Geological answers for the 19th and 21st centuries

A review of
Scriptural Geology **(1838) and** ***Appendix to Scriptural Geology*** **(1840)**
George Young
(1777–1848)

Terry Mortenson

George Young was the most geologically competent of the scriptural geologists,[1] and his writings show that he was well read in geological and scientific literature. He 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.[2] The published results of these observations were praised for their accuracy by the leading old-earth geologists in 1828. However, George Young's most seasoned reflections on geology and the Bible, *Scriptural Geology* (1838, 78 pages) and *Appendix to Scriptural Geology* (1840, 31 pages), were essentially ignored in the following decades.[3]

Young presented well-reasoned and sound arguments from geology to counter the prevalent theories of Charles Lyell and William Buckland. Unfortunately, his peers and much of the church had already succumbed to the authority of science. Buckland and Adam Sedgwick, both geologists and Anglican clergymen, who had previously suggested a tranquil Flood, had moved on by the early 1830s to outright rejection of the biblical account. By the 1840s critics of the scriptural geologists stated, or implied, that no competent geologists still argued for the Flood.

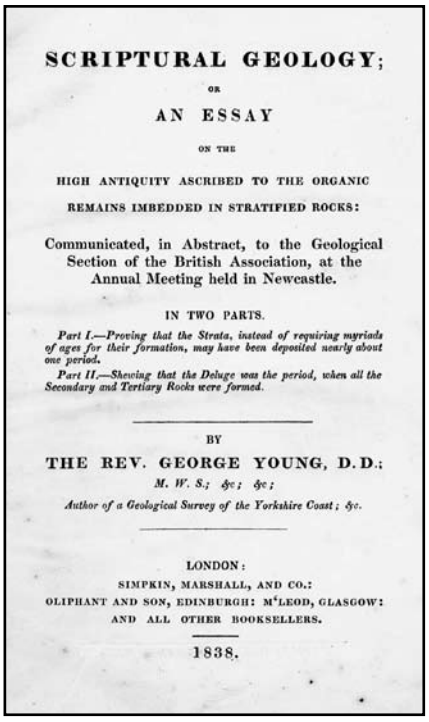
It is valuable to note that most of the arguments that Young presented from geology are still valid today. Sound answers and refutations to the claims of long geological ages have been evident from the very outset of the debate. Young had the answers, but his contemporaries chose to wilfully ignore his arguments.

In retrospect, we may lament where battles for the authority of the Bible have been lost, such as in the 19th-century geology debates. However, it is clear that it is not simply a matter of doing good science and waiting for the scientists to turn around and see the truth. We know that the heart of man is deceitful and proud. The battle is spiritual, and the enemy is happy for those he has deceived to use unethical means to promote his agenda, including ridicule, political and ecclesiastical powers, and appealing to intellectual pride. The issue of the authority of the Bible needs to be taken up by every Christian; it is our foundation and each one needs to stand his/her ground and defend the faith.

Facts and theories

Young explicitly claimed that he was not offering a complete theory.[4] He preferred to focus his attention on the careful gathering and integrating of geological facts. In the summary of his 1838 *Scriptural Geology,* he wrote,

> 'Upon the whole, let us learn, in the pursuits of geology, to guard against launching into wild imaginations, alike unfavourable to science and religion. Let every phenomenon be attentively surveyed, let every fact be duly investigated, let facts be accumulated, and diligently compared; and, instead of indulging in flights of fancy, let sober reason, and sound judgment, determine the results.'[5]


SCRIPTURAL GEOLOGY;
OR
AN ESSAY
ON THE
HIGH ANTIQUITY ASCRIBED TO THE ORGANIC REMAINS IMBEDDED IN STRATIFIED ROCKS:
Communicated, in Abstract, to the Geological Section of the British Association, at the Annual Meeting held in Newcastle.
IN TWO PARTS.
Part I.—Proving that the Strata, instead of requiring myriads of ages for their formation, may have been deposited nearly about one period.
Part II.—Shewing that the Deluge was the period, when all the Secondary and Tertiary Rocks were formed.
BY
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SIMPKIN, MARSHALL, AND CO.:
OLIPHANT AND SON, EDINBURGH: M'LEOD, GLASGOW:
AND ALL OTHER BOOKSELLERS.
1838.

Image from the Whitby Museum

Nevertheless, more than any of the other geologically-informed scriptural geologists, Young presented the most thorough explanation of his time for how the whole geological record could be harmonized with a literal reading of the Genesis account of creation and the Noachian Flood.

Scriptural Geology (composed of two parts) was initially communicated to the Geological Section of the British Association for the Advancement of Science (BAAS) at their annual meeting in Newcastle in 1838. Only the first half of it was admitted to the meeting, and then only read in abstract, followed by a reply from Sedgwick. Before Young presented it to the public, it was enlarged.[6]

Like the original draft submitted to the BAAS, the published edition was also divided into two parts. In the first part he sought to prove from the geological evidence that the strata were laid down not over long ages but primarily in one period, the Flood. He then dealt with objections to this conclusion. In the second part he argued against the gap theory and

the local and tranquil flood theories, by going into great detail about the effects of the Flood in relation to the geological phenomena.

Appendix to Scriptural Geology was written as a response to John Pye Smith's theory that Genesis described merely a local creation and local Noachian Flood, both in the Mesopotamian Valley.

Part I—Geological arguments for the Flood

In Young's day, common arguments for an old earth were: the regularity of the stratified deposits, the thinness of some of those strata, and the ripple marks on the upper boundary of some strata. This data was interpreted by old-earth geologists as evidence of slow deposition over many years. Just as modern creationists have documented in recent literature, Young pointed out that all these features can be observed to form rapidly on present-day ocean beaches.

Similarly, it was claimed that different fossils occurring in different layers were evidence for progressive creations over a long period, with different creatures 'reigning' in each 'age'. But as Young pointed out, the evidence showed that the complexity of creatures does not gradually increase as one proceeds up through the strata and, in fact, many fossils in the lowest strata are more analogous to living forms than some fossils in higher strata are. This information was known long before Darwin commented on the lack of fossil evidence for his theory.[7]

The primary focus of Young's rebuttal (covering pages 10–23) was against the idea that the fossils buried in the strata were situated in the place where the plants and animals had lived, died and were buried. He instead argued that the evidence pointed to the conclusion that these creatures had been transported by floodwaters and deposited with the sediments of the strata.

He rejected the *in situ* theory for plants because, first, no existing peat bog was thick enough to produce the vast coal seams, which were also interspersed with ocean-deposited sediments. He cited evidence and arguments from Lyell and Phillips to support his contention that upright fossil trees and stems, so often associated with the coal, had been transported to their positions before being buried. In response to the claim that such trees often showed evidence of the work of boring insects on the surface, which was interpreted to have taken place while the tree grew, Young argued that it was marine creatures that did this work, as the tree floated. For evidence he referred to a log with such markings in the Whitby Museum that had been retrieved recently from the sea.[8]

In Young's view the *in situ* theory to explain fossil animals was also problematic. He noted that the beds loaded with shells generally lie conformable to the coal strata, and gave as evidence the common mixture of marine and terrestrial creatures in a single stratum. Young described a 4-inch- to 5-inch-thick seam (10 cm to 12.5 cm), in the Lias Formation, which extends for many miles along the coast and is primarily composed of oyster shells. The shells give every indication of having been transported, and the bed is far more extensive than any modern oyster bed. Similarly, he argued that the abundance of corals and shells in the Upper Oolite is unlike the arrangement of modern coral reefs and must have been transported.[9]

He argued that the proven proliferation of animalcules, insects and sea-life in the present world[10] would have been even greater in the generally tropical climate of the pre-Flood world, and thus could provide all the material necessary to form the chalk by the depositing currents of the Flood. Even Lyell, himself, argued that in spite of the perfect state of preservation of shells in the strata, the intermingling of fresh-water and marine shells indicated transport from a distance by agitated water currents.[11]

As proof that the sedimentary rock record is largely the result of one depositional event, the Noachian Flood, Young offered five evidences:

First is the general conformity; each stratum insensibly or gradually blends into the one above with no erosional inequalities at the boundary to suggest long ages before the next was deposited.

Second, though there are also some non-conformities, no doubt caused by volcanic force from below (which is a sudden, not a gradual, event in any case), these show evidence of rapid deposition, not slow deposition over thousands of years. This is because the breaks, or faults, affect the whole rock mass of many strata.[12] Also, in cases where the breaks are small, the strata (from the lower to the upper) are bent, indicating that all the strata were only partially consolidated at the time of movement.

Third, the denudation of the strata, again affecting many strata in a location, to produce the valleys and alluvial detritus, must also have occurred when the strata were only semi-consolidated. Furthermore, there is no evidence of the denudation of the surface of past 'worlds' at different levels in the stratigraphic record.

Fourth, highly preserved and flattened fossils (e.g. of fish and reptiles) point to rapid deposition of the strata with accumulating pressure on the lower, still soft, layers. Many such fossils evidence crushed bones and contorted bodies, suggesting that they were violently entombed alive.[13]

Finally, the evidence of tropical climate throughout the geological record strongly supported Young's belief that the whole record had all been laid down in one short period.

Counterarguments

In the remaining pages of part one, Young dealt with two geological objections and one theological objection to his view. The evidence for a global tropical climate in the past[14] helps to explain the existence of tropical plants and animals in the strata as well as the prodigious quantity

of fossils generally. Secondly, to the fact that many fossils are peculiar to particular strata and different from living forms, Young responded that the rich variety of creatures in the present world would have been greatly augmented in the antediluvian world, and as today, would not have been equally distributed on the earth.[15] In addition, the currents of the Deluge would have been in many different directions, carrying different creatures from different locations.[16]

Theologically, it was objected that a 6,000-year-old creation limits the display of God's glory; also there was no clear reason why God waited so long to create the world. But Young countered that as mere humans we are in no position to judge God's choice of when He created the world. As far as God's glory is concerned, Young felt that creation in six days demonstrates more of God's power and skill than creation in six years or six ages of untold years. Furthermore, the amount of glory ascribed to God is not determined by the length of time used to create something, but rather by the evident wisdom of its design and adaptation to the purposes for which it was created.

Part II—Compromise positions

In part II, Young turned his attention to the various attempts to harmonize the creation account with old-earth theories. He spent no time on the day-age theory because it 'seems now to be abandoned as utterly untenable'. Instead he focused on the gap theory and gave four reasons for rejecting it:

First, even if one conceded that there were many 'creations' before Genesis 1:3, out of the wreck of which this present world was created (as Genesis 1:2 might suggest), such a scenario would not be the pre-Adamite theory of the leading geologists. That theory does not end with a wrecked chaos before the present state of the world, but with a good world of marvellous creatures, continents, oceans, rivers, etc.[17] Second, there was a theological problem. All the thousands or millions of years of pre-Adamite worlds supposedly passed without any rational beings on Earth (i.e. man) to praise God for His works. How could there be so many ages with no provision for such an important task? Third, another theological objection, which Young had raised in 1828 against the day-age theory, was the fact that:

> 'According to scripture, it was man's disobedience that brought death into the world, with all our woe; but, according to this geological system, death had reigned and triumphed on the globe, in the destruction of numerous races of creatures, thousands of years before man existed.'[18,19]

Image from the Whitby Museum

One of the colour plates from Young's Geological survey of the Yorkshire Coast. *The artist was John Bird. From left to right, top to bottom: a fossil plant from Castleton coal shale, a fern in sandstone from near Sandsend, a reed or cane from High Whitby, impressions in coal shale, arrowhead-shaped impressions in sandstone, petrified wood with a knot from alum shale and a nut from a nodule in sandstone.*

The final (and to Young, the strongest) reason for rejecting the gap theory was that 'it leaves no room for the deluge, that great catastrophe so distinctly recorded in sacred history', either by tranquillizing or localizing the Flood.

The local flood

Young responded, in his 1840 *Appendix*, to John Pye Smith's idea of a local creation (i.e. Genesis 1 only describes the creation of a portion of central Asia).

Young agreed with Smith that God used figurative language to describe Himself, that in 'matters of science' He attributed scriptural language to the knowledge of the Jews and early Christians, and that universal terms in the Bible were also used in a limited sense. But these facts could not be used to reject a universal creation for several reasons. The ancient Israelites were not nearly as ignorant as Smith portrayed them, argued Young. And at the time Moses wrote Genesis, they knew of larger portions of the globe than just the area outlined by Smith, so that there was no need to use universal terms to describe a local creation, if it indeed had been only local. Furthermore, Genesis 1–11 professes to describe the early history of the whole world, not just central Asia, which became the focus after the Flood.[20]

Young presented his reasons for believing that the antediluvian human population was at least as great and as widely dispersed over the earth's surface as in the nineteenth century, so that a local flood would be inadequate to destroy that ungodly race of men.[21] Then, too, there was the plain and

repeated use of universal terms (which indicated their literal meaning in this case) to describe the global Flood. Also, the local flood would necessitate a number of miracles:

1. While the sea level was raised over the mountains locally, it would have had to be kept constant at the normal level generally.
2. The flux of the waters that flooded the local area would have to have been restrained from flowing back to where they came from.
3. This action of the water would need to have been maintained for 150 days, with no water slipping out through the many mountain passes on the edge of this local area.
4. The diurnal and annual motion of the earth would not have been affected by this watery bulge.

Another problem is the lack of any surviving landmarks to identify this local area of creation and flood which Pye Smith envisaged. Furthermore, he argued, why was the Ark needed if Noah, his family and the animals could easily have migrated out of the area? The building of the Ark and a year's confinement in it were unnecessary hardships on them. Finally, he noted that 2 Peter 3 draws a tight parallel between the Flood and the coming universal conflagration.[22]

The Flood and the stratigraphic record

The last six pages of *Scriptural Geology* and the bulk of the *Appendix* were devoted to answering ten objections to the Flood's being the cause of most of the stratigraphic record.

1. It was asserted by Young's opponents that the fact of extinct creatures was inconsistent with Noah's mandate to save two of every living thing. Young replied that in the Bible 'all' does not always mean all, but often only denotes very many, so that what Genesis means is that Noah was to take either all the animals within his reach in that part of the world where he lived or all the animals which God thought necessary to replenish the earth.[23]
2. Closely related to this was the objection that the Ark was far too small to carry the number of creatures envisaged by the global Flood view. Young insisted that critics calculated far too many species, since, for example, most insects and reptiles (or their eggs) could survive outside the Ark.[24]
3. Critics also argued that the thicknesses of the strata are too great to be produced by the Noachian Flood. Again Young charged them with gross exaggeration by adding together the measurements of the *extreme* thickness, rather than the *mean* thickness, of each of the strata. This was erroneous, because the strata were not of uniform thickness throughout, but rather lens-shaped (thick in the middle and tapering at the edges), and were not of universal extent over the face of the globe. Therefore, instead of the geological column being 10 miles (16 km) deep, as some old-earth geologists supposed, Young thought two miles (3.2 km) was closer to reality and a credible production of the Noachian Flood.[25]
4. Critics asserted that a flood as violent as scriptural geologists supposed could not produce such distinct, homogeneous strata as we find. Young had briefly responded to this in 1828 by referring to the sorting action of oceanic tides observed on modern beaches.[26] In 1838 he argued that, in reality, these characteristics of the strata militate far more against the theories of his critics. He thought it inconceivable that there could have been a purely oolitiferous ocean depositing its homogeneous stratum for thousands of years, followed by a purely cretaceous ocean depositing the evidence of its reign for another epoch of thousands of years, and so on. On the other hand:

'We shall shew a disposition to be "willingly ignorant", if we shut our eyes against evidences everywhere visible, indicating that the earth has experienced convulsions inconceivably greater than any now felt, and that the stratified rocks have been deposited at a rate incomparably more rapid than the present depositions of mud in the ocean. Professor Buckland himself, though he attempts to neutralize the effect of his own testimony, shews in his Treatise (p. 307), by indubitable tokens, that the lias at Lyme Regis must have been deposited with a rapidity a thousand times greater than the sediment now accumulating in the sea; for the fossil cuttle-fish found there, must have been killed and

Image from the Whitby Museum

A portrait of Young by painter Edwin Cockburn, which hangs in the Whitby Museum library.

imbedded in the strata almost in a moment of time, being prevented from discharging the contents of their ink-bags. "I might register the proofs of instantaneous death, detected in these ink-bags, for they contain the fluid which the living sepia emits in the moment of alarm; and might detail further evidence of their immediate burial, in the retention of the forms of these distended membranes; since they would speedily have decayed, and have spilt their ink, had they been exposed by a few hours to decomposition in the water. The animals must therefore have died *suddenly*, and been *quickly* buried in the sediment that formed the strata, in which their petrified ink and ink-bags are thus preserved." It is strange, that the learned author of these valuable remarks, should ever advocate the system of gradual deposition, during countless ages. The difficulties attending that system are vastly greater, than any that can be started [*sic*] against the diluvian theory.'[27]

The remaining objections against the Flood, to which Young responded, were specifically raised by Smith.

5. Smith supposed that a global Flood would necessitate a miraculously created supply of water five-miles deep to encircle the globe and cover all the high mountains. Young countered that no such miracle was required since the present oceans had enough water; all that was needed was for the ocean beds to rise by volcanic force and the land would correspondingly sink. Furthermore, it was not essential, or even legitimate, to assume that the pre-Flood mountains were as high as at present.[28]
6. To the question of post-diluvian animal distribution, Young responded that the antediluvian universal tropical climate only gradually changed to the present varied climatic conditions. This process of climatic change would have allowed time for the migrations to take place.
7. To another of Smith's objections, Young responded that fresh- and salt-water fish and their spawn could survive in the waters of the Flood, because there would not have been a completely homogeneous mixture of these two kinds of water.[29]
8. Regarding the refurbishment of the earth at the end of the Flood to make a suitable habitation for Noah's family and the animals, Young wrote:
'Hence, Dr Smith's remarks (pp. 162–163) about the perils of descending Mount Ararat, on the wet and slippery faces of naked rocks, and the necessity of a miracle, to save Noah and his family and cattle from breaking their necks in attempting to get down, are rather puerile.'[30]

This was because the volcanic activity during the Flood would have sustained the tropical climate for some time after the Flood, thereby aiding the drying and solidification of the surface sediments and the rapid growth of lush vegetation during the several months of receding waters between the time of the landing of the Ark and the disembarkation from it.

9. The number and age of extinct volcanoes in southern France and the dating of some trees, by the tree-ring method, to be much older than the supposed date of the Flood led Smith to reject its universality. But Young responded that the ages of trees and lavas were equally difficult to determine.[31] He also cited examples, taken from Murray's *Portrait of Geology*,[32] of the rapid formation of volcanic cones. Based on his own observations, he rejected the notion that existing rivers cut the valleys through the lava; rather they only slightly modified valleys formed by faults and denudation of the floodwaters.
10. Finally, adding to the answer he had already given in 1838, Young explained how the Flood could have produced the thinly laminated layers in the strata. He objected that Smith had no proof for his assertion that a $\frac{1}{25}$-inch-thin layer represented one year's deposition.[33]

Image from the Whitby Museum

An engraving of Kirkdale Cave, which was investigated by both William Buckland and George Young.

On the contrary, flatly crushed and highly preserved fish, which naturally decay in hours, were frequently found fossilized in such laminated strata, which was a clear proof of very rapid deposition and lamination.[34]

Conclusion

Young gave the most thorough analysis of the geological record done by any scriptural geologist. He also answered in a gracious and respectful, yet challenging, way the specific geological and theological arguments of the leading old-earth geologists. He contended that the rocks and fossils gave abundant evidence that most of the geological record was the result of Noah's Flood and that therefore geology did not prove that the earth was millions of years old. He was firmly convinced by the scientific and biblical evidence that God had created the world in six literal days about 6,000 years ago. In spite of his recognized geological and biblical competence and respected Christian reputation, his arguments were completely ignored by his geological opponents, even those geologists who were also ordained clergymen and knew him personally. Modern old-earth geologists still have no answers to the arguments of Young. He remains ignored by the majority, and unknown in university classrooms.

A battle for the authority of the Bible regarding the history of the earth was lost in the early 19th century despite clear, solid evidence defending the biblical account. It is not enough to do the science and wait for the world to see the truth. And compromise positions only lead to the church losing more ground as the Bible slides into the realm of myth and fairy tales. George Young and the other scriptural geologists were solitary voices in a sea of compromise and indifference. To recover the ground that has been lost, the foundations of the church must be restored and Christians awakened to the importance of our biblical history.

References

1. 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.
2. Mortenson, T., The creation of Yorkshire; Review of: Young, G., *A Geological Survey of the Yorkshire Coast*, *TJ* **18**(3):48–51, 2004.
3. These two were published in a combined second edition in 1840.
4. Young, G., *Scriptural Geology*, p. iv, 1838.
5. Young, ref. 4, p. 77.
6. Young, ref. 4, p. iii. The BAAS Report for 1838 does not refer to Sedgwick's reply. It was briefly remarked on in a footnote in: Smith, J., On the last changes in the relative levels of the land and sea in the British Islands, *Memoirs of the Wernerian Natural History Society* **VIII**:63, 1838.
7. Darwin, C., *On The Origin of Species by Means of Natural Selection, or The Preservation of Favoured Races in the Struggle for Life*, London, 1859, <www.darwin-literature.com/The_Origin_of_Species/10.html>, October 2004.
8. Young, ref. 4, pp. 10–14.
9. Young cited Phillips, J., *Treatise on Geology* **I**:218, 1837, in support of the transport theory of the oolite.
10. He referred to the research done by Professor M. Ehrenberg. For a brief summary of some of his work over many years, see M. Ehrenberg, Observations on the disseminations of minute organic bodies, *Edinburgh New Philosophical Journal* **XXXVI**(71):201–202, 1844.
11. Lyell, C., *Principles of Geology* **III**:245, 1830–1833.
12. He gave two extensive examples. One of them, taken from Phillips, ref. 9, p. 182, was a fault 1000–2000 feet (300–600 metres) deep and running for 110 miles (177 kilometres).
13. He cited many examples, some of which were in the Whitby Museum.
14. He relied on Lyell's argument for a different geographical arrangement of the land masses in the past, which would have produced such a universal climate. See Lyell, C., *Principles of Geology* **I**:125–143, 1830–1833.
15. He gave many examples of this and also cited the research of Lyell and Darwin.
16. Again, he cited Phillips in support of this idea.
17. A clear summary of this pre-Adamite theory was provided by Mantell just a few months after Young published this criticism: 'Thus geology reveals to us the sublime truth—that for innumerable ages our globe was the abode of myriads of living forms of happiness, enjoying all the blessings of existence, and which at the same time were accumulating materials to render the earth, in after ages, a fit, temporary abode, for intellectual and immortal beings!' See Mantell, G., *The Wonders of Geology* **II**:504, 1839.
18. Young, ref. 4, pp. 41–42.
19. Young, G., *A Geological Survey of the Yorkshire Coast*, p. 342, 1828.
20. Young, G., *Appendix to Scriptural Geology,* pp. 4–7, 1840.
21. Young, ref. 4, p. 42. Young, ref. 20, pp. 8–12.
22. Young, ref. 4, pp. 42–43. Young, ref. 20, pp. 12–14, 18.
23. Young, ref. 4, p. 72. Young did not explain why he could take 'all' here in a limited sense, but not interpret in a similarly limited sense the universal terms describing the extent of the Flood.
24. Young, ref. 20, p. 15.
25. Young, ref. 4, pp. 72–73. The squamose, lens-shaped nature of the strata had been discussed in more detail on pages 50–51.
26. Young, ref. 19, pp. 48–49.
27. Young, ref. 4, pp. 74–75.
28. Young, ref. 20, pp. 14–15.
29. In other words, some parts of the universal Flood would have been saltier than others and would have only gradually changed from one kind to the other.
30. Young, ref. 20, p. 17.
31. Young, ref. 20, pp. 18–21. In rejecting tree-ring dating, he cited *Physiology of Plants* (1833), the work by his fellow scriptural geologist, John Murray. The difficulty of dating lavas in the early nineteenth century has been noted by Martin Rudwick, Poulett Scrope on the Volcanoes of Auvergne: Lyellian Time and Political Economy, *British Journal of the History of Science* **VII**(27):216, 1974, who, in a footnote, discussed the error of Scrope, a leading expert on volcanoes at the time, in dating the volcanoes of southern France as being much older than Daubeny (and modern geologists) have dated them.
32. Murray, J., *Portrait of Geology*, 1838.
33. Though Young offered no specific observational evidence in support, his objection was sound. In an analysis of recent flood deposits in Colorado, geologists concluded 'Strata of sand both in stream channels and on bordering flood plains, when deposited by a violent flood, contain dominantly horizontal layering characteristic of the upper stream regime. Much of the layering is in the form of fine laminae similar to the type commonly ascribed to intermittent accumulation in quiet water over a long period of time.' See McKee, E.D., Crosby, E.J. and Berryhill Jr, H.L., Flood deposits, Bijou Creek, CO, June 1965, *Journal of Sedimentary Petrology* **XXXVII**(3):850, 1967.
34. Young, ref. 20, pp. 21–25; Young, ref. 4, pp. 7–8. Young cited examples of such fossils found in several locations of Europe and Britain.