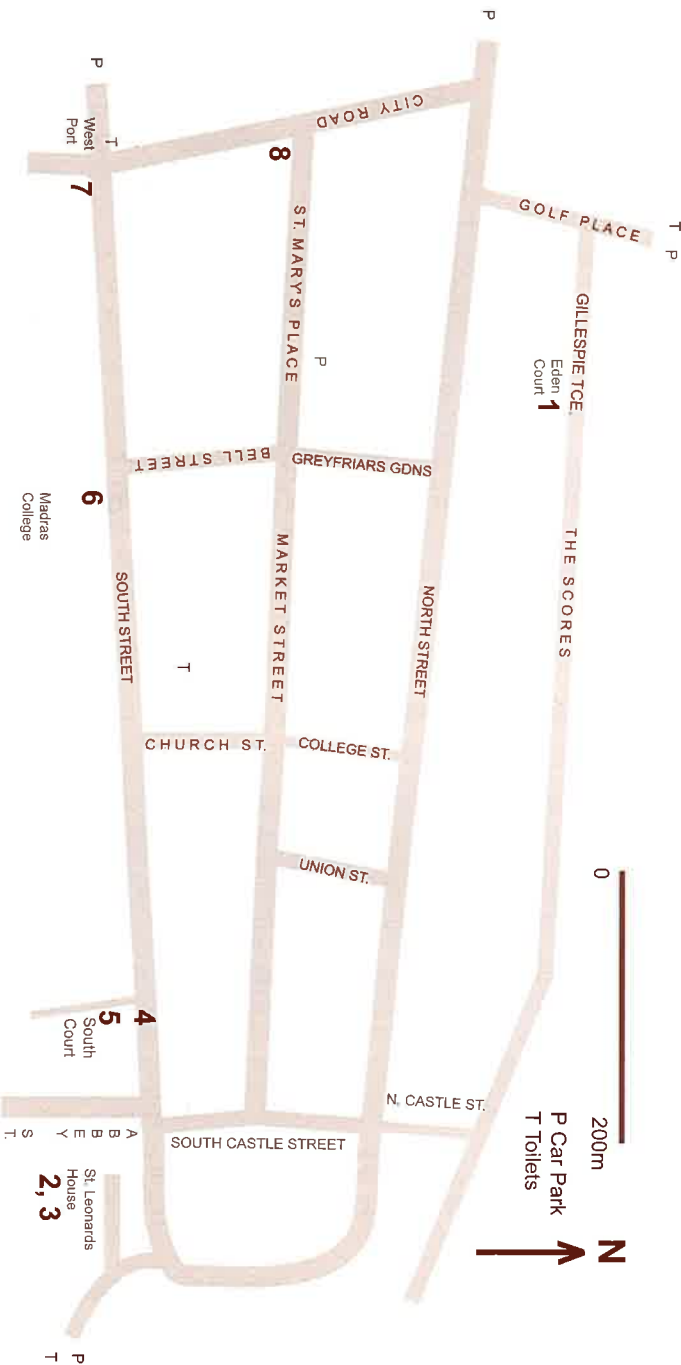


Locality Map



geoHeritage Fife

was set up in 2000 to:

- * publicise Fife's geological heritage
- * provide educational resources in geology
- * promote geotourism

In 2006 it incorporated Fife RIGS, whose remit is to identify and assess sites of geological importance, and to register them with the local planning authority, in order to protect and conserve them.

If you would like to assist with these aims, consider joining the group by contacting

geoHeritage Fife
01334 828623

Geological Society of London

Founded in 1807, it is the world's oldest geological society. Its role is to publish research articles and books, accredit degree courses in geosciences and support the professional development of geologists. It also monitors Government papers and legislation, and advises ministers on matters involving the extractive and minerals industries, and environmental hazards.

Further information from:
enquiries@geolsoc.org.uk

Acknowledgements

University of St. Andrews Library - photos of Chambers, Brewster and Jehu
Hamish Johnston - Heddle photo
Rosalind Garton greatly improved the text.

Historical Geoscientists at St. Andrews



To commemorate the 200th anniversary of the Geological Society of London (the world's oldest geological society), this guide highlights the contributions made by geologists associated with St. Andrews during the 18th and 19th centuries. Follow the trail to visit their place of residence and find out more about them on their commemorative plaques.



geoHeritage Fife

Locality 1
"Eden Court", 6 Gillespie Terrace

Robert Chambers LL.D.
(1802 - 1871)



Co-founder of the publishing firm W. & R. Chambers, Edinburgh, publishers of "Chambers Encyclopædia"

LL.D., St Andrews, 1863.

** Lived for two years (1841-1843) in Abbey Park, and from 1863-1871 he lived at Eden Court, The Scores, St. Andrews. He is buried in St Rule's Church.*

Chambers was interested mainly in aspects of recent geological history, such as glaciation and raised beaches, and in evolution. To these he made notable contributions during his first spell in St Andrews. He is mostly remembered as the author of *Vestiges of the Natural History of Creation*, published anonymously in 1844. He advocated that life on Earth had developed from simple organisms to complex animals over a long period of time. This idea ran counter to the current religious orthodoxy. Churchmen were scandalised by the suggestion that humans could have evolved from apes.

He was a mentor to the young Archibald Geikie (later Director of the Geological Survey) and joined with T.H. Huxley in defending Darwin's new theory of evolution by natural selection.

A mammal-like reptile, *Euchambersia mirabilis*, is named after him.

Locality 2
Headmaster's House, St. Leonard's School

Matthew Forster Heddle M.D.
(1826 - 1897)



President, Geological Society of Edinburgh, 1851-52.
Professor of Chemistry, University of St Andrews, 1862-1883.

Keith Medallist, Royal Society of Edinburgh, 1878.
President, Mineralogical Society of Great Britain & Ireland, 1879.

** Lived at St. Leonard's House, off South Street, and is buried in the Cathedral graveyard, near the SE corner.*

In 1861, Heddle supervised the excavation from Dura Den of fossil fishes, now in the University's Bell Pettigrew Museum. One of these fishes, *Gyroptychius heddlei*, is named after him. During his time as Professor he published widely on the mineralogy of Fife and Scotland, culminating in the posthumous publication of *The Mineralogy of Scotland* which is illustrated with many of his own fine drawings of crystals. Singlehandedly he created a geological map of Sutherland. While President of the Geological Society of Edinburgh he was largely responsible for the extension of the work of the Geological Survey to Scotland and he was one of the founder members of the Mineralogical Society of Great Britain & Ireland. His collection of Scottish minerals, especially agates, is now in the Royal Scottish Museum, Edinburgh, although a modest collection remains in St. Andrews University.

Locality 3
Headmaster's House, St. Leonard's School

Sir David Brewster LL.D., F.R.S.
(1781-1868)



Principal, United College, University of St Andrews, 1838-1859.

Founder Member, St Andrews Literary and Philosophical Society, and of the University Museum in 1838.
President, Royal Society of Edinburgh, 1864.
Principal, University of Edinburgh, 1859-1868.

** Lived at St. Leonard's House, off South Street.*

Brewster was an eminent physicist and writer and a pioneer of optical crystallography and mineralogy, many major concepts of optical mineralogy being based on his discoveries. Inventor of the kaleidoscope in 1816, he also discovered how light could be polarised. He improved the stereoscope and in 1856 he published an article on its history, theory and construction. He established 'Brewster's Law' which states: *A reflected beam of light is plane-polarised if the reflected and refracted beams are perpendicular to each other.*

He discovered and interpreted relationships of optical properties of minerals to their crystal form and chemical composition. He also discovered and described several new minerals including the zeolites: Gmelinite, Levynite and Epistilbite. The mineral *Brewsterite* is named after him, as is Brewster Place in St. Andrews.

Locality 4
Between 38 and 44 South Street

George Martine F.R.S.
(1702 - 1741)



Martine coat-of-arms

** Lived in South Court, then in 56 South Street*

A physician and surgeon in St Andrews, Dr George Martine was interested in temperature and its measurement in the human body. Apart from his clinical studies, he noted that air temperature in caves seemed to increase with increasing depth. In a collection of essays published posthumously in 1780 he states:

"And we know, from the nicest observations, that in the cave of the Observatory at Paris, only about 90 feet underground, the heat keeps the thermometer at gr. 53, and that without any assistance from the sun; it being never sensibly increased by the most scorching season, beyond its heat in the most severe winters that have been felt there... And great and even troublesome heats are said to be observed at greater depths, and increasing in proportion to these depths..... So that it would seem the body of the earth has a very great proper internal heat..."

This observation was much ahead of its time and in conflict with contemporary beliefs, which stated that the Earth was part of God's creation and therefore a static entity.

Locality 5
South Court, No.42, off South Street

James David Forbes LL.D., F.R.S.
(1808 - 1868)



Professor of Natural Philosophy, University of Edinburgh, 1833-1859
Principal, United College, University of St Andrews, 1859-1868

** Lived in South Court, 42 South Street*

In 1832 Forbes published on some experiments on the electricity of tourmaline and other minerals when exposed to heat. Four years later he wrote about the geology of Auvergne, in particular in connection with the origin of "trap" (or volcanic) rocks. This was followed by writings about his travels through the Alps of Savoy. As an eminent glaciologist, in 1846 he published his *Illustrations of the Viscous Theory of Glacier Motion*, demonstrating how glaciers flowed plastically. He later showed conclusively that the Cuillin Hills on Skye had been moulded by the action of glaciers. This was the most detailed and satisfactory account which had yet been given of the evidence that the uplands of Britain once nourished groups of glaciers. On his arrival in St. Andrews he published a book about his theory of glaciers. Forbes Avenue, near Lawhead School, is named after him.

Locality 6
Pillar next to Blackfriars Chapel, South St.

Charles Lapworth LL.D., F.R.S.
(1842 - 1920)



Assistant English Master, Madras College, St. Andrews 1875-1881.
Wollaston Medallist, Geological Society of London.
Royal Medallist, Royal Society.
Honorary Fellow, Royal Society of Edinburgh.
Professor of Geology, University of Birmingham (1881-1913)

During his time at St. Andrews Lapworth spent his spare time carrying out detailed mapping of the complex rocks of the Southern Uplands of Scotland. By studying the distribution of extinct organisms called graptolites, he was able to interpret these rocks. In 1879 Lapworth suggested the name 'Ordovician' for the period of time between the Cambrian and Silurian, a name which was universally accepted. In the same year he produced a masterful paper on graptolites in which he proved the value of the graptolite as a zone fossil.

In 1882, when he was Professor at Birmingham he wrote a classic paper on the Girvan district. Sir Edward Bailey, Director of the Geological Survey and Professor of Geology at Glasgow University, later described Lapworth's interpretation of the Southern Uplands as "one of the miracles of science" and later opined that "Lapworth grew up to be, perhaps, the greatest geologist who ever lived."

Locality 7

172 South Street, next to the West Port

There is no plaque to him.

**Henry A. Nicholson M.D., D.Sc., F.R.S.
(1844 - 1899)**



*Professor of Natural History, University of St. Andrews
(1875 - 1882)*

*Professor of Natural History, University of
Aberdeen (1882 - 1899)
Lyell Medallist, Geological Society of London.*

** Lived at 172 South Street.*

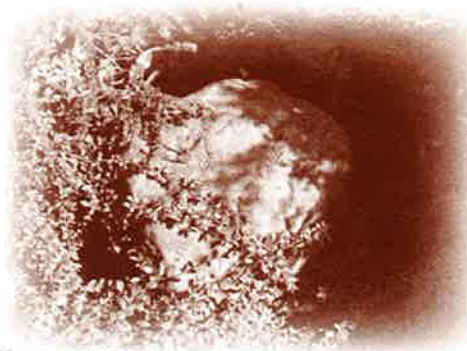
Nicholson was an eminent palaeontologist and published widely on various groups of fossils, including the graptolites, which had proved so important to Lapworth's research. The two men overlapped in St. Andrews and would often meet to discuss their respective work. Nicholson was not convinced by the theory of evolution by natural selection. He believed in some evolutionary mechanism but not the one advocated by Darwin. He spent his later years at St. Andrews studying fossil corals.

On Nicholson's death in Aberdeen, Lapworth wrote:
Nicholson was to a large extent the ... pioneer of that close and detailed study of the graptolites and their geological and geographical distribution, which ... has wholly revolutionised our previous ideas of the geological significance of these fossils.

Locality 8

Corner, St. Mary's Place & City Road

"Blue Stane"



This is the odd-one-out in the tour but is included as a geological curiosity.

The "Blue Stane" is a relic of pre-Christian Pictish St. Andrews when it had some now forgotten ritual significance. It is reputed to have been the coronation stone of Kenneth Macalpine, who united the kingdoms of the Scots and the Picts in 843AD. According to legend, a giant standing either on Drumcarrow Craig or at Blebo Craigs threw the stone at St. Rule's cell on the Kirkhill, but it fell short.

Geologically, the stone is made of dolerite (or whinstone), an iron- and magnesium-rich igneous rock which is found on Drumcarrow Craig. This stone was probably plucked by glaciers which covered Fife during the last ice age and was then dropped nearby as a glacial erratic when the ice retreated about 13000 years ago. The giant legend looks like folk history to explain the movement of such a large stone.

**Thomas J. Jehu M.A., B.Sc., M.D.
(1871 - 1945)**

There is no plaque to him.



***First lecturer in Geology at the University
of St Andrews, 1903 - 1914***

*Member, Royal Commission on Coastal Erosion 1906
Professor of Geology, University of Edinburgh 1914-45
Keith Medallist, Royal Society of Edinburgh 1934*

** Lived at "St. Ronans", Hepburn Gardens.*

Jehu was a Welshman who came to the University of St. Andrews to set up its first Geology Department in 1903. With two assistants he taught the first two years of a degree course. In his early years he worked on the glacial deposits of Wales, then later studied the rocks near to the Highland Boundary Fault at Aberfoyle in Argyll where he claims to have discovered fossils, the first time fossils had been described from the complex zone of rocks called the Highland Border Series. When he moved to Edinburgh University in 1914 to take up the Chair of Geology, his research interests changed to the rocks of the Outer Hebrides. With R.M. Craig (his Assistant at St. Andrews) he produced five publications on the geology of the Outer Hebrides, which earned the authors the Keith Medal.