Throstle Shaw

[NY 237 272]

J. Boardman

Introduction

At many sites in the northern Lake District considerable thicknesses of scree, or vegetated scree, overlie glacial till, or bedrock (Boardman, 1978) (Figure 7.20). These are far better developed on the Skiddaw Group of rocks than on the Borrowdale Volcanic Group owing to the relative frost-susceptibility of the former. At high-altitude sites in the Skiddaw–Blencathra massif (> 500 m) low-angle scree slopes are active, whereas at lower altitudes screes are vegetated and inactive under present climatic conditions. At many sites, vegetated scree overlies till of Late Devensian age and the relationship implies that scree formation post-dates deglaciation. As it is assumed that early Holocene warming and vegetation colonization would have led to cessation of scree accumulation at low-altitude sites, the screes therefore are regarded as having formed under periglacial conditions immediately post deglaciation and during the Loch Lomond Stadial climatic deterioration.

Description

Throstle Shaw [NY 237 272] is a roadside exposure, at an altitude of 100 m, at the foot of the south-west facing slope of Dodd (502 m). The deposits at Throstle Shaw are divisible into two distinct units (Figure 7.21).

Unit A is a very poorly sorted, silty and sandy diamicton with gravel clasts. The clast population is mainly angular slates but there are low numbers of edge-rounded slates, glaciated clasts and non-slate (erratic) clasts. There is no bedding and little obvious sign of preferred orientation. However, macrofabric analysis of the larger clasts show movement to the west, suggesting downslope movement (Figure 7.22). This contrasts with a northerly direction of movement for the local tills. Stone shape is variable but there is a lack of well-developed blades and discs and a significant difference in shape compared with the overlying unit. The unit is regarded as a debris flow that contains scree, fluvial and glacial material remobilized on the slopes of Dodd.

Unit B (Figure 7.23) is a relatively well-sorted and bedded openwork gravel composed predominantly of angular, slate clasts. The beds dip at about 20° to the west, downslope. Occasional edge-rounded and glaciated clasts occur in the unit. Small amounts of sand and silt are found on upper faces of clasts as a result of washing through of fines. The unit is typical of many deposits in the area and is referred to as 'stratified scree', or 'greze litees', on the basis of its bedded and well-sorted character. Washburn (1973) described such deposits as being composed of 'angular, usually pebble-size rock chips and interstitial finer material'. In some areas they are rhythmically bedded with alternating fine and coarser beds (Dylik, 1960; Watson, 1965).

Interpretation

Unit A has been been interpreted as a mass movement deposit and is a typical paraglacial response to deglaciation (Boardman, 1978). Till-dominated deposits on steep hill-slopes were likely to have been unstable immediately after deglaciation and downslope movement would have been triggered rapidly by snow melt in a series of catastrophic debris flows. Unit B, on the other hand, is evidence for a long period of frost action on the Skiddaw Slate hill-slopes and the consequent transport of rock chip debris to footslopes owing to the redistribution of rockfall scree by snow melt, perhaps over a permafrost table (Howarth and Bones, 1972). Distance of transport was very limited as clasts are rarely edge-rounded and during transport frost action would have continued to reduce clasts in size. Finer-grained material may well have been transported through the slope to valley bottoms, but coarser material remained on high-angle hill-slopes. The stratified scree at this site has similarities with those on similar rock types in west Wales (Watson, 1965) but, in the

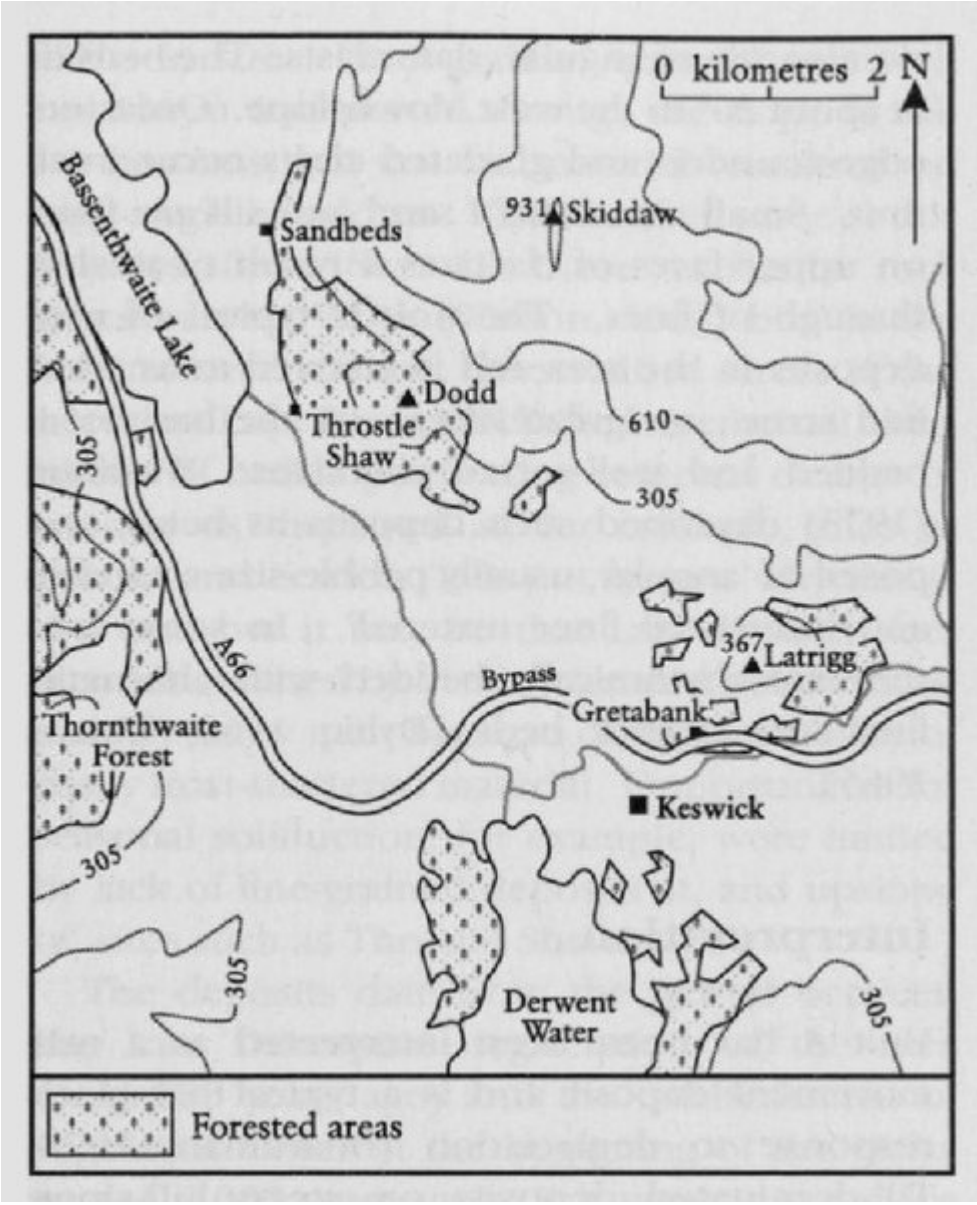
international context, the stratified screes of the northern Lake District lack the incremental alternation of bedding reflecting seasonal change of process as displayed at, for example, sites in Poland and France. It is not known why this is the case but it may be that Lake District sites were dominated by frost action and debris transport by snow melt because of the availability of easily frost-shattered material. Opportunities for seasonal solifluction, for example, were limited by lack of fine-grained deposits at, and upslope of, sites such as Throstle Shaw.

The deposits date from the period between the Late Devensian deglaciation of the area (*c.* 16 000 years ago) and the establishment of vegetation cover at the beginning of the Holocene (10 000 years ago). It is tempting to place them wholly within the Loch Lomond Stadial, for which there is an abundance of evidence of periglacial climate in northern Britain and associated frost action, snow melt and fluvial activity, but they also may have been active in the period 16 000 to 13 000 years ago.

Conclusions

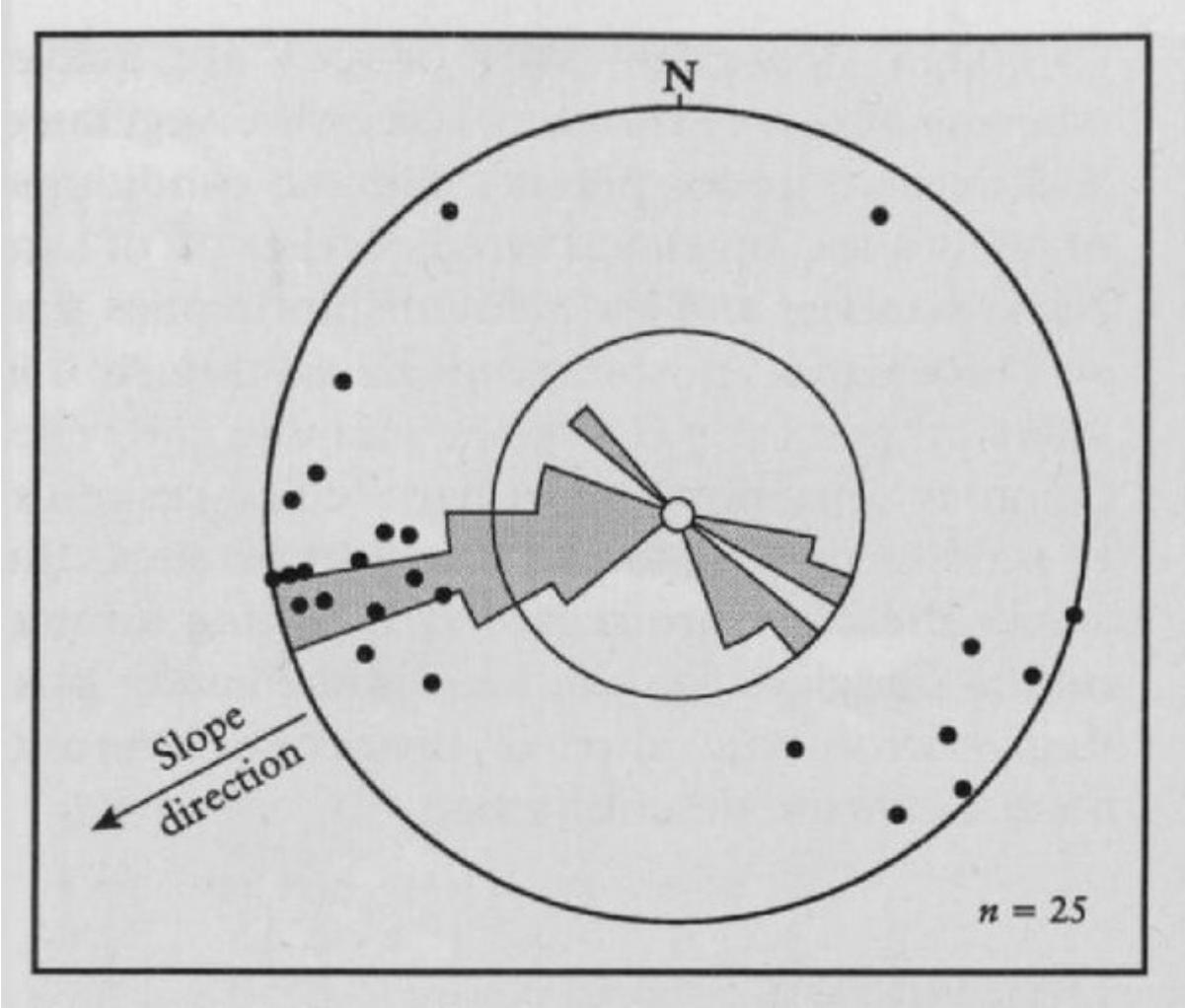
Throstle Shaw provides evidence of the impact of a periglacial climate on the landscape of the northern Lake District in a period when mass movement, frost action and snow melt were potent processes in a largely devegetated landscape.

References

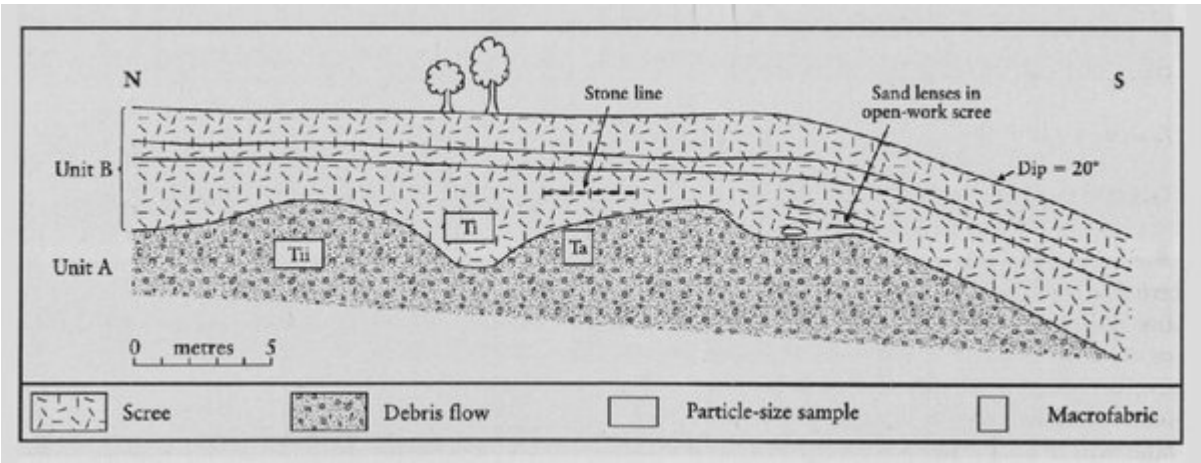


(Figure 7.20) Periglacial slope deposits in the Keswick area: location of sites (after Boardman, 1985b).

(Figure 7.21) Throstle Shaw section. (Photo: J. Boardman.)



(Figure 7.22) Macrofabric analysis of elongate clasts in the debris flow deposit at Throstle Shaw, Tii on (Figure 7.23) (after Boardman, 1985b). n: sample size.



(Figure 7.23) Unit B, Throstle Shaw section (after Boardman, 1985b).