

Geologists, and of course, Darwin himself. What is particularly of note is that researchers have largely ignored the influence of the earlier British controversies on the development of American anti-evolutionism. As perusal of the volumes within this series will show, modern American anti-evolutionists such as Henry Morris and Philip Johnson clearly present arguments that are in some sense 'living fossils' unchanged after almost 150 years.

The purpose of this series is to make primary sources available to the modern reader. Works have been selected on the basis of their interest, not only to historians of the natural sciences, but to those with an interest in Victorian culture and contemporary anti-evolutionary thinking. What is particularly noteworthy is that many of the authors selected were skilled popularizers of science, often writing for a middle and lower class who clamoured to read about the latest in scientific knowledge. Miller and Chambers, to highlight but two examples, specialized in a form of writing that was both polemical and educational, and their respective journals were among the most popular of those available to the reading classes. In publishing shorter periodical pieces, along with more substantive book-length works, we hope to highlight further the literary skill of these authors, but also to illustrate the importance of the periodical press within Victorian science.

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INTRODUCTION

'Follies of the present day': Scriptural Geology from 1817 to 1857

'There is a prejudice against the speculations of the geologist, which I am anxious to remove. It has been said that they nurture infidel propensities. It has been alleged that geology, by referring the origin of the globe to a higher antiquity than is assigned to it by the writings of Moses, undermines our faith in the inspiration of the Bible, and in all the animating prospects of the immortality which it unfolds. This is a false alarm. *The writings of Moses do not fix the antiquity of the globe.*'¹

So spoke the Scottish theologian, Thomas Chalmers in 1804. During the winter of 1803–04, Chalmers presented a series of lectures at St. Andrews during which he outlined a reconciliation of the apparent incompatibility between the *Genesis* account of creation and the findings of the developing science of geology. He argued that the language of scripture allowed for an indefinite gap between the first and second verses of chapter I. This in turn allowed for a time in which geological formation could occur before the traditional six-day creation which, in this view, represented a restoration of the whole Earth after aeons of activity and eventual devastation. Chalmers' ideas – on geology, natural theology and revelation – would eventually be expanded within *The Evidence and Authority of the Christian Revelation*,² and his 'Gap theory', as it became known, aimed to show that *Genesis* and geology could live side-by-side, once one was willing to interpret the scriptures to allow for the apparent age of the

¹ Miller (1857), p. 141, emphasis in the original.

² For a very useful discussion of Chalmers' views and the controversy over *Evidences*, see Topham.

Earth. Thus Chalmers could argue that geology does not lead to 'infidel propensities' for the very reason that the text of *Genesis* never explicitly set the time of creation, unlike specific chronologies from such individuals as Archbishop James Ussher of Armagh.

Contrary to popular opinion, Christians prior to the early nineteenth century were not doctrinally bound to the idea of a young Earth in accordance with the calculations of Ussher. Michael Roberts has convincingly shown that few followed such a recent chronology even at the time Ussher was writing in 1658.³ Instead, many supported a 'Chaos-Restitution' model in which an initial chaos of undefined duration was followed by a reordering in six days and a global Deluge.⁴ While the Deluge was deemed to be responsible for the geological strata, and humankind was a recent creation, few educated individuals believed in a literal six-day creation, and as awareness of the vastness of geological time grew, the period of initial chaos was greatly extended. Thus, prior to 1800, while geology was providing scientific evidence for an ancient Earth – and natural philosophers were generating naturalistic theories to explain the origin and form of the Earth – theologians were already accepting a non-literal reading of *Genesis*. Chalmers was not original in his idea, representing as it did a new gloss on a widely accepted, and theologically safe, view.

Chalmers' gap theory received explicit support from such geologists as William Buckland – who eventually recanted his previously held belief in a global Deluge – and William Conybeare, before being modified by John Pye Smith in 1839.⁵ Smith abandoned the idea of a worldwide Deluge in favour of a regional tranquil flood, and posited that six thousand years ago, God destroyed and flooded a portion of the Earth, subsequently restoring and repopulating it as the Biblical Eden. The original

³ See Roberts (2002) in which he examines the writings of John Ray and contemporary theologians, poets and naturalists. See also Roberts (1998).

⁴ Supporters of this model included such theologically orthodox individuals as the natural philosophers Edmund Halley, Thomas Burnet, William Whiston, and John Woodward, and the poets John Milton, Edmund Spenser, John Dryden and Alexander Pope.

⁵ Buckland; Conybeare; J.P. Smith.

creation occurred prior to this point in time, and thus Chalmers' worldwide re-creation became localized to a smaller geographical area. Denounced by the few remaining (but very vociferous) literalists, Smith's theory received support from such respected 'gentlemen of science' as William Whewell, Adam Sedgwick, Baden Powell & John Herschel, and theologically informed individuals as the future Archbishop of Canterbury, John Bird Sumner.⁶ Yet this theory too would soon be replaced in the minds of Christian geologists.

Chalmers' synthesis of *Genesis* and geological science had initially been accepted by the stonemason, editor and popularizer of science, Hugh Miller. While acknowledging that he 'certainly did once believe ...that the six days were simply natural days of twenty-four hours each ...and that the latest of the geologic ages was separated by a great chaotic gap from our own', this view had, in his mind, been 'greatly outgrown by the progress of geological discovery, and is ...adequate no longer'.⁷ Unlike most of the 'anti-geologists' (as he termed those who spoke against geological theories using scripture as their source of knowledge), Miller was an accomplished geologist who amassed an impressive amount of empirical knowledge during his annual field-trips. Such observations formed the basis for many of his most famous works, including *Foot-Prints of the Creator* (1849) and *Testimony of the Rocks* (1857). In the latter, Miller equated the biblical 'day' with an indefinite period of time and identified specific geological era with the 'days' in *Genesis* such that Day Three was the Paleozoic, Day Five the Secondary, and Day Six the Tertiary. In what Miller termed the 'Mosaic Vision of Creation', Moses had not himself witnessed the events he described in *Genesis*, but had them revealed to him in a panoramic fashion. Miller was thus adopting a theory now known as 'Day-Age' which radically departed from Biblical literalism, yet preserved the Mosaic account as a framework.⁸ Furthermore, Miller rejected the idea of

⁶ Sumner. A minority of Anglican churchmen opposed these developments up until 1850, the most prominent being Dean Cockburn of York; see Morell & Thackray, pp. 229–245.

⁷ Miller *op. cit.*, pp. vii, 148

⁸ Miller *op. cit.*, pp. 175, 200–203, 179–210, 176. Miller's revelatory theory originated from Kurtz while the interpretation of the *Genesis* days as long periods of time was similarly unoriginal (see, for example, Deluc).

a global flood, claiming instead that the Noachian Deluge was local and caused by a rapid depression of a restricted area of the Earth which led to a rapid inundation of water (perhaps accompanied by heavy precipitation). Subsequent elevation of the land slowly returned the area to its previous state. Miller's attempt at reconciling his faith and his geological experience received strident denunciation from the few remaining literalists, a minority of individuals whom, starting in the early 1800's, consistently opposed any attempts at such reconciliation. They argued instead that the evidence pointed to an Earth that was formed less than 10,000 years ago, the majority of whose geological formations (and the fossils therein) were a product of a massive, divinely caused, global flood.⁹ Today, such individuals – for they still exist – are termed 'Young Earth Creationists', 'Creation Scientists' or 'Flood Geologists', but in the past they became known as 'scriptural geologists'. It is these individuals to whom we will now turn.

The scriptural geologists represented a backlash against geological developments in the early 1800s.¹⁰ As has been pointed out elsewhere, few of these critics had any first-hand experience in field geology, most showed little presence in the emerging professional societies, had comparatively few scientific publications, and would not have considered themselves to be 'geologists' (though the term 'scriptural geology' appears to have originated with the 1826 publication of George Bugg's two-volume work, *Scriptural Geology*). James Moore notes that these individuals were 'largely preprofessionals or members of the older professions

⁹ For example, see the writings of Davies, and J. A. Smith. 'Day Age' interpretations are still being made and still being criticized by more conservative voices – see Young and Morris (1978). For further details on Miller's life, geological investigations and firm evangelical faith, see Shortland.

¹⁰ This set of facsimile editions presents solely British works of scriptural geology. For a discussion of American contributions to this genre see Stiling. Scriptural geology in general has received little historical examination, the sole recent major study appearing to be that of Mortenson, which has not been published in any academic journal, but has partially appeared between 1997 and 2002 in the Young Earth Creationist magazine *C.E.N. Technical Journal*. My research – which will be fully presented elsewhere – contradicts his claims that (a) the scriptural geologists were (by the standard of their time) as scientifically competent as their critics, and (b) that strict literalism was theologically prevalent before 1800.

– classically educated and genteel laymen, versed in polite literature; clergymen, linguists, and antiquaries – those, in general, with vested interests in mediating the meaning of books, rather than rocks, in churches and classrooms'.¹¹ At a time when the emerging scientific profession was beginning its attempt to become the sole authority on interpretation of the natural world, the scriptural geologists harkened back to a day when the educated layman was seen as an equal partner in such discourse. It is clear that, as Martin Rudwick writes, the reaction of the scriptural geologists was 'in part a cultural [one] to the social and cognitive exclusion of all but self-styled experts from an area of speculation that, in the heyday of theories of the earth, had been open to all'.¹² By the standards of the day, the scriptural geologists were largely dilettantes – educated men, in a few cases with some scientific background, but not by any means conversant with the ideas and methodologies being used by those who were attempting to professionalize geology. To modify a statement by John Hedley Brooke, one could be a reader of geology, one could think about the relations between geology and faith, one could be a patron of safe geology, one could be an author and a teacher of geology – without actually doing any geology.¹³ Most of the scriptural geologists did not 'do' any geology, and this, as much as anything else, seemed to irk the geologists.

Interestingly enough, the scriptural geologists themselves were not beyond modifying scripture to suit their exegesis. For example, Andrew Ure allowed for an extra day of creation that occurred after the Deluge, and Miller noted that Granville Penn

¹¹ Moore, p. 337. While it would be difficult to present an exhaustive list of members of this movement, the following are good exemplars; Granville Penn (1761–1844), George Bugg (1769–1851), Andrew Ure (1778–1857), Henry Cole (1792?–1858), Thomas Gisbourne (1758–1846), George Young (1777–1848), George Fairholme (1789–1846), William Rhind (1797–1874), William Cockburn (1773–1858), Frederick Nolan (1784–1864), William Martin (1772–1851) and John Murray (1786?–1851) in Britain; David Lord (1792–1880), Eleazar Lord (1788–1871) and Martyn Paine (1794–1877) in America. While not strictly a work of scriptural geology, the publication of *Geological Essays* in 1799 by the Irish mineralogist Richard Kirwan (1733–1812) forms an important foreshadow of future developments.

¹² Rudwick, p. 312.

¹³ Brooke, p. 19.

interpreted verses of Genesis that conflicted with his view as (in Miller's words) 'mere idle glosses, ignorantly or surreptitiously introduced into the text by the ancient copyists'.¹⁴ This ability to pick and choose which parts of the text to treat literally lead Miller to exclaim:

It need not surprise us that a writer who takes such strange liberties with a book which he professes to respect, and which he must have had many opportunities of knowing, should take still greater liberties with a science for which he entertains no respect whatever, and of whose first principles he is palpably ignorant.¹⁵

This raises an interesting point. Even in their theology – what should surely have been their strongpoint – the scriptural geologists were suspect. If anything, they were fighting a rearguard action against those mainstream theologians who sought, in the mind of the scriptural geologists at least, to compromise the divine word. They saw that if the Earth was populated prior to the Edenic creation, then there must have been death, and if there was death, then biblical themes of original sin and redemption through the sacrifice of Christ were called into question. At the heart of the matter was the historicity of Christ, his redemptive actions, and the future of humankind. Such extra-scientific concerns would lead James Mellor Brown to attack Buckland for his quasi-traitorous act – as a churchman – of denying the ubiquity of the Biblical Deluge:

This affords another illustration of men who pull down the bulwark, but disclaim any intention of endangering the citadel. The Trojan Horse, drawn within the walls of the devoted city by friendly hands, is a standing emblem of men acting under the unsuspecting guidance of the Evil One.¹⁶

While the likes of Buckland were allegedly acting unwittingly for the 'Evil One', Mellor Brown felt that no particular expertise was

¹⁴ Roberts (1998), Miller (1857), pp. 412–13.

¹⁵ Miller *op. cit.*, p. 414.

¹⁶ Brown, 24. Similar sentiments are expressed by modern creationists.

required when examining scientific matters. Rather the natural world could be understood by reasoning from the pages of Scripture. Thus, revelation was exalted over natural theology, and Mellor Brown was swimming against the stream of natural theology which was becoming particularly prevalent in British thought.

There is little space here to devote to detailed examination of the arguments put forward by even the representative scriptural geologists reprinted herein. It is interesting to note that many (e.g., Mellor Brown, Granville Penn and George Fairholme) supported the idea that the universe was created with the appearance of age, an argument that remains popular with modern supporters of a young Earth.¹⁷ Terry Mortenson lists five major objections that the scriptural geologists had against the idea of an old Earth: (i) observations of gradual transitions between different mineralogical formations, (ii) the presence of polystrate fossils, (iii) the inability of shells to be used to accurately date strata, (iv) the presence of human remains in 'old' strata, and (v) the observation that geology was in its infancy and was thus prone to 'over-theorizing'.¹⁸ Whatever the value of these arguments in the 1820s, these soundly disproven speculations are worthless today which makes it all the more surprising that a perusal of modern creationist literature reveals their perennial use.

The reaction of the geological community to these varied writings can probably best be summarized by a statement made by Charles Lyell in 1827:

We cannot sufficiently depreciate the interference of a certain class of writers on this question...While they denounce as heterodox the current opinions of geologists, with respect to the high antiquity of the earth and of certain class of organic beings, they do no scruple to promulgate theories concerning the creation and the deluge, derived from their own expositions of the sacred text, in which they endeavour to point out the

¹⁷ Of course, such an argument no more supports a 6000 year-old Earth than it does one that was created while you, dear reader, were enjoying this essay!

¹⁸ See note 10. These have been discussed by Michael Roberts (see <http://www.glenn.morton.btinternet.co.uk/mortensonresp2.html>).

accordance of the Mosaic history with phenomena which they have never studied, and to judge of which every page of their writings proves their consummate incompetence¹⁹

To the emerging scientific profession, scriptural geologists and their ilk threatened to present science as antithetical to Christian piety – a charge which the early geologists denied, and indeed given the roots of historical geology proves meaningless. This is particularly highlighted in the relationship between the scriptural geologists and the British Association for the Advancement of Science, which was founded in 1831.²⁰ The scriptural geologists saw the BAAS as advocating theologically unsound – and even heretical – ideas, particularly in its members willingness to assign science and religion to separate spheres of knowledge. This view led the likes of Frederick Nolan, William Cockburn, and Henry Cole to attack the Association and prominent Broad Church scientists such as Adam Sedgwick. The Reverend Sedgwick – Woodwardian professor of geology at Cambridge, vocal opponent of transmutation, and leading figure in both the BAAS and the Geological Society of London – would, while addressing the latter society in 1830 excoriate Andrew Ure for his book, *A New System of Geology*, which he termed a ‘monument of folly’.²¹ In this work, Ure (the only scriptural geologist, apart from John Murray, who was a member of the Society) explicitly claimed the utility of a young Earth interpretation of geology, while advocating a single Ice Age which was a natural consequence of a global Deluge. While Ure was a competent chemist, Sedgwick felt that his geological theorizing was worthless, and furthermore endangered the work of the GSL’s members:

the goodly pile, gentlemen, which many of you have helped to rear, after years of labour, has been pulled down and reconstructed; but with such unskilful [sic] hands that its inscriptions

¹⁹ Lyell.

²⁰ See Morell & Thackray, pp. 229–245.

²¹ Clark & Hughes, vol. 1, p. 362. Clark & Hughes describe Sedgwick’s criticism as being ‘as severe as anything [he] ever penned’ – a comment that is particularly noteworthy considering his attack on Robert Chambers’ *Vestiges of the Natural History of Creation* in the late 1840s which lead to his sprawling 5th edition of *Discourse on the Studies of the University* (1850).

are turned upside down; its sculptured figures have their heads to the ground, and their heels to the heavens; and the whole fabric, amid the fantastic ornaments by which it is degraded, has lost the beauty and the harmony of its old proportions.²²

The following year (also in a Presidential address to the GSL), Sedgwick famously recanted his belief in the ubiquity of the ‘philosophical heresy’ of adopting ‘the diluvian theory, and [referring] all our superficial gravel to the action of the Mosaic Flood’. Sedgwick’s recantation occurred for simple evidential reasons; there was no evidence of ‘man, and the works of his hands’ in these deposits. Thus, for Sedgwick, in this case at least, evidence took precedence over biblical exegesis. Sedgwick’s apostasy, at least as far as the scriptural geologists were concerned, was completed with his *Discourse on the Studies of the University*, in which he praised the attempts of Chalmers to reconcile science and religion, while noting that ‘to confound the ground-works of philosophy and religion is to rum the superstructure of both’.²³

The most prolific opponents of scriptural geology and supporters of non-literal readings of *Genesis* were in no way atheists or fellow travelers with the radicals who supported evolutionary thought. Chalmers began his life as a moderate in the Church of Scotland and an opponent of evangelicalism. By 1810 he had become an evangelical²⁴ and would eventually lead the Disruption of 1843 which would result in the formation of the Free Church of Scotland. While Miller (a highly orthodox Free Church member) referred to the scriptural geologists as

²² Woodward, p. 86. The Geological Society would appear to have felt that Sedgwick’s treatment was ‘appropriate’.

²³ Sedgwick, p. 104. Sedgwick’s attackers included Henry Cole (*Popular Geology Subversive to Divine Revelation!*, 1834), William Sewell, and the *British Critic* which also objected to Sedgwick’s willingness to admit Dissenters to Cambridge.

²⁴ While the term itself can be somewhat nebulous, many authors follow David Bebbington in defining an evangelical as being marked by ‘a belief that lives needed to be changed ... the expression of the gospel in effort ... a particular regard for the Bible [and] ... a stress on the sacrifice of Christ on the cross’ (Livingstone *et al.*, p. 6). By this reading, of course, Chalmers, Smith, and Miller would have been as evangelical as the scriptural geologists.

'anti-geologists', he equally felt that evolutionary ideas as presented by Robert Chambers in *Vestiges of the Natural History of Creation* were some of 'the most insidious pieces of practical atheism that has appeared in Britain'.²⁵ Sedgwick's opposition to transmutation, whether presented by Chambers or Darwin, is legendary and needs no expansion here. In fact many of the strongest critics of scriptural geology were themselves evangelicals who displayed a large number of what John Hedley Brook terms 'archetypal' characteristics including holding a biblically informed philosophy of nature, viewing the world as a 'theatre of redemption', favoring induction as a scientific methodology, resisting attempts to exclude God's sovereignty over nature, and insisting on harmony between science and religion.²⁶ And it was not just the scientists who felt this way; evangelical organs such as the *Christian Observer* consistently opposed the views of Bugg and his brethren.²⁷ In America, Edward Hitchcock (professor of geology and natural theology at Amherst College) supported the attempts of Smith, Buckland, Sedgwick and Miller to reconcile geology and scripture, while simultaneously condemning Penn, Fairholme, Young, and George Cole for resisting modern science.²⁸ In short, it was clear that one could retain strong evangelical credentials without supporting a literal reading of scriptures. While the scriptural geologists attempted to portray themselves as representing traditional and orthodox ways of interpreting nature and the scriptures, it is clear that, in both areas, they were a minority – not just in the early 1800's, but stretching back further in time. As Miller noted:

the follies of the present day are transcripts, unwittingly produced, and with of course a few variations, of follies which existed centuries ago; and it seems to be on this principle ... that scarce an explanation of geologic phenomena has been

²⁵ Miller (1845).

²⁶ Brook, pp. 24–7.

²⁷ My thanks to Michael Roberts for making me aware of this.

²⁸ Hitchcock. Other American critics of scriptural geology included the Yale geologist Benjamin Silliman, whom Stiling describes as 'no theological liberal' (p. 179).

given by the anti-geologists of our own times, that was not anticipated by writers of the sixteenth and seventeenth centuries.²⁹

Modern Young Earth Creationism strengthens Miller's point by recycling many of the same arguments that were put forward by the scriptural geologists. Whether this similarity is due to common descent or convergent evolution is a matter for debate. Creationists of the early Twentieth century often acknowledged the influence of the likes of Penn or Fairholme whereas the major works of later creationism conspicuously ignore any mention of the scriptural geologists.³⁰ Indeed, a number of current creationist theories are remarkably similar to earlier ideas that receive no mention in the modern literature. For example, the claim by Steve Austin of the Institute for Creation Research that coal was formed from mats of vegetation which floated during the Deluge had been put forward by John Williams in 1789, James Parkinson in 1804, Penn in 1825, Martyn Paine in 1856, and the Seventh Day Adventist prophetess, Ellen G White in 1864. Many of these individuals were mentioned by Byron Nelson in 1931. This is not to say that the modern American creationists are the direct descendants of the scriptural geologists, as current scholarship indicates that the genesis of the modern American movement is in fact with the Seventh Day Adventist church.³¹ What it does indicate, however, is that many of the arguments for a young earth and global flood remain unchanged from when they were first developed in the first half of the nineteenth century. Most importantly, these arguments were developed before the development of Darwinism. Scriptural geology was not combatting an early form of evolutionary thinking. While the scriptural geologists saw geological theories as productions of the 'unsuspecting guidance of the Evil One', modern creationism sees evolutionary theory in a similar light. What has remained

²⁹ Miller *op. cit.*, p. 396.

³⁰ Compare Nelson or Price with Morris (1993) or Whitcomb & Morris. The latter briefly mentions Chalmers and Smith, with no mention of the scriptural geologists. Price acknowledges that Fairholme derives Price's 'great law of conformable stratigraphic sequences'.

³¹ See Numbers.

constant is that individuals who have attempted to deviate from literalism while remaining professing Christians have received the brunt of the attacks by a vocal minority who have resisted compromise. In many ways, 'what has been will be again, what has been done will be done again; there is nothing new under the sun' (Ecclesiastes 1:9).³²

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³² I would like to thank the Rev. Michael Roberts for providing reprints of works cited herein. Jon Topham provided some initial bibliographic guidance, while Kirsten Robertson was, as always, a pleasure to work with. Jacquie Lynch provided much needed editorial guidance.

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THE
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