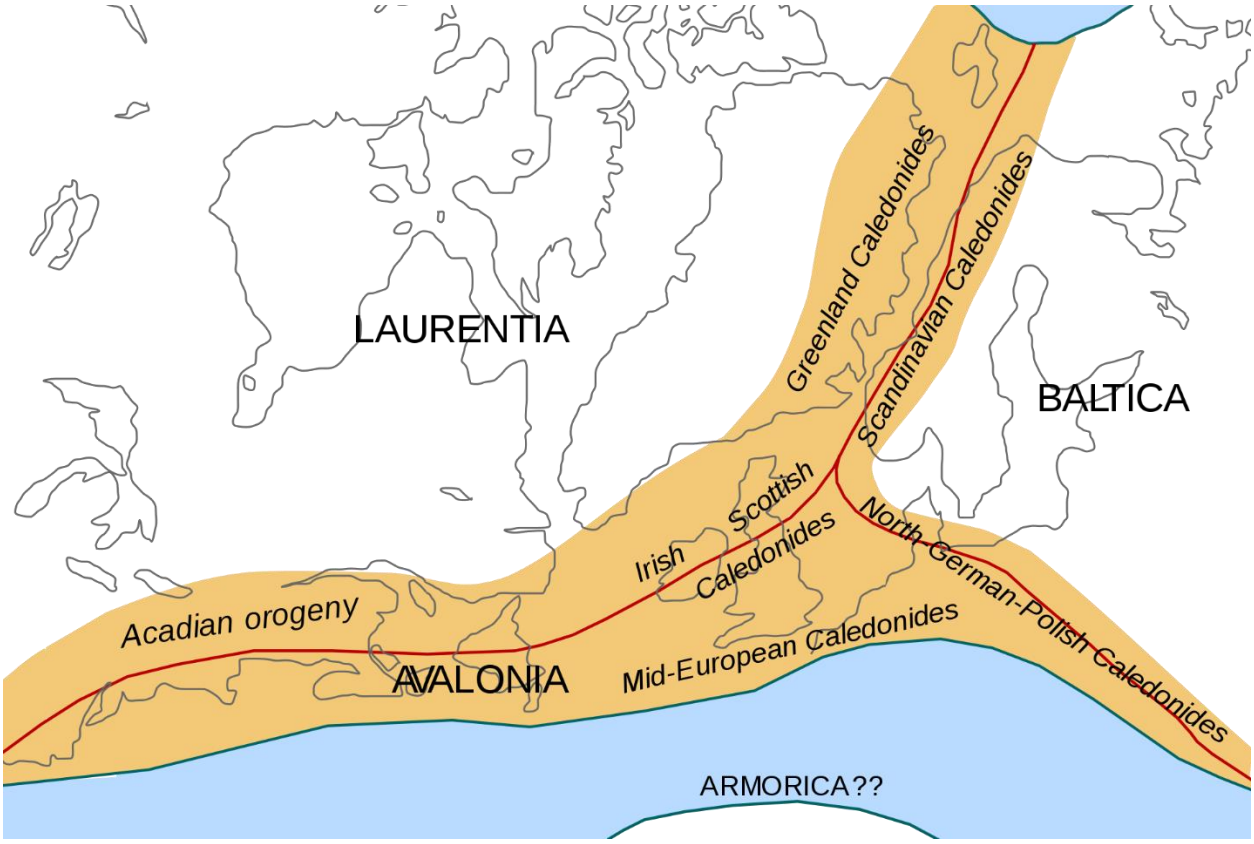
Craighead Quarry and Plate Tectonics

If being where our Watson line continued wasn't enough, Craighead is also known for its role in supporting the theory of plate tectonics.

Geological History

From about 490 million to 390 million years ago, the continental craton of Laurentia which forms the geological heart of today's North America, the protocontinent of Baltica and the microcontinent of Avalonia slowly came together, closing up the early Iapetus Ocean. Their slow collision led to the Caledonian orogeny, a mountain-building era in what are now the northern part of the British Isles, Scandinavia, Svalbard, eastern Greenland and parts of Europe. It was at about this same time that the floor of the Iapetus Ocean was being subducted under Laurentia, leading to a mountain building period that resulted in the creation of the early Appalachian Mountains in North America.

As this was getting underway, today's Scotland, northwest Ireland and much of North America were on Laurentia. Today's England, Wales and southeast Ireland were on Avalonia. Today's Norway and the rest of Scandinavia were on Baltica. The collision of these land masses brought these pieces together as part of the new supercontinent of Pangaea. But Pangaea eventually split up, with the creation of the Atlantic Ocean that separated Scotland from North America.



Laurentia, Baltica and Avalonia as they were colliding, Wikipedia, artwork by Woudloper - Own work, CC BY-SA 1.0, https://commons.wikimedia.org/w/index.php?curid=5038110

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When this collision was still more of an idea than proven geological fact, some key supporting evidence was close to the surface in southwest Scotland, especially in the Ballantrae-Girvan-Dailly area, what geologists refer to as the Girvan Arc. It turns out that the quarry at Craighead, Dailly Parish, was a critical source of this evidence.

The types of rock, how they were layered, and how they folded are similar between the Appalachians and southwest Scotland. Just as importantly, the Girvan Arc's "rich Laurentian faunal assemblages" – its fossil record – was among the first in Scotland to be compared with that of the Appalachians. The Craighead Quarry has yielded trilobites, brachiopods, gastropods, bivalves, crinoids, corals, graptolites and calcareous algae. Many of these, it turned out, had close counterparts in the North American fossil record.

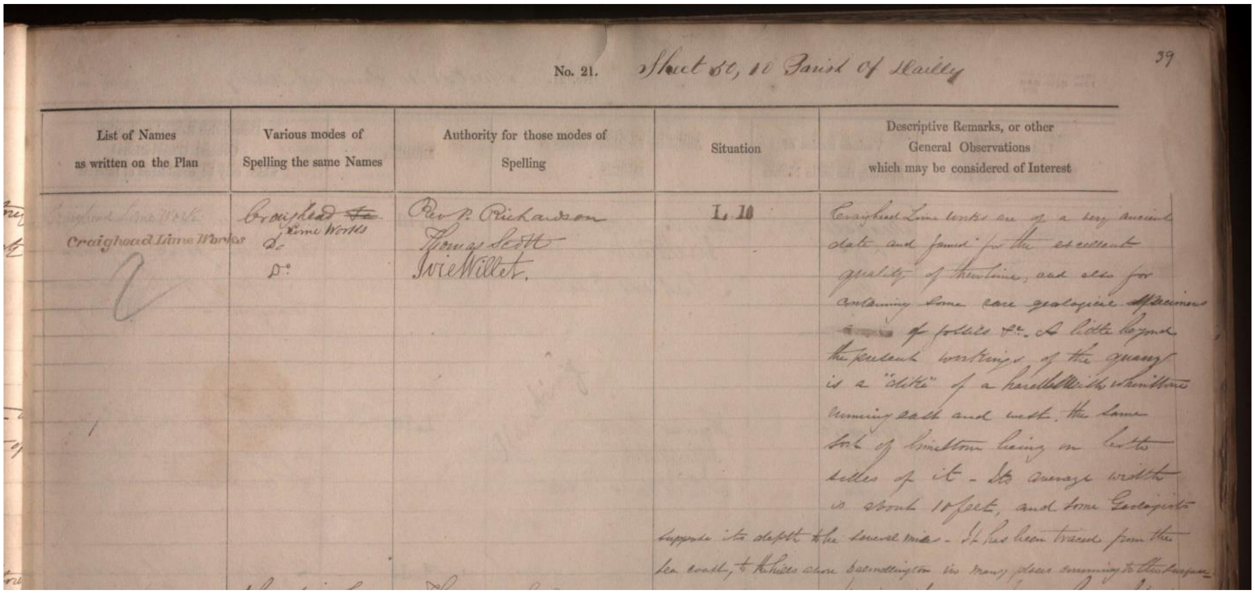
Thus, both geological and fossil evidence collected at Craighead Quarry in Dailly Parish helped geologists confirm the relationship between the Appalachians of North America, the mountains of Scotland and the ancient Scandinavian Caledonides range in Norway, and more broadly supported the then-emerging theory of plate tectonics.

Craighead Quarry is located just west of today's Craighead (formerly Moorgate) and east of High Craighead (formerly Craighead).

As New Scientist, August 13, 1981, described it, "The quarry was one of the first and most crucial pieces in the jigsaw of evidence that led to the theory of plate tectonics – better known as continental drift. Fossils found in the quarry were the first to suggest that 400 million years ago, in the Ordovician period, Scotland was joined to parts of Ireland and North America." Fossils collected from the site provide the world's standard reference point for more than 60 species of fossils.

Craighead Quarry has been designated a Site of Special Scientific Interest.

The <u>Ayrshire Ordnance Survey Name Books 1855-1857</u> described Craighead Lime Works this way:



No. 21. Sheet 50, 10 Parish of Dailly 39

List of Names as written on the Plan	Various modes of Spelling the same Names	Authority for those modes of Spelling	Situation	Descriptive Remarks, or other General Observations which may be considered of Interest
Craighead Lime Works	Craighead Lime Works Do Do	Rev. R. Richardson Thomas Scott Ivie Willet.	L. 10	Craighead Lime Works are of a very ancient date and famed for the excellent quality of their lime, and also for containing some rare geological specimens of fossils &c. A little beyond the present workings of the quarry is a "dike" of a hard blueish whinstone running east and west, the same sort of limestone being on both sides of it - Its average width is about 11 feet, and some Geologists suppose its depth to be several miles - It has been traced from the Sea coast, to the hills above Dalmellington in many places coming to the surface

Ayrshire Ordnance Survey Descriptive Remarks for Craighead Lime Works: "Craighead Lime Works are of a very ancient date and famed for the excellent quality of their lime, and also for containing some rare geological specimens of fossils etc. A little beyond the present workings of the quarry is a "dike" of a hard blueish whinstone running east and west the Same Sort of limestone being on both sides of it. Its average width is about 11 feet, and some Geologists suppose its depth to be several miles - It has been traced from the Sea coast, to the hills above Dalmellington in many places coming to the surface" [sic]

Looking across High Craighead. The quarry is down through the trees to the left.

Craighead Quarry and Lime Works in 1966

Craighead Lime Works at Craighead Quarry in 2012

The International Appalachian Trail

The Appalachian National Scenic Trail, a U.S. National Park Service unit, is a continuous hiking trail that covers about 2,200 miles from Springer Mountain, Georgia to Mount Katahdin, Maine. It generally follows the crestline of the Appalachian Range. The Appalachian Range itself is now recognized to run from Flagg Mountain, Alabama to the north end of Belle Isle in the province of Newfoundland and Labrador, Canada.

The International Appalachian Trail (IAT) was created to follow the range from Mount Katahdin north into Canada's Quebec and Newfoundland and Labrador provinces. As our understanding of the geology of the Caledonian-Appalachian mountain chain increased, the IAT was extended with trails in Canada's Prince Edward Island and Nova Scotia provinces.

Part of the IAT now runs through Scotland, following the coast in southwest Scotland, and passing through Loch Lomond and the Trossachs National Park north of Glasgow. Trails in other European countries have also been added or are under consideration.

Along the International Appalachian Trail route through Foreland, Ballantrae, Ayrshire

Along the International Appalachian Trail route through Balmaha, Stirlingshire, along the coast of Loch Lomond. The small island in the distant left is Clairinch, the ancestral homeland of Clan Buchanan.

Prepared by Mark David Wasson
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