GLACIERS AND FIORDS – the story of ice in Norway

11.00 a.m. – Friday 30th July

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The whole of Norway's landscape is dominated by the effects of glaciation.

There are still some active glaciers but relatively few places where you can actually walk on glacier.

Brae is the Norwegian for "glacier".

Features of glaciers:

The ice starts in the mountain bowl because snow lands on it and accumulates, the lower part gets compressed into ice which then moves when it is too heavy. As it gets lower down, it melts more rapidly in summer conditions than it can accumulate in winter conditions.

At the edges and at the end of the glacier all the bits of sediment and debris get left behind because of the melting conditions around them. The water goes into a lake or the sea.

Cirque, corrie or cwm are the only words to describe the bowl – all coming from other languages. There is no English word to use. ("Cirque" = French, "Corrie" = Scottish and "Cwm" = Welsh) English "combes" are the result of melt water.

In the South of England there are no glaciers – the landscape having been formed by rivers.

In Norway there is much bare rock scraped away by the glaciers – i.e. one can see the striations on the rock surfaces and also classic u-shaped valleys are created. The u can get seriously straight sided.

The valleys in glaciated terrains can have steps in them. The steps are characteristic and are to do with glaciers merging. The additional ice adds weight and power to the merged glacier with the result that it scours more deeply and widely. Where there is a small glacier going into another then a hanging valley is created. The subsidiary valley comes in way above the main one and waterfalls result. The streams from the hanging valley drops into the main one.

The Ice Age was a 2.5 million year span of time encompassing a number of different ice ages. The last Ice Age was the Divensian – named after Chester (Diva). Ice moved out of most parts of Britain by 15000 years ago.

Some of Norway still has the ice cover – at one time, though, not even the mountain tops protruded above the ice.

A moraine is a mass of debris on a glacier. Boulder Clay is now called "till". It is this material plus frost shattered rock from the valley sides that accumulates along the edge of the glacier forming a lateral moraine. The best lateral moraines in the world are in the Himalayas – in Nepal.

The material that is dumped at the end of the glacier is called a terminal or end moraine.

The Norwegians only identified their glaciation features in around 1830. Up until then they were not aware of their glaciated past. The freshest moraines are from a few hundred years ago.

In 1750 there was a “Little Ice Age” following the Medieval Warm period. Britain and the whole world got a lot colder – when there were frost fairs on the Thames etc.

Lefoten – strand flat – is a major feature of Norway. They are platforms cut by the sea – by the waves hammering on the beach and erosion of the cliffs etc. Norway has come up recently by a large amount. It was squashed down by the ice. 25000 years ago Norway had a couple of miles of ice on top of it but now has bobbed back up. The isostatic uplift, as it is called, varies – in places it is as much as 1000 feet. The rock shelves rise and are known as strand flats. They are everywhere we go on the west of Norway. Sea level dropped 400 feet during the ice age as so much water was locked up in the form of ice.

Fjords are the other big feature – for the last hour or so of the journey up the fjord, the scenery is particularly magnificent. They were also cut by glaciers through the relatively flattish surface beginning 10 to 15 million years ago. The Sognefjord is about 4000 feet deep.
The fjords follow the old valleys – the ice flowed where the old valleys were. Ice streams within the ice cap followed these valleys making them deeper. There are no fjords in the eastern part of Norway because there was cold-based ice. The ice was frozen onto the rock and was stuck there. There is no erosion there. Where the striations occur is where there is warm based ice – ice which moved over the rock because the water acted as a lubricant. Cold-based ice on the high plateaux therefore had little erosion.

Post-glacial landslides are a feature and cause an enormous problem - tsunamis can result from the vast amount of rock descending into the fjord, creating great waves which can inundate any village on the fjord banks.

In Tatfjord village in 1934 forty people were killed when the village was destroyed by such a landslide.