# British Scriptural geologists in the first half of the nineteenth century: part 8. George Fairholme (1789–1846)

Terry Mortenson

George Fairholme was an enthusiastic and competent geologist, well read in the leading geological literature of his time, British and foreign. His original first-hand geological investigations involved years of travel in Britain and abroad. He participated in scientific meetings, interacted with leading contemporary geologists and other scientists, and published in reputable scientific journals. His two books on geology were based on a deep conviction of the truth of Scripture, historical, theological and moral. He refuted the arguments of long-age geologists, which were not only contradictory to Scripture but also to the scientific facts. He believed that old-Earth reinterpretations of Genesis destroyed faith in the rest of the Bible. He argued that, although Genesis does not teach a system of natural philosophy or even of geology, it does provide reliable beacons for geological study. His geological and geographical areas of interest included valley systems, waterfalls, coastal erosion, human fossils, polystrate fossil trees, and insensible transitions between strata. From these he showed that the strata were not formed by modern processes operating over millions of years but by the Flood about 5,000 years ago.

## Biographical sketch

George Fairholme was born to the wealthy Scottish family of William and Elizabeth Fairholme of Lugate, Midlothian on January 15, 1789.[1] In 1800, when George was eleven, his uncle bequeathed him the Greenknowe estate (comprising 5,000–6,000 acres) near Gordon, Berwickshire.[2] There is no official university record of him graduating from Oxford, Cambridge, Aberdeen, Edinburgh, Glasgow, St. Andrews or Dublin. Evidently he was tutored at home and self-taught.

On November 15, 1818 in Dunkeld, Perth, he married Caroline Forbes, eldest daughter of the eighteenth Lord Forbes and granddaughter of the sixth Duke of Atholl.[3] The Fairholmes had four sons and one daughter.

George Fairholme died in Leamington Spa on November 19, 1846.[4]

## Scientific work and geological competence

Fairholme published two lengthy books on geology—*General View of the Geology of Scripture*,[5] and *New and Conclusive Physical Demonstrations both of the Fact and Period of the Mosaic Deluge, and of its having been the only event of the Kind that has ever occurred upon the Earth*.[6] He critically evaluated Lyell's theory in his 32-page booklet, *Positions géologiques en vérifications directe de la chronologie de la Bible*,[7] which was published in Munich, but apparently never appeared in English. He wrote geological journal articles on coal, Niagara Falls, and human fossils.[8] In addition, he wrote journal articles (two of which were translated into German) on spiders, elephants, microscopic creatures, and woodcocks.[9] These reflect his scientific competence in recording careful observations of nature, wide research in relevant scientific literature, personal correspondence or conversation with other naturalists, the use of museum and zoo collections, the application of appropriate experimentation, and a caution so as not to over-generalize from the stated observations. His writings reflect a high level of education and he was apparently fluent in French and German.[10]

It seems that Fairholme was not a member of the Geological Society or other such society,[11] but he conducted his own personal geological investigations. In *Mosaic Geology*, where he presented new scientific facts and inferences, he says of his fieldwork:

> 'I have spared no pains in personally tracing out these proofs, from point to point, not only in our own island, but also over various parts of the continent of Europe: and the simple and obvious nature of many of the facts, in those districts within my reach, has enabled me to extend with confidence the same line of reasoning to every part of the earth, where phenomena precisely similar, are clearly described by travelers.'[12]

His geological research before 1833 was not insignificant. He wrote,

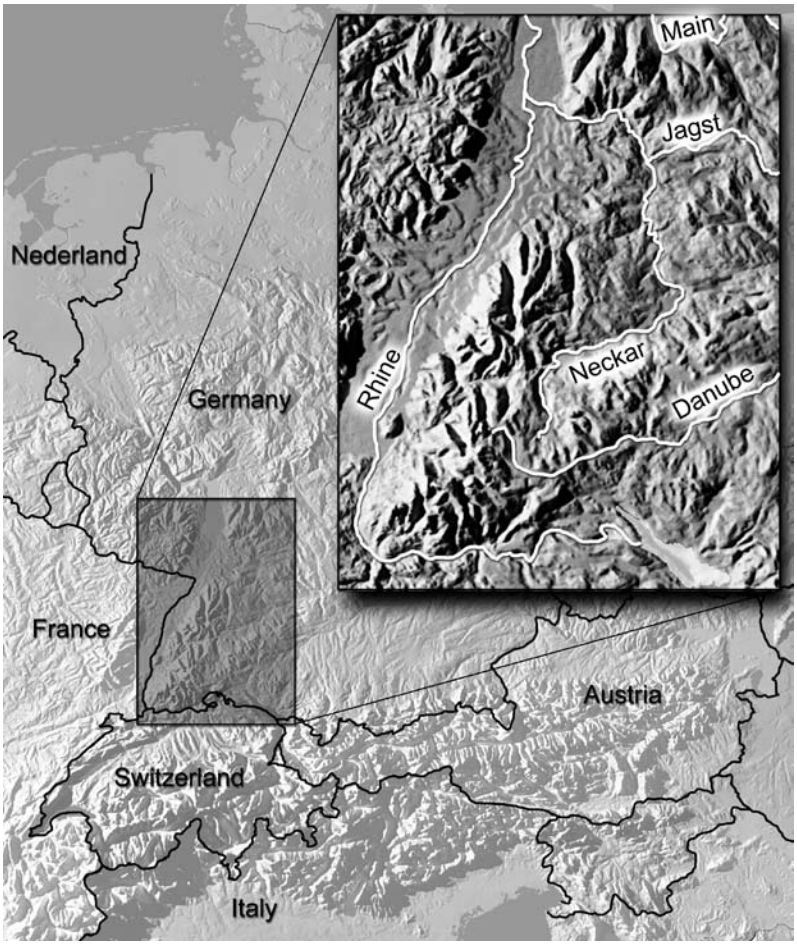
> 'In the course of repeated travels over a great part of Europe, I have also had many opportunities of practically forming a judgment of the more visible and tangible evidences adduced in support of those theories.'[13]

These field studies included a longitudinal journey across the UK and descent into several mines.[14] He also studied fossils in geologist W. Buckland's Oxford collection and while staying in Switzerland in 1829

he conducted geological and geographical fieldwork.[15]

Although Fairholme sometimes discussed matters of which he had not made personal observations, such as the Niagara Falls, he was always careful to inform his reader and cite his sources.[16]

His geological field research included several months exploring the valley system of the French tablelands. While in Germany for the 1834 scientific meeting at Stuttgart, he described his observations of the winding Neckar river valley: 'But having, myself, just completed an examination of *the whole course* of the Neckar, from its very source, down to Heidelberg, and having seen *many hundreds* of such windings, both above and below Canstatt … '.[17] Such observations led him to reject the burst-lake theory for the formation of the valley explained by the geology professor at the meeting, who had taken him and others on a field trip to the valley.

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*Fairholme's personal observations of the winding Neckar river valley, which he undertook while in Germany for the 1834 scientific meeting at Stuttgart, led him to reject the burst-lake theory for the formation of the valley.*

Most 19th century catastrophists did not believe the Biblical Flood caused the sedimentary strata, even though many believed it deposited the surface diluvium. The major reason for this was that there were no proven examples of human fossils in the secondary strata.[18] One potential challenge to that conclusion was a mixed deposit of animal and human fossils discovered in 1820 near Köstritz, Germany.[19] Apparently without ever personally visiting the site, Buckland concluded that the human bones had been washed into their position in the secondary rocks long after the strata had been laid down and after the Flood, in which at that time Buckland still believed.[20] Fairholme acknowledged that virtually no other current geologist believed these Köstritz fossils were from pre-Flood humans and he was aware of many places where human bones had been found, which upon close inspection had proven to be post-diluvial. Nevertheless, Fairholme wrote,

> 'Nor can I deny to others, the feelings to which I myself formerly laid claim: for without in the slightest degree doubting the truth of the facts described by him [Schlotheim], nothing short of that *personal* examination and attention, which I have since bestowed upon the locality, could have brought me to that entire conviction of the existence of FOSSIL MAN [i.e. pre-Flood] which I at present entertain.'[21]

One of the reasons that Fairholme believed that most of the sedimentary rock record was produced during the year-long Noachian Flood was the gradual, *'insensible transitions'* (or conformity) between the strata. He was first alerted to this fact by a French professor of geology in Paris, who because of this fact had rejected Cuvier's theory of multiple catastrophes each separated by long stretches of time. Fairholme said:

> 'I had ample opportunities, both in Britain and on the continent of France and Germany, of inspecting the junctions of almost all the formations; and I feel persuaded that there is no fact more clear in geology that this, *viz. that the upper surface of almost every formation, was yet soft and moist, when the superincumbent sediments were deposited upon it.*'[22]

Fairholme was well read in the current works of the leading geologists and other scientists of his day. Contrary to the charge of one critic,[23] Fairholme did not rely primarily on articles in the *Edinburgh Encyclopaedia* for writing his *Geology of Scripture*.[24] And again contrary to that critic, he referred to articles, not written by someone 'who appears to have as little practical acquaintance with the science as' Fairholme,[23] but by leaders in the field.[25] In addition to these articles, Fairholme read and interacted with Cuvier's *Ossemens Fossiles*, Lyell's *Principles of Geology*, DeLuc's *Lettres Geologique*, John Phillips' *Outlines of Geology*, Buckland's *Reliquiae Diluvianae*,

and others, as well as a number of works on animal natural history written by respected explorers.[26]

In *Mosaic Deluge* he showed familiarity with Hutton's and Werner's theories and discussed at some length the work of the chemist, John Murray, whose experimental research raised serious objections to the Playfair/Hutton theory.[27] He constantly interacted with the arguments in Buckland's and Lyell's most recent works. But he also referred to the well-known writings of British geologists Adam Sedgwick, John Macculloch, Robert Bakewell and Henry De la Beche. He cited the works of English scientists William Whewell, William Prout, Sir Humphrey Davy, Sir John Herschel, William Kirby, William Wood and Henry S. Boase. And he evidently read books by French scientists such as Georges Cuvier, Alexandre Brongniart and Claude A. Rozet, as well as the writings of little-known English practical geologists, such as Mr. Edward Mammatt.[28]

Furthermore, he read English and foreign scientific journals[29] and gleaned pertinent information from more popular magazines and newspapers,[30] as well as the travel journals of experienced explorers, such as Captain Basil Hall and Bishop Heber of India.[31] In most cases he quoted liberally from his sources (often a page or more), especially from those with whom he disagreed, reflecting his desire to properly represent their views before contesting their conclusions.

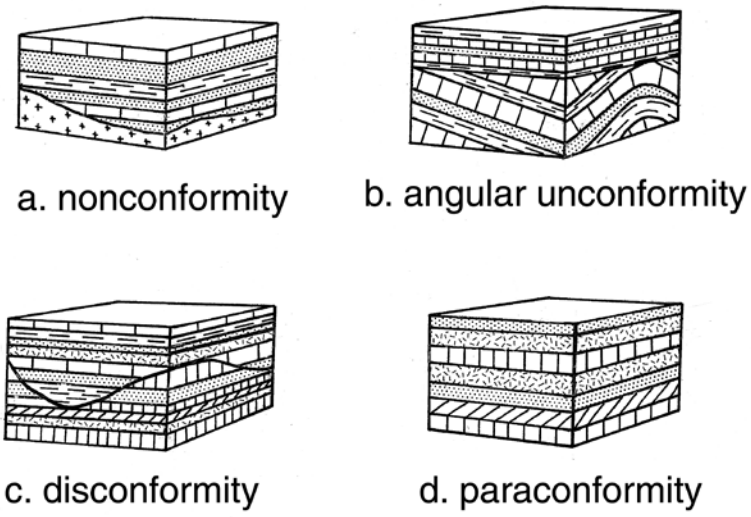
In spite of all this evidence of geological competence, three scathing reviews of his writings stated that Fairholme, like the other Scriptural geologists, knew nothing about geology. One said that he knew 'scarcely an atom of geology as now taught' or knew 'that atom imperfectly', that he was 'actually (or willfully) ignorant of the simplest data of the science [geology]' and that he had a brain with an opening like 'a diluvial chaotic pit'.[32] Another said he had 'little real knowledge of geology',[33] and a third spoke of Fairholme's 'want of practical acquaintance' with geology.[34] Yet neither of these latter two critics cited a single example of such ignorance.

In dealing with the arguments of his opponents Fairholme displayed a very respectful attitude. One could accuse him of being boring in the use of adjectives, because his most frequent descriptions were 'able' or 'learned', which he used equally with regard to deistic uniformitarians, such as Lyell, Playfair and Hutton, and to Christian catastrophists, such as Buckland and Sedgwick. After quoting James Hutton's famous statement that he found 'no traces of a beginning, no prospect of an end', which had provoked the angry charge of atheism from many others, Fairholme refrained from character assassination and simply, but firmly, criticized his conclusions by saying,

> 'But Hutton, intent only on proving the vast antiquity of the earth, carried his sweeping conclusions far beyond the limits prescribed by his premises; and was thus amongst the first to mislead the scientific world into that tangled labyrinth, which most men now perceive, and which some regard without much hope of ultimate extrication.'[35]

He described John Macculloch as 'one very talented author, for whose abilities I have a high respect'.[36] He concurred with the 1837 president of the Geological Society [Lyell] in giving 'a high and well merited eulogium on the descriptive parts of [Buckland's] Bridgewater Geological Treatise',[37] even though he also rejected, but in ways different from Lyell, some of Buckland's theoretical interpretations of the facts. For example, Fairholme largely agreed with Buckland's theory of the mode of formation of the vast coal measures (i.e. transport and burial of plant debris by flood waters), but presented his reasons from nature for rejecting the millions and millions of years postulated for their formation.[38]

Fairholme was willing to admit his errors, when so proven by the evidence, and to modify his views accordingly, as shown in the appendix to the article on Niagara Falls and in his introductory chapter to *Mosaic Deluge* with reference to his *Geology of Scripture*.[39] On Buckland's recantation of his belief in the Flood, which Buckland felt obliged to make because of new geological evidence brought to his attention, Fairholme compared himself saying,




*Four types of field evidences for periods of erosion and nondeposition. a) The nonconformity where stratified rock rests on nonstratified rock, b) The angular unconformity where stratified rock rests on tilted and eroded strata, c) The disconformity where parallel strata are present below and above but where discordance of bedding is evident, d) The paraconformity where no discordance of bedding is noticeable. Paraconformities are proposed between strata for the sole reason that appropriate index fossils are absent from the intervening geologic system. Paraconformities usually show no evidence of subaerial exposure or the supposed millions of years between strata.*

> 'So far from condemning these candid admissions of supposed error, I look upon them as in the highest degree praiseworthy; nor can there be the slightest doubt of their disinterested and honourable nature, when we consider that they voluntarily level with the ground, some theoretical structures which were once regarded with general delight and admiration.'[40]

In addition to analysing existing geological theories, Fairholme also added to geological knowledge by presenting new facts from his own fieldwork. The new facts he presented related to the formation of valley systems, sea cliffs and waterfalls. He thought his work on valleys was especially significant. It was the arguments of Lyell, Scrope and Murchison, in the late 1820s (that valleys had been cut by the rivers now flowing in their bottoms), which had increased doubts about the violent nature of the Noachian Flood and led to the recantations of Sedgwick, Buckland and Greenough. Fairholme wrote,

> 'I am induced to offer this contribution to the general stock of *facts*, on which alone, scientific knowledge can be solidly based. From the critic, I feel that I can look for but little indulgence, while deliberately entering on the field of controversy, in opposition to so numerous a host of powerful combatants. But humbly invoking the Divine blessing, without which all scientific efforts, however brilliant, are to man but *"a stumbling block"*, to God "*foolishness"*; and confidently trusting in the simplicity and clearness of the facts which have at length been disclosed, I submit both these facts and the inferences which seem naturally to flow from them, to the candid and unbiased judgment of the world.'[41]

After presenting his 'new and conclusive' evidences regarding the time of the formation of the present land masses and their subsequent changes, Fairholme stressed that they were a totally new contribution to geological knowledge. He quoted extensively from *Discourse on the Study of Natural Philosophy* (1831) by astronomer, Sir John Herschel, a man of encyclopedic knowledge, including geology, and almost deified by his contemporaries.[42]

Herschel was discussing the obscurity of geological knowledge about the commencement of, and subsequent changes to, the present superficial rock strata of the dry lands. He discussed how it was difficult to evaluate the effects of present causes in geology, such as the annual erosion rates of the continents or coastal erosion caused by the sea. Herschel concluded that 'much then, at present, must be left to opinion' and 'every possible effort' should be made 'to obtain accurate information on such points' for geology to move forward as a true science.[43] Fairholme then remarked of his own work,

> 'I may, perhaps, be permitted, without presumption, to hope, that the evidences just produced, from sea-cliffs and water-falls, have now become of a sufficiently distinct and definite nature to entitle them to a place amongst such inductive reasoning, as are so beautifully applied to the more experimental sciences … .'[44]

## The relation between Scripture and geology

Fairholme held the traditional Christian view of the inspiration, infallibility and inerrancy of Scripture.[45] In this belief he was not ignorant of critical Biblical scholarship. In the preface to Mosaic Deluge he decried the fact that the 'all too common view at present' is that the early chapters of Genesis were mythical or allegorical, the result of successive traditions of ignorant and superstitious people.[46] He believed, like many Englishmen in his day, including some Christians who opposed his view of Genesis and geology, that the 'Sacred Word of God can neither err, nor stand opposed to His Works, however blindly or imperfectly man may interpret them'.[47] So he made a distinction between the unerring Scriptures and a person's interpretation of them, which could be in error. But, he said, when rightly understood, God's truth in Creation would be harmonious with the truth of Divine revelation.

He was convinced that the Genesis-geology debate was foundational to faith in the rest of Scripture. In response to Lyell's insistence on explaining every geological phenomenon by the current laws of nature Fairholme said,

> 'Such is the line of reasoning by which the distinct testimony of Inspiration is to be set aside, on the subject of the deluge; and such the steps, whether intentional or casual, by which, if acceded to, all confidence in Scripture must eventually be shaken, on subjects of infinitely greater importance than that which we are now examining.'[48]

Some of those more important subjects included the historicity of the accounts of the miracles of Jesus as well as the truthfulness of the prophetic statements in the Bible about the future.

But it was as a result of his geological investigations up to 1833 that his 'confidence in the unerring accuracy of these Records [Genesis 1–11] [was] firmly established'.[49] After another four years of more first-hand study of geological features of the earth, as well as analysis of the current theories of Buckland and Lyell, he concluded in 1837 that 'we find that the combined efforts, even of the ablest men, have proved totally incompetent successfully to contend against the simple yet unbending Words of Eternal Truth'.[50]

Though he had this view of Scripture, he decided in his *Mosaic Deluge* to restrict himself to scientific arguments. But he did not want his readers to think that he was belittling the Word of God. Thus, before proceeding into the last stages of his argument, he made this digression

(which reveals not only his view of the Bible, but also his perspective on purely scientific arguments):

> 'My design is … to draw my inferences from *natural phenomena*, as far as their evidences are exposed to our view. But though this may be the most proper, and the most philosophic mode of dealing with the subject, I would by no means have it inferred that I undervalue, or set aside, the conclusive testimony of Revelation, on this point. On the contrary, I should myself be content to rest, with the fullest confidence, on the unerring truth of revealed testimony, on this as on all other points, especially if they are beyond my own ready comprehension; but as this may not be the feeling of numbers who take an interest in geology, … it may be more satisfactory to such persons to exclude, for the moment, what the Scriptures have taught us, with regard to this particular subject, with the distinct reservation, however, that they are in no wise freed from their allegiance to the Word of God, by any imperfection which they may conceive to exist, in the evidences which I may now adduce, in support of that Word.'[51]

So in Fairholme's view, all of the Scriptures were produced by Divine supernatural inspiration. They are God's unerring revelation, and as such they are completely trustworthy in all that they affirm.

## On the laws of nature

Fairholme had more to say about the so-called 'laws of nature' than any other Scriptural geologist. This was to respond to Buckland, Lyell and his other opponents who insisted on explaining the geological phenomena on the basis of such laws. It is interesting to note how Fairholme used analogy with the existing laws of nature to show that there was indeed a First Cause, and to determine the limits to what secondary causes could explain.

He used arguments from Scripture to clarify the geological reasoning of those who discounted the reality of the Genesis Flood. He wrote,

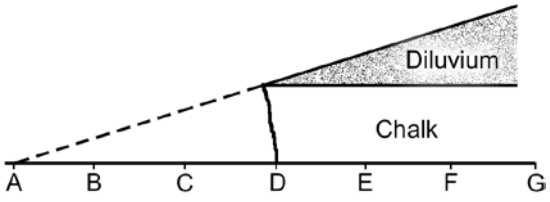
> '"A natural deluge, arising from physical causes, within our view", says geology, "may be readily understood and assented to; and of such local convulsions we have numerous proofs, in the strata of the earth; but to a *universal flood*, such as Moses describes, we cannot subscribe, because we can conceive no law in nature, by which it could possibly be effected." It may readily be admitted, that, as a general rule, this determination of adhering closely by the established laws of nature, is most necessary and wise; for, without such rule, human ardour, combined with human blindness would recur, in every difficulty, to a *final* cause. But "although it be *dangerous* hastily to have recourse to final causes",[52] yet there are some subjects, and those too, not unworthy of philosophic attention, which cannot possibly be credited, without drawing a certain line of exception to this rule. Is the chemist in his laboratory, for example, to refuse his assent to the statement of History, with regard to the physical fact, that, on one occasion, *water* was converted to *wine*, merely because he is certain that the laws of chemistry would not enable *him* to succeed in any similar trial? Is the physician or surgeon to put in the plea of the laws of nature, in objecting to the no less physical facts, respecting the *blind* being made *to see*, the *deaf to hear*, the *dumb to speak*, and even *the dead body*, on which corruption had begun its work, *to rise again into life*, and once more to resume its former station in human society? … We can, in short, see no bounds to scepticism on such subjects, from the moment that we subscribe to any such objections, however talented they may be, who set us the example. If these, and such like statements of physical facts are to be erased from the Word of God, as being altogether inconsistent with the common laws of nature, then, indeed, *but not till then*, will the Christian geologist be justified in entertaining doubts with respect to the fact of a general Deluge, on the pleas of his inability to account for it, by the fixed laws of nature. … We cannot *believe* one of the above preternatural, yet physical, facts, and *deny* another, simply because we have not discovered the means by which that other was effected.'[53]

## Erosion of the coasts

When Fairholme discussed the erosion of the sea cliffs along the coast of England we see something of his idea of the uniformity of processes and rates of nature and how he argued from analogy.

> 'We plainly see in examining all these coasts, that in a thousand, or in ten thousand years, the edge of the cliffs on which we now walk will not exist, and that instead of being elevated, as we are, far above the waves, the geologists of that day, must walk upon what is now the foundation of the rock on which we stand, left dry by the ebbing tide, and covered, like those below us, with a protecting coat of sea-weed. What must thus happen to future philosophers, now happens to ourselves with reference to by-gone times, and to masses of solid rock already washed away. Unless we forcibly reject all analogy, our forefathers might have foretold what we now see has taken place; and in the same manner, we can now with certainty foretell what our descendants must witness in succeeding ages; for as an action which is ceaseless, is now slowly destroying the lands at D in the plates [see replica below], so has

it progressively advanced from A to B and C;




and so must it continue to advance from its present place D to E, F, and G; but beyond the point at A we can by no means advance, under the guidance of the existing laws of nature. We then reach the commencement of a new state of things; and it is as clear as any mathematical demonstration, that as, on a certain day, this action, which is now ceaseless, must have begun, by the breaking of the first powerful surf on a fixed shore, so, before that day, there was there no such action, simply because there was no fixed land for such surf to beat upon. Beyond this point, and beyond the date (whatever it may be, of 5, 10 or 100 thousand years) to which it points, we cannot advance; we must there embark on the obscure sea of theory, without chart or compass.'[54]

### Older sedimentary rocks

Concerning the difference between the older sedimentary rocks and the sediments being deposited by the present rivers and oceans he stated:

'The existing lands consist of all the strata already described. The rivers, by means of which much of the detritus of these lands is carried into the sea, flow over *the whole of them*; and, consequently, the sediments now lodged in the waters, must be a mixture from the destruction of all sorts of rocks. In like manner, the sea coasts are composed of every variety of mineral formation; consequently the destruction by the waves, there so constant, must occasion deposits of moved matter, of a like mixed character, partaking of the composition of the whole, and not confined to that of any one species of rock. One river is perhaps charged more especially with the detritus of *argillaceous* formations; another with *arenaceous* sediments, &c., each according to the prevalence of the rocks, over which it flows. If we view this process on the great scale, we cannot fail to perceive, that though the movements of the waters may sift and arrange the whole into distinct strata, such strata cannot have the universality of *character*, which the older formations exhibit. Far less can their fossil contents, consisting of fish, shells, or vegetables, be the same *in all latitudes*, as appears formerly to have been the case. The analogy, then, on which geologists reason, between the *mode* of former depositions, and the result of existing action, can, in no point, hold good, except that water still possesses, as it always has done, the power of arranging its sediments in *strata.*'[55]

### Range of arguments

In 1833 Fairholme expressed his rejection of evolution because it was contrary to the laws of nature, though he did believe in limited biological variation to produce different races (e.g. of men).[56]

Fairholme believed in the general uniformity of the processes of nature, such as gravity, the flow of water downhill, the erosive and sorting powers of moving water, the ameliorating effect of the atmospheric forces on the surface of the Earth, that earthquakes cause faults, etc. He was therefore committed to the scientific principle of analogy. He assumed, because of the physical evidence he observed, that the present gradual processes, such as wind, rain, river and sea erosion and river, lake and ocean sedimentation, continued ceaselessly, since the land masses were elevated. But he did not believe that the rates of these processes had been constant, for in the case of sea cliffs and waterfalls, he observed evidence that in the past the water was working against much softer rocks, resulting in more rapid erosion.[57]

But by the same process of analogy Fairholme concluded that the elevation of the continents was contemporaneous and catastrophic. He argued that the present-day processes, such as erosion, sedimentation, volcanoes and earthquakes, described as the 'present processes of nature', the 'laws of nature' or the secondary causes of effects, completely failed to explain the major features of the continents. Present upheavals (e.g. floods, volcanoes and earthquakes) are only miniature analogies of the past singular upheaval which laid down the fossiliferous sedimentary strata and diluvial surface rubble all over the earth, raised the continents, and scooped out the valley systems. In this regard he was reasoning very much like the catastrophists of his day. However, he believed he had uncovered geological evidence, which corroborated the testimony of Scripture. There had only been one catastrophe in the past. It had not been a normal event of nature, which we should expect again in the future, but a unique never-to-be-repeated preternatural event associated with the judgment of God on a sinful world.

So Fairholme did not freely invoke miracles to explain what he saw but he sought to find secondary causes for the observed effects. From his geological observations he argued against those who said that the present processes (and rates) of nature did explain everything. When he felt that the natural secondary causes demonstrably failed to explain the effects, he concluded that the First Cause had

preternaturally acted. As the catastrophists applied this line of reasoning to the biological realm to explain the origin of life forms, Fairholme insisted it could and should be applied to the geological realm to explain the features of the Earth. In reality he argued that such preternatural Divine activity only occurred in geological history at the time of the Flood and original Creation.

He argued that to insist on explaining everything by present day processes or 'laws of nature' would necessarily involve the denial of all the miraculous elements of the Bible, which in his view was impossible for a Christian.

### His *Geology of Scripture*

His *Geology of Scripture* was mainly aimed at refuting Lyell. In it he argued that:

1. It is unreasonable and unphilosophical to attribute all things to the mere laws of nature. Even if secondary causes can explain the transformation of the original chaotic mass into the present globe, they cannot explain the origin of the chaotic mass. Therefore we are forced to acknowledge a Creative Power. This logic applies even more forcefully to the origin of animals and plants, which display such evident design. God must have made originally a mature, perfect man, oak tree, bear, etc. When we compare such reasoning to Scripture, we realize that God did such creating in six literal 24-hour days. So the original creation was perfect; it did not improve gradually from an imperfect state over eons of time.
2. The first great geological change on Earth took place on the third day, when God made the dry land by Divine decree. He did this not by the normal laws of gravity, fluid flow and slow accumulation, but by the depression of the Earth's thin crust in places. From that moment the ocean, operating in a manner similar to its present action, produced the earliest, non-fossiliferous, secondary formations on the base of the primary rocks created in the initial act of Creation.
3. A great portion of the secondary formations (those containing marine fossils, e.g. the chalk) was formed by the current laws of nature operating during the 1,656-year period from the Creation to the Noachian Flood. (He later modified this view in his *Mosaic Deluge*.)
4. The Flood, for which there is evidence all over the dry lands, produced all strata containing the fossil remains of land animals as there was a gradual interchange of the former sea and land.
5. The Flood waters, moving in currents similar to the movements of the present oceans, distributed the floating plants and animals to where they are now buried. The pre-Flood climate was not significantly different than the present climate, and plants and animals similarly lived at different latitudes.
6. Man coexisted with the pre-Flood plants and animals. Contrary to the catastrophists like Buckland and Cuvier, there were no progressive creations over long ages before man.
7. On the basis of the worldwide traditions and other proofs, such as the origin of languages, we may conclude that the human race is descended from Noah's family in the present-day Middle East.
8. All the evidence supporting of these points corroborates the historical truth of Genesis 1–11 and other statements of Scripture. This evidence, along with the evidence of fulfilled prophecy, shows the Bible to be the product of Divine inspiration.

### His *Mosaic Deluge*

In his *Mosaic Deluge*, Fairholme stated that further personal study of the geological evidence convinced him that he had made some errors in his first book. The line of argument then in 1837 was different and limited in scope, focusing completely on the Noachian Flood, which he now believed, contrary to his earlier book, laid down virtually all the sedimentary fossiliferous rocks. Interestingly, this is the position of most creationist geologists today.

First, he reviewed his previous arguments in favour of the global extent of the Flood (e.g. quadruped animal

*Niagara Falls, we can calculate the time of commencement of water flow to be, at most, 10,000 years. However, even with a constant power of water, a considerably smaller rock resistance in the past can reduce the commencement to about 4–5,000 years ago.*

remains, especially mammoths in the diluvial deposits and in various caves). He then remarked about some recently discovered human fossils which Fairholme believed were strong evidence that the secondary strata were not all formed before the creation of man[58] and an overview of the traditional non-geological defense of the Flood account in Genesis. After this, he argued strictly from the phenomena of nature to prove the following points.

1. As we look at the general features of the landmasses all over the world, we observe systems of valleys draining in all directions from the summits to the present sea level. These valley systems were clearly formed by water, but, contrary to the ideas of Hutton, Playfair and Lyell, they were not formed by the existing rivers over immense periods of time. The greatest evidence of this is the many dry valleys (no longer containing any river) in the valley systems, which connect into the drainage system at just the right level. These suggest that the carving, scooping waters which produced the valley systems are no longer seen on the continents.[59]
2. As the valley systems end at the level of the present seas, so in a similar way the dry and wet valleys on the sides of lakes end at the present level of the lakes.
3. These two points show that the whole network of valleys was formed contemporaneously, regardless of the length of the valleys.
4. Since the valleys were not carved by the present streams but the latter merely flow down previously prepared valleys, a study of the additional erosion by the rivers leads us irresistibly to a commencement of their flow in a certain place.
5. By measuring the rate and amount of erosions of major waterfalls such as at Niagara Falls or at Schaffhausen on the Rhine, we can calculate the time of commencement of water flow to be, at most, 10,000 years. In addition, even with a constant power of water, a considerably smaller rock resistance in the past can reduce the commencement to about 4–5,000 years ago.
6. Since the waters of Niagara represent the drainage of nearly half of North America and other river systems there are similar, even if they lack a falls, we can by analogy conclude that all the rivers started to flow, and hence the continent became dry land, about 5,000 years ago.
7. Careful examination of the present sea-cliffs of Britain and Europe shows that they have eroded a relatively short distance.
8. This means there was a definite point in space and time where and when the present ceaseless activity of the waves commenced. Thus the continents rose at a definite period (contrary to Hutton, who saw no evidence of a beginning).
9. The average coastal erosion in England and France is observed to be about one half mile. Over 10,000 years this works out to an annual loss of three inches, which is too little, given the observed erosion on the coasts. Therefore the commencement of the sea erosion, and with it the elevation of the present continents, began sometime between 10,000 years ago and the beginning of historic times (i.e. human histories, at that time reckoned to reach back about 5,000 years).
10. We cannot at present get any nearer to the true age of the present continents, but since there are similar effects and causes on all seacoasts, we can conclude that the continents were born simultaneously.
11. The coincidence between the commencement of the existing state of the continents and the Genesis Flood and the worldwide traditions of a global flood is obvious.
12. Various geological evidences may be added to the Biblical evidence for the uniqueness of the Flood. One is that the sedimentary strata were laid down in relatively rapid succession (during the year of the Flood) on top of each other while the lower one was still damp and soft. Others are fossil trees, found frequently in the secondary and tertiary strata (though primarily in the coal formations), which are buried in an upright position (at various angles) and which traverse several strata.[60] Also, smooth gradual transitions (in terms of the mixture of rock type) from one strata to the next generally characterize the stratigraphic record. Ephemeral markings (e.g. ripple marks and animal tracks) at the transition boundaries between strata likewise indicate that the strata must have been buried before erosion could take place.[61] Finally, there is a general lack of vast erosional features between the geological formations such as the present surface valley systems, which are shown to be the result of the Flood.[62] Therefore the geological record is not the result of many catastrophes over millions of years.
13. All these lines of evidence, Fairholme argued, prove the fact, the recency, and the uniqueness of the global Noachian Flood. This was the goal stated in the title of the book, and corroborates the literal truthfulness of the Biblical account.

## Conclusion

By early nineteenth century standards, George Fairholme was most competent to critically analyze old-Earth geological theories. He was well read in the leading contemporary geological and other relevant scientific literature, both British and foreign, books and journals. His first-hand geological investigations involved many years of more extensive travel than some of the most well known geologists, such as Werner, Hutton, Cuvier, William Smith and John Macculloch.

He published his results in reputable scientific journals and in books, inviting responses from geologists. Both at home and abroad, he participated in scientific meetings and had interaction with reputable geologists and other

scientists, in person or via correspondence. He critically interacted with the arguments of leading geologists (both those who opposed him, as well as one other Scriptural geologist). Yet at the same time he expressed respect for them as scientists, commending them for the work he felt was helpful to geology. He also admitted and corrected errors which he himself had previously made.

His view of the laws and processes of nature was very similar to many leading old-Earth catastrophists of his day. Furthermore, he made an honest attempt to contribute new observations and inferences to geological knowledge. He most certainly did not oppose the study of geology, but only old-Earth geological theories, which he believed were contradictory to both Scripture and scientific facts.

In his view, Genesis does not teach an entire system of natural philosophy or even of geology, but rather it provides trustworthy beacons to guide geological studies into a true understanding of Earth history. He used the geological and geographical evidence (e.g. valley systems, waterfalls, sea coast erosion, human fossils, polystrate fossil trees, insensible transitions between the strata, etc.) to show that the global Flood had formed the present surface of the land masses about 5,000 years ago. The strata were not the result of modern processes operating over millions of years but were formed by the Flood.

As a wealthy landed gentleman (like Darwin) he had money to travel and study nature, especially geology. He apparently was not concerned about denominational or political affiliation. Rather his writings were prompted by a genuine desire to help increase scientific knowledge. His two books on geology were motivated by a deep conviction about the truth of Scripture, historical, theological and moral, and he believed that old-Earth reinterpretations of Genesis destroyed faith in the rest of the Bible.

## References


1. Fairholme, G., *Notes on the Family of Greenknowe and on the history of the estate from 1470 to the present time,* 1838, unnumbered page of the preface to this unpublished manuscript in the possession of Mrs Waveney Jenkins of the Isle of Man. See also Burke, J., *Burke's Landed Gentry* (1965–72), **III**:315–316.
2. Fairholme, Ref. 1.
3. George and Elizabeth Fairholme's contract of marriage, copy obtained from Mr. Gerald Fairholme, London; Evans, S., *Historic Brisbane and Its Early Artists* p. 24, 1982.
4. Death Notices, *Leamington Spa Courier*, **XIX**(963):3, 21 November 1846; *Gentlemen's Magazine*, N.S. **XXVII,** p. 108, 1847.
5. Fairholme, G., *General View of the Geology of Scripture,* J. Ridgeway, London, 1833; second edition, Key and Biddle, Philadelphia, 1833, 1838, and H. Hooker, Philadelphia, 1843. Hereafter it will be referred to as *Geology of Scripture*.
6. Fairholme, G., *New and Conclusive Physical Demonstrations both of the Fact and Period of the Mosaic Deluge, and of its having been the only event of the Kind that has ever occurred upon the Earth,* James Ridgeway & Sons, London, 1837; second edition, 1840. Hereafter it will be referred to as *Mosaic Deluge*.
7. Fairholme G., *Positions géologiques en vérifications directe de la chronologie de la Bible*, George Franz, Munich, 1834.
8. The articles were: Some observations on the nature of coal, and on the manner in which strata of the Coal Measures must probably have been deposited, *Philosophical Magazine* 3rd Series, **III**(16):245–252, 1833; On the Niagara Falls, *Philosophical Magazine* 3rd Series, **V**(25):11–25, 1834; Geological Phenomena, *Christian Observer* **XXXV**:346–350, 1835. Hereafter these articles will be referred to as *Coal*, *Niagara Falls* and *Geological Phenomena* respectively.
9. The articles were, On the power possessed by spiders to escape from an isolated situation, *Philosophical Magazine* 3rd Series, **I**(6):424–27, 1832 [German translation: Über die Fahigkeit der Spinne, sich von einem isolirten Orte aus zu entfernen, *Notizen aus den Gebieten der Natur und Heilkunde* **XXXV**:278–81, 1833]; Description of a species of natural micrometer; with observations on the minuteness of animalcula, *Philosophical Magazine* 3rd Series **II**(7):64–67, 1833; Natural History of the Elephant, *The Asiatic Journal* N.S. **XIV**(1):182–86, 1834 [German translation: Zur Naturgeschichte der Elephanten, *Notizen aus den Gebieten der Natur und Heilkunde* **XLI**:193–98, 1834. Note that the *Royal Society Catalogue* is incomplete, listing only the German version]; Observations on woodcocks and fieldfares breeding in Scotland, *Magazine of Natural History* N.S. **I**(7):337–340, 1837. Hereafter these articles will be referred to as *Spiders*, *Animalcula*, *Elephants*, and *Woodcocks* respectively.
10. Fairholme, Ref. 8, *Coal*, p. 23; Fairholme, Ref. 6, pp. 20, 38, 41, 88, 108, 130.
11. The beginning of his 1833 article on natural micrometers and animalcula has 'F.G.S.' after his name. But the Geological Society has no record of his membership (personal correspondence from Mrs W. Cawthorne at the Geological Society, 2 March 1994). It is a mystery how these letters got placed there. His 1833 article on coal has no such initials after his name.
12. Fairholme, Ref. 6, p. xiv.
13. Fairholme, Ref. 5, pp. 1–2.
14. Fairholme, Ref. 5, pp. 327, 330–332, 381–382.
15. Fairholme, Ref. 5, pp. 277–278, 282, 316, 125.
16. In his writing on Niagara Falls, for example, Fairholme relied primarily on the work of Captain Basil Hall and Robert Bakewell, who were also sources for Fairholme's American critic, Henry D. Rogers (later a famous structural geologist and professor of geology in Glasgow) and for Lyell. In confirmation of Hall's conclusions about the Falls, Fairholme received information from his personal friend, Sir Howard Douglass, who as a result of many years' experience as governor of New Brunswick had become recognised as a well-informed observer of the Falls. See Fairholme, Ref. 6, pp. 158–159; also *DNB* on Douglass.
17. Fairholme, Ref. 6, p. 130.
18. This was in fact the main reason that Adam Sedgwick gave for his recantation of his belief in the Flood as a geologically-significant event. See Sedgwick, A., Address to the Geological Society, *Philosophical Magazine* N.S., **IX**(52):314–317, 1831.
19. The English translation of the original German investigation by Baron Schlotheim was done, with editorial comment, by the reputable geologist Thomas Weaver (1773–1855): On fossil human bones, and other animal remains recently found in Germany, *Annals of Philosophy* N.S. **V**:17–24, 1823. Like Fairholme, Weaver was convinced by the evidence that, contrary to the burst-lake theory that Schlotheim favoured, all the human and animal bones were buried during the Flood, after which time they became fossils.
20. Buckland, W., *Reliquiae Diluvianae,* 167–170, 1823. Buckland appeared to rely completely on Scholtheim's report as given by Weaver. In his discussion of human fossils, Buckland ignored the Köstritz find in his *Bridgewater Treatise* (1836), I:103–106.
21. Fairholme, Ref. 6, p. 52. In a letter to the *Christian Observer* **35**:346–350, 1835, Fairholme described the several days he spent in 1834 in the *'closest scrutiny'* of the geological phenomena in Köstritz, as well as in conversations with two of the men there who were most knowledgeable

about the human fossil bones.

22. Fairholme, Ref. 6, pp. 396–397.
23. Anonymous, Review of Fairholme's *General View of the Geology of Scripture*, *Magazine of Natural History* **VI**(33):256, 1833.
24. Fairholme referred to the following articles in the *Edinburgh Encyclopaedia*: Deluge, England, France, Organic Remains, Ark, Physical Geography, Chemistry, Mineralogy, Zoophytology and Antediluvian.
25. For example, the articles on 'Organic Remains' and 'Mineralogy' were written by John MacCulloch and Robert Jameson respectively, both prominent geologists, and 'Zoophytology' was written by Robert Grant, Professor of Zoology at the University of London.
26. The works on animal natural history were relevant to his criticisms of Buckland's theory on caves and their fossils.
27. Fairholme, Ref. 6, pp. 92–95. In 1802, John Murray published *A Comparative View of the Huttonian and Neptunian Systems of Geology*.
28. Fairholme, Ref. 8, *Niagara Falls*, pp. 18, 20, (the anonymous quote on p. 18 is from Macculloch, J., *System of Geology* **I**:445–446, 1831); Fairholme, Ref. 6, pp. 97–98, 158–159, 242, 282, 286, 318, 325–327.
29. E.g., *Magazine of Natural History*, *Annals of Philosophy*, *Philosophical Magazine*, *Transactions of the Royal Society*, *Transactions of the Geological Society*, *The Asiatic Journal*, and *Annales de Chimie et de Physique*.
30. E.g., the *Inverness Courier*, the *Saturday Magazine* and the *Illinois Monthly Magazine.*
31. Fairholme, Ref. 8, *Coal*, p. 248 (footnote) and *Niagara Falls*, pp. 11–15; *Elephants*, p. 186; Fairholme, Ref. 6, pp. 38–41, 97, 260, 306–307, 345; *Woodcocks*, p. 337.
32. Anonymous review in *Christian Remembrancer* **XV**:391–392, 1833.
33. Anonymous review in *Magazine of Natural History* **VI**(33):256, 1833.
34. Smith, J.P., *On the Relation between the Holy Scriptures and Geological Science* (often referred to as *Scripture and Geology*), London, p. 220, 1839. In his discussion of Fairholme, Smith gave no evidence of having read Fairholme's *Mosaic Geology*.
35. Fairholme, Ref. 6, p. 309.
36. Fairholme, Ref. 8, *Niagara Falls*, p. 18. Fairholme doesn't actually state that it was John Macculloch, but he follows the accolade with a quote, which I found in Macculloch's *System of Geology*, **I**:445–446.
37. Fairholme, Ref. 6, p. 410. Earlier in his preface, Fairholme had described Buckland's treatise in his own words as 'beautiful and interesting' (ibid., ix).
38. Fairholme, Ref. 6, pp. 385–389.
39. Fairholme, Ref. 8, *Niagara Falls*, pp. 23–25; Fairholme, Ref. 6, pp. 62–63.
40. Fairholme, Ref. 6, pp. ix–x.
41. Fairholme, Ref. 6, pp. xiv–xv.
42. Cannon, W.F., The impact of uniformitarianism, *Proceedings of the American Philosophical Society* **105**(3):301–314, 1961.
43. Herschel, J., *Preliminary Discourse on the Study of Natural Philosophy,* London, pp. 283–286, 1840 (identical to 1833 edition).
44. Fairholme, Ref. 6, pp. 327, 329.
45. Fairholme, Ref. 5, pp. title page, x, 24, 135, 493. On these pages Fairholme used both the words 'infallible' and 'unerring', though he favoured the latter by referring to the unerring character, dictates, truths and source of Scripture. His comments suggest that he had essentially the same view as modern Christians who hold to the complete 'inerrancy' of Scripture.
46. Fairholme, Ref. 6, pp. x–xi.
47. Fairholme, Ref. 6, p. xvi.
48. Fairholme, Ref. 6, p. 59. His response was after a lengthy quote from Lyell's *Principles of Geology* (1830–33), **III**:271. Later on page 390, Fairholme similarly stated, regarding the new theories of geology, that bending 'His Sacred Revelation to our own fanciful theories, thus rudely shatters the very foundation of our belief on other points, of incomparably greater importance than geology, to the present as well as future well-being of the human race'.
49. Fairholme, Ref. 5. p. 493.
50. Fairholme, Ref. 6, p. 423.
51. Fairholme, Ref. 6, p. 356.
52. He quoted from Buckland's *Bridgewater Treatise,* **I**:547, 1836.
53. Fairholme, Ref. 6, pp. 59–62.
54. Fairholme, Ref. 6, pp. 236–237.
55. Fairholme, Ref. 6, pp. 377–378.
56. Fairholme, Ref. 5. pp. 7–14, 457–458.
57. This was particularly the form of his argument for calculating the time (about 5,000 years ago) of the initial recession of Niagara Falls. See Fairholme, Ref. 8, *Niagara Falls* and Fairholme, Ref. 6, pp. 157–203.
58. He had dealt with this at some length in Fairholme, Ref. 5, pp. 377–420, and in his letter to the editor in *Christian Observer* **XXXV**:346–350, 1835.
59. Buckland argued very similarly in his *Reliquiae Diluvianae* (1823), 239–258. Although by the time of his 1836 *Bridgewater Treatise* he had abandoned the Flood as the cause of these valleys, he never, as far as I could discover, explicitly refuted his 1823 reasoning.
60. He had previously argued this point in *Geology of Scripture* (1833), 328–340, and Fairholme, Ref. 8, 247–251.
61. This was also discussed in Fairholme, Ref. 5, pp. 340–345.
62. Fairholme, Ref. 6, pp. 12, 80, 285, 392–405, 412–429.

**Terry Mortenson** is a speaker, writer and researcher with *Answers in Genesis* in Kentucky, USA. Before joining AiG in 2001, he was a missionary for 26 years with Campus Crusade for Christ, serving most of that time in Eastern Europe. He has a B.A. in mathematics from the University of Minnesota, an M.Div. from Trinity Evangelical Divinity School in Chicago and a Ph.D. in history of geology from Coventry University in England. He is married and has eight children.