

British scriptural geologists in the first half of the 19th century: part 12. George Young (1777–1848)

Terry Mortenson

Biographical sketch¹

George Young was born on 25 July 1777, the fourth of ten children of John and Jean Young, at their small farm in the parish of Kirk-Newton, south-west of Edinburgh. Since George was born with only a right hand (the left forearm ended in a stump), agriculture was ruled out as a future vocation. His pious parents therefore educated him with a view to Christian ministry, a course consistent with his own spiritual convictions, which developed early in life.

To fulfil the requirements for ordination in the Church of Scotland, to which he and his family belonged, he commenced, in 1792, four years of literary and philosophical studies at the University of Edinburgh. He distinguished himself, especially in mathematics and natural philosophy, being a favourite student of Professor John Playfair, who was in the process of becoming the articulate interpreter of James Hutton's uniformitarian geological theory.² Young completed his degree with high honours and then began a five-year course in the theology at Selkirk, under the tutelage of Dr George Lawson (1749–1820), a famous Scottish divine who was well read in philosophy, history and natural science.³ In 1801 Young was licensed to preach by the presbytery of Edinburgh. After a brief visit in the summer of 1805 to Whitby, North Yorkshire, he became, in 1806, the pastor of the chapel in Cliff Street, a congregation he served for 42 years until his death. In 1819 the University of Edinburgh conferred on him the degree of M.A.

Young faithfully discharged his responsibilities as a pastor and was respected for his concern for the poor and his generous, self-denying Christian spirit, because of which he delighted to unite with Christians of other communions in joint efforts of witness and service.^{4,5} His congregation fixed a monument over the pulpit of the church after his death, which honoured Young for having 'preached the Word of God within these walls with unabated zeal for 42 years, actuated and sustained throughout solely by a sense of duty, and an anxious desire for the salvation of souls.'

Beyond this, his scholarly attainments were also considerable. He had a more than common knowledge of

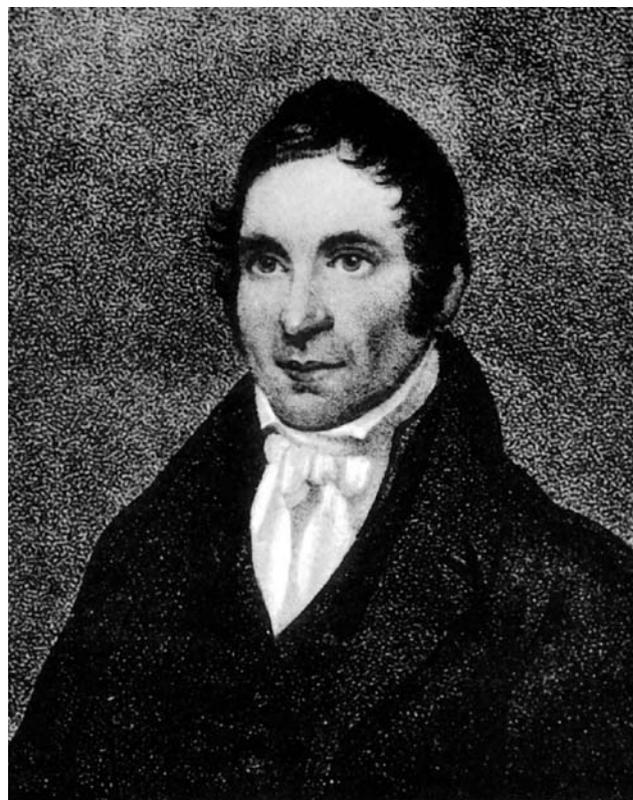


Image from the Whitby Museum

Monochrome engraved portrait of Young in 1820, used as the frontispiece of his Picture of Whitby.

Hebrew, Greek, Latin, French and Italian, as well as acquaintance with Arabic, Chaldee and Syriac, and was considered quite an authority on the Anglo-Saxon language. His extensive knowledge of antiquities and numismatics enabled him to decipher ancient manuscripts, coins and inscriptions with great skill.

In 1823 he became a founding member and the first secretary of the Whitby Literary and Philosophical Society, a position he held until his death and which also included the establishment of the Whitby Museum.⁶ He was also a corresponding member of the Wernerian Natural History Society and the Northern Institution and an honorary member of the Yorkshire, Newcastle, Leeds and Hull Literary and Philosophical Societies.⁷

Young published 21 books. His longer works included a series of lectures on the Book of Jonah, a two-volume *The History of Whitby*,⁸ a treatise vindicating the evangelical principles of religion and a highly acclaimed biography of Captain James Cook.⁹

Young wrote three works on geology. *A Geological Survey of the Yorkshire Coast* (236 pages),¹⁰ written with the assistance of John Bird, first appeared in 1822, with a greatly revised edition (356 pages) released in 1828.¹¹ Ten years later he published *Scriptural Geology* (1838, 78 pages),¹² followed shortly thereafter by *Appendix to Scriptural Geology* (1840, 31 pages), in which he responded to John Pye Smith's theory that Genesis described merely a local creation and local Noachian Flood, both in the Mesopotamian Valley.¹³

View of geology and geological competence

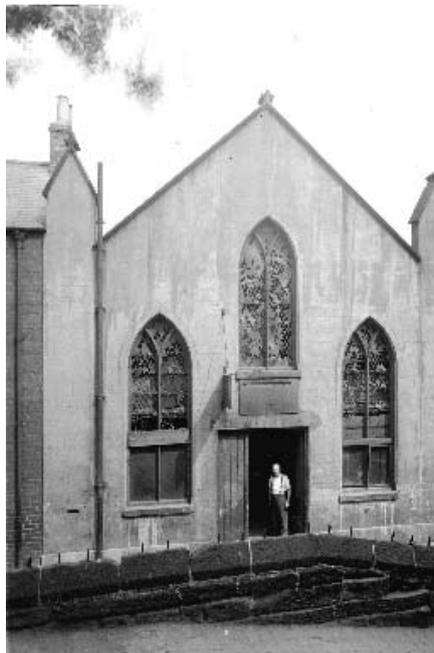
Young had an obvious love for the study of geology and saw it not as a threat, but as an aid to faith. He wrote:

‘The researches of the geologist are far from being unworthy of the Christian, or the philosopher: for, while they enlarge the bounds of our knowledge, and present a wide field for intellectual employment and innocent pleasure, they may serve to conduct us to the glorious Being.’¹⁴

And he hoped that his efforts would have a practical benefit for the manufacturer and businessman to know where the valuable minerals were, for the landed proprietor to know the nature of the strata under his soils, for the miners to not waste money searching for coal in the wrong places, and for ‘the admirers of the works of God’ to be stimulated in their devotion to God.¹⁵

In addition to his scientific training at university, he appears to have kept himself current in his reading on geology and related fields. In his 1819 journal article on a fossil skeleton found near Whitby, he referred several times to Lacépède’s *Histoire naturelle de Cétacées* (1825) and Cuvier’s *Comparative Anatomy* (1802). In his 1828 *Geological Survey*, he referred to Buckland’s *Reliquiae Diluvianae* (1823), Greenough’s *First Principles of Geology* (1819), Macculloch’s *Description of the Western Islands* (1819), Parkinson’s *Organic Remains* (1804–1811), the early volumes of Sowerby’s *Mineral Conchology* (1812–1846), the *Geological Transactions*, geological articles in the *Philosophical Magazine*, the *Philosophical Transactions* of the Royal Society of London and the *Edinburgh Philosophical Transactions*, as well as the geological writings of continental geologists such as Dolomieu and others.

In 1838–40 he demonstrated careful reading of Lyell’s *Elements of Geology* (1838) and his first (1830–33) and second (1834) editions of *Principles of Geology*, Phillips’ *Geology of Yorkshire* (1829) and *Treatise on Geology* (1837), Buckland’s *Bridgewater Treatise* (1836), and reports of the annual meeting of the British Association for the Advancement of Science. His 1840 *Appendix* was a rapid response to Pye Smith’s theories published in 1839 and included a reference to the writings of his fellow scriptural geologist, John Murray.^{16,17} A considerable knowledge of reptile anatomy, especially of crocodiles and marine dinosaurs, and a commitment to careful research of past scientific literature are reflected in his 1825 journal



The only known picture of the front of Young’s chapel (demolished by 1930s), but taken when the front had been remodelled some time after his death.

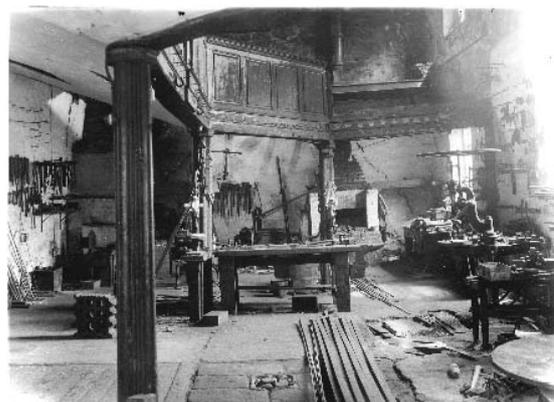
article on the discovery of a fossil crocodile in the alum-shale strata near Whitby. Though he relied on Buckland for his description of some of the fossils found in Kirkdale Cave, Young’s own knowledge of mammal anatomy does not appear to have been insignificant.^{18,19}

Young also had extensive geological field experience. In his introduction to the *Geological Survey*, Young stated that he and Bird had completed their study of the geology of Yorkshire:

‘... with no small labour; exploring the whole line of coast, and visiting every part of the interior likely to throw light on the objects of their research. Scarcely a hill or a valley, a cliff or a chasm, remains unexamined; scarcely an alum-work, a coal-pit, a quarry, or any other remarkable opening in the strata, has been left unvisited; so that, if the result should not come up to their wishes, or the

expectations of their friends, they cannot well charge themselves with want of diligence, patience, and perseverance.’²⁰

Young also more than once examined the geological formations around Edinburgh.^{21,22} In addition to his geological reading, he continued his geological field research up to the time of his writings in 1840, for he said, ‘For many years I have paid particular attention to the courses of rivers, and have invariably found, that these courses are connected with breaks, faults, denudations, or other irregularities in the strata through which they pass.’²³ He also mentioned his discovery of a fossil fish in limestone rocks near South



The interior of Young’s chapel when it had been converted into a blacksmith’s shop—but still showing one of the original galleries.

Shields, early in 1840, at the age of 63.²⁴

Young's geological writings were favourably reviewed by contemporary geologists. Of Young's *The History of Whitby* (1817), the review in the *Edinburgh Philosophical Journal*, edited by the geologist Robert Jameson and the physicist David Brewster, recommended the 'valuable' work to the attention of geologists.²⁵ Whitby geologist, Martin Simpson wrote

'a work of high literary character and antiquarian research, in which he gave a very luminous and correct exposition of the rocks and organick remains of the district [which] immediately produced a general revolution in publick opinion respecting the fossil remains of the district, and excited great zeal for further discovery.'²⁶

Young's *Geological Survey* was highly praised for its thorough and detailed observations, as discussed in the book review in this issue of *TJ*.¹⁰ However, 10 years later, geological opinion had changed and *Scriptural Geology* was generally ignored by his contemporaries.¹²

More than any of the other geologically-informed scriptural geologists, Young presented the most thorough explanation of his time for how he conceived that the whole geological record could be harmonized with a literal reading of the Genesis account of creation and the Noachian Flood. Therefore, we should consider his arguments carefully.

Attitude toward his geological opponents

While not hesitating to challenge the theories of the most famous geologists, Young was respectful of their knowledge, research and accomplishments. He described his former professor, Playfair, as 'one of the most learned' authors.²⁷ Though critical of Cuvier and Brongniart's theory of the Paris basin, Young nevertheless said that they were authors 'to whom science is otherwise much indebted'.²⁸ In spite of his strong refutation of Buckland's theory of Kirkdale Cave, Young wrote, 'we are sensible of the value of his researches into this subject'. He described Buckland's *Bridgewater Treatise* as generally 'valuable' and 'admirable', the work of 'my learned friend'.²⁹⁻³¹ John Phillips' writings were also 'valuable'.³² Lyell, though even more hostile to Young's views, was respected as an 'indefatigable' collector of geological facts, and in several places Young used some of the ideas which Lyell had 'advanced and ably maintained'.³³

He declared John Pye Smith to be a gentleman 'distinguished, as a divine, a scholar, and a man of science'.³⁴ Yet with reference to Pye Smith's *Scripture and Geology* (1839), Young stated that 'notwithstanding the general excellence of the work, and the devout spirit in which it is written, it advocates theories tending to undermine the very foundations of our faith, though nothing could be farther from the pious author's design'.³⁴ Where he could, he commended Pye Smith.

'I have read with much delight and admiration,

his closing address to men of science, on the value of true religion; and deeply regret to think that its excellent tendency is too likely to be neutralized, by the wild and dangerous notions advanced in other parts of the volume.'³⁵

In return for such respectful disagreement, Young hoped for a similar kind of hearing from his critics. After stating in *Geological Survey* his reasons for rejecting the day-age theory, he commented:

'Aware that our sentiments on this subject differ materially from those of a great proportion of our literary friends, we would beg of them a patient hearing; that they may not condemn our remarks, till they have candidly weighed them.'³⁶

He obviously did not feel that he had received that kind of treatment from his geological opponents, for ten years later he introduced his *Scriptural Geology* by saying:

'These geologists [the critics of the scriptural geologists] complain, and have a right to complain, of those who stigmatize them as atheists, infidels, and enemies to revelation: yet they ought to remember, that they have no right, on their part, to denounce their opponents as bigots, fanatics, ignorant, and illiberal. It is not by hard names, but by strong arguments, that the cause of truth is to be established.'³⁷

Without apology, he used information and arguments from his geological opponents to refute their own theories, but he expressed his effort not to misrepresent them in any way. In using evidence from Buckland to support the idea that the strata were deposited in rapid succession rather than over long ages, Young stated:

'Professor Buckland himself, though he attempts to neutralize the effect of his own testimony, ... It is strange, that the learned author of these valuable remarks, should ever advocate the system of gradual deposition, during countless ages.'³⁸

More explicit is Young's comment regarding Pye Smith. After charging that Pye Smith had misunderstood and misrepresented him, though not intentionally, Young continued, 'It is possible, that I also may have misunderstood him, on some points; but I am not conscious of having done him injustice, or of having said any thing in the spirit of hostility.'³⁹

Reference to other scriptural geologists

The only work that Young particularly commended to his readers in 1828 was Granville Penn's *Comparative Estimate of the Mineral and Mosaical Geologies* (1825), which Young felt had opposed the contemporary old-earth theories with 'much force of argument'. He continued, 'We are not prepared to admit all that Mr Penn has advanced; but his theoretical views appear to us, on the whole, much more judicious than those which he combats.'⁴⁰

In the introduction to his *Scriptural Geology* (1838), he indicated that he knew of other works being prepared for publication, but that he did not know their contents and so was unable to comment on their arguments. However, he did make a positive remark about Leveson Vernon Harcourt's *Doctrine of the Deluge* (Vol. 3, 1838), and in his 1840 *Appendix* he supported his argument with information from John Murray's *Portrait of Geology* (1838) and *Physiology of Plants* (1833) and William Rhind's *Age of the Earth* (1838). Young gave no indication of personally knowing any of these other scriptural geologists.⁴¹

View of the relation of Scripture and science

Young did not discuss at length the relation between Scripture and science, but he was clearly sensitive to the common objection raised against the scriptural geologists in light of the Galileo affair.

'An appeal to Scripture on geological questions is regarded by many as altogether inappropriate; because, from the superior nature of its objects, we cannot expect it to be occupied with matters of science. And it is true, that the Bible is not intended to teach us geology, any more than astronomy: its statements relating to nature, are not expressed in scientific language, but are set forth in the simplest form; being in accordance with the appearances of things, and the views most generally received among men. Yet we are sure, that the facts of science may be reconciled with the sacred page; and we may be permitted to doubt the truth of any theory, which makes that reconciliation impossible. The volume of creation, the volume of providence, and the volume of inspiration, have all one author; and whatever apparent discrepancies [*sic*] there may be between them, there can be no real opposition. It is an interesting fact, that the progress of science has, in more than one case, illustrated the truth of the sacred records.'⁴²

Young never explained just how the interpretation of the Bible and the interpretation of the physical world could, and should, be harmonized. Nor did he explain on what basis he could rely on the Bible for his understanding of Earth's history, while at the same time agreeing with his opponents that the Bible is not intended to teach geology. However, he clearly believed that with regard to the origin and history of the earth, the plain teaching of Genesis (as he saw it) should guide the interpretation of geological phenomena, not vice versa.

View of the laws of nature

Young rejected Lyell's uniformitarianism, which maintained 'that the strata have been formed in the same gradual way in which sediment is now being deposited' in the ocean, and that all geological phenomena 'may be

accounted for by existing causes still in operation'. But he was not thereby constantly invoking miracles to explain what he observed. Rather, he sought to explain rocks and fossils by existing causes, which, during the Flood, had operated at vastly magnified levels of intensity, frequency and geographical extent as a result of special Divine action.

The tranquil flood view came under severe criticism precisely because, from Young's perspective, it must invoke numerous miracles. In defence of the global flood view he said:

'An effusion of waters over the whole earth, so still as not to destroy the vegetation, is the kind of deluge fancied by some geologists; but such a deluge could not take place, without the most extraordinary miracles;—miracles uncalled for, and of which Moses gives not the slightest hint. . . . But there was no occasion [during the Flood] for such miracles: existing causes, directed and controlled by the great First Cause, were sufficient to produce the deluge, without any new creation, or any violation of the laws of nature.'⁴³

The chief natural causes God used were, he believed, spelled out in the Genesis narrative: the forty days of rain and the breaking up of the 'fountains of the deep', which included massive volcanic activity.⁴⁴

Defense of the global Flood

In his 1838 and 1840 books, Young strongly argued against the local flood and tranquil flood views, from evidence of both geology and theology, and instead contended that virtually the whole of the geological record was attributable to the Flood.^{10,12}

The purpose of the Flood was to destroy the earth, not just man, according to Genesis 6:13. The year-long duration of the Flood intimates that much more than the drowning of Earth's inhabitants was its object. Young thought it reasonable to assume, from the description in Genesis, that 'many years might revolve before the ocean subsided to its present level'. Also, like the local flood theory, a tranquil flood would necessitate miracles 'uncalled for, and of which Moses gives not the slightest hint', such as the creation and annihilation of the floodwaters and the suspension of the laws of water erosion by flooding rivers and tempestuous seas, that would naturally accompany forty days of rain and the volcanic activity that produced the rupturing of the fountains of the deep. For these reasons the notion of a tranquil flood was quite unbelievable to Young.⁴⁵

In arguing that God directed and controlled existing causes to accomplish the judgment of the Flood, Young challenged his geological opponents by saying:

'Is it, then, unreasonable, or unphilosophical, to suppose, that when the Almighty resolved to destroy an ungodly world, he might employ the energies of this great expansive force [volcanic activity],

to heave up the bottom of the sea, and to shake, dissolve, and depress the land? We cannot easily conceive how the fountains of the great deep could be broken up, in any other way, so as to co-operate with the rains in overflowing the world. In this way, the object could be accomplished by the supreme Ruler, without forming any new matter; and as, at the creation, one day only was occupied in raising up the dry land from the sea, even so at the deluge, a single day might have sufficed for submerging the dry land beneath the waters. But, instead of being the work of a day, this mighty revolution was in progress during several weeks; the earth sinking, and the sea rising, in a gradual and comparatively tranquil manner; so that the safety of the ark and its inmates was not endangered, and time was allowed for effecting, in a more orderly way, the changes now made in the crust of the earth. There was not one great terrific convulsion, to complete the work at once; but a series of smaller convulsions, carrying it forward by successive stages. Now, may we not trace, in the different formations of the stratified rocks, a correspondence with these successive convulsions; and on this principle, explain the diversified phenomena of the present strata? Let us inquire, then, into the effects, which volcanic agency thus operating, would naturally produce.⁴⁶

Young endeavoured to demonstrate this by describing in some detail his conception of the year-long progression of the Flood's work in relation to the present state of the stratigraphic record and by answering the most common objections, of which he was aware, to this view.⁴⁷

Among other things in his description of the progress of the Flood, he explained how the earth could have been so quickly prepared for human and animal life after the Deluge. The consolidation of the strata, providing an adequate base for the new post-diluvian soils, was much faster than was supposed by the old-earth creationists. Young believed that the chief agents of induration of the sediments were chemical action, the pressure of the rapidly accumulating strata, and the heat and electricity associated with the volcanic activity, rather than time. Though much of the pre-Flood vegetation would have been buried in the strata to form coal seams, Young reasoned, a considerable portion of seeds, roots, and even whole plants would have still been floating on the receding waters and later taken root in the rich, moist alluvial soils. In the weeks that Noah waited for the earth to sufficiently dry, this would have produced a lush mantle for the earth, in which the dove found a fresh olive leaf. Likewise, some still-floating carrion would have provided food for the raven Noah had sent out earlier.⁴⁸

Young contended that the alternating fresh-water and marine formations were better explained by the complex vicissitudes of the Flood than by a long series of multiple



Image from the Whitby Museum

Engraving of Whitby Museum, on Pier Road, in 1827. The public baths occupied the ground floor. The Subscription Library occupied the first floor and the Museum was located on the top floor.

catastrophes gradually raising and then lowering the land. The different kinds of rocks were formed by the sorting power of water, igneous intrusions, and post-depositional chemical modification.⁴⁹ Faulting and aqueous denudation associated with the recession of the floodwater resulted in cliffs, caverns and valleys, the detritus from which the alluvial sands, gravels and erratic boulders were formed.⁵⁰ Young argued with Buckland regarding Kirkdale Cave, which both had explored (separately) in the early 1820s. He wrote:

‘It has been urged, that if the relics in such a cave as that of Kirkdale were drifted in by the waters of the flood, we cannot also ascribe to the flood, the formation of the strata, and of the cave itself. And certainly, these different effects could not have been produced simultaneously: but there is no impropriety in attributing diverse effects to the same cause, acting under varied circumstances, and in various stages of its progress.’

Another issue Young addressed was why fossil bones of man and quadrupeds were so rarely found and then only in the top strata and alluvium. To this he replied that quadrupeds would naturally escape the Flood longer, because of mobility. But he also cautioned against concluding the non-existence of creatures on the basis of the lack of fossil evidence, because quadruped footprints in lower strata proved that they had existed at the time those strata were being deposited, even though their bones had not been found in them. Bird and monkey prints had also occasionally been found, but bones of both were a much rarer discovery.⁵¹

As far as human remains are concerned, Young said, the main reason we do not find many in the rock strata is that for the most part the pre-Flood land and sea changed places during the Deluge so that most human remains would be buried under the ocean bottom, beyond the reach of geologists. Still he contended that some human fossils had been found in ancient deposits, such as the caves in Gailenreuth (Germany), in Bixe, Pondres, and

Southern France) and in Liège (Belgium).⁵²

In summary, Young concluded that, in comparison to the Flood, the old-earth views miserably failed to explain the geological evidences. He said:

“It is acknowledged, in a quotation from Dr Macculloch (p. 397), “that the accumulation of materials at the bottom of the ocean is a work *infinitely slow*.” Can this infinitely slow deposition account for the phenomena presented by our present rocks? The materials washed down by the rivers, or abraded from the coasts by the sea itself, are deposited, partly along the shores of the ocean, and partly in hollows in its bed. In this manner, banks of mud, sand, and gravel, are formed in various spots; and a few organic substances, chiefly shells, may be found mixed up with such materials. But what ground have we to believe, that these banks are future rocks in embryo? Is there any portion of them that can be called an incipient bed of red sandstone, or of magnesian limestone, or of oolite, or of lias, or of chalk? At the mouth of one or two great rivers are found masses of drifted trees, covered with mud, illustrating in some degree, the origin of coal beds; but where do we find any carboniferous strata now forming; any incipient beds of sandstone, shale, ironstone, and coal? It is plain, that the existing rocks, composed in so many instances of homogeneous materials, have been deposited under very different circumstances, and with far more rapidity, than any of those accumulations of sand, gravel, or mud, now going on.”⁵³

Furthermore, the notion of a long series of elevations and submersions of the crust lacked any real supporting evidence. He continued:

“In the majority of cases”, adds Dr Smith, “it is shown by physical evidences of the most decisive kind, that each of those successive conditions was of extremely long duration; a duration which it would be presumptuous to put into any estimate of years or centuries, &c.” But where are these decisive evidences;—where is there any evidence at all, that such successive conditions, such seesaw motions, such dippings and redippings of the earth’s crust, have ever taken place? The *evidences* exist only in the wild imaginations of some modern geologists. It is true, that in countries where earthquakes and volcanoes prevail, coasts have been elevated, or have subsided; and in a few instances, the same spots that have sunk at one time, may have risen at another: but can the occurrence of one or two isolated facts of this kind, authorize us to set up a system of alternate elevation and subsidence as a general law of nature, prevailing throughout the globe during countless ages? Dr S. objects to my ascribing the phenomena of unconformable strata “to the elevating force of volcanic agency” (p. 390);

but surely it is more rational to suppose, that in such cases, volcanic agency has thrown one set of strata out of their natural position before the next set began to be deposited over them, than to attempt an explanation of such phenomena on the principle of alternate elevation and subsidence.”⁵⁴

Conclusion

The nature of Young’s pastoral work, geological and non-geological writings and the peer reviews of his scientific work and writings indicate that he was a very competent geologist who was motivated to write on the subject of geology out of a sincere passion for truth, both scientific and biblical.

He sought to explain the Flood and the geological record by natural processes analogous to those operating in the present, though greatly magnified during the Noachian Flood. In this regard he argued in a manner very similar to how all the old-earth catastrophists contested the uniformitarian interpretations of the geological data. Cleavelly stated that Young ‘questioned many of the facts concerning fossils, sedimentation and geological time’.⁵⁵ But the evidence here presented shows, I think, that it is more accurate to say that, rather than generally questioning the facts themselves, Young objected to some of his contemporary geologists’ *interpretations* of those facts. He also opposed the old-earth theories because he believed that they ignored significant contrary facts and involved alternative interpretations of Scripture which were not exegetically sound. Though he often strongly disagreed with his opponents’ geological theories, he respectfully acknowledged their contributions to the advancement of the science.

Using both geological and scriptural arguments, he attempted to provide a brief answer to every difficulty and objection, of which he was aware, to the biblical view of Earth’s history. He believed that new discoveries would throw much additional light on the subject. But he hoped that his research and writings would assist future geologists to arrive at a more perfect knowledge of the history and structure of the globe.

References

1. Unless otherwise stated, this is based on Smales, G., *Whitby Authors and Their Publications*, pp. 64–71, 1867; and the article on Young in: Stephen L. and Lee, S. (Eds.), *Dictionary of National Biography (DNB)*, Oxford: vol. 13, Oxford Univ. Press, 1917.
2. Playfair published his *Illustrations of the Huttonian Theory of the Earth* in 1802 based on Hutton’s earlier work of 1795, which was the penultimate year of Young’s university studies. It is quite likely, therefore, that Young gained a thorough knowledge of the Huttonian theory.
3. See article on Lawson in Stephen, L. and Lee, S. (Eds.), *Dictionary of National Biography (DNB)*, Oxford: vol. 13, Oxford Univ. Press, 1917. Lawson was Professor of Theology at Divinity Hall, Selkirk, where he also pastored. Known as the ‘Scottish Socrates’, he was admired for his vast erudition and apparently infallible memory. He trained many notable Presbyterian, Independent and Church of Scotland ministers. See also Cameron, N.M.deS. (Ed.), *Dictionary of Scottish History and Theology*,

- p. 474, 1993.
4. Anonymous, Brief Notice of the Late Rev. George Young, D.D., *Evangelical Magazine XXVII*:114, 1849.
 5. Anonymous, Memoir of the late Rev. George Young, D.D., *The United Presbyterian Magazine III*:102, 1849.
 6. Anonymous, Whitby Literary and Philosophical Society: A Retrospect (1823–1948), *Whitby Gazette*, 16 January 1948.
 7. The requirements for such membership were the same as for ordinary members of these societies. The difference was related to a member's place of residence and his degree of involvement in a society's activities. See Hume, A., *Learned Societies and Printing Clubs*, pp. 143–144, 146, 149–150, 175–176, 1847.
 8. This first appeared in 1817 and contained 33 pages of information on the geology of the area. It was republished in 1976.
 9. In *The Life and Voyages of Captain James Cook* (1836), Young sought not only to give an accurate history, but also to teach moral lessons from Cook's character, conduct and life experiences with the hope of inciting virtue and piety in his readers. See preface to the book. The 275 pre-publication subscribers for the book included Louis Agassiz and William Buckland.
 10. Mortenson, T., The creation of Yorkshire; Review of: Young, G., *A Geological Survey of the Yorkshire Coast*, *TJ 18*(3):48–51, 2004.
 11. Hereafter this work is cited as *Geological Survey*. John Bird, who did the illustrations for this book, was curator of the Whitby Museum and member of the Whitby Literary and Philosophical Society, as well as an honorary member of the similar societies of Hull and Yorkshire.
 12. Mortenson, T., Geological answers for the 19th and 21st centuries, Review of Young, G., *Scriptural Geology*, *TJ 18*(3):52–57, 2004.
 13. These two were published in a combined second edition, also in 1840.
 14. Young, G., *A Geological Survey of the Yorkshire Coast*, p. 2, 1828.
 15. Young, ref. 14, p. 12.
 16. Mortenson, T., British scriptural geologists in the first half of the nineteenth century: part 11. John Murray (1786?–1851), *TJ 18*(2):74–82, 2004.
 17. Young drew some information on volcanoes from Murray's *Portrait of Geology* (1838), which had been published anonymously, and called it Murray's work. Whether Young knew that Murray was the author through personal acquaintance or through reading Murray's *Truth of Revelation* (1840), where Murray identified himself as the author of *Portrait*, is not clear. Young did not explicitly recommend Murray's *Portrait of Geology*.
 18. Young, ref. 14, pp. 299–300.
 19. Young, G., Account of a fossil crocodile recently discovered in the alum shale near Whitby, *Edinburgh Philosophical Journal XIII*:76–81, 1825.
 20. Young, ref. 14, p. 9.
 21. Young, G., *Appendix to Scriptural Geology*, p. 27, 1840.
 22. Young was responding to Pye Smith's objections to William Rhind's views on the geology of Edinburgh. See: Pye Smith, J., *Relation between the Holy Scriptures and the Geological Sciences*, p. 299, 1839.
 23. Young, ref. 21, p. 21.
 24. Young, ref. 21, p. 22.
 25. The brief commendation was in the form of an editorial introductory paragraph to: Young, G., On the Formation of Valleys, Bays and Creeks, *Edinburgh Philosophical Journal VII*(13):151–155, 1822.
 26. Simpson, M., *The Fossils of the Yorkshire Lias*, p. iv, 1884. Simpson was appointed lecturer in natural science for the Whitby Literary and Philosophical Society and curator of the Whitby Museum in 1837, positions he held up to the time of his book in 1884. So he was personally acquainted with Young and Bird; the latter he described as 'an artist and a man of a philosophical turn of mind'. Simpson wrote several books on geology and on the fossils of the Lias formation in Yorkshire, and late in life he was recognized by the Geological Society of London for his life-long research in paleontology. The above information about him comes from the preface to his book.
 27. Young, ref. 14, p. 327.
 28. Young, ref. 14, p. 328.
 29. Young, ref. 14, pp. 302–307.
 30. Young, G., *Scriptural Geology*, pp. 37, 41, 75, 1838.
 31. Young, G., On the fossil remains of quadrupeds, &c. discovered in the cavern at Kirkdale, in Yorkshire, and in other cavities or seams in Limestone Rocks, *Memoirs of the Wernerian Society of Edinburgh VI*, p. 172, 1822. As noted earlier, Young knew Buckland personally through face-to-face conversation and correspondence.
 32. Young, ref. 30, p. 11.
 33. Young, ref. 30, p. iii, 31, 34, 55.
 34. Young, ref. 21, p. 3.
 35. Young, ref. 21, p. 31.
 36. Young, ref. 14, p. 343.
 37. Young, ref. 30, p. iv.
 38. Young, ref. 30, p. 75.
 39. Young, ref. 21, p. 31.
 40. Young, ref. 14, p. 356.
 41. Young, ref. 30, p. iii; Young, ref. 21, pp. 19, 20, 27.
 42. Young, ref. 30, pp. 39–40. After this he gave one example of the vindication of the Bible from archaeology.
 43. Young, ref. 30, pp. 43–44.
 44. Young, ref. 30, pp. 44–45. Again in 1840 he stressed the unnecessary and unscriptural miracles involved in the tranquil flood theory: Young, ref. 21, p. 12.
 45. Young, ref. 30, pp. 43–46.
 46. Young, ref. 30, pp. 46–47.
 47. He attributed the primary and transition stratified rocks to the antediluvian period: Young, ref. 30, p. 47. His ideas on this point were similar to those expressed by Thomas Gisborne in his *Considerations on Geology*, pp. 28–30, 1837.
 48. Young, ref. 30, pp. 52, 56–57, 59, 65.
 49. Young, ref. 30, pp. 53–55.
 50. Young, ref. 30, pp. 60–61. Here he particularly rejected Lyell's iceberg theory for explaining the erratic boulders.
 51. Young, ref. 30, pp. 62–65. The infrequency of finding monkey bones in the strata was also particularly noted by Robert Bakewell in his *Introduction to Geology* (4th edition), p. 37, 1833.
 52. Young, ref. 30, pp. 69–71.
 53. Young, ref. 21, p. 23.
 54. Young, ref. 21, 24–25.
 55. Cleevely, *World Palaeontological Collections*, p. 320, 1983.

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.