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IRISH EROSION SURFACES

SIR,—Mr. E. H. Thornton has recently (1960) offered a statistician's comments on a published summary (Davies, 1958) of a paper on Irish erosion surfaces which I read to Section E of the British Association in 1957. Mr. Thornton reaches the conclusions, first that in the altimetric frequency graphs which formed the basis of my work the occurrence of peaks may be attributed largely to chance and that they do not therefore represent erosion surfaces, and secondly that the coincidence of peaks in the graphs for various counties is of little or no significance. The present writer himself confessed in reading the original paper to having some doubts as to the value of the statistical results, but the final verdict on their validity must obviously come from the comparison of the statistical results with the data obtained by the extensive field-mapping of erosion surfaces. It will clearly be many years before erosion surfaces have been mapped over a sufficiently large area of Ireland for such a full comparison to be made, but during the last three years morphological mapping has been carried out by the present writer over more than 1,000 sq. miles of south-eastern Ireland and has included some 700 sq. miles within Counties Wexford and Wicklow, both of which counties were included in the statistical analysis. A full interpretation of the mapped features has yet to be made, and in any case as neither Co. Wexford nor Co. Wicklow has been completely mapped it would be unreasonable to try to compare the results of the mapping so far carried out with the frequency graphs constructed by using all the trigonometrical points in each county. The mapping has, however, demonstrated that flats of apparent erosional origin are widespread in the two counties, and from the work carried out so

far it appears that the flats are grouped at heights which appear to correspond roughly to some, at least, of the peaks in the frequency graphs. The writer thus now feels confident that some of the maxima in the graphs do represent erosion surfaces and is unable to accept Mr. Thornton's conclusion that the maxima occur largely by chance.

With reference to Mr. Thornton's second point that the similarities in the graphs for different counties are again merely chance, the writer can only say that he has traced flats at similar heights over large areas of south-eastern Ireland and has nowhere encountered any evidence suggesting that the platforms have suffered warping. Thus if maxima in the frequency curves for individual counties do represent erosion surfaces it is only reasonable to find maxima occurring at similar heights in adjacent counties.

Mr. Thornton has not been able to examine critically the data on which the statistical analysis was based, and since the appearance of his comments the present writer has compared the distribution of the trigonometrical points used in the analysis with that of the mapped flats. It has been discovered that of the 487 trigonometrical points falling within the mapped areas of Counties Wexford and Wicklow, 353 in fact lie on features mapped as flats. It is thus now clear that the distribution of trigonometrical points is not a random one, and that the Ordnance surveyors unconsciously selected morphological flats as the sites for the majority of trigonometrical points. In view of this the existence of a relationship between erosion surfaces and maxima in the frequency graphs is hardly surprising. It might, of course, be argued that since the recognition of flats in the landscape is subjective, the present writer has, with the earlier statistical work in mind, been tempted to map the areas around trigonometrical points as flats. In fact, however, there is little likelihood of this having happened for the statistical analysis was, for various reasons, based on the trigonometrical points shown on the first edition of the Ordnance Survey's Six Inch Maps, whereas field mapping is being carried out on the current Six Inch Maps which carry a slightly different series of trigonometrical points.

The writer thus finds it difficult to agree with Mr. Thornton that the statistical work was apparently fruitless. When the present programme of morphological mapping in south-eastern Ireland has been completed it is hoped to compare the results of the mapping with the results of the statistical analysis and, if the results of the latter prove valid, to discuss their implications.

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9th November, 1960.

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