Giant's Causeway in Northern Ireland.

The Edinburgh Geological Society is a very active one and produces lots of very good leaflets which you can download free of charge.

http://www.edinburdhgeolsoc.orq/publications/deoconservation-leaflets/

Amongst these free publications is one for the famous Siccar Point, described by James Hutton. The St. Abbs leaflet was produced this summer and was written by my geologist teacher friend.

http://edinburdhqeolsoc.ord/downloads/lbdc-leaflet-st-abbs.pdf

It's excellent and I thoroughly recommend the walk with the leaflet to hand.

As you can tell from the above, we are extremely fortunate to have moved from one beautiful area to another and I hope I shall be able to welcome members of the Bath Geological Society in the future. The geology is fabulous!

Fig 8: *Goswick beach, as empty as the roads!*

Marine and fluvial erosion and deposition can be studied easily here.

A Trip to Mistaken Point, Newfoundland

Graham Hickman

In July 2017 I was very fortunate to be able to visit the Mistaken Point Ecological Reserve in Newfoundland on two successive days. Mistaken point is the southernmost tip of Newfoundland and faces out into the bleak Atlantic Ocean. It was nearby at Cape Race that the distress call from the Titanic was first received. The Gulf Stream meets the cold Arctic currents and thick fog blows inland much of the year.
My eagerness to visit such a bleak place was to see the world's oldest multicellular soft bodied fossils. Access is strictly controlled and a limited number of people are allowed on the daily Ranger-guided 6km walk to the fossil beds. Absolutely no collection or un-permitted access is allowed.

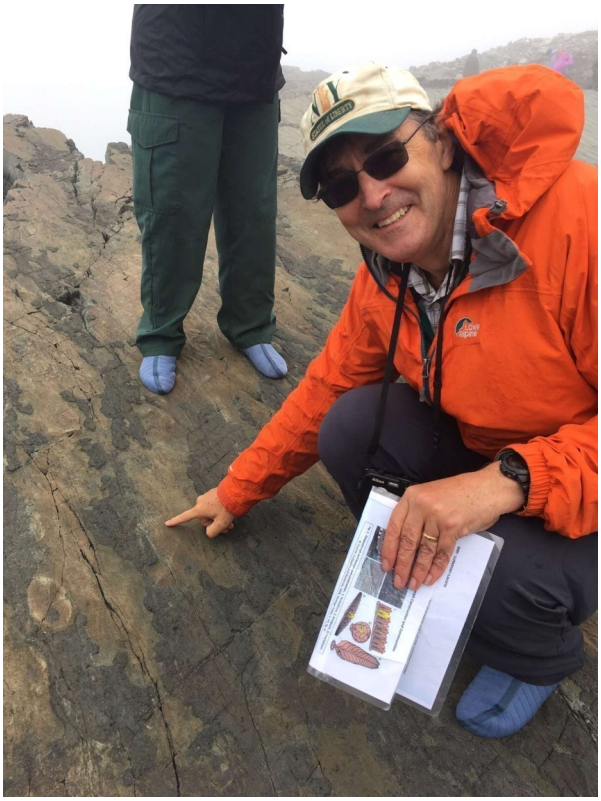

Fig 1, *Graham Hickman on the 'E' surface*

Fig 2, *Close-ups of fossils with very fine details*

At Mistaken Point over 100 bedding planes are reported to have fossil impressions. The Ranger-guided visit is to the 'D' and 'F' bedding planes within the Mistaken Point Formation. They were impressive with hundreds of fossils on each bedding plane. We had to remove our boots and were given soft slippers to wear before being allowed onto the rock surfaces. As my son later pointed out, all old things need slippers!

As a geology graduate from Leicester University I was very familiar with the ancient fossil *Charniodiscus.* My lecturer, Dr Trevor Ford, had been instrumental in publishing and naming the fossil after the school boy Rodger Mason who discovered it while rock climbing near Charnwood Forest. Subsequent discoveries of similarly old fossil strata from around the world have been studied and a great deal more is known about this period of time now. In 2004 it was given its own period name in the Geological Chart, the Ediacaran, after the mountains in Australia. It runs from 635 to 541 million years (according to the latest ISC chart) and is the last period of the Neoproterozoic Era. (Late Pre-Cambrian).

The amazing thing about Mistaken Point is the in-situ preservation, abundance and variety of Ediacaran fossils. Some 20 different species have been identified.

The sediments are fine grained turbidite silts and mudstones with only minor structural deformation. Many of the fossils have disc like attachments with which they attached themselves to the substrate. The turbidites are interpreted to have been deposited at the edge of submarine fans in water depths below the photic zone. The in-situ fossilisation and environmental interpretation makes these primitive animals rather than plants.

The diorama below shows the likely life

Fig 3, *Diorama of likely life positions of animals from Mistaken Point*

positions of the different species of animals found at Mistaken Point, (The photo was taken in the Miller Hall Geological

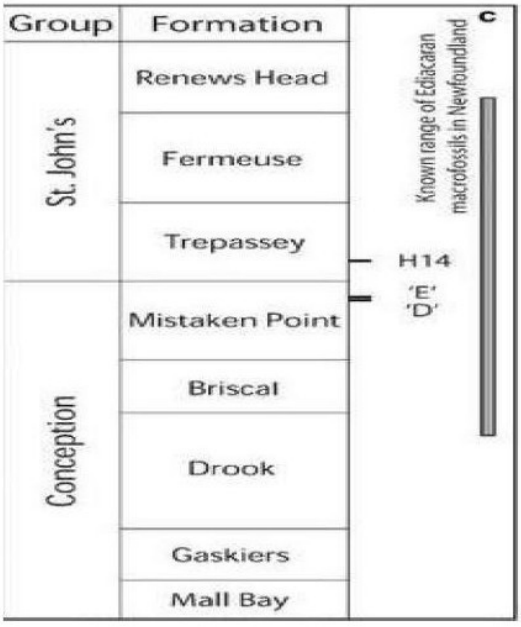

Fig 4, *Stratigraphic Column*

Museum in Kingston, Ontario, CA).

The preservation has occurred due to a layer of volcanic ash with little disruption to the fossils, a slight alignment is observed in the fossils but few broken or displaced pieces. Photo below left shows an abundance of fossil impressions on the 'E' bedding surface. The lighter brown areas are where the volcanic ash layer has not been eroded from the outcrop.

Fig 5, *more fossils*

Fig 6, *expanded view of outcrop*

There is much ongoing research to understand how this community fed, reproduced and evolved. The absence of bioturbation suggests life had not yet become mobile and the absence of shells indicates lack of predators.

Dr Alex Liu from Cambridge University, is actively studying these fossils and has found evidence for bioturbation in younger overlying strata, many of his papers are free to download as his research funding is though an NREC Independent Research fellowship.
The fine details and preservation of fractal front patterns is truly amazing. If you ever get a chance to visit, do so it is a great experience.

References:

A.Liu et al. 2014 — Remarkable Insights into the palaeoecology of the Avalon Ediacaran macrobiota. Gondwana Research, 27:4 1355-1380. http://eprints.esc.cam.ac.uk/3182/

Government of Newfoundland and Labrador. 2009. Mistaken Point Ecological Reserve — Management Plan. Parks and Natural Areas Div. http://www.flr.gov.nl.ca/natural areas/pdf/mistaken point ecological reserve.pdf