

with a discussion of the probable sources of origin of the material, and it was considered that the mineral assemblage in the Lancashire Triassic sandstones was suggestive of a north-western origin, although there may have been subsidiary drainage from other sources, and possibly some communication with the Midlands.

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## CORRESPONDENCE.

### EOCENE CYCLES OF SEDIMENTATION.

SIR,—We trust you will allow us a little space to comment upon the reply of our friend, Professor Stamp, to our recent criticism of some of his published statements. It is true, as he points out, that writers sometimes find difficulty in expressing their views in an unambiguous manner, but this is as frequently the fault of the writer as of the reader. In making our criticism we did not attempt to read Professor Stamp's mind, although, in fact, we had ample opportunity of so doing in numerous private discussions. We restricted our remarks to statements in his published works, which are admirably clear and admit of but one interpretation, viz., that Wealden uplift was the essential cause of marine transgression in Eocene times. Indeed this has always seemed to us the distinctive feature of his theory. We need scarcely remark that we attached particular importance to the version given in his textbook, which is not only his most recent utterance on the subject, but is presumably a full and clear statement of his case expressly designed for the use of students.

We are told in Professor Stamp's reply<sup>1</sup> that uplift of the Wealden dome was merely an adjunct to wider movements of subsidence. In this connexion let Professor Stamp's words speak for themselves. In an introductory section on the Eocene rocks (*Introduction to Stratigraphy*, 1923, pp. 267-9), he says—

(i) That the formation of an anticlinal fold would cause the waters to spread in all directions over the deltaic deposits formed round the river mouths.

(ii) That "the history of the Eocene may be summarized as a succession of such movements. The intermittent but gradual uplift of the Weald seems responsible *in the main*".

So much for the "adjunct". The wider movements of subsidence now admitted by Professor Stamp only get an oblique reference in small type ten pages later, in the explanation of a diagram.

We are accused of missing his idea that Wealden folding and regional depression were almost synchronous. We missed it for the simple reason that this is the first clear reference to the matter made by him. No unbiassed reader could extract such a meaning from his previous writings.

<sup>1</sup> *GEOL. MAG.*, Vol. LXI, 1924, p. 98.

His present account is far clearer, and we are in agreement with it in the main. Though he does not admit it, it is obvious that he realizes the justice of our former claim that "the influence of the Weald was neither as paramount nor as far-reaching as is implied by Professor Stamp's treatment".

Coming now to questions of stratigraphical fact, we have yet to see that the Weald was being uplifted at all during Eocene times. Pre- and post-Eocene uplifts are clearly demonstrable, but Professor Stamp in his reply omits all reference to the conclusive fact that the Woolwich Beds overlap the Thanet Sands against the flanks of the Weald, and are in turn overlapped by the Blackheath Beds. If this is not evidence of continuous subsidence, we are concerned to know what is. None of the evidence of uplift adduced by Professor Stamp appears to us to be valid; certainly none of it can reverse the conclusion drawn from the above facts—that Eocene times witnessed the progressive subsidence of the Weald, at least until the end of the London Clay period. Uplift may then have supervened in Bagshot times, as we have already admitted, but even of this there is no proof. We have already explained the Eocene pebblebeds as the rearranged beach deposits of a sinking shore line: we cannot accept the truly extraordinary theory which represents them as being literally shot down the flank of the Weald by uplift.

There are many other points on which we might join issue with Professor Stamp. It is certainly unjust to accuse us of rushing into print: many of our criticisms were framed before we undertook to read the proofs of the textbook. We advise those interested in the subject to read Professor Stamp's original articles and to compare them with his recent account. They will then, we feel sure, find our criticisms amply justified.

In conclusion we may say that the truth seems to be that Professor Stamp has now dropped the offending clause of his theory. He has retreated from the untenable position which resulted from his Wealden uplift idea. We are content if we have hastened, however slightly, the demise of this misleading idea. Clarified by its removal, his theory will certainly prove more acceptable to workers in Eocene stratigraphy. We may say quite definitely that we regard Professor Stamp's work as the most considerable contribution to the subject since the time of Prestwich, and we welcome its release from the unnecessary restrictions imposed upon it by his former published statements.

A. K. WELLS,  
S. W. WOOLDRIDGE.

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THE HANGING VALLEYS OF NANT-FFRANCON.

SIR,—It was a disappointment to be absent from the reading of Professor O. T. Jones's recent paper on "The Upper Towy" at the Geological Society, for both paper and discussion were of keen interest to one who is working in North Wales. Perhaps I may be permitted to make a somewhat belated contribution to the discussion.