

Don't blame the map

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A review of
The Map that Changed the
World:
The Tale of William Smith
and the Birth of a Science
by Simon Winchester
Viking, London, 2001

The English canal builder, William 'Strata' Smith was a pioneer of geology whose remarkable discoveries about fossils and strata are fundamental to the science. It is fitting that a book should be devoted to his work and, that such a book should appeal to anyone interested in geology. It also should appeal to anyone interested in the history of Western thinking because geology is a field of learning that is foundational to other fields of knowledge. This big idea is expressed in the title of the book, *The Map that Changed the World*.

In some respects, Winchester is correct to link geology with changes in world thinking. Sherwood Taylor, Curator of the Museum of the History of Science, Oxford, said the same thing in 1949: 'In England it was geology and the theory of evolution that changed us from a Christian to a pagan nation.'¹

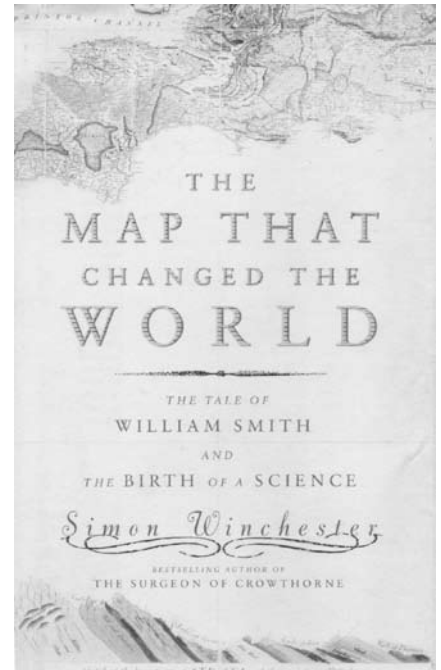
But in other ways, the title is misleading because it implies that Smith's map changed England 'from a Christian to a pagan nation'. That notion reflects a basic misunderstanding about science, a misunderstanding that is very prevalent today. Winchester, like so many geologists, doesn't realise that geological facts don't speak for themselves, but have to be interpreted. Rather than Smith's map, it was a new philosophy of geology that changed world thinking. In fact, Winchester describes how an earlier pioneer of geology, the 'gently-born Scots doctor' James Hutton, was

'one of the leading philosophers of the age'. More than 40 years older than Smith, he published his anti-Biblical ideas in *Theory of the Earth* in 1797 around the time the young Smith was working as a surveyor in Mearns Colliery in Somerset. Hutton's pagan² philosophy was kept alive by another Scot, John Playfair, and later systemised and popularised by Charles Lyell who called it 'uniformitarianism'.³

Winchester relishes the change away from Christian thinking that has occurred since Smith's time. His disparaging attitude towards the Christian faith spoils an otherwise fascinating work, and raises concerns about the overall reliability of his writing. Usually his cynicism bubbles along just below the surface in the form of prejudiced comments, but sometimes his bitterness is open and lurid, like when he describes his schooling in a Catholic convent. It must be said that if his experiences are accurately recorded, it is not surprising that he has a strong, anti-Christian, anti-creationist attitude. Yet, it was while he was at this school that Winchester developed a passion for fossils and, surprisingly, he refers to his school days as 'curiously contented'. I wonder what really happened.

This biography of William Smith illuminates many aspects of life in England at Smith's time. We see how economic forces affected the patterns of agriculture, pushed up demand for coal and fuelled a desire for cheap transport. Each of these affected Smith's career and provided opportunities for his geological observations.

Today, we can study huge areas of rock in road cuts as we drive along a freeway. This was not so in Smith's day. His first insight into the structure of the rocks under the ground came when he descended into the coal mine where he was employed. Later, when he supervised the construction of a canal in Somerset, he had the



opportunity to observe a continuous section of strata in a gash across the countryside. Fortunately, the route traversed an area of simple geology and he quickly grasped its geological structure.

I suppose the most significant episode, as far as geology is concerned, occurred when the canal was being excavated. Some of the strata, especially the finer-grained sandstones, looked very similar and Smith found it difficult to distinguish one bed from another. A sandstone in one cutting may have looked identical to one in another cutting half a mile away. Yet, the strike and dip of the strata indicated that the beds were not the same.

That, of course, is the basic problem faced by geologists. How do we correlate rocks over vast distances when we cannot see what is going on under the ground. Smith's solution to this problem transformed geological science. He realised that the beds could be distinguished by the fossils they contained. He found that the bivalves, the ammonites, the gastropods and the corals were subtly different from one bed to another.

This prompted Smith to arrange his fossil collection in a sequence, starting with those from the deepest beds and finishing with the fossils from the

uppermost beds. He realised too that he could map the outcrops of different formations over the whole of England by mapping the occurrence of the fossils. Thus began a career of travel, observation, and sample collection that occupied Smith for the rest of his life. What he discovered about fossils and strata eventually led to the publication of his geological map of England in 1815.

Winchester illustrates Smith's great contribution to geology by including 18 line drawings of Jurassic ammonites. He places one specimen at the beginning of each chapter in what he believes to be the 'exact chronological sequence'. The first fossil shown is the 'oldest' ammonite found in the deepest sequence of Jurassic sediments, while the last comes from a much higher horizon.

According to Winchester, and he is

simply reflecting what most geologists think, the reason different beds contain distinctive fossils is 'Evolution—we can say that today.' Yet, surprisingly, even Winchester admits that his Jurassic ammonites do not support the idea of 'evolution':

'It must be said, though, that anyone who flips rapidly from chapter to chapter in the hope of seeing the evolutionary advancement of the ammonite, speeded up, will be disappointed: ammonites ... do not display any conveniently obvious changes to their features—they neither become progressively smaller with time, nor do they become larger; their shells do not become more complex, or less' (p. xiii).

Clearly, evolution does not provide a useful explanation for the fossil succession of Jurassic

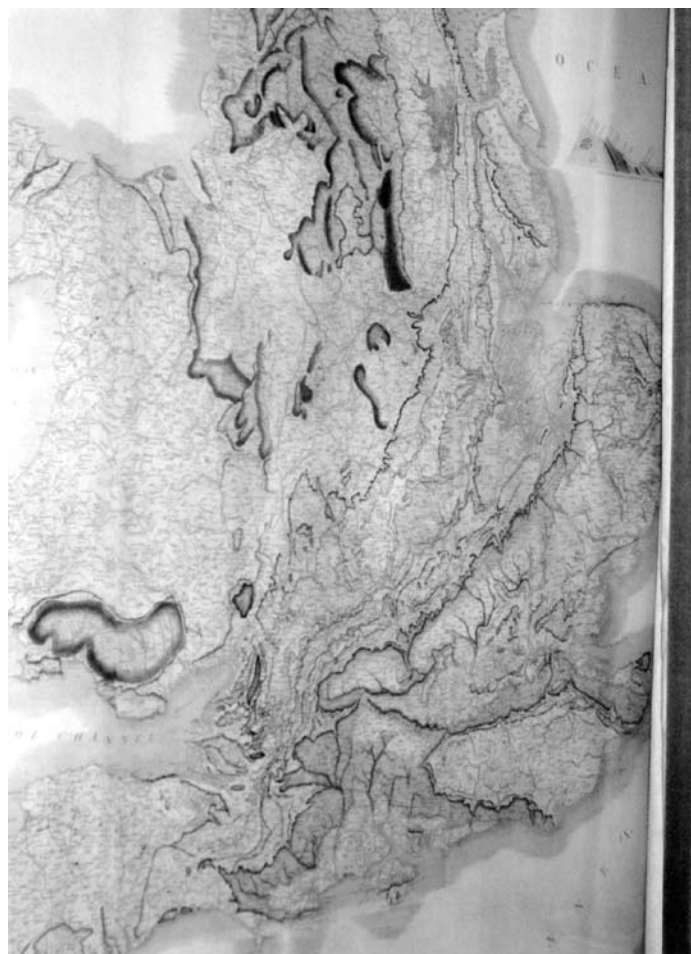
ammonites. The Biblical Flood is a far-superior explanation for different fossils being buried at different horizons within a sedimentary basin thousands of kilometres in extent.⁴

The problem is that, at the outset, the Huttonian philosophy eliminated the Biblical Flood as a possible geological explanation. Most geologists pour scorn on the idea. Winchester reflects this attitude when discussing the origin of marine fossils:

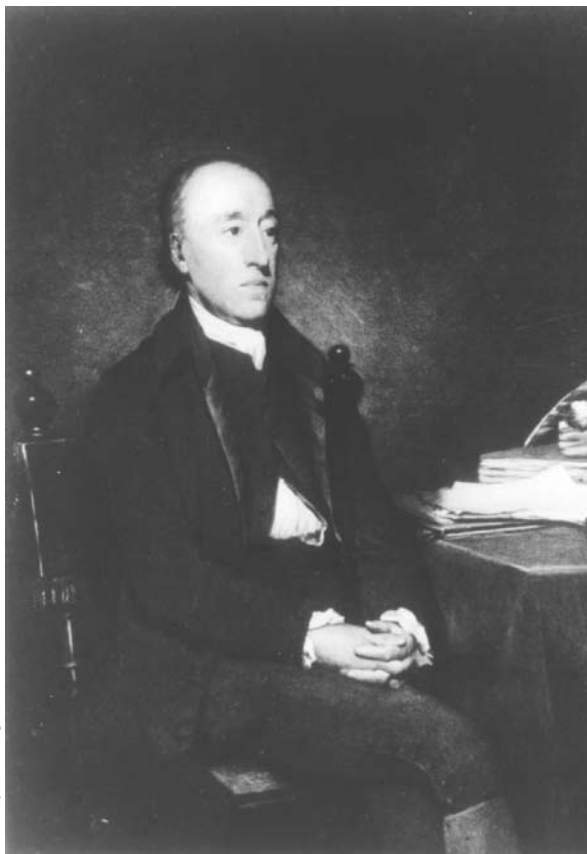
'What event ... could possibly have swept these remains to where they were now found? Could Noah's great flood ... have been so violent and so massive as to wash up shells on to the tops of mountains ... ?' (p. 43).

This is where uniformitarian geologists reveal either their ignorance or their wilful rejection of Scripture.

'No ... said the seers of the day.



The map of William 'Strata' Smith as it hangs on the wall of the eastern wing of Burlington House, Piccadilly (Left). A closer view is shown on the right.



James Hutton (1726-1797)

Noah's flood was said in Genesis to have been a short and placid affair ... ' (p. 43).

Short? Perhaps, if a one-year cataclysm can be considered short. But placid? Genesis definitely does not say the Flood was placid. How could a global cataclysm be considered placid when the highest mountains were covered by water and every land-dwelling, air-breathing creature outside of the ark was destroyed? Modern computer simulations of the global Flood reveal that it was anything but placid.⁵ It would be good for Winchester, indeed for all uniformitarians, to carefully read the account of Noah's Flood in Genesis and to think through its geological implications.

Winchester writes well and his experience as a geologist shows through. I am sure all geologists, as well as anyone who has travelled with a geologist, would chuckle at Winchester's description of 'Strata'

Smith touring across England by coach:

'He invariably sat out in the open, perched beside the driver, ... constantly scanning the horizon, continually asking to be allowed to get down and flail away at some roadside exposure "with the small hammer he seemed always to keep with him" ... bringing specimens, of rocks, of fossils, of crystals and of minerals, back into the coach with him' (p. 100).

As geologists, we can identify with the difficulty Smith found in putting pen to paper. Apparently, he was a perfectionist who could not bear to start writing up his grand scheme until he had sorted out every detail. He found it easier to travel on field work than to write. We can appreciate too the chagrin of his financial backers who waited year after year for his map and book.

Inside the cover, one of Smith's early maps is reproduced alongside a 1970 map, of the geology of England. The accuracy of Smith's original map is remarkable.

The book covers far more than geology. It introduces the various personalities at the time and also exposes some of the politics within geological circles in England.

This is an interesting book that reveals something of the history of geology which, of course, is necessary to help understand the philosophy and the basis of that science. But it was not the map that changed the world, but the anti-Biblical philosophy of uniformitarianism that transformed England from a Christian to a pagan nation. If you can ignore the author's innuendo against the Christian faith and if you can reinterpret the spin he

puts on events, then his book could be an interesting read.

References

1. Taylor, F.S., *Geology changes the outlook*; in: *Ideas and Beliefs of the Victorians*, Sylvan Press Ltd, London, p. 195, (one of a series of talks broadcast on BBC radio), 1949.
2. For example, Press, F. and Siever, R., *Earth*, 4th ed., Freeman & Company, 1986, on p. 40 of their textbook explain how the new Huttonian philosophy meant 'an obvious return to the old Greek way of looking at things' away from a 'literal interpretation' of Genesis. Similarly, Holmes, A., *Principles of Physical Geology*, 2nd ed., Thomas Nelson and Sons, London, 1972, pours scorn on the British Christian heritage and the Bible. On p. 44 he says: 'Had he lived in India, however, Hutton would have found a ready-made system of world chronology fully adequate for the needs of geology at the time. According to the Hindu calendar, as recorded in the ancient books of Vedic philosophy, the year A.D. 1960 corresponds to 1,972,949,061 years since the present world came into existence. This astonishing concept of Earth's duration has at least the merit of being of the right order.' By implication, the Biblical record, according to Holmes, has no merit.
3. The concept of uniformitarianism has changed since Hutton and Lyell. I use 'uniformitarianism' for the belief that the geologic record formed slowly over thousands of millions of years. Today, uniformitarians invoke local catastrophes and propose past environments that were different from what exist today. But they will not entertain the idea of a supernatural Creation and global Flood as recorded in the Bible.
4. See for example, Woodmorappe, J., The fossil record: becoming more random all the time, *CEN Tech. J.* **14**(1):110-116, 2000, or Woodmorappe, J., Mammal-like reptiles: major trait reversals and discontinuities, *TJ* **15**(1):44-52, 2001.
5. Barnette, D.W. and Baumgardener, J.R., Patterns of ocean circulation over the continents during Noah's Flood; in: Walsh, R.E. (Ed.), *The Third International Conference on Creationism*, Creation Science Fellowship, Pittsburgh, pp. 77-86, 1994.