CORRESPONDENCE.

LARGER FORAMINIFERA FROM THE TERTIARY OF SOMALILAND.

SIR,—Please allow me to protest against some remarks affecting myself, which appeared in a paper under the above heading by Dr. W. L. F. Nuttall and Mr. A. G. Brighton, in your issue for last month (February, 1931). Thus, on p. 56 of the same, these authors challenge my reference of the Kohat Shale to the Laki on the grounds that it contains *Nummulites laevigatus*, *N. perforatus*, *N. atacicus*, *Ass. exponens*, and *A. spira*. The authors say: "In our opinion, this assemblage of *Nummulites* and *Assilina* would be regarded by all authorities as typical of strata of Lutetian age." Of course it would; and since they leave the matter at that, they deliberately imply that I suggested a Lower Eocene age for the Kohat Shale in the face of all the evidence. I wish, therefore, to make it clear that the reason why I referred the Kohat Shale *as a whole* to the Laki was that the more definitely Khirthar (or Middle Eocene) forms, such as *N. laevigatus*, *perforatus*, etc., only come in at the top of nearly a hundred feet of sediments—whereas (to mention only a few facts) the palaeontologists at Calcutta had identified such typical Laki forms as *Alv. oblonga* and *Ass. granulosa* as characterizing the great bulk of the bed, while crowded *A. leymeriei* had also been identified in the lower levels of it.[1] Thus, as I pointed out, the fauna appeared, though mixed, to be of Laki character on the whole, the characteristically Khirthar forms coming in only at the summit of the formation. All this Messrs. Nuttall and Brighton ignore. They quote my Khirthar forms as if they characterized the entire bed, omit all reference to my Laki ones, and then calmly propose that I had "no justification" for holding that *kohaticus* occurs in beds of Laki age—a statement which the bare mention of *oblonga*, *granulosa*, and *leymeriei* would have been sufficient to refute.[2] I think that some indignation is excusable on my part. (There is much more I would like to say, but I will not encroach further upon your space.)

L. M. DAVIES.

LEITH FORT,
EDINBURGH.
7th March, 1931.

[This letter has been shown to Mr. Brighton, who replies as follows.]

[1] See, for instance, pp. 198–207 of *Trans. Min. and Geol. Inst. of India* for February, 1926.

[2] On Nuttall's own showing, these forms have never been found outside of the Laki, or Lower Eocene, in India.

SIR,—In the absence of Dr. Nuttall abroad, it falls to me to reply to Lieut.-Col. Davies. I much regret that, in compressing our paper into a reasonable size for publication, we should have made it possible for him to misunderstand our statements concerning *Dictyoconoides kohaticus* and the Kohat Shale through which it ranges.

In his papers Lieut.-Col. Davies consistently states that the Kohat Shale is Lower Eocene. In our paper we state that, firstly, *D. kohaticus* is " associated in India with a typical Middle Eocene fauna ", and give ample demonstration of the fact. There can be no doubt that the topmost bed of the Kohat Shale, where this association occurs is Middle Eocene, and that the reference by Lieut.-Col. Davies of the Kohat Shale to the Lower Eocene is inaccurate. Secondly, we state that " there seems to be no justification for the view expressed by Davies that " *D. kohaticus* occurs in beds of Lower Eocene age". I had intended to discuss this in detail in a future paper ; but I may be permitted to indicate our reasons for this statement here.[1] The fauna which ranges through the Kohat Shale (omitting the undoubted Middle Eocene topmost bed) includes only seven definitely identified species, of which five are foraminifera. Of these two (*Alveolina oblonga* and *Assilina granulosa-leymeriei*) are characteristically Laki (Lower Eocene) ; two (*Alveolina javana* and *Assilina spira*) are characteristically Kirthar (Middle Eocene) ; and one (*Nummulites atacicus*) ranges through both. If the foraminiferal fauna of the Kohat Shale consisted of the Laki species alone, the " bare mention " of them would substantiate the view that the Kohat Shale is Lower Eocene. But taking the fauna as a whole, in the opinion of Dr. Nuttall and myself, it affords no justification for such a conclusion. In the absence of a detailed description of the species which would enable one to form an opinion of their identity, the age of this unique assemblage must remain in doubt.

A. G. BRIGHTON.

[1] It is not possible in a short space to deal with all the details given by Lieut.-Colonel Davies ; his papers should be consulted for a full statement of his views. For Dr. Nuttall's opinion of the range of these foraminifera, see GEOL. MAG., LXIII, 1926, 495. It may be pointed out, however, that records, without description or figures, of, for instance, *A. spira* in the Lower Eocene, do not invalidate the statement that *A. spira* is typically Middle Eocene. Lieut.-Colonel Davies records *Alveolina oblonga* as occurring throughout the Kohat Shale, and thus presumably ranging into the undoubted Middle Eocene ; but *A. oblonga* is none the less a characteristically Lower Eocene species. The value of such records, without description or figures, is often problematical.