

ment but of fact; no one who examines the actual fragments and sees how precisely the edges of these bones fit one on to the other can refuse to admit that the parieto-temporal angle of Dr. Smith Woodward's restoration is a genuine peculiarity of this skull. If this is admitted it becomes impossible to tilt the upper margin of the parietal upwards and outwards. In other words, this peculiar articulation of the temporal bone affords confirmatory evidence of the proper location of the middle line.

It is a very interesting fact that the curious conformation of the temporal region of the brain, to the reality of which Prof. Keith objects, is quite analogous to that exhibited in the remarkable cranial cast of the Gibraltar skull, of which he is the custodian, and in some of the casts of primitive crania (negro, Australian, and Tasmanian) which he kindly obtained for me.

The greater part of Prof. Keith's letter deals with the lack of symmetry in the original reconstruction, which was due to a slight error in the positions assigned to the occipital and right parietal fragments. The need for this correction was realised before the meeting of the Geological Society last December; and this was taken into consideration when I was writing my preliminary note. G. ELLIOT SMITH.

The University of Manchester.

#### "Aëroplanes in Gusts."

I SHALL esteem it a favour if you will spare a little space in which to refer to the unsigned review of the first edition of my book, "Aëroplanes in Gusts," printed in NATURE of October 2.

It is not at all my intention to refer to or contest an adverse opinion standing alone, but there is associated with that opinion, in a way that might appear to justify it, a misstatement of fact that I can scarcely be expected to pass without an endeavour to correct.

Your readers are informed that I "measure the effect of a gust of wind by the accelerations of the air particles relative to the aëroplane." That I certainly do not do, and your reviewer has no excuse whatever, in anything I have written, for attributing to me so simple and foolish an error as the words imply. A most casual reading of my book, even in its first pages, shows, decisively, that I quite properly measure the gust—not "the effect of a gust," whatever that may mean—by the acceleration of headway, or acceleration of the velocity relative to the air, which, independently of that due to gravity and even of that due to the propeller, is being *impressed* upon the flying machine by the air.

The confusion made possible by not maintaining or exhibiting, as I have done in my book, the distinction between an actual acceleration and an impressed acceleration, and by not excluding the gravitational acceleration, scarcely needs enlarging upon or explaining in the columns of NATURE.

S. L. WALKDEN.

Muswell Hill, N., October 4.

I HAVE just received the second edition of "Aëroplanes in Gusts," and in reply to the author's criticism of my review, I cannot do better than quote the passage on p. 2 containing the definition:—

"Using therefore the term 'headway' in place of the cumbersome 'velocity relative to the air,' it will be taken for granted that the reader knows that:—

"(1) The instantaneous *strength* of gust at any point of the air as regards a given flying-machine flying at that point is measured by the acceleration of headway which any singularity of the air at that point is impressing upon the flying-machine, and the *direction*

of the gust is opposite to the direction of the impressed acceleration.

"For example:—If the air is accelerating downwards at 40 ft. p.s. p.s., it is impressing upon the flying-machine an upward acceleration of headway of 40 ft. p.s. p.s., and this is the measure of the downward gust. In other words, the gust is of strength 40 ft. p.s. p.s., downwards. Simple velocity as distinguished from rate of change of velocity is, it will be noticed, completely ignored."

(The author then goes on to point out that accelerations may be represented by straight lines. Agreed.)

On p. 4 he says:—

"The general method of finding the impressed accelerations acting at a given instant upon a flying-machine consists in first answering the question:—

"If at any given instant the flying-machine could be suddenly transformed to a small smooth concentrated mass, how would it accelerate relative to the air?"

"The acceleration answering the above question is the 'resultant relative gravity' of the following discussion, and when common gravity is subtracted *in vector sense* the result is the acceleration tendency or impressed acceleration due to the gusts. When from this result the impressed acceleration due to the absolute acceleration of the air at the place of the flying-machine is also subtracted *in vector sense* there will usually be found an impressed acceleration remaining. This is due to the air having what is called "velocity structure" at the point, and to the flying-machine in crossing that structure creating for itself a rate of change of headway."

If Mr. Walkden considers that he has received any injustice through the use of the term "effect of a gust" in substitution for his reference simply to "a gust," or the measure thereof, the reference to "effect" should certainly be withdrawn. But as regards his views on "impressed accelerations," the above quotations will probably appeal to readers of NATURE far more effectively than any criticism, however adverse. Yet several journals have reviewed the book favourably, and it has run into a second edition.

THE REVIEWER.

#### Mass as a Measure of Inertia.

CAN any of your readers enlighten me as to the authorship of the definition, "The mass of a body is the dynamical measure of its inertia"? I am under the impression that it is due to Clerk Maxwell, but have not been able to find where it occurs. I should be grateful for information as to where to look for it.

W. C. BAKER.

School of Mining, Queen's University,  
Kingston, Ont., October 13.

#### ENGINEERING RESEARCH AND ITS COORDINATION.

THE questions of the coordination and encouragement of research in engineering have been brought forward in various ways recently. In April Sir Frederick Donaldson, chief superintendent of Woolwich Arsenal and president of the Institution of Mechanical Engineers, referred to them in his presidential address. At the recent summer meeting of the same institution held in Cambridge, Mr. G. H. Roberts, of Woolwich, read an interesting paper entitled "A Few Notes on Engineering Research and its Coordination," while the matter was also touched upon