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Abstract: Adam Sedgwick (1785–1873) was one of the leading British geologists, who did much work on the Lower Palaeozoic stratigraphy. He was professor of geology at Cambridge and was an Anglican clergyman, later becoming Prebendary (Canon) of Peterborough. This paper considers his religious beliefs in relation to his geology, which, as he was an evangelical, centres on his and other people’s interpretations of Genesis. Although he did not publish anything on Genesis, his understanding becomes clear from three interactions with fellow Anglican clergy. Two were acrimonious, one being with Henry Cole after the publication of The Discourse in 1833, and the other his controversy with Dean Cockburn of York at the British Association meeting in York in 1844. The third was his friendly correspondence with the evangelical Dean of Carlisle, Francis Close. This letter gave the longest statement of his ‘reconciliation’ of geology and Genesis.

Adam Sedgwick (1785–1873) (Fig. 1) was one of the leading early 19th century geologists in Britain. For nearly half a century after becoming Woodwardian Professor of Geology at Cambridge in 1818, he was at the forefront of geological research and made some of the greatest contributions to elucidating the Lower Palaeozoic stratigraphy. There has not been a recent full-scale study of his work as a geologist, although Secord (1985) and Rudwick (1985) have considered his and other geologists’ work on the Welsh Palaeozoic and Devonian strata, respectively. However, my present concern is not so much Sedgwick as a geologist per se, but Sedgwick as a geologist and evangelical Anglican clergyman, and how his faith impinged on his science and vice versa.1

Sedgwick was born in Dent in the Yorkshire Dales near Sedbergh. His father was vicar of Dent and the living passed from father to son from 1768 to 1885. He was schooled first in Dent, then at Sedbergh School, and went to Trinity College, Cambridge in 1804, graduating as a Senior Wrangler in mathematics. He remained at Trinity for the rest of his life, initially tutoring mathematics and becoming a Fellow in mathematics in 1810. After he was ordained in 1817, his future seemed settled; unless he had found a wife, which would have enforced his resignation and the taking up of a living.

However, Sedgwick never found a wife and remained a lifelong bachelor, but in 1818 the post of Woodwardian Professor of Geology became vacant as John Hailstone did find a wife at the age of 58 after several dalliances and was obliged to resign. An election ensued and there were two candidates, Adam Sedgwick and Charles Cornelius Gorham of Queen’s College, who later achieved notoriety by falling out with the Bishop of Exeter over baptism in 1847, in an event known as the Gorham controversy (Chadwick 1971, Vol. 1, pp. 250–270). Both candidates were evangelical clergy, although Gorham, the more conservative of the two, had the backing of most evangelicals in Cambridge, including Isaac Milner and Charles Simeon. Neither candidate had any doubt that the Earth was ancient and did not consider Genesis as literal truth as far as the age of the Earth was concerned. In this they reflected the views of most educated Anglicans and also evangelicals in both the Church of England and the Presbyterian Church of Scotland. At the time of the election Gorham clearly knew more geology than Sedgwick but at present nothing is known of his geology beyond his acceptance of an ancient Earth.

In the election Sedgwick received 186 votes compared with Gorham’s 59 and after that Sedgwick took up geology with a vengeance. He gave lecture courses each term, and spent every summer in the field throughout England and Wales for the next 40 years. In the 1820s he worked in the north of England but his most important work was in Wales beginning in 1831. That year he spent from August to October in North Wales working out the geological succession below the Old Red Sandstone or Devonian. He began in the Shrewsbury area in August with the young Charles Darwin, who later left Sedgwick on 20 August near Bangor to return home for the shooting season, but joined the Beagle instead. Sedgwick gave Darwin a superb grounding in geology, which he used to great effect on the Beagle voyage (Roberts 2001). Sedgwick failed to work down the geological succession, as in North Wales the Devonian is present only in Anglesey. Thus he had to start in

older rocks and try to link them to the Old Red Sandstone. He covered vast distances on foot and climbed most of the mountains of Snowdonia. In 2 months Sedgwick had worked out the basic stratigraphy and structure of a complex area. In the same year Roderick Murchison (1792–1871) travelled through South Wales looking for what lay below the Old Red Sandstone. He was lucky, as near Ludlow, the Silurian (using today’s terminology) lies conformably beneath the Old Red Sandstone (Devonian). Also, an evangelical vicar aided him: the Reverend Thomas Lewis (1801–1858), who had learnt geology from Sedgwick, had worked out the succession in his parish of Aymestry (Secord 1985, pp. 55–56). From 1836 to 1847, several geologists including Sedgwick worked in Devon and Cornwall to elucidate the age of various strata. Rudwick has charted comprehensively their work and Sedgwick’s vital role (Rudwick 1985). Although Sedgwick was not a prolific writer, he was one of the main geologists who worked out the Lower Palaeozoic stratigraphy from the Cambrian to the Devonian. Yet he was a convinced evangelical. From a 21st century perspective with creationist controversies occurring in many countries, this may seem rather unlikely. However, this may depend on one’s perception and definition of an evangelical. Bebbington has given one of the best historical treatments of British evangelicals (Bebbington 1989) and my definition (Roberts 2009, note 2) is based on his.

Fig. 1. Adam Sedgwick (1785–1873).

Concerns of evangelicals

In Britain and the USA evangelicals were the strongest part of the Protestant churches in the early 19th century (Bebbington 1989; Wolfe 2006), including Church of England. It is easy to ‘read back’ contemporary understandings of evangelicals in relation to science into the 19th century but that does evangelicals an injustice. Although they were conservative Protestants who put great emphasis on the authority of the Bible, they not were literalist in regard to Genesis and geology, although many claimed to be ‘literalist’ in the sense of accepting the plain meaning of the Bible. Some were literalist in regard to Genesis, but these were a declining proportion through the century. In this paper I use ‘literalist’ in regard to the interpretation of Genesis, rather than the whole Bible. This is not an ideal term, as someone like Sedgwick would be literalist on the Gospels but not Genesis. Most educated Christians, whether Anglican or not, accepted modern science, especially geology (Roberts 1998, 2008), although a few opposed ‘old-Earth’ geology on theological grounds.

The conventional picture of science and religion during this period is that there was conflict with the new science of geology, but that does not do justice to the numbers of clerical geologists. The conflict thesis of science and religion tends to colour many historians’ perspectives (Brooke 1991) and thus it is often assumed that evangelicals had to be literalists. The corollary of that is that if a Christian accepted science and particularly geology then they were thus ‘liberal’ rather than evangelical. This was the argument of Cannon (1978) in an article entitled ‘Scientists and Broad churchmen: An early intellectual network’. She posited a network of ‘liberal’ scholars at Cambridge and Oxford, whose liberal perspective enabled them to embrace the implications of geological science. In Gentlemen of Science, Morrell & Thackray (1981, pp. 225–229) argued that liberal Anglicans dominated the fledgling British Association for the Advancement of Science, yet they overlooked the fact that Sedgwick was an evangelical. Use of the term ‘liberal’ for certain Christians requires caution. In contrast to more conservative Christians, whether evangelical or Catholic (in the Roman or Anglo-Catholic form), liberals are more questioning of many aspects of theology, especially miracles, the nature of the atonement and the authority of the Bible. Later in the 19th century, they were more inclined to take a radical critical view of the Bible, regarding Genesis as myth and the Old Testament as unreliable history. However, to make the rejection of a ‘literal Genesis’ and a 6 day creation the mark of a liberal results in the error of having to classify the many evangelicals, such as Sedgwick and Thomas Chalmers, who accepted geological
time as ‘liberal’. Chalmers was the leading Scottish evangelical, who did much to give the Victorian church there its evangelical flavour (Bebbington 1989, passim). At Oxford and Cambridge there was a broad tradition of intellectual endeavour that could be termed liberal, but not in the radical sense outlined above. Some, such as Hare at Cambridge and Baden Powell (1796–1860) at Oxford, were antecedents of the liberal Anglicanism associated with Essays and Reviews (Anonymous 1860), a work of English liberal theology, but others were not. Baden Powell was notorious for denying the miraculous, which was uncommon in that period. The Oriel Noetics of Oriel College, Oxford (Edward Copleston (1776–1849), Richard Whateley (1787–1863) and others) were mildly liberal. Sedgwick’s Oxford counterpart William Buckland (1784–1856) received much support from J. B. Sumner (1780–1862) and G. S. Faber (1773–1854), both leading evangelical theologians of his day, and from Bishop Barrington (1734–1826) of Durham, an evangelical sympathizer. These examples undermine the simple liberal–evangelical divide, which is based on the supposition that liberals accept the findings of science and evangelicals do not. Of the four leading Anglican clerical geologists, Henslow, Buckland, Conybeare and Sedgwick, none were liberal in the sense of a radical questioning or rejection of the miraculous, the atonement or biblical authority. Buckland and Conybeare, who both became deans of cathedrals, were on the liberal, or moderate, fringe of evangelicalism and only Sedgwick was clearly evangelical.

Sedgwick as churchman

Before we consider the religious beliefs and theology of Sedgwick and how they impinged on his science, we need to consider Adam Sedgwick as a churchman and cleric, and how he was situated in the Church of England. Sedgwick was very much part of the Anglican establishment, both at Cambridge and in the wider church. He was evangelical but had nothing to do with conservative Evangelicals or Recordites (Hilton 1988, pp. 10–11).

His career at Cambridge shows him to have been a don who was very much in the mainstream of the Church of England and that his clerical life was run in parallel with his geological work. He was never a profound theological thinker, but on political issues he often showed an independent mind. In 1829 he opposed the university petition against Catholic emancipation, and in 1834 he chaired a meeting to abolish religious tests (i.e. acceptance of the Anglican 39 Articles) to proceed to a degree.3 This condition did not change until 1871, when Gladstone, a staunch high Anglican, was Prime Minister. In 1834 Sedgwick was made Prebendary of Norwich, which both enhanced his income and required him to be canon in residence each year. However, he seems to have enjoyed this, particularly when he could preach on St Paul and his letters. A few years later his name was suggested as the new Bishop of Norwich and in 1853 he turned down the Deanery of Peterborough (Clark & Hughes 1890, Vol. I, 336, 432, 485; Vol. II, 248).

Sedgwick was a Low Churchman and was strongly critical when one of the leaders of the Oxford Movement, John Henry Newman, left the Church of England to become a Roman Catholic priest in 1845. To him the Anglican Book of Common Prayer formed the basis of his churchmanship, and his correspondence with Canon Wodehouse shows that he would have liked a modification of this book in a Protestant direction, thus going against the Anglo-Catholic trend of his day. He was no ‘party man’ as were some evangelicals, and he mixed widely in the church, becoming friends with both Bishop Stanley, who became Bishop of Norwich in 1837 and his son A. P. Stanley, a liberal Anglican (Clark & Hughes 1890, Vol. I, 485; II 399). In contrast to that he was also friendly with the strongly evangelical Dean Francis Close of Carlisle, with whom he corresponded on personal matters as well as the interpretation of Genesis 1. Surprisingly, Clark & Hughes made no mention of this friendship in their biography. In 1843 John Salter, a young palaeontologist with aggressive evangelical views, accompanied him on his summer field-trip to North Wales, and on Sundays they often studied their Polyglot Bibles together in English and Greek.

This brief portrait of Sedgwick shows a diligent clergyman who combined his dual calling as don and cathedral canon. He was an evangelical but not narrowly so, and was very much an accepted member of the Church of England; in fact, a good churchman. In this period about a third of Anglican clergy were evangelical, including archbishops, bishops and deans. Having situated Sedgwick in the Church of England we shall now consider his understanding of theology and science.

Sedgwick on theology and science

Sedgwick was not a theological innovator and was not involved with Liberal Anglican restatements of faith such as Essays and Reviews (Anonymous 1860). He felt little need to modernize traditional Anglican teaching. His theology was scripturally based but, unlike Conybeare, did not take much notice of the German biblical critics. His theology was somewhat unreflective, but still deep and sincere, as he seemed to have been a Christian
free of doubt and questioning, in marked contrast to more progressive Christian thinkers.

That raises several questions, the first being, ‘What effect did his faith have on his science?’ There is no evidence that he had a crisis of faith over science or any conflict between geology and Christianity. Some of his perspectives changed: he was a catastrophist until 1831, when he partially adopted uniformitarianism. Details on how Sedgwick understood both catastrophism and uniformitarianism are not relevant to this paper, as from 1820 at the latest Sedgwick was convinced of the vastness of geological time (of the order of millions of years if not more). In the early 1820s, like most British geologists, he believed the biblical Flood to be a worldwide event, which had deposited sediments known as diluvium, hence diluvialists. (These sediments are now considered to be glacial deposits.)

Sedgwick on geology and Genesis

When Sedgwick was made Professor, most educated Christians had made their peace with geology, if, of course, they were ever at war. There was minimal opposition to geological time from 1780 to 1810 (Roberts 1998, 2007; Rudwick 2004), possibly because many were unaware of new ideas of geological time, and many adopted either a day–age interpretation, according to which the days of Genesis were very long periods of time, or the chaos–restitution interpretation, which, like Haydn’s The Creation, posited that God first created the chaos of indefinite duration (Genesis 1:2) and then re-ordered the whole of creation in 6 days to be ‘a new created world’, which was developed by Chalmers, Townsend (1813), Faber (1823) and Sumner (1833) from older interpretations (Roberts 2007). Some biblical commentators, such as the evangelical Thomas Scott (1788–1792), Sedgwick’s Cambridge colleague Charles Simeon in the 1790s and Francis Close in 1826, simply made no reference to geology. However, their apparent literalism may be indifference or a pietistic emphasis, rather than hostility to geology. The treatments of Genesis in relation to geology by Buckland in Vindicatae geologicae (1820) and Conybeare in the Outlines (Conybeare & Phillips 1822) are seen far better as mainstream Anglican thinking than as an attempt to push the boundaries of biblical interpretation in a liberal direction. However, despite both making a strong case that their accommodation to geological time was well grounded in scripture and tradition, both were slightly defensive.

Even so, interpretations of Genesis were not static, and had gradually changed from the end of the 16th century, when most commentators assumed an age of the Earth of some 6000 years. Widely held ‘old-Earth’ views such as those of Chalmers ascribed a strong historical component to Genesis, but by mid-century more figurative, or even mythological views were becoming increasingly common. Within the Anglican Church biblical literalism virtually disappeared from publications after 1855, only to reappear in the late 20th century with young-Earth creationism being adopted by numbers of Anglican clergy. Sedgwick was active in geology for half a century from 1818, during which time, at least among the educated, biblical literalism on Genesis almost disappeared and the biblical Flood was no longer considered to be world-wide but only local in its extent. Much of this theological ‘readjustment’ caused little religious angst and friction, but the spate of ‘anti-geologies’ that began in 1818, led by ecclesiastical conservatives, evangelicals and several lay Christians, caused some controversy. Initially, these were eirenics, as was Thomas Gisborne’s The Testimony of Natural Theology to Christianity (1818), which in contrast to Paley's Natural Theology (1802 reprinted 2008), presented a natural theology based on a literal 6 day creation with an implicit rejection of geology. However, some years later these turned to virulent attacks by George Bugg (1769–1851), writing first in the Christian Observer and then in his two-volume work Scriptural Geology (Bugg 1826–1827), and then by Henry Cole (1792–1858) and Dean Cockburn of York (1774–1858), who focused on Sedgwick and Buckland.

The days of Genesis

A brief study of Sedgwick’s letters, writings and life (Clark & Hughes 1890) demonstrates that he was not troubled by supposed geological challenges to his evangelical faith. Sedgwick does not seem to have published anything on the relation of geology to Genesis. Throughout his tenure of the Woodwardian professorship there is no doubt that he accepted an ancient Earth and thus a ‘stretched view’ of Genesis 1. He was very ample in his view of geological time and, according to John Rodwell in reminiscences to Francis Darwin in 1882, Darwin said of him in 1831, ‘What a capital hand is Sedgwick for drawing large cheques on the Bank of Time’ (Burkhardt & Smith 1985, p. 125). If Sedgwick accepted either of the two common interpretations of that time, the chaos–restitution or day–age, he would have no problem in reconciling vast geological time with a conservative view of the Bible.

A survey of contemporary theological writings shows that chaos–restitution was the most widespread ‘reconciliation’ of geology and Genesis in the period 1810–1850 and that the biblically
literalist anti-geologists, such as Cockburn, George Fairholme (1789–1846) and Robert Fitzroy (1805–1865; the captain of the Beagle), were in the minority, even among evangelicals (Roberts 1998, pp. 247–250). It is easy to regard the chaos—restitution interpretation of Genesis as special pleading, but it was widely held until mid-century. It was a development of long-held interpretations of Genesis (Roberts 2002, 2007). Hugh Miller (1802–1856) questioned it in a footnote in Footprints of the Creator (Miller 1849, p. 332), his anti-evolutionary critique of the Vestiges (Chambers 1844) in 1847. This he expanded in The Testimony of the Rocks, published posthumously (Miller 1857), both in the Preface and in two chapters on Genesis and geology. He explained why he felt it necessary to reject Chalmers’ gap theory, which had been widely held for 50 years in favour of his concept of ‘The Mosaic Vision of Creation’. In the Preface, Miller spelled out the geological reasoning behind this change. He wrote, ‘I certainly did once believe Miller spelled out the geological reasoning behind this change. He wrote, ‘I certainly did once believe...

Within a few years the Reverend Gilbert Rorison...ukland that the six days were simply natural days of twenty-four hours each...and that the latest of the geologic ages were separated by a great chaotic gap from our own’ (Miller 1857, pp. x–xi). This was reasonable to catastrophists, who believed that each geological era was ended by a catastrophe. Miller explained that there was no problem with ‘the Palaeozoic and Secondary rocks’, but there was with recent strata. He continued, ‘During the last nine years [written c. 1856], however I have spent a few weeks every autumn in exploring the later formations’. From his study of the Pleistocene, he concluded that many of our ‘humbler contemporaries’, especially molluscs, existed long before man. Thus ‘No blank chaotic gap of death and darkness separated the creation to which man...and hyaena, or for familiar animals...[that] lived throughout the period which connected their times with our own’ (Miller 1857). As a result Miller rejected the whole idea of chaos then restitution, and adopted the view of six prophetic days of creation. Chalmers’ ideas were more congenial to catastrophism than to uniformitarian geology, with its seamless geological development through time.

Within a few years the Reverend Gilbert Rorison was arguing for a totally poetical interpretation of Genesis in Wilberforce’s very conservative Answers to Essays and Reviews (Wilberforce 1861, pp. 281–286) and the chaos—restitution interpretation rapidly went out of fashion, except for nascent fundamentalists.

Unlike Coneybear, Buckland and others, Sedgwick never seems to have written at any length on his understanding of Genesis 1. The little we have consists of comments in his Discourse, and two letters, one written at the height of his controversy with Dean Cockburn and the other in 1858 to Francis Close (1797–1882). These few writings show that Sedgwick was not convinced by any contemporary interpretations but had no problem either with Genesis or geology. He thought there were many irresolvable problems and seemed to keep the two in separate compartments.

In his 2 hour sermon in Trinity College Chapel on 17 December 1832, later published as a Discourse on the Studies of the University (Sedgwick 1969) he made scant reference to the Bible or geology. However, in Note F, along with a tirade against the anti-geologists, he gave a summary of his belief in the Bible and its relation to science in two pages (Sedgwick 1969, pp. 104–105). His position is clear: ‘But if the Bible be a rule of life and faith—a record of our moral destinies—it is not (I repeat), nor does it pretend to be, a revelation of natural science’ (Sedgwick 1969, p. 104).

This may sound like Stephen Gould’s NOMA (‘non-overlapping magisteria’) (Gould 1999), where by science and religion are kept totally separate, but Sedgwick took the historicity of the Bible for granted. He explained how the Bible depends on both internal and external evidence, but science does not, as ‘it is based on experiment alone’. He criticized those who looked for evidence of science in the Bible, as ‘They [the writings of Scripture] were addressed to the heart and understanding, in popular forms of speech.’ Thus God is ‘capable of jealousy, love, anger’, but this is not literal. Sedgwick extended this to descriptions of the natural world, citing the (alleged) ‘fulminations of the Vatican against those who...maintained the motion of the earth’. And so he moved to geology, which speaks of ‘vast intervals of time, during which man...had not been called into being’. In other words, geological time is biblically and theologically irrelevant, as ‘Periods such as these belong not, therefore, to the moral history of our race; and come neither within the letter nor the spirit of revelation’ (Sedgwick 1969, p. 105). This contrasts with the concordist interpretations of Genesis that were so popular at that time, such as those by Buckland, Chalmers, Sumner and a plethora of less well-informed clerics, who wished to prove that geological science was in concord with their own biblical interpretation. Sedgwick found concord by keeping the two separate, and here he went against the grain of most orthodox thinking in Britain, yet was evangelical when he preached.

After a tirade against the anti-geologists, which we shall consider below, he then gently criticized concordists: ‘Another indiscretion (far different from the egregious follies I have just noticed) has been committed by some excellent Christian writers on the subject of geology...they have prematurely...endeavoured to bring the natural
history of the earth into a literal accordance with the book of Genesis’ (Sedgwick 1969, pp. 107–108), and extending the length of the Genesis days, Sedgwick continued: ‘The impossibility of the task was however (as I know by own experience) a lesson hard to learn; but it is not likely to be attempted by any good geologist.’ From this we can conclude that in earlier years Sedgwick had followed some concordist approach, either day–age or chaos–restitution, but realized that this could not work and thus preferred some kind of separation, as outlined above. As for no attempts by ‘good geologists’ his prophecy was wrong. His friend Buckland continued to do so, as did Miller (1857) and the US geologists Silliman, Hitchcock and Dana (Davis 2003, pp. 34–58).

In 1844 Sedgwick became embroiled in controversy with the Dean of York, which will be discussed below. According to Clark & Hughes, ‘Soon afterwards he wrote a long letter to an unknown friend, who felt doubts and difficulties’. Sedgwick wrote:

The first two verses ... are an exordium, declaring God the Creator of all material things ... After the first verse there is a pause of vast and unknown length, and here I would place the periods of our old formations, not revealed because out of the scope of revelation. ... After the word ‘deep’ there is a pause. The work of actual present creation begins. The spirit of God broods over the dead matter of the world, and in six figurative days brings it into its perfect fashion and fills it with human beings (Clark & Hughes 1890, p. 79).

There is nothing novel in this, as it is similar to various interpretations put forward over the previous 200 years and shows some similarity to those of Whiston (1696), Buffon (Buffon 1778), de Luc and Townsend. However, he has broken with the theory put forward by Chalmers and Summer, which considered the ‘restitution’ to take place in six solar days. It is an indication that the ideas of Chalmers were beginning to break down and, as we saw, Miller had a part to play. It is a pity that Clark & Hughes did not flesh out this letter so that it could be put into context. Despite the fulminations of the Dean of York, on this matter Sedgwick was traditionally orthodox and could have claimed many precursors from at least the previous two centuries.

Ten years later Sedgwick’s conservative theology became apparent when he raised serious doubts about Hugh Miller’s revelatory day theory of Genesis in a letter to his friend Dean Francis Close of Carlisle in 1858. One of the first to expound Miller’s ideas on ‘the Mosaic Vision of Creation’ was Close, who gave a lecture to the Young Men’s Christian Association (YMCA) in London in 1858 (Close 1859) and made extensive use of Miller’s book. Close was a leading evangelical and was Dean of Carlisle from 1856 (Munden 1997, p. 49). He was not universally liked and was often regarded as an extreme evangelical, and while at Cheltenham was known as the Pope of Cheltenham. In the 1820s, while at Cheltenham, he preached on early Genesis, but took Genesis literally and ignored geology (Close 1826). He cannot be strictly considered an anti-geologist at that time, as he made no mention of any geological findings and appears simply to have assumed that Genesis should be read literally. In this, he seems to resemble Thomas Scott and Charles Simeon, two leading evangelical commentators of a preceding generation, who simply made no reference to science and sought to explain its spiritual message. Within 30 years he moved to the scientifically informed non-literalism of his YMCA lecture.

Close took considerable interest in education and while at Cheltenham founded two schools and a teachers’ college, which is now part of the University of Gloucester. For this reason Villiers, the new Bishop of Carlisle, asked Palmerston to appoint him as Dean. Hennell described Close’s activities as Dean as a continuation of his work at Cheltenham, with a night school for adults, a Bible class for men, and lectures on scientific subjects. On the last Hennell wrote, ‘He tended to favour the “Genesis and Geology” type of theme, with emphasis on the literal truth of Genesis’ (Hennell 1979, p. 120). Nothing could be further from the truth, and Hennell has simply perpetuated the unsubstantiated contention that evangelicals must be literalist.

Hennell did not provide any references to these scientific lectures, but Close gave one such lecture to the YMCA at Exeter Hall in London in either December 1857 or January 1858. Exeter Hall was built as an evangelical meeting place near Westminster Abbey in 1831, and was used by evangelicals of all shades. It was the location for the annual ‘Lectures delivered before the Young Men’s Christian Association’. These probably started in 1844 and Dean Francis Close gave a lecture entitled ‘Hugh Miller’s “Testimony of the Rocks”—God in his Word and in his Works’. In this lecture Close was true to form in his mode of preaching, as the introduction to the published lecture stated that, ‘The following lecture was spoken extempore and taken down by reporters. ... The Lecturer is aware that this course has betrayed him into a colloquial style’ (Shipton 1858, p. 240).

Close’s style was sermon-like and patronizing in a typically Victorian way when teaching young men of a lower class. As well as enthusing about geology, Close was critical of some scientists for their hostility to Christianity and of Baden Powell, who has been mentioned previously for his liberal theology, for regarding the ‘Mosaic Cosmogony’ as contrary to science. Baden Powell was also criticized for holding the doctrine of progressive creation ... till monkeys become men, and so on’. This was before Darwin’s Linnaean Society paper
of the same year. Close made the distinction of God’s two ‘books’, the word of God and the works of God. To emphasize the harmony between science and Christianity Close referred to his attendance of the British Association at Cheltenham when he ‘went from class to class’.

Before he discussed Miller’s ideas, Close gave a survey of the succession in the geological column, which was remarkable if given extempore by an amateur. The theological heart of Close’s address was his comparison of Genesis and geology and his discussion of Miller’s Testimony of the Rocks and McCausland’s Sermons in Stones. McCausland (1806–1873) was a distinguished lawyer, who graduated from Trinity College, Dublin, and who, according to the Dictionary of National Biography, ‘published religious works, the most popular being Sermons in Stone first published in 1856’. Sermons in Stones is fairly well-informed in geology and totally opposed to evolution. McCausland favoured a long-day interpretation and looked to Whiston, ‘Des Cartes’ and de Luc for support (McCausland 1865, p. 127).

Close based the argument of his lecture on these two writers and concluded ‘it is hard to conceive that it can be otherwise than the true one’ (Shipton 1858, p. 259). He regarded McCausland as improving on Miller’s sweeping vision and had reservations on Miller, ‘I exceedingly regret that our friend Hugh Miller has . . . indulged in some very mythical imaginations’ (Shipton 1858, p. 265).

It is not possible to work out the exact context of Sedgwick’s letter to Close, but it is clearly Sedgwick’s response to the printed version of Close’s lecture to the YMCA, rather than the collected lectures, which has a preface dated 31 March 1858. Presumably Close had sent a copy of the lecture to Sedgwick, who replied fairly promptly. Unfortunately, the letter is probably a handwritten copy of the original and omits some personal details at the end of the first paragraph that are not directly relevant to the lecture. Sedgwick began by complaining about his health and wrote that it can be otherwise than the true one’ (Shipton 1858, p. 265).

The main thrust of Sedgwick’s letter is that he picked up Close’s comments that Miller had ‘indulged in some very mythical imaginations’ (Shipton 1858, p. 265) and voiced his own concerns that Miller’s interpretation of Genesis might do some harm, as his over-schematic approach was geologically wrong. Sedgwick wrote:

Hugh Miller was a man of great natural genius, + in some parts of geology, admirably well informed, but it is not always safe to follow him, when he travels beyond his own beat—His ‘Testimony of the Rocks’ is in its way a noble work—it may do much good, but it may do some harm + .

He also wrote:

I make no difficulty in the words Morning + Evening, they are only I think meant to mark the beginning + end of periods or days,—the Mosaic day is assuredly not 24 hours, + if we once admit a prophetic extended meaning of day, our souls are then free, + we are permitted to give any indefinite period, + the word day.

But then he wrote:

I do not like the scheme of stretching the Bible, like an elastic band, till we can wrap up our hypotheses in its sacred leaves (Sedgwick to Close, 27 March 1858).

This letter is of great significance as the leading evangelical geologist wrote it to another evangelical. Both had a high view of the Bible and both were more than convinced by geological findings. Both took Genesis ‘non-literally’ yet Sedgwick, cautious as usual, was reluctant ‘of stretching the Bible, like an elastic band’ and preferred to wait as this ‘will end in harmony, + true accordance with the word of God’ (Sedgwick to Close, 27 March 1858). Undoubtedly, Darwin and Goodwin in Essays and Reviews would have dismissed this stance, as both had a mythological view of Genesis, but it demonstrates the shift away from the ‘chaos–restitution’ interpretation. It also shows that Sedgwick had slowly changed his theological understandings of Genesis during his life, and never rejected them as revelation, even though he was emphatic that they did not contain any science.

Controversy with the anti-geologists

As we live in a world where creationism in its many forms gains popularity by the day, to the extent that recently the Council of Europe has made a statement against both creationism and intelligent design, we may imagine that it was as common in the early days of geology as today. It was not. To attempt to express it numerically, in my researches I found that about 15–20% (possibly an overestimate) of Church of England clergy, out of about 130 considered, accepted a 6 day creation between 1810 and 1855. Several of those, like Close, later rejected a young Earth. I have looked at several hundred clergy who touched on the subject of geological time from 1855 to 1970, and only one, Griffiths Thomas, writing in 1919, held to 6 days, but previously had accepted both geology and evolution.5

Before about 1815 most writers who held to a 6 day creation did not attack geological time and tended to discuss time in Genesis from a ‘biblical’ point of view, as did Simeon (1832) and Scott (1788–1792). Ironically, within a year of Sedgwick’s election to the professorship, there
was a spate of anti-geologies (or scriptural geologies) for the next 40 years, which died out in the 1850s. I am aware that most historians, whether Millhauser (1954) or Mortenson, who is an employee of ‘Answers in Genesis’, the leading young-Earth creationist (YEC) organization (Mortenson 2004), refer to flood geologists as ‘scriptural geologists’ but I prefer the term ‘anti-geologist’ used by Miller in The Testimony of the Rocks in his chapter ‘The geology of the anti-geologists’. Miller as an evangelical was not going to let others claim the term scriptural. Anti-geologist is theologically neutral and focuses on attitudes to geology, not the Bible. This is brought out in Lynch’s selection and introduction of Creationism and Scriptural Geology, 1817–1857 (Lynch 2002, Vol. 1, pp. ix–xxiv). However, many of the ‘anti-geologists’ would not identify with the term, as they would claim to be in favour of geology but not old-Earth geology as has O’Connor argued (O’Connor 2007, p. 362).

The ‘anti-geologists’ reached their peak in the mid-1820s and annoyed uniformitarian and catastrophist alike. Their argument was that (old-Earth) geologists were mistaken and ungodly. Some had good scientific credentials outside geology, such as William Brande of the Royal Institution, John Murray, a chemist, and Andrew Ure (1778–1857) of Glasgow; others were evangelicals (e.g. Bugg, Nolan, Cole, Best, Mellor Brown and Young) and some were traditionalist clergy (e.g. Vernon Harcourt (brother of a co-founder of the British Association), Cockburn and Edward Nares). Despite their variety most anti-geologists had a common theme: the Earth was a few thousand years old and had been created in six 24-hour days, and the strata were laid down in the biblical Flood. Many emphasized that there was no death or suffering before the fall (Genesis 3) and thus no animals had lived for more than a few hours before Adam. This was to retain the centrality of the atonement, as Christians believe that death is the curse of sin. (Most orthodox Christians such as Sumner, Chalmers and Bishop Samuel Wilberforce did not consider that animal death before the fall affected the atonement.)

The importance of the ‘anti-geologists’ can be overstated as they attracted much attention, particularly in retrospect. The ‘anti-geologists’ were attacked most vigorously by other Christians, as was A New System of Geology by Ure (1829), which was scathingly reviewed anonymously in the British Critic of 1828. Lyell identified the reviewer, ‘A bishop, Buckland ascertained (we suppose Sumner), gave Ure a dressing in the British Critic and Theological Review! They see at last the mischief and scandal brought on them by Mosaic systems’ (Lyell 1881, Vol. I, p. 268).

The evangelical anti-geologists 1817–1845

Many anti-geologists were evangelical clergy and laity. The first work that challenged geology was The Testimony of Natural Theology to Christianity (Gisborne 1818). Gisborne was a friend of William Wilberforce (father of Samuel) and the last patient to be treated by Erasmus Darwin in 1802. The book was peace-making, but objected to geology, because the existence of death in the animal world implicit in the existence of prehistoric life before Adam contradicts the view in the opening lines of Paradise Lost, which was often considered to reflect the true interpretation of Genesis 3:

Of man’s first disobedience, and the fruit
Of that forbidden tree, whose mortal taste
Brought death into the world, and all our woe (John Milton, Paradise Lost, Book 1, lines 1–3).

The storm broke in the 1820s in the Christian Observer, and began with reviews of A Treatise of the Three Dispensations (Faber 1823); this was classic theology on the ‘dispensations’ of Abraham, Moses and Jesus Christ, but the third chapter ‘Respecting the length of the six demi-urgic days’ caused the problem. Here Faber summarized geological findings under the guidance of Buckland. George Bugg took great objection. Several years later Bugg wrote to the Christian Observer criticizing the editor S. C. Wilks for taking the ‘side of modern geologists’ and listed the five difficulties of the Bible versus geology, which were:

1) Geology claims that death was there before Adam sinned.
2) Geology denies the Six Days of Creation.
3) ‘Scriptural Creation’ is handed over to Geology.
4) Prevents missionary work among the Hindoos.
5) Removes the basis of the Sabbath (Bugg 1828).

A few years after Faber’s work, Bugg published his magnum opus Scriptural Geology (Bugg 1826–1827), in two volumes, which was an answer to Buckland. Bugg claimed that whatever is contrary to that Bible must be false’. He started from the premise that the Mosaic narrative gave the general order of the strata with one physical revolution on the third day and that ‘Christian Geologists are bound in honour and conscience to agree’. He continued with is a variety of theological argument, a rejection of contemporary geology, and a reinstatement of the biblical Flood as the source of all strata. Bugg’s motivation was theological, as he was unable to accept animal death before the fall.

Frederick Nolan (1784–1864) was a notable Oxford divine of his day. In many ways his career parallels that of Faber. Both were leading evangelical theologians publishing prodigiously on evangelical beliefs. The pair made forays into geological science, Nolan rejecting it and Faber welcoming geological findings. In 1832 Nolan was elected to
ADAM SEDGWICK

the Royal Society and in 1833 he gave the annual prestigious Bampton Lectures on theology at Oxford, published with the title The Analogy of Revelation and Science established (Nolan 1834). Nolan argued that the findings of geologists were mistaken and the Earth really was a few thousand years old. Buckland’s anger was undisguised, as his wife Mary wrote to William Whewell on 12 May 1833:

we have had the Bampton Lecturer holding forth in St Mary’s against all modern science, . . . . Denouncing all who assert that the world was not made in 6 days as obstinate unbelievers, etc, etc. (Morrell & Thackray 1981, p. 234; 1984, p. 168).

Although Nolan’s lectures were soon eclipsed by Keble’s Assize Sermon on 11 July 1833, which marked the start of the Oxford Movement, they highlighted a rumbling problem within the churches. At that time geology was the science of the day with its strange extinct beasts and its vast timescale, with the present day ‘towering o’er the wrecks of time’. There were other evangelicals who took up cudgels against geology during those two decades, but they passed the peak of their activity in about 1840 and thereafter dwindled. There are a variety of reasons for their decline. A major factor was simply increasing age; younger evangelicals were more open to geology, following on first from Chalmers and Faber, then Smith and Miller.

‘Scientific’ anti-geology

‘Scientific’ and anti-geology may seem to be an oxymoron, but some anti-geologists argued that their geology was more scientific than conventional geology. But was it? A frequent contributor to the Christian Observer during the 1820s and 1830s was George Fairholme (1789–1846), who signed himself as ‘A Layman on Scriptural Geology’. Fairholme was a Scot and was probably educated at home rather than university. He wrote the General View of the Geology of Scripture (Fairholme 1833) and the Mosaic Deluge (Fairholme 1837). The preface of the latter discussed the theological results and scepticism caused by geology and especially the rejection of a universal deluge: ‘there cannot be conceived a principle more pregnant with mischief to the simple reception of scripture’. Fairholme emphasized the universality of the Deluge: ‘if false . . . then has our Blessed Saviour himself aided in promoting the belief of that falsehood, by . . . alluding both to the fact and the universality of its destructive consequences to mankind’ (Fairholme 1837, p. 61).

In the General View of the Geology of Scripture (Fairholme 1833), he gave an appearance of geological competence by citing geological works. However, his geology does not bear comparison with that of major geological writers of his day. His lack of geological competence is best seen in his discussion of the relationship of coal to chalk. Fairholme wrote:

the chalk formation is placed far above that of coal, apparently from no better reason, than that chalk usually presents an elevation on the upper surface, while coal must be looked for at various depths below the level of the ground (Fairholme 1833, p. 245).

He had previously discussed this (Fairholme 1833, pp. 207–210) and concluded, having misunderstood an article in the Edinburgh Encyclopaedia, that

Nothing can be clearer than this account; and it appears certain, that, as in the case of the Paris Basin, this lime-stone formed the bed of the antediluvian sea, on which the diluvial deposits of coal, clay, ironstone, and free-stone, were alternately laid at the same period (Fairholme 1833, p. 209).

It is clear that Fairholme regarded Carboniferous Limestone and the Cretaceous chalk as the same formation, and he wrote that coal fields,

lie among sandstones . . . but have, in no instance, been found below chalk, which is one of the best defined secondary formations immediately preceding the Deluge.

Thus the Cretaceous strata were pre-Flood and the Coal Measures were deposited during the Flood. He continued,

But during the awful event [the Deluge] we are now considering, all animated nature ceased to exist, and consequently, the floating bodies of the dead bodies must have been buoyed up until the bladders burst, by the force of the increasing air contained within them (Fairholme 1833, p. 257).

It is impossible to agree with Mortenson’s assessment that ‘By early nineteenth century standards, George Fairholme was quite competent to critically analyze old-earth geological theories’ (Mortenson 2004, p. 130). Although Fairholme took it upon himself to criticize geology, he did so from sheer ignorance, as is evidenced by his claim that Chalk always underlies Coal. Fairholme, like all anti-geologists, attempted from his armchair to find fault with geology, but his ‘scientific’ objections were simply misunderstood geology. Then, as now, the advantage of writing such works is that the refutation of their absurd arguments is beyond the patience of rational people. The geological fraternity had very little respect for the anti-geologists and the response was frequently biting sarcasm, often led by Lyell.

Sedgwick was engaged in public controversy with anti-geologists on at least two occasions. The first occasion, in the early 1830s, he almost brought upon himself by some scathing remarks in an appendix to A Discourse on the Studies of the University, where he devoted several paragraphs to a devastating critique of anti-geologists. By the time Sedgwick completed the manuscript in November 1833, Oxford had witnessed Nolan’s Bampton
Lectures. After he stressed that ‘Geology can neither lead to any false conclusions, nor offend against any religious truth’, Sedgwick launched into the anti-geologists:

But there is another class of men who pursue Geology by a nearer road, and are guided by a different light. Well-intentioned they may be, but they have betrayed no small self-sufficiency, along with a shameful want of knowledge of the fundamental facts they presume to write about (Sedgwick 1969, p. 106).

Sedgwick then gave sample titles such as *Mosaic Geology* and *Scriptural Geology*, and named authors such as Bugg, Penn, Nolan and Forman. These, according to Sedgwick,

Have committed the folly and sin of dogmatising on matters they have not personally examined, and, at the utmost, know only at second hand—of pretending to teach mankind on points they themselves are uninstructed (Sedgwick 1969, p. 106).

Having read works by Bugg, Penn, Nolan and other similar writers, this is a fair comment. Except for George Young, their geological comments emana-

ted from an armchair rather than a windswept ridge in Snowdonia. Perhaps Sedgwick exaggerated when he referred to their ‘mischievous nonsense’, ‘irrational cosmogony’ and that they are ‘confined within the narrow fence of their own ignorance’. As for seeking dialogue with them, he continued, ‘We are told by the wise man *not to answer a fool according to his folly* [Proverbs 26: 4–5]; and it would indeed be a vain and idle task to engage in controversy with this school of false philosophy’ (Sedgwick 1969, p. 106).

It was inevitable that a response would be forthcoming, and Henry Cole (1792–1858) provided this in 1834 in most intemperate language. Cole had graduated from Clare College and was ordained but moved in and out of the Anglican ministry never obtaining a living. He published widely and became a Doctor of Divinity in 1854 (Mortenson 1999). Even Mortenson described him as ‘largely ignorant of the facts of geology’. Cole devoted 134 pages to refuting Sedgwick in *Popular Geology subversive of Divine Revelation! A Letter to the Rev. Adam Sedgwick, Woodwardian Professor of Geology in the University of Cambridge; being a Scriptural Refutation of the Geological Positions and Doctrines promulgated in his lately published Commencement Sermon* (Cole 1834a). Cole spent the first 50 of his 134 pages demonstrating that the first three verses of Genesis 1 deal with the first day and denying some intervening ‘chaos’ before the first day. ‘The second argument goes directly to prove the non datableness of geognostic facts . . . otherwise than as scripturally dated’ (Cole 1834a, p. 7). The third argument was to show Sedgwick’s moral code to be contrary to the word of God. Cole’s book was full of vituperation directed at Sedgwick.

The whole basis of Cole’s argument was that the only Christian and orthodox way of interpreting Genesis was to accept a creation in 6 days and that anyone who did not was an ‘infidel’. He dismissed any arguments for geological time as they are ‘in direct opposition to, and contradiction of, the eternal truth of divine Revelation,—and that, therefore are false, dangerous and impious!’ (Cole 1834a, p. 10). Nowhere did Cole consider whether previous generations of Christians had not held to a literal Genesis, which in fact many did not, both since the Reformation (Roberts 2002, 2007) and in the early church. Cole makes sorry reading as the reviewer in the *Christian Observer* noted Cole’s complaining about “palpable evasion” of the Divine veracity, “willing ignorance”; “infidel scoffers”, “the graceless geologist”, “heaven-marked infidelity, presumption and falsehood” (Anonymous 1834, p. 373). The 20 page review in the *Christian Observer* continued in this vein and pointed out that not only is Sedgwick condemned for infidelity and other crimes worthy of the stake, but his views are shared by “hundreds of pious clergymen and thousands of pious laymen” (Anonymous 1834, p. 371) including “Chalmers [Thomas, the leading Scottish evangelical], Faber [George, an Anglican evangelical theologian], Sedgwick, Buckland, Conybeare, Bishop J. Bird Sumner [the evangelical Bishop of Chester, later Archbishop of Canterbury], and numerous other divines”. Although it was anonymous, the review had the hallmarks of the editor S. C. Wilks, a friend of Conybeare, who used his editorial position to keep the anti-geologists at bay. Cole responded with a letter, which Wilks refused to publish, but which was published at Cole’s personal cost of £30, an enormous sum for an unbeneﬁced clergymen.

Sedgwick seems to have ignored Cole’s attack, but his next brush with anti-geologists was with a leading dignitary, Dean William Cockburn of York, some 10 years later. For 10 years Cockburn fought long and hard against geology, particularly addressing Buckland and Sedgwick, and when York hosted the British Association, he delivered a blistering attack on the geological views of the BA. In 1838 Cockburn published a 23-page pamphlet *A Letter to Prof Buckland concerning the Origin of the World*. His emphasis, like that of many anti-Geologists then and now, was on facts, and he claimed to take these geological facts from Buckland’s book (i.e. the ‘Bridgewater Treatise’, Buckland 1836) and to demonstrate that these facts are incompatible with Buckland but compatible with Moses: ‘First, that your theory is incompatible with the facts made known to us by geological discoveries, and, secondly, that these facts are reasonably to be explained by attending minutely to the historical account given by Moses’ (Cockburn 1838).
He addressed a further pamphlet to Murchison in 1840 on *The Creation of the World*, in which he gave his alternative geological history, with the first volcano occurring in the Cambrian, and the flood depositing the fossils, with trilobites lying at the bottom ‘with scarcely the power of motion’ (Cockburn 1840, p. 18). His final flourish was that there is ‘no valid reason for supposing that all the Eocene, Miocene and Pliocene’ were deposited in a time that ‘exceeded three days’, thus concluding that ‘the opinion of common sense will ultimately prevail’ (Cockburn 1840).

Cockburn not only drew the ire of the ‘reverend geologists’ but also Lyell, who wrote to his sister in Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon the Dean’s copy to Sedgwick, who in his reply, confined himself almost exclusively upon theDean’s supposed ignorance’ (Cockburn 1844, p. 16). To Cockburn’s annoyance Sedgwick soon curtailed his responses and refused to have his letters published. On Monday 30 September 1844 Cockburn wrote to Warburton, the president of the Geological section, for further discussion, which was refused. Sedgwick’s critical response to Cockburn met with differing reactions. *The Times* and the conservative evangelical *Record* (which was far narrower than the *Christian Observer*) supported Cockburn, but the *Spectator* and Miller’s *Witness* did not. Probably because of Cockburn’s influence Sedgwick was snubbed by both the City Council and the cathedral chapter (canons), who refused to dine with him during the meeting, but this may have been as much cathedral politics as conviction. Two of the canons were sons of Edward Harcourt, Archbishop of York: Leveson Vernon Harcourt (1788–1860) was an anti-geologist, who wrote the *Doctrine of the Deluge* (Harcourt 1838), and William Vernon Harcourt (1789–1871), who was a founder member of the British Association in 1831 and no scientific supporter of his Dean. However, cathedral politics has its own rules, as has been wittily described by Anthony Trollope in his Barchester novels.

Cockburn had presented a paper to the British Association that was, by the geological standards of its day, plain nonsense. It is difficult to see how Sedgwick could respond to it. Sedgwick and other geologists had endured Cockburn’s semi-coherent geological ramblings for several years and responded with no avail. Buckland had previously written to Sir Robert Peel, Cockburn’s brother-in-law, in support of Sedgwick. This hardened attitudes, but in the 1840s more people were convinced by the whole tenor of geological argument in favour of prehistoric worlds, and an increasing proportion of the clergy, Anglican, Roman Catholic, Presbyterian and Non-conformist, accepted the scientific arguments of the geologists and reconciled this with some kind of non-literal interpretation of Genesis.

The anti-geologists continued into the mid-1850s, but were a declining force, although there was a brief flowering in Scotland in 1858 after the publication of Miller’s *The Testimony of the Rocks*. They had never gained much support and their influence was short-lived. Although almost certainly numbers of Christians from 1855 held to 4004 BC as the date of creation, publications are probably absent. By 1855 most educated Christians, whether evangelical or not, accepted geology, even if many were initially hostile to Darwin in 1859. However, that is another story.

**Summing up**

The focus of this paper has been deliberately very narrow, as it is only on Sedgwick’s understanding of Genesis 1 in relation to geological time and his brushes with anti-geologists. Sedgwick on Noah’s Flood has been briefly considered by Young in *The Biblical Flood* (1995, pp. 113–114), and his reaction both to the *Vestiges* and *The Origin of Species* has been covered many times (Moore 1979; Secord 2000). Sedgwick, as the most evangelical of the early 19th century clerical geologists, has considerable relevance today, because creationism and its rejection of geology is gaining popularity and has infiltrated Sedgwick’s church, the Church of England. An awareness of how
evangelicals 200 years ago understood geology in relation to the evangelical beliefs of the authority of the Bible and the text of Genesis will shed light on the present controversies and may prevent or halt the oversimplified dichotomy of science versus religion and geology versus Genesis. The religious aspects of the controversy cannot be ignored but need to be understood. No better example from both the history of geology and of evangelicalism can be found than Adam Sedgwick.

Very often the concern about creationism has been over evolution and thus the controversy has been presented as evolution versus creationism. Consequently, it is considered to be more about Darwinian evolution than anything else. Yet fundamental to all creationism is an attack on the whole of geology, although intelligent design evades the issue of the age of the Earth. So long as the controversy is centred on the ‘icons of evolution’ such as the peppered moth and Haekel’s embryos the doubtful nature of geology can be assumed because questions have been raised against historical sciences in general. The founder of 20th century creationism was George McCready Price, whose books (e.g. Price 1906, 1923) formed the basis of every subsequent development, and who spent his life trying to overturn all geological science with its ‘long ages’. He argued that evolution ‘all turned on its view of geology, and that if geology were true, the rest would seem to be more or less reasonable’. Ultimately, the controversy is geology versus creationism, or, as I have presented elsewhere (Roberts 2009), between a critical realist and naive realist approach to both theology and science.

I can be fairly certain that most readers will be convinced of all the geological arguments for a vast timescale, and that they consider the issue as simply not worth considering on the grounds of its absurdity. At present there are a few YEC geologists who have either degrees or doctorates. The most significant are Steven Austin, Kurt Wise and Marcus Ross, who now teach in US evangelical colleges that demand staff to believe in a 6 day creation. Many US evangelical colleges, such as Wheaton, do not make this demand (Moshier et al. 2009). Despite their small numbers, young-Earth geologists have a very high profile and with the recent Radioisotopes and the Age of the Earth (RATE) project, which questioned radiometric age-dating, have considerable influence on the general public, who, if they do not actually believe their arguments, begin to doubt orthodox science.

It is also easy to assume that the influence of a few Christians will be minimal, except in the USA. However, about one-third of the world’s population is Christian, and about 5% of the world’s population are evangelical and that figure is rising rapidly. Coupled with the support of creationism by conservative Muslims, that means a significant number of people, who are highly motivated and organized. To give a historical parallel, when Constantine recognized Christianity as the official religion of the Roman Empire in AD 313 only 10% of the population were Christians.

On the surface the controversies of today seem to be a continuation of what happened in the early 19th century, but, despite similarities, that is not the case. Effectively, the anti-geologists went extinct by 1860 and one cannot trace any line of descent from them to the YECs of today. As Numbers (1992) presented the story in his book The Creationists, today’s creationists were effectively started with the publication of the book The Genesis Flood by Whitcomb & Morris (1961), who based their ideas on those of G. M. Price, and his series of anti-evolution and flood geology books, published from 1905. Price did not belong to any ‘mainstream’ or revivalist church but to the Seventh-day Adventists, who broke away from mainstream Protestants in the mid-19th century. Against all expectations, creationism has continued to grow within all churches and has spread throughout the world.

Most of the criticism of creationism has come from secular scientists and liberal Christians, so that the former can be dismissed by creationists for being atheist and the latter for being liberal, theologically, thus reinforcing creationist views. Most critiques of creationism assume that today’s creationism is a throwback to before 1800 when Christians accepted a 6000-year-old Earth. With the emphasis on Hutton (a deist) and Lyell being almost the only people who argued for geological time, the way is clear to claim that geological time is a fruit of the Enlightenment and thus contrary to orthodox Christianity. This is a favourite argument of creationist writers.

No historian of geology can accept this oversimplified picture, and the case of Adam Sedgwick living a few decades later totally undermines this view. Here was a leading geologist of world renown who challenged many popular perceptions, especially of those who would consider themselves educated; he was a major contributor to elucidating the geological column, yet was a man of evangelical beliefs. We may regret his rejection of evolution, which was understandable for a man of his day, but conveniently forget that most geologists and physicists agreed with him at the time.

Sedgwick had a very expansive view of geological time, which he combined with a reverent and expansive view of the book of Genesis and its account of creation. He was happy to accept both without attempting to shoehorn all science into the Bible.
His letters give a few hints of his interpretation but sadly he never committed these to a full exposition.

Although a man of both clear religious convictions and broad sympathy, he showed little tolerance for the activities of the anti-geologists and incurred the wrath of Cole and Dean Cockburn. He was not afraid to expose the absurdity of those beliefs, not that it did him any lasting harm, except in York.

To Sedgwick there was no conflict between his geology and his evangelical beliefs, and this is summed up in the wording of his memorial tablet at St Andrew’s Church, Dent (Fig. 2):

As a man of science and a Christian he loved to dwell on the eternal power and godhead of the Creator as revealed in nature and the fuller revelation of his love as made known in the Gospel of His son Jesus Christ.

I thank R. O’Connor and M. Köbl-Ebert for their comments as referees. The transcript of the letter from Sedgwick to close is reproduced by kind permission of the Headmaster of Dean Close School, Cheltenham.

Appendix

Letter by Adam Sedgwick to Francis Close, Dean of Carlisle
(reproduced with permission from Dean Close School, Cheltenham)
Cambridge. March 27, 1858

My dear Dean,

I am not in good health, the gout steals away any sleep by night, + by day smashes me torpid, irritable + stupid: but I am not insensible to kindness, + try to thank the friends who remember me in the way you have done.............

Hugh Miller was a man of great natural genius, + in some parts of geology, admirably well informed, but it is not always safe to follow him, when he travels beyond his own beat—His ‘Testimony of the Rocks’ is in its way a noble work—it may do much good, but it may do some harm—for when men connect certain difficult passages of the bible with any scheme of interpretation which has gained their confidence, they are almost certain to look with suspicion, + ill will, on any man, who does not accept this interpretation + to suspect them of infidelity—

That God created all worlds, + gradually through the operation of his spirit brought them into the order + symmetry in which we now see them, + that man the last being of Creation, are points in which we all agree, but so far as regards the Earth, how was this order brought about? Why what succession.

I make no difficulty in the words Morning + Evening, they are only I think meant to mark the beginning + end of periods or days,—the Mosaic day is assuredly not 24 hours, + if we once admit a prophetic extended meaning of day, our souls are then free, + we are permitted to give any indefinite period, + the word day—However long it is but an atom of a part of eternity—In regard to the first 8 verses of Genesis, we can only in the first instance, get a glimmering of their meaning, from a knowledge of the Hebrew, or possess a good translation—the words are difficult, + are perhaps meant to be so; + there may be a great physical truth lurking in them, what future discoveries in science may help to clear up,—I do not profess to comprehend them. If I remember rightly, Hugh
Miller, puts within the 1st + 2nd days, the whole older Palaeozoic Creation—If the 3rd day represents the Carboniferous period, the previous conclusion is inevitable—Now in the older Palaeozoic periods (old red, Silurian, Cambrian etc we have multitudes of fishes, some of a very high type, + a magnificent marine fauna, many of the creatures with beautiful organs of senses—for example many of the old Trilobites had eyes, all analogy, the old Nautilus, + orthocerates must have had very perfectly formed eyes—They were less-motive + highly preadaceous creatures, + had need of eyes—

The Fauna could not exist without a flora—but that Flora (He says) was marine! I believe it was in good part, but we have a few land plants, some reptiles, in the old sand period; (He says) was marine! I believe it was in good part, but we have a few land plants, some reptiles, in the old sand period; x we have no right to argue from negative evidence—Here there is a first + great difficulty, which none of the authors in question appear to have cleared up—

Again let us come to the 3rd day—the period of the vast Forests, which supplied the materials of our coal Beds, according to Hugh Miller—the interpretation here, is at last plausible, yet not without difficulties, for we have a vast abundance of highly organised Fishes of the period, we have a few reptiles, + a great Fauna—All the species new—there is hardly so much as one, that can be regarded as the natural descendant of any species that lived during the former days—

I do not believe that the Forests felt not the influences of light—a reference to McCausland’s claim that there was no sunshine until the Permian, i.e. after the Carboniferous Among the coal plants are occasional Coniferous trees, are we to suppose that they grew without light? The Fishes of the period had eyes, so far as we can judge as well fitted for light, as are the eyes of living fishes.—Here there is again a difficulty, which Millars has not cleared up—

I do not like the scheme of stretching the Bible, like an elastic band, till we can wrap up our hypotheses in its sacred leaves.

The Permian formation was not the beginning of the reptile age—but it is true that reptiles have their great prominence during the secondary period—beginning (say) in the Permian, + ending with Chalk, but the reptiles were not by any means all marine—and as for fishes, they had perhaps a nobler type in the Anterior, or Palaeozoic period.—there is a difficulty here also—but perhaps it is not insuperable—a few mammals (animals with hot blood + giving suck) did exist, during the secondary period—more than even Mr Miller thought of—for many have been discovered within the past year—Still the Tertiary period, is the grand period of Mammal life; + through it we ascend to the period of man—the last created of Heaven—as to any subsequent difficulties, they belong to the Historian + Divine, rather than to the Geologist—

Don’t think me a bad man, if I tell you that when puzzling my brain (during long by gone years) about this chapter, I have sometimes fancied, that the 3rd + 4th days, had by some mistake of translation been made to change place—formerly I tried all sorts of hypotheses to little satisfaction, so of late years I have little troubled my head with hypotheses, not doubting that in the end, all difficulties would vanish—

I am sure, if we go on honestly, our difficulties will be less + less—H. Miller has given us a noble sketch, but so far as he is hypothetical he is unsafe—

Some of the gorgeous notions that decorate his pages, only dazzle my eyes, + make my head giddy; nor can I honestly subscribe to all that MacCausland states in the quotation in question.

Your remark about the whales is just + true—it is simply the case of a bad translation—(1) that God created all worlds (2) that they parted? Into their present condition, by successive changes in conformity with his will, + with of his ordering (3) that Animal life began in a humble form (4) that two epochs followed, marked by the organic progress (5) that a still higher progress was marked by the Creation of Mammal types—(6) Lastly that man was created, and that the creative power, was by its own inherent will,—all this is I think at present made evident, even to our gross senses,—and I admire as much as you do, that grand idea of poor Miller, that our own time (till the consummation of all earthly things, when a new Heaven, + a new Earth shall rise up before the Chosen Children of God) is to be regarded as a long protracted sabbath, or rest from the labour of new creations—Surely it is good to have gone so far—

There are difficulties in morals, in politics, in religious life—they are a grand part of our probation, Why should we expect at once to clear up all difficulties presented to our senses by the natural world? It will not do for us to shut our eyes like terrified children, we must note these difficulties manfully, + with an honest spirit, + then God will bless our labours—

I dread the seduction of . . . hypotheses—

After what has been done, + done honestly, I have no fear for the final result, + I believe as formerly, as I believe my own existence, that any discords that may now appear among the Elements of our present Earth, will end in harmony, + true accordance with the word of God I ought to ask your forgiveness for this ugly scrawl, ever my dear Dean

Very truly + gratefully your’s [signed] A. Sedgwick

Notes

1 An earlier version of this paper was presented at the ‘Electrifying Experimentation’ conference at Sheffield University in March 2006.
2 For example, on one day he walked over 18 miles and climbed 6000 ft, as well as making many geological notes and collecting many rock specimens.
3 Despite Darwin’s radical dissenting background, he was enough of an Anglican to gain a degree and potentially be ordained.
4 In the 21st century, on the basis of my own dealings with Anglican clergy, I would estimate this figure at between
5 and 10%. Kevin Logan, a creationist Anglican vicar, told me he had arrived at a similar figure. In fairness to clergy in the early 19th century, geology was a young science; today’s clergy do not have that excuse.

One conclusion of the RATE project was that decay rates speeded up in the year of Noah’s Flood, but it overlooked that the extra energy would have boiled away the oceans and fried Noah.

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