

SHORT NOTE

A NOTE ON THE DISTRIBUTION OF DRUMLINS IN GREAT BRITAIN

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ABSTRACT. Comparison of recent maps of the distribution of drumlins in Great Britain reveals considerable discrepancies. Morphometric analysis and speculation regarding drumlin genesis require accurate maps.

RÉSUMÉ. Une note sur la distribution des drumlins dans la Grande Bretagne. Comparaison entre des cartes récentes pour la distribution des drumlins dans la Grande Bretagne révèle des inconsistances significatives. L'analyse morphométrique et spéculations concernant l'origine des drumlins demandent des cartes précises.

ZUSAMMENFASSUNG. Eine Bemerkung zur Verteilung von Drumlins in Grossbritannien. Der Vergleich neuerer Kartierungen der Drumlin-Verteilung in Grossbritannien zeigt erhebliche Unstimmigkeiten. Die morphometrische Analyse und die Überlegungen zur Drumlinentstehung erfordern zuverlässige Kartierungen.

Rose and Letzer (1975) emphasize the importance of reliable maps in order to obtain meaningful morphometric data from individual drumlins. Equally necessary is accurate representation of regional distributions. For example, current speculation concerning drumlin genesis requires such information. Criticism of the model proposed by Smalley and Unwin (1968) includes comment on the distribution of drumlins in relation to ice margins (Boulton and others, 1977). But there exists no map of drumlin distributions in Great Britain suitable for discussion of theories of drumlin formation.

Four recent attempts to record drumlin distributions in Great Britain are shown in Figure 1. A number of points concerning the sources for this figure should be noted.

- (1) In Figure 1a only the "main drumlin areas" of Embleton and King (1975) and not "isolated drumlins" are reproduced. This map appears to be a generalized form of a Clarendon *Atlas* map (Blackman and others, 1963, p. 19) though this source is not acknowledged.
- (2) The source maps for Figure 1b and c claim only to show main or major drumlin fields.
- (3) Some detail has been lost in Figure 1d due to reduction in scale from the original: drumlin fields of less than 4 km² are omitted.

Many published maps are based on one of the four sources used to draw Figure 1. For example, Boulton and others (1977) use d, and Sugden and John (1976) use a.

Detailed analysis of the differences between the maps is unnecessary. There is consensus on the fact that small areas around Glasgow, Carlisle, Morecambe Bay and the Tweed Basin possess drumlins. There are profound disagreements over areas such as Galloway, Kirkcudbright, West Cumberland Lowland, East Lothian, Fylde, Vale of York, Wensleydale, parts of Denbigh, and the Newtown area of Wales. A clear difference of opinion concerns Anglesey and Llyn where perceptions vary from total cover to no drumlins. The exclusion of drumlins from south-west Scotland in Figure 1d contrasts with the other maps.

Objective assessment of the maps is difficult since the problem partly concerns the definition of "drumlin" and "major field". Opinions vary as to the merits of detailed field mapping as against air photographs in the compilation of drumlin maps and no published assessment of the relative reliability of these techniques is known to the author. In the absence of such data, reliance on a combination of field mapping and air photographs would seem desirable.

Information provided with the originals of the Figure 1 maps does not include details of the methods of compilation. Use of either field mapping or air photographs must in some cases be doubted. For example, the widely reproduced photograph of drumlins at New Galloway, Kirkcudbright (e.g. Curtis and others,

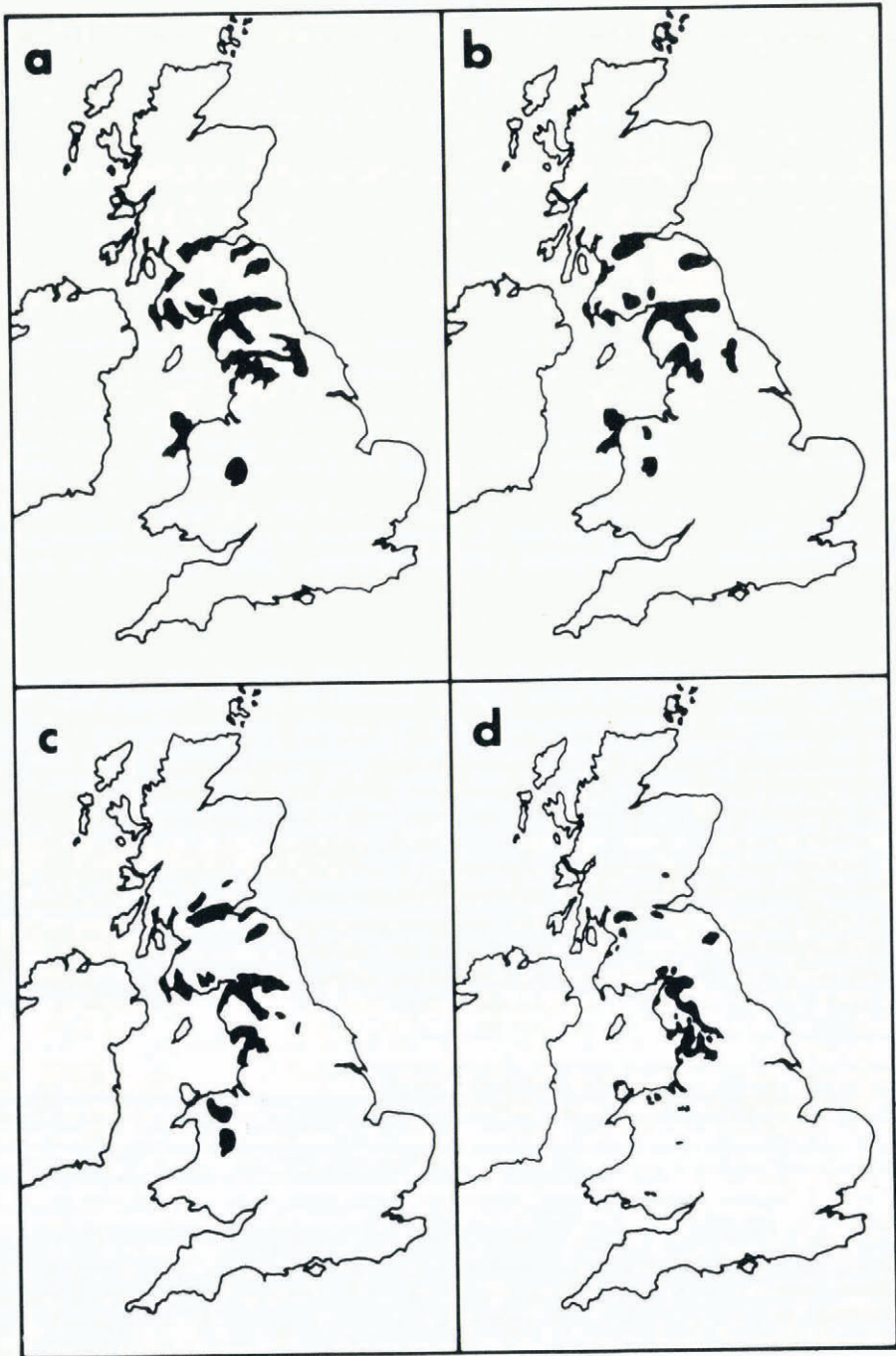


Fig. 1. Distribution of drumlins in Great Britain according to four recent sources: (a) Embleton and King (1975), (b) Derbyshire (1978), (c) I.G.S. (1977), (d) Brown (1976), Waters (1976), Cullingford (1976).

1976, p. 141; Sissions, 1967, plate IX) is taken in an area in which, according to Figure 1d, no drumlins exist. It is also worth noting that Figure 1d is derived from the largest-scale map of the four: increase in scale does not appear to guarantee an increase in accuracy.

In the four maps here considered, it could be claimed in mitigation that what is being mapped is, in each case, subtly different. However, future attempts to map drumlin distributions should be mindful of the need for clear definitions of what is being recorded (Evans and Cox, 1976) as well as adequate and clearly described mapping techniques (Rose and Letzer, 1975). Lack of precise definition will hamper progress on drumlin genesis and their significance as glacier bedforms (Rose and Letzer, 1977).

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