." Since pitot tubes cannot be used for turn indicators this is presumably an error for "*static tubes.*"

Yours faithfully,

J. R. PANNELL.

To the Editor of the AERONAUTICAL JOURNAL.

DEAR SIR,—I thank Mr. J. R. Pannell for pointing out that at the end of my paper on "The Static Head Turn Indicator" the words "pitot tubes" is an error. The comparison should be between Venturi tubes and static openings and not between Venturi tubes and pitot tubes.

Mr. J. R. Pannell's opinion on the accuracy of static openings can undoubtedly be taken as final, and it is satisfactory to know that considerable differences of form do not cause much error if certain simple precautions are observed. It is pointed out in my paper that when flying near the ground at 80 miles per hour in a circle of one mile radius, that the banking angle is 4deg. 10min., and the difference of pressures is about 1mm. head of water. This is about 1/10,000 of atmospheric pressure or ten times the accuracy given by Mr. J. R. Pannell. If the flight is at a great height the difference of pressures may be half this amount, or 20 times the accuracy given. Mr. J. R. Pannell says: "It is probable that in ordinary use the static tube reads the true pressure to an order of accuracy higher than that of present methods of measurement." From this it would seem that a more refined method of measurement is required for testing this point when static openings are used for the special purpose of the turn indicator.

The explanation of the action of the turn indicator given by Mr. Pannell seems to me to be perfectly clear and most easy to understand.

Yours faithfully,

HORACE DARWIN.

The Orchard, Huntingdon Road,
Cambridge, January 18, 1920.

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* Report of the Advisory Committee for Aeronautics, 1912-13, p. 35.