

The creation of Yorkshire

A review of
***A Geological Survey
of the Yorkshire Coast
(1828)***
**George Young
(1777–1848)**

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George Young's¹ first geological work, *A Geological Survey of the Yorkshire Coast* was highly praised by contemporary geologists of his day as a thorough and valuable contribution to geological knowledge of Yorkshire in north-eastern England. During the 19th century, as is still the case today, the geological arguments for the age of the earth resulted from assumptions about the past, rather than the facts. Young was very careful to separate the facts from the assumptions, and powerfully argued from the geological evidence and scriptural record that those proposing an ancient age for the earth were misguided.

Geological Survey was written with the artistic assistance of John Bird and first appeared as a 236-page volume in 1822, with a greatly revised edition (356 pages) released in 1828.² This review will focus on the 1828 edition.

After a 12-page introduction, the work was divided into three parts. Part 1 (172 pages) is a geological description of all the strata of the Yorkshire Coast. Part 2 (125 pages) is a description of the various fossils found, arranged into classes and identified according to the locations where they were found. In Part 3 (47 pages) Young and Bird presented their theoretical inferences from these facts. It also included an index, 37 pages of plates showing fossils and 5 pages explaining the plates.

The authors realized that there would be opposition to the latter part

and addressed their critics:

'... as the hints here thrown out are chiefly suggested by existing phenomena, it is hoped that they may be serviceable to the studious enquirer. Where the views adopted by the authors militate against the favourite theory of any of their readers, they expect from the reader that candour and indulgence which he himself has a right to claim from others. On subjects involved in so many difficulties, mutual forbearance is indispensable.'³

Contemporary reviews

Whitby geologist Martin Simpson described Young's *Geological Survey* as 'in every way worthy of a pupil of the celebrated Playfair'. He continued:

'[It] was performed with great accuracy, minute investigation, and care, during four years of assiduous labour. ... In this work a fair and accurate description of the series of strata along the coast was given, which formed an important guide in further researches. The publication of this work, and the visits of the authors [Young and Bird] to various localities, and their intercourse with men of scientific tastes, gave a great impulse to geological pursuits throughout the district.'⁴

In an 1825 article on diluvial formations, Adam Sedgwick, who most likely knew Young personally, described the *Survey* as containing 'some excellent observations'. The next year, in an article on the classification of the strata of the Yorkshire coast, Sedgwick again commended the work of Young and Bird, whose 'information induced me to shorten the task which I had proposed to myself'. This was because 'with many excellent details' the relations of the geological phenomena had been 'elaborately and faithfully described' to give an accurate history of the structure of the

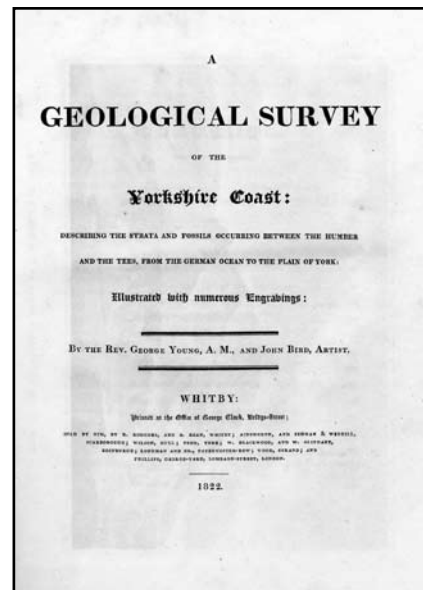


Image from the Whitby Museum

whole Yorkshire coast.⁵ John Phillips also acknowledged the 'descriptive accuracy' of the *Geological Survey* in his own later work on the same subject.⁶ Though Young did not travel extensively, the fact that Young was so well acquainted with this particular part of England was significant for developing a wider view of Earth history, because so much of the 'geological column' was represented in Yorkshire.⁷

Young was cautious in his theorizing, because of what he perceived to be the still rather infant state of geology. In 1828 he wrote:

'It is within the last twenty or thirty years, that geology has begun to assume her proper rank among the sciences; ... Within these few years, the collection of geological facts has been rapidly accumulating. Still, if we may judge from the jarring opinions held on the subject, we have not obtained sufficient data, for establishing a general theory of the earth; in other words, we cannot satisfactorily explain the natural causes, employed by the Creator to bring our globe into its present state; which, as all agree, is widely different from its original state. The chief thing to be done, therefore, in the present stage of the science, is to enrich it with ample stores derived from

actual observation; ... Every addition to these stores, will serve to enlarge and consolidate the basis, on which a true theory of the earth, if such can be found, must necessarily rest.⁷⁸

Facts and inferences

From his geological research of the Yorkshire coast, Young drew out the following twenty facts and inferences:⁹

1. All the strata (except the whinstone dyke) were formed by aqueous deposition.
2. They were deposited horizontally or nearly so.
3. Some powerful force inclined and dislocated the strata.¹⁰
4. A denudation of the strata has occurred by a force other than existing rivers.
5. Alluvial beds of gravel and sand were deposited after, and as a result of, the dislocation and denudation of the strata.
6. Valleys were formed by faulting and denudation, not by the rivers in them presently.¹¹
7. In many places subsidence has caused basins, which are not limited to the coal measures, contrary to the impression given by many geological writers at the time.
8. None of the strata are universal over the earth, like an onion skin, but rather are scale-like and many, if not all, of these strata thin out at the edges, many of which were obliterated by the denudation of the strata.¹²
9. As a result, we should not expect the same strata series everywhere in the world, as indeed we find examples of missing strata¹³ and strata in the wrong order.¹⁴
10. Often one stratum makes an insensible or gradual transition into another stratum of a different mineralogical character, making it difficult to define the dividing line.
11. Seams or secretions are sometimes imbedded within (and therefore are subordinate to) another stratum.
12. Strata are in different states of in-duration (i.e. lower strata are often softer than upper strata),¹⁵ and organic remains are in different states of preservation irrespective of the order of succession of the strata.
13. The strata were not formed gradually at the bottom of the ocean in the way that modern rivers and ocean currents deposit material.¹⁶
14. The varying plenitude of fossils in the strata is in no relation to the order of succession of the strata.
15. Some strata have marine fossils, some land fossils, but most contain a mixture of the two, which implies that when the strata were deposited, land and sea life were blended together.¹⁷
16. Some fossils are well preserved, while others are mutilated and compressed, and none show evidence of having lived where they died.¹⁸
17. The use of fossils to identify the strata is very limited to local areas, since so many fossils are extensively diffused and intermixed through the whole geological record.¹⁹
18. Fossilized creatures with living analogues and those without (i.e. apparently extinct) are so intermixed in the strata as to make it impossible to label some as more ancient than others.²⁰
19. From the above facts and inferences it is reasonable to conclude that all the strata had a nearly contemporaneous deposition.²¹
20. The basaltic dyke (in Yorkshire) was produced by the same agent that elevated the continents.

For these twenty reasons Young concluded that the old-earth 'formation system [of multiple creations and revolutions before the creation of man] may please the imagination, and give scope to the fancy, but it will not stand the test of an appeal to facts'.

Given the great amount of geological exposure and the solid groundwork carried out by George Young, the Yorkshire coast would be a fertile area for reinvestigation by modern creationist geologists.

Kirkdale Cave

Part 2 on fossils included a 17-page (pp. 294–310) discussion of the famous Kirkdale Cave, with a refutation of Buckland's post-diluvian hyena den theory of the cave. Young pointed out a number of factual errors in Buckland's description of the cave and gave his reasons for concluding that the cave and its fossil remains were deposited by the Noachian Flood, though not all simultaneously. Young's argument was based on his own first-hand research of the cave, commenced within a week of its discovery, and on his personal discussions with the workmen who cleared the cave of fossils (sometimes while he was watching them), as well as conversations with William Salmond (FGS) and William Eastmead, the two geologists most involved in the analysis of the cave and its fossils. A number of the fossils were deposited in the Whitby Museum, which Young and Bird managed. Eastmead concluded that the cave was an antediluvian deposit.²²

Young's discussion on the Kirkdale Cave was a revised form of two journal articles written in 1822 and published in the *Memoirs of the Wernerian Natural History Society*. There are some interesting facts to be noted in regard to these. The first article, read to the Wernerian Society in May 1822, was published that year²³ and was a purely descriptive account of caves and the fossils found in them. The second article, which gave Young's theoretical interpretations of this geological data (in terms of Noah's Flood) and gave a critique of Buckland's den theory, was read to the Society on 30 November 1822. However, it was not published until at least four years later,²⁴ long after Buckland's theory was established in people's minds.

In Young's second article, he said that he waited to publish his theoretical interpretations until Buckland had published his in the *Philosophical Transactions of the Royal Society*. Buckland's views were already known to Young as a result of earlier personal correspondence and

personal conversation in Whitby between the two.²⁵ So why did the Wernerian Society wait so many years before publishing Young's objections to Buckland's ideas, especially since Young had more first-hand knowledge of Kirkdale Cave and its fossils than Buckland did?

This may have been a case of deliberate suppression (under Robert Jameson's influence) of Young's article. Jameson was the founder and director of the Wernerian Society and editor of its *Memoirs*. He secretly encouraged John Fleming, who advocated a tranquil Noachian Flood which left no geological effects, to oppose Buckland's early views on the Flood.²⁶ Fleming did so in the *Edinburgh Philosophical Journal* (co-edited by Jameson and David Brewster).²⁷ Could it be that Jameson intentionally delayed publication of Young's article until after Fleming's, because of Jameson's own drift from catastrophism to uniformitarianism, which was in progress at the time?

Hints and conjecture

Having discussed the facts and inferences that he considered to be 'certain', Young proceeded to his 'probable' hints and conjectures as to the time and the manner of the deposition of the strata. In defence of a literal interpretation of Genesis 1–11, he first dealt with the day-age theory for harmonizing Genesis with old-earth geological theory, which insisted that the strata had been deposited before the creation of man. He presented five reasons for rejecting this:

1. the order of events in Genesis 1 do not coincide with the order of fossil remains in the strata,
2. a creation over long ages detracts from the honour of God,²⁸

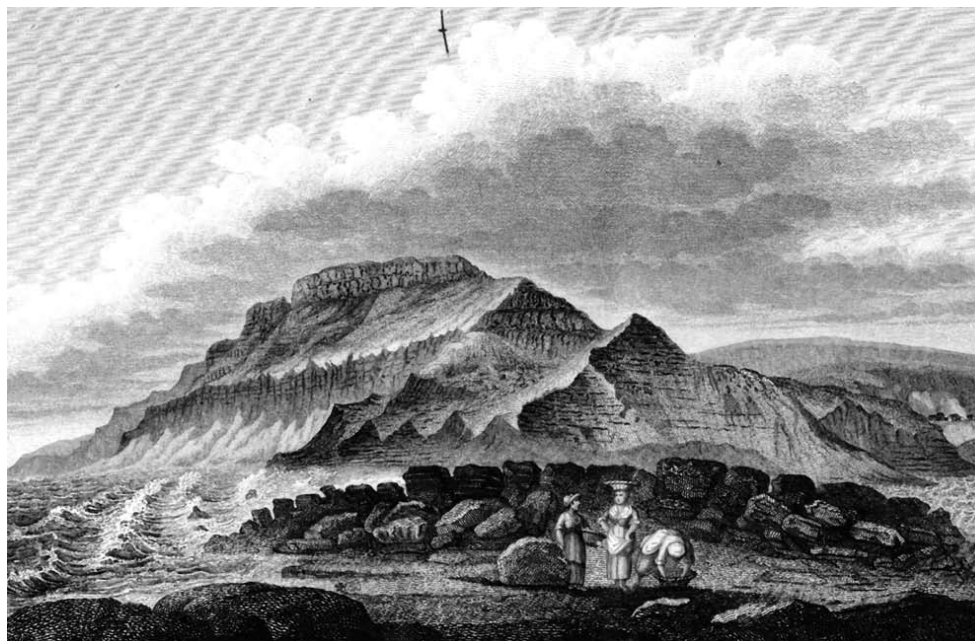


Image from the Whitby Museum

The frontispiece of Young's Geological Survey of the Yorkshire Coast, 1822. Picture by John Bird.

3. the goodness of creation (as stated in Genesis 1:31) militates against the notion of long ages of destruction before the sixth day,
4. the strong evidence that the days were literal,²⁹ and
5. the incongruity of having ages of catastrophes resulting in the misery and destruction of creatures before man's Fall in sin and even before his creation.³⁰

After giving his reasons for rejecting the notion of a tranquil Noachian Flood,¹ Young concluded his theoretical discussions by responding to geological objections to his theory of a recent creation and a global catastrophic Noachian Flood.³¹ These were presented in a question and answer format and covered such issues as:

1. the extent to which the antediluvian strata were demolished by the Flood,
2. how the Flood could have dissolved so much of the earth's crust,
3. how the pre-Flood world could have supplied all the animal and vegetable matter that we find in the strata,
4. how the violent Flood could have

- produced such a regular series of strata and, in many cases, homogeneous strata,
5. how it could have transported the quantity of matter necessary to produce the strata,
6. what the cause of the break up of the crust was,
7. how plant life could have survived the Flood and been so quickly restored after the Flood,
8. and why more quadrupeds and humans were not found in the fossil record.

It is interesting to note that many of the objections of the past are still being argued today. In each case, he answered the objection based on known facts of natural science.

Conclusion

Young made very thorough investigations of the geology of his home area of Yorkshire, where a great percentage of the so-called 'geological column' was exposed in the mines and on the sea coast. The published results of these observations were praised for their accuracy by the leading old-earth geologists at the time. His arguments for a young earth and the

answers he gave to his opponents are still essentially valid and worthy of investigation. I would encourage modern creationist geologists to build upon the solid research work by George Young in the Yorkshire area.

References

- Mortenson, T., British scriptural geologists in the first half of the 19th century: part 12. George Young (1777–1848), *TJ* 18(3):121–127, 2004.
- 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.
- Young, G. and Bird, J., *Geological Survey*, pp. 11–12, 1828. Young also expressed his caution regarding theoretical interpretation and speculation on pages iv and 311. His third part is therefore labelled ‘general observations’ and is broken into two sections: ‘facts’ and ‘inferences’, which he said could be regarded as ‘certain’ and ‘hints and conjectures’, which comprise ‘what is only probable’.
- Simpson, M., *The Fossils of the Yorkshire Lias*, pp. iv–v, 1884. According to Simpson, the men whom Young influenced included Mr Bean and Mr Williamson in Scarborough. The latter contributed much to paleontology during his life.
- Sedgwick, A., On the classification of the Strata which appear on the Yorkshire Coast, *Annals of Philosophy* N.S. II:339, 341, 1826.
- Phillips, J., *Illustrations of the Geology of Yorkshire I*, p. xv, 1829.
- According to Williamson, W.C., Biographical notices of eminent geologists, *Proceedings of the Yorkshire Geological and Polytechnic Society* VIII(3):296, 1884; ‘No part of England, probably no part of the world, displays in so small a compass such an unbroken succession of the Cretaceous, Oolitic, and Liassic beds, as is revealed in the precipitous cliffs that overhang the shore from Flamborough Head to Skinninggrave.’ Williamson added that Young and Bird, along with William Bean and John Williamson, were the men ‘whose united labours in unearthing the relics of bygone ages, assisted in giving the study of Yorkshire Geology an impetus, and in stamping it with an importance, it had not hitherto known.’
- Young, ref. 3, pp. 2–3. He further stressed the infant state of geological knowledge on pages 8–9.
- Young, ref. 3, pp. 311–340.
- He did not argue here that the force was volcanic. That was proposed later under his ‘hints and conjectures’.
- This is one of his longer points, occupying five pages, as he refuted the Huttonian theory, which he no doubt learned well from his former professor, John Playfair, at Edinburgh University and which was later adopted by Scrope and Lyell. One of his reasons for rejecting the river theory was the existence of dry valleys, where no river flowed at the time. George Fairholme discussed this idea at length as a result of his study of the plains of France. See Mortenson, T., British Scriptural geologists in the first half of the nineteenth century: part 8. George Fairholme (1789–1846), *TJ* 16(3):98–107.
- Lyell described and illustrated this thinning out of the strata in his *Manual of Elementary Geology*, pp. 16, 98, 102, 1855.
- I.e. paraconformities. For a tabular illustration of this from the work of Young’s contemporary, William Smith, see: Sheppard T., William Smith, his maps and memoirs, *Proceedings of the Yorkshire Geological and Polytechnic Society* N.S. XIX:139–141, 1914–1922.
- Here he cited an example from Greenough’s *A Critical Examination of the First Principles of Geology*, 1819.
- This he attributed to the fact that the cause of induration is primarily, if not exclusively, intrinsic to the nature of the stratified deposit, rather than simply being an effect of time.
- Here, in rejecting the uniformitarian theory, which in 1828 was in the process of being recast by Scrope and Lyell, Young gave a rebuttal to an argument used by his former professor, John Playfair, in his defense of Hutton.
- Here he argued against the theory of alternating sea beds and lake bottoms put forth by Cuvier and Brongniart to explain the Paris Basin. One reason he cited was that land and sea shells, by which the French geologists distinguished their lacustrine and marine environments, are often difficult to distinguish. In a footnote, he cited supporting evidence from Sowerby, J., *Mineral Conchology*, 1812–1829; and Beudant F.S., Extract from a Memoir read to the Institute on the 13th of May 1816 on the Possibility of making the Molluscae of Fresh Water live in Salt Water, and vice versa, *Philosophical Magazine* XLVIII(22):223–27, 1816.
- Here he argued for the allochthonous (i.e. transported) origin of upright trees and plant stems and of shell-fish preserved in the strata.
- This statement is apparently confirmed by the table in William Smith’s representation of the stratigraphic record. See Smith, W., *Stratigraphical System of Organized Fossils*, 1817, unpaginated chart facing page 137. Young named ostracites, ammonites and belemnites (all of which feature prominently in Smith’s chart), and terebratulæ as particular examples of shells that pervade almost all the strata. Young repeated this point in his *Scriptural Geology* (1838, p. 9), to which John Pye Smith vociferously replied that it was ‘an assertion full of extreme inaccuracies’. See Pye Smith, J., *Relation between Holy Scriptures and the Geological Sciences*, p. 388, 1839. However, the prominent conchologist Sowerby agreed with Young regarding ammonites and terebratulæ. See Sowerby, J., *The Genera of Recent and Fossil Shells*, 1820–1825. Buckland also confirmed Young’s statement. See Buckland, W., *Bridgewater Treatise I*, pp. 292, 312–313, 333, 1836.
- Here he argued against the idea, then popularized by some leading geologists, that the lower one goes in the strata the more dissimilar creatures are from the present. No such gradation exists in the actual strata, he said, citing zoophytes in the chalk and oolite strata well above the lowest strata which contained oysters and other shells virtually identical to living species. See Young, ref. 3, p. 334, 1828.
- This is confirmed, he wrote, by the facts that 1) breaks (or faults) and denudations in a given location affect all the strata of that location, 2) the bending of the strata associated with the breaks indicate that at the time of such modifications the strata were still only half-consolidated, and 3) the insensible transitions and lack of evidence of erosion (i.e. conformity) between the strata belie any long stretches of time between deposition of strata.
- Eastmead, W., *Historia Reivallensis*, 1824.
- Young, G., *Memoirs of the Wernerian Society* IV:262–270, 1822.
- Young, G., *Memoirs of the Wernerian Society* VI:171–183, 1826.
- Young, G., ref. 24, p. 172.
- See article on Fleming in: Stephen L. and Lee, S. (Eds.), *Dictionary of National Biography (DNB)*, Oxford: vol. 13, p. 32, Oxford Univ. Press, 1917.
- Fleming, J., *Edinburgh Philosophical Journal* XIV(28):205–239, 1826.
- This, of course, is a very subjective evaluation. Young believed that creation over long ages was inconsistent with God’s power; instantaneous creative acts on each of the six days conveyed, to him, the grandeur of Psalm 33:9—‘He spoke and it was done; He commanded and it stood fast.’
- His reasons were the use of ‘morning’ and ‘evening’ in Genesis 1, the parallel use of ‘day’ in the sabbath commandment of Exodus 20:11, and the impossibility of having an ages-long seventh day in the historical narrative of Adam’s life.
- Young, ref. 3, pp. 341–342. He remarked here that in attributing the great proportion of the strata to the Flood, he was not adopting the ‘crude notions’ of John Woodward, though he regarded Woodward and others like him as being closer to the truth than the contemporary old-earth creationists.
- Young, ref. 3, pp. 346–355.