CORRESPONDENCE

To the Editor of the JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY.

DEAR SIR,—With reference to your review of my book, "The Strength of Materials," your reviewer writes:—"The argument on p. 95 is false; *all* the theories there compared give continuous values of the stress."

The sentence to which Miss Hudson takes exception is:—"The strain energy theory gives continuous values to both principal stresses throughout the entire range of positive and negative stresses, *i.e.*, the slope of the curve does not suddenly alter when one of the stresses changes sign." I admit that I have, perhaps regrettably, used the word "continuous" in its colloquial rather than its mathematical sense, but I define the meaning of the word in the last part of the sentence, and the diagrams make quite clear the meaning I intend the word to have.

I think it is important for engineers to grasp the significance of the argument, which is this:—The maximum shearing stress theory demands a kink in the graph where it crosses the axes, whilst the strain-energy theory gives a smooth curve without such kinks. In nature one expects smooth curves and not kinks. No one, in laboratory tests, has detected any such kink. The shearing stress theory demands that slip should occur on different planes in the two cases; experiment shows that in a single crystal the planes will often be the same in the two cases, although they may be different. From this one concludes that, in the aggregate, there will be no such difference of plane as is accepted by the shearing stress theory.—Yours faithfully,

JOHN CASE.

R.N. Engineering College,
March 18th, 1926.