

AN AREA OF SOLIFLUCTION ON SUDUROY, THE FAEROE ISLANDS

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An area of peculiar surface features seen on air photographs in the south-eastern part of Suduroy, the Faeroe Islands, has been found by field investigation to be earth lobes, generated by solifluction. The vegetation cover of the lobes and the thick growth of lichens and mosses on the stones indicate that the lobes are inactive. They are undisturbed by ice movements and have most likely been created in late glacial times.

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On aerial photographs of south-eastern Suduroy an area with peculiar lobe-shaped surface structures, not unlike those characteristic of many lava flows, shows up. The author visited it in the field in 1970 and found it to be earth flow structures which although clearly visible on the air photographs may be less easily surveyed on the ground. In fig. 1 which is a stereoscopic sketch made from an air photograph of the area the dots indicate stones and stony areas, the dots indicating the intensity of stones and blocks as interpreted through a study of aerial photographs. The stones stand out white or light grey because of lichen growth on their surfaces. Because of the radial distortion of scale, accurate measurements cannot be made from fig. 1, and the main features have therefore been transferred on fig. 2 to the topographic map (sheet M 52, Sumbö) by means of a Watts stereosketch.

The Faeroe Islands are made up of three series of basaltic surface flows of lower Tertiary age (Tarling & Gale, 1968). On Southern Suduroy only lavas of the lower series crop out. These are trap-forming aphyric, tholeiitic lavas forming 10–30 m thick flows with an easterly dip (Rasmussen & Noe-Nygaard, 1969 and 1970). Subordinate tuff layers occur. The basalt is well jointed and big angular blocks are easily loosened on weathering. The southernmost end of Suduroy is divided up lengthwise by a well marked ridge,

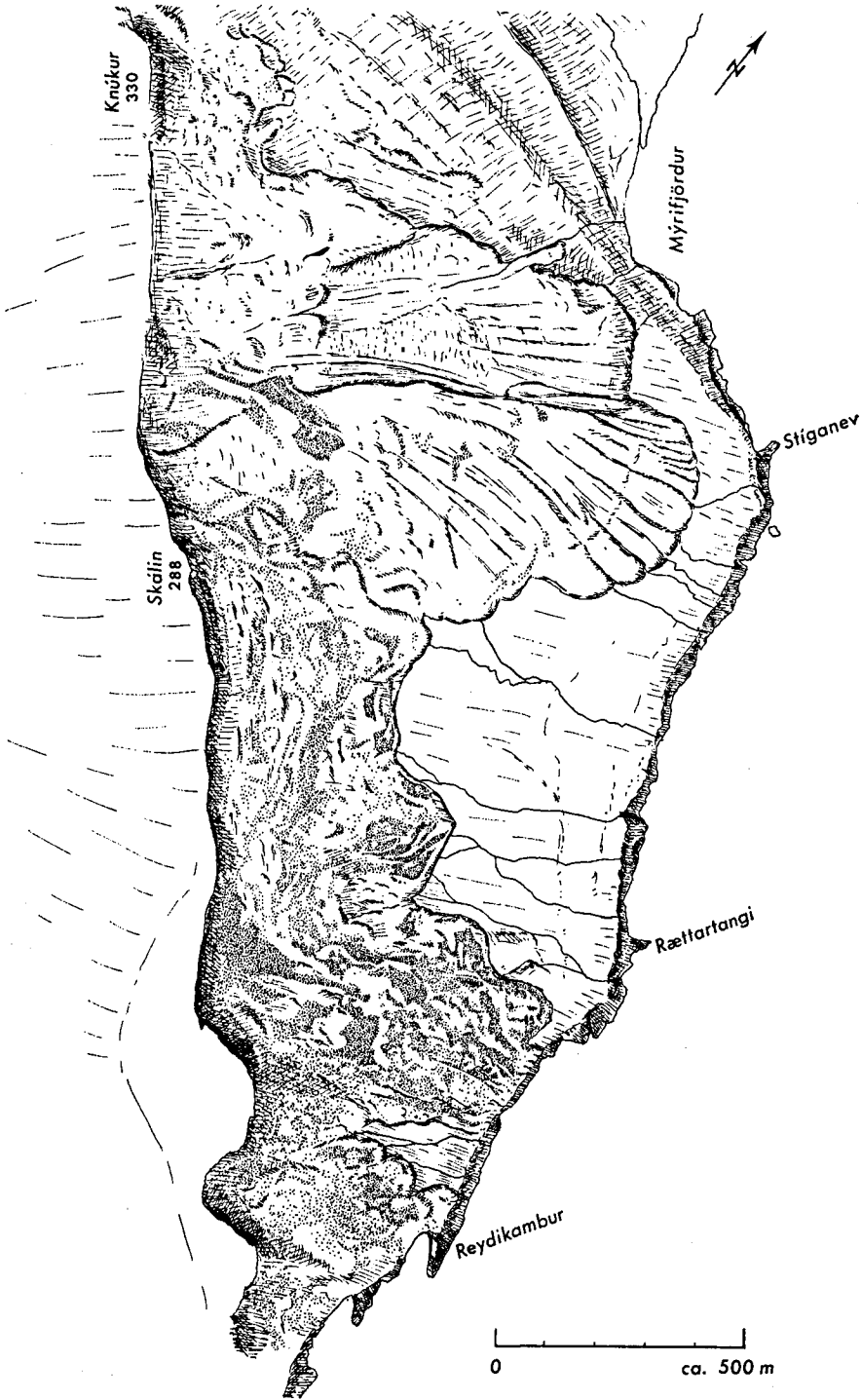


Fig. 1. Sketch from aerial photograph. The dots indicate stones and stony areas.

which runs from the 330 m high Knúkur in a south-easterly direction almost to the coast between Reyðikambur and Lambafles. Another high on the ridge is Skálin, 288 m, almost one kilometer south-east of Knúkur. To the west of the ridge the terrain forms a gentle and comparatively smooth slope; around the township Sunnböur (Sumbö) there are cultivated areas. To the east of the ridge the terrain is hummocky and here the earth flows occur. Especially in the southern part the terrain is so stony that it is a troublesome task to cross it on foot and there are no cultivated areas.

The earth flow area is about 2500 m in length and in places – at Blæing – near to 1200 m across. As shown by fig. 1 there is a great difference between the northern and the southern part. The northern part extends from Knúkur to Skálin, it consists of a complex of lobes and does not carry many stones; towards the lower end of the lobes fan-like radiating furrows are conspicuous. On the map, fig. 2, it can be seen that the furrows normally contain small watercourses, on the author's visit they were dry due to a couple of weeks' drought but in many cases the location of sub-surface watercourses could be traced on the surface. The lobes are often terraced, as shown in fig. 3, the overgrown surface carrying small tufts which on the slopes may pass into terracettes. (Plate 1, fig. 1).

In some cases the fronts of the lobes are bordered by stones (plate 1, fig. 1), in other cases the lobes have turf fronts. Apart from a few small areas, there are not many stones and blocks lying on the surface (plate 1, fig. 2). Between Knúkur and Skálin the ridge has been worn down, so there is no mountain wall to provide the surroundings with block material, only Knúkur having contributed a certain amount of blocks.

An attempt was made to dig into some of the lobes in order to make out if the shape of the lobes was depending on an underlying lava flow; it was, however, impossible to dig further down than about 0,5 m because of the contents of boulders. The terrain between the lobes is very moist, a great part of the vegetation is sphagnum, and here and there pools of mud present hazards to the grazing sheep.

The southern part, situated along the scarp running from Skálin towards south-east, appears much more chaotic than the northern part. The hum-

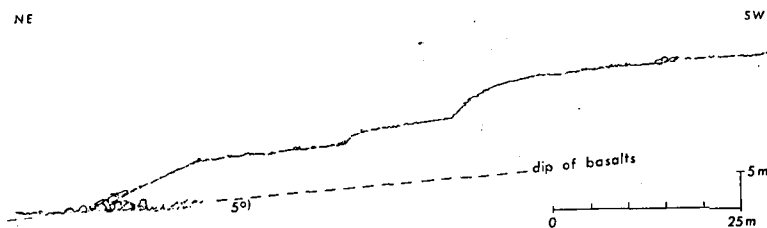


Fig. 3. Field sketch of a terraced lobe at Knúkur.

mocky lobes are shorter and narrower, and the overwhelming abundance of block material is the most impressive feature (plate 2, figs. 1 and 2). Flow is indicated by the arrangement of stones, which mostly appear in broad streams, in some cases concentric with the lobe front, in other cases straight or contorted (plate 2, fig. 1, and plate 3).

The size of the stone streams is greatly variable from 10–15 m to more than 50 m across, the length up to 300 m. Some blocks are rounded and some have more sharp outlines. They are all basaltic, only a couple of red tuff slabs were found on the surface. Very big blocks can often be seen (plate 2, fig. 2). In contrast to what was the case in the northern part of the area the rivulets mostly appear at the front of the lobes (fig. 2).

As the earth lobes have not been disturbed by ice movements, it can be stated that they are younger than the last glaciation, likely having come into existence in late glacial time when the ice cover was melting away but the climate still so severe that freezing and thawing played an important role in the process of denudation. The vegetation cover on the earth lobes – with the exception of minor wind eroded patches – and the thick growth of lichens and mosses on the stones indicate that the lobes as a whole are no longer actively in motion. In the downward movement there may have been both landslides and solifluction involved. Three big scars in the scarp at the southernmost part of the ridge may indicate landsliding. Part of the soil material may have been left on the slope as ablation moraine.

As there was insufficient time during the one-day traverse for a detailed study, the term solifluction is used in this paper in a very broad sense, namely as the literal meaning “soil flow”, a term proposed by J. G. Anderson in his classic paper on solifluction in Bear Island and the Falkland Islands (Anderson, 1906).

In the Faeroes most cirques face east, indicating that prevailing westerly winds may have blown snow over the mountain ridges and deposited it on the lee side. On southern Suduroy masses of snow accumulating on the eastern side of the ridge may, by melting, have soaked the soil and thus made it unstable. In the basalt region of Disko Island, West Greenland, several soil streams or mud flows seem to have their source in small glaciers or perennial snow patches on the eastern side of the island (Weidick, 1968). On Disko Island, Steenstrup observed an active mud flow which was capable of carrying large boulders (Steenstrup, 1901, p. 280).



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Fig. 1. A stone-bordered lobe front at the foot of Knúkur.

Fig. 2. The earth flow area between Knúkur and Skálin, viewed south-east. There are only scattered patches with stones.



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2

Fig. 1. A winding and a somewhat contorted stone stream in the southern area.

Fig. 2. In the center a big block split into two. The left half measures about $3 \times 2 \times 1,5$ m. Note the cover of lichens and mosses. Southern area.



Stone streams in the area between Skálin and Lambaklettur. Fot. Ragna Larsen.

Dansk sammendrag

Ved et luftbilledstudium af Færøerne afsløredes en speciel overfladestruktur på det sydøstlige Suduroy. En feltundersøgelse viste, at det drejede sig om et område med store tunger af flydejord. Tæt vegetation på jordoverfladen og bevoksning af lichener og mosser på sten antyder, at flydejordstungerne nu er inaktive. De er sandsynligvis dannet under senglaciale klimaforhold.

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