the criticism on Prof. Blasius' recent book on storms may be cited as an illustration, and a close adherence to its text, viz., storms practically considered.

LETTERS TO THE EDITOR

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Force

In his valuable lecture on force at Glasgow, reported in NATURE, vol. xiv., p. 459, Prof. Tait did great service by insisting on the duty of precision and consistency in the use of this as of other scientific terms, and showed clearly how the word "force" may be used precisely and consistently. My reason for troubling you with this communication is that I am unable to identify this use of the word with Newton's, on the assumption that the English equivalent for Newton's *vis* is "force."

As the same difficulty has probably occurred to other readers of NATURE, I should be glad if Prof. Tait would kindly tell us through your columns what are the equivalents in English for the phrases (1) *vis*, (2) *vis insita*, (3) *vis impressa*, each of which is used in Newton's "Principia."

In the phrase *vis insita*—if *force* is the English for *vis*—is not a meaning of the word "force" implied which is wider than and inclusive of the meaning of *vis impressa?* P. T. MAIN

An Intra-Mercurial Planet

THE discussion as to the existence of a planet within the orbit of Mercury leads me to communicate an observation made many years ago, which I believe nothing but the existence of an unknown planet between us and the sun can explain. On Sunday, January 29, 1860, the sun rose in a fog in London, so that he could be steadily looked at as if through a dark glass. Soon after eight o'clock a perfectly round black object was seen by four persons, including myself, clearly defined upon the lower half, according to my recollection, of the sun's disc. It passed slowly across his face and made its egress at about half-past nine A.M. In apparent size it was equal to the representations I have seen of Mercury in transit. F. A. R. RUSSELL

Pembroke Lodge, Richmond Park, September 30

Brilliant Meteor

THE brilliant meteor of September 24 was well seen in the neighbourhood of Ipswich, and as the observation of it was difficult in the absence of stars, the following notes may be useful. It was first seen at 6h. 31m. 15s. L.M.T., and the train was visible as a luminous cloud until 6h. 47m. 3s. L.M.T. The course had a length of about 25°, which was described in three seconds, and made an angle of 80° with the horizon. By means of the train which it left behind, it was possible to fix the point of disappearance with considerable accuracy, namely: altitude, 14° 6′; azimuth reckoned from south towards east, 54° 16′. At this time Saturn was visible, having an altitude of 10° 56′, azimuth 53° 15′.

For purposes of description the course may be divided into three portions, roughly equal. In the first portion the meteor had a uniform brightness somewhat greater than a first magnitude star, but during the second portion it rapidly increased to many times the brightness of Venus, and almost suddenly diminished to its former magnitude. In the third portion it again increased in brilliancy, considerably exceeding its former maximum, and was suddenly extinguished without bursting. This third portion only was marked by the train estimated about 6° long, with a scarcely perceptible breadth. During the sixteen minutes that the train was visible it drifted about 12° northwards, losing gradually its definite outline. Direction of wind, south-south-west.

The diameter of the disc was certainly not greater than 2′, and the form was pear-shaped, though not very prolonged, leaving the observer with the idea that the peculiarity of form was merely due to the persistence of the impression on the retina. It is very difficult to estimate its maximum brightness accurately, as the heavens afford us no object with which to compare it. I have recently shown that Venus has only $\frac{1}{800}$th part of the light of the full moon, and there is no other standard of light with which to bridge over this gap. If the moon had only a diameter of 2′, its intrinsic lustre would be 240 times greater than it is, and the intensity would probably be such as would cause the observer involuntarily to avert his eyes when seen suddenly, even in full twilight; still, I do not think the meteor had much less light than such an object would have. The glare was of the colour, and closely resembled, a very vivid flash of lightning, for which it was mistaken by many persons.

JOHN I. PLUMMER

Orwell Park Observatory, September 27

The Age of Palæolithic Man

IN the extremely interesting communication on this subject which Mr. Skertchley has made to NATURE, vol. xiv. p. 448, there are one or two points on which I should like to say a few words.

First, in approaching this subject and endeavouring to find out the whole truth let us in starting have nothing but the truth. A human bone, a fibula, was certainly found beneath glacial clay in the Victoria Cave at Settle, but so far *no implements* have turned up from that ancient horizon. This is a simple inadvertence which does not in any way affect the strength of Mr. Skertchley's position, but I am anxious to correct it and as it were strangle it at the birth lest cuckoo-like it should shoulder kindred but legitimate statements out into the cold.

Mr. Skertchley's remarkable discovery consists in the finding of palæolithic implements beneath the great chalky boulder clay of Mr. Searles V. Wood, jun., which is the so-called East Anglian upper boulder clay, and this, as Mr Skertchley says, and as I believe Mr. Searles Wood holds, and with which I certainly agree, is probably as old as the Lancashire lower boulder clay or till. And this Lancashire till is undoubtedly of the same age as the till of Scotland, as all authorities admit. Moreover this till is generally admitted to be the product of the great ice-sheet of Scotland and the North of England. We are therefore landed at the conclusion that implements have been found in beds which are probably of earlier age than the Scottish ice-sheet, a conclusion in which I cannot but heartily concur. Mr. Skertchley does not state this directly, but I presume this is the legitimate inference to be drawn from his statements, and one which he would himself admit.

There can be no doubt that this is very strong and corroborative evidence of the general views so ably urged by my friend, Mr. James Geikie, that all palæolithic implements and the fauna associated with them are of inter-glacial age. It may seem captious after having been led to the battle by so able a general, and having driven the enemy so far already, to grumble at his stopping short in the pursuit, yet such is the object of my present remarks. And I would wish to point out that there are heights, or rather depths, which may yet be advantageously scaled to the further discomfiture of the foe.

Mr. J. Geikie has not ventured to carry the age of the bulk of the palæolithic beds further back than the time immediately *succeeding* the great Scottish ice-sheet. He appears to regard the "great submergence" which followed this as the chief cause for the removal from certain areas of the remains of men and animals which peopled them in inter-glacial times. "The palæolithic gravels of the south-east of England . . . are contemporaneous with those ancient valley-gravels of Scotland which overlie the till and boulder-clay, and which are themselves partially rearranged and covered with marine deposits belonging to the time of the great submergence."[1] He certainly once "puts his hand to the (ice-) plough." "No doubt, however, portions . . . especially in the districts south of the Thames, may date back to the earlier warm periods of the glacial epoch, and thus be contemporaneous with the fresh-water beds in the Scottish till; while some may go back even to pre-glacial ages;" but he immediately "looks back" to the sea of the great submergence as the great destroyer of palæolithic records. "After the great ice-sheet shrank back and the till and boulder clay had been deposited, a land-surface existed, rivers flowed down the valleys, and plants and animals clothed and peopled the country. In Scotland the fluviatile deposits belonging to that period have been subjected to great denudation, but in one place at least they have yielded animal remains, frogs and water-rats. But if the country had never been submerged after the withdrawal of the ice from the low grounds, there is good reason to believe that the presence of the relics of palæolithic man and remains of the animals with

[1] "The Great Ice Age," pp. 482-3.