

## Truth, Faith and Doubt in some Eighteenth and Nineteenth Century Scientists.

When T H Huxley championed the *Origin* in the great Oxford debate of 1861, chaired by Darwin's Tutor and Mentor, Professor John Henslow, he was following the path of Copernicus and Galileo, who had, similarly, championed new scientific knowledge against Christian biblical tradition, and fought for the publication of the truth. He knew what he was doing and we can know where he was coming from. In his preface to a volume of collected essays, published in 1894<sup>1</sup>, he tells us

I have never "gone out of my way" to attack the Bible: it was the dominant ecclesiasticism of my early days, which, as I believe, without any warrant from the Bible, itself, thrust the book my way. I had set out on a journey, with no other purpose than that of exploring a certain province of natural knowledge; I strayed no hair's breadth from the course which it was my right and my duty to pursue; and yet I found that, whatever route I took, before long, I came to a tall and formidable-looking fence. Confident as I might be of an indefeasible right of way, before me stood the thorny barrier with its comminatory notice board- "No thoroughfare. By order. Moses." There seemed no way over; nor did the prospect of creeping round, as I saw some do, attract me. The only alternatives were either to give up my journey- which I was not minded to do- or to break down the fence and go through it.

Reading this, we may be surprised that, as is sometimes reported, Huxley said under his breath "The Lord has delivered him into my hands" in response to Bishop Wilberforce's classic remark "If anyone were willing to trace his descent through an ape as his grandfather, would he be willing to trace his descent similarly on the side of his grandmother?" Huxley's reported reply was apt. "I would rather have a monkey for a Grandfather, than one who used great gifts to stifle the truth". This moment at Oxford focussed a debate, which had dominated philosophy and the search for truth for the previous hundred or more years, and has continued ever since. Writing in the early 1960s, the church historian, John Kent, surveyed theology, from Charles Darwin's time to that of Owen Blatchford, and concluded that "most theologians before 1914 had still not come to terms with a scientific as opposed to a purely speculative doctrine of evolution" and that "fifty years later (and he might well say 100 years later) it was still possible to ask the question 'Have modern theologians accepted the doctrine of evolution at all'".<sup>2</sup> The effect of new scientific knowledge on cherished biblically based Christian tradition, which led many to doubt biblical truth can be seen in a brief study of C.18<sup>th</sup>. and C.19<sup>th</sup>. scientists. One of these is a local man, James Bateman

James Bateman was born in 1812, and is best generally described as an accomplished horticulturist and landowner, but, for our purposes, we need to realise he was an accomplished botanist and geologist, and a committed Evangelical Christian. Growing up in Knypersley Hall, the Botanist established a fine collection of Orchids, having been inspired by these plants whilst studying in Oxford. When he moved to Biddulph Grange, in 1840, he established the extensive gardens, through the next decade, and then built a gallery, as an entrance to the gardens. On one wall he marked the seven days of creation, and within each day placed samples of different types of rock and a collection of fossils above them. The gallery was built between 1856 and 1862, and made a significant statement about God's role in creation and so challenged evolutionary ideas. He thereby proclaimed the Church's authority in scientific matters. Huxley would certainly not have approved. So how did an accomplished botanist and geologist come to make this statement, for he amassed a wide knowledge of the great variety of plants to be found across the world, growing many of them in his garden, and he obviously knew a considerable amount about fossils and rocks, both important for the development of the theory of evolution, a theory that he could not accept.

The C.19<sup>th</sup>. was the period of extensive plant collection, though it had begun some time before. Joseph Banks (1743-1821) reputedly persuaded George III to support voyages to new lands so that

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<sup>1</sup> Science and Christian Tradition, Collected Essays, volume V, p.viii

<sup>2</sup> From Darwin to Blatchford, John Kent

he could indulge his passion for Botany, and published Linnaean descriptions of the plants of Labrador and Newfoundland. He went to the South Pacific, and even found 800 new species in Australia, between 1768 and '71, the time when Erasmus Darwin was establishing his extensive Botanic Garden in Lichfield. James persuaded his wealthy parents, who had made their fortune through mining, to finance expeditions to find new varieties. Apparently it was a lucrative business. There was great competition and there was a fairly ruthless disregard for conservation! What Bateman would have discovered was the wide variety of species, especially amongst Orchids, with their varied forms, which others would explain in terms of progressive development, but Bateman would see as, at most, varieties of specific creations of God. Indeed, it is said that he objected to the current practice of hybridisation between species, because it usurped the role of God.

It was probably the family interest in mining that led to James Bateman also developing an interest in Geology. Geology was all the rage in this period. Some 100 years earlier, Erasmus Darwin, and many others in the Lunar Society, were opening up the fossil record and studying rock formations and minerals, particularly in the Derbyshire Dales, as a result of their interest in mining and in building canals. In the years between 1815 and 1820, William Smith had published the first detailed geological maps of Britain. Smith was a surveyor, who, already fascinated by fossils, surveyed for canals and searched for building rock and coal. Through this work he recognised that sedimentary rocks had resulted from the land being overlaid by water, and that the resulting rocks could be recognised from the fossils within them, and were sequenced, with the sequences repeating themselves in many locations. This was important information, which others, like Lyell, would develop further. Indeed, Adam Sedgwick called Smith 'the father of English Geology'. Sedgwick (1785-1843) was Professor of Mineralogy at Cambridge, and in the 1830's, the young Charles Darwin, accompanied his Tutor on field trips into Wales, mapping the strata and identifying fossils within them. Subsequently Sedgwick would describe the Devonian and Cambrian rocks in great detail. For Charles Darwin, particularly when he avidly read the works of Charles Lyell, this geological material played a large part in developing his theory of evolution, but Sedgwick, a devout priest, adjusted his theology to his field studies by following men like Cuvier along the path of Catastrophism. James Bateman however was not a priest, but a layman, and was not able to follow this compromising route, as a means of maintaining his hold on the biblical record with advancing geological knowledge, for he was, also, an Evangelical Christian, holding strongly to the inerrancy of the biblical record.

In order to understand Bateman's reaction to the clash between biblical and scientific truth and his response in developing the Gallery, we need to explore what this really meant. The Church of England was formed at the Reformation, in the C.16<sup>th</sup>. For its first 1500 years, the Church excepting the Orthodox churches of the East, after 1100 or so, looked to Rome and the Pope, for leadership and as their authority in matters of belief and behaviour. The Pope had a powerful role in the world, influencing and appointing leaders in religion and politics, levying severe taxes, and ruling on all doctrinal and ethical matters. As is well known, when Henry VIII was refused annulment of his marriage to yet another barren wife, it brought to a focus the growing discontent with papal authority and power, the King declared himself Head of the Church, and the Church of England was born. Of course there was more to the Reformation than this.

Change had been in the air in Europe for some time. On the Continent, the publication, in Germany, of Luther's 95 Theses, critical of Roman belief and practice was important in bringing about the reformation of the German Church, a move which the nobility were only too glad to applaud as it released them from the Pope's authority and heavy taxation. Luther, however, was more concerned with religious belief and practice. For example, he inveighed against the doctrine of purgatory, the 'limbo land' entered at death, in which the soul pays for the sins of life, before being allowed to enter heaven. Belief in purgatory had allowed a system of indulgences and 'commercial' masses to grow up, which, in theory, enabled people to buy their way into heaven more quickly. This was a

lucrative system for the priests of the Church, for no one knew how long they would have to serve. The system is lampooned in Chaucer's *Canterbury Tales*, as is the priests 'glossing' of the text of the Bible, which allowed them to claim authority for their every action. The translation of the Bible into the native tongue brought this power, so easily abused, to an end.

The translation of the New Testament into English, by John Wycliffe, early in the C.15<sup>th</sup>, was the beginning of a movement, which the Church, led by Rome, resisted. Giving the text, in a comprehensible form, to the people, challenged the authority of the priests, and, indeed, William Tyndale who, a little later, took the work further and produced the first printed edition of the whole Bible, lost his life as a result of his work, and copies of his Bible were burnt. However, with the move to a Church of England, Henry VIII saw that a new version, by Miles Coverdale, was placed in every church in the land. (The frontispiece of one such bible, in Lichfield Cathedral Library shows Henry handing over the 'Verbum Dei' to all.) In his preface to the Great Bible, Cranmer wrote 'Here all may learn what things they ought to believe, what they should do and what they should not do', and he even produced sets of Homilies, which, according to Article 35, should be read 'distinctly and diligently by the ministers so that they may be understood of the people, because they contain a godly wholesome doctrine'. He thus echoes the Swiss Reformer, Calvin, who also stressed that scripture was the revealed word of God.

Another Reformer, William Whitaker (1548-95) put it another way, stressing that the Church is the guardian, and witness, of Scripture and should distinguish between true, sincere and genuine scripture and the spurious, false and superstitious with a duty to publish, set forth and preach the scriptures, and to expound and interpret them. 'We do not thereby reject or make of no account the authority of the Church, he goes on, but see scripture as more authoritative because it comes from God, not by the Church, but by the Holy spirit'. This notion of the authority of scripture in the reformed church is then strongly featured in the 39 Articles.

The translation of the Bible into English was not done in isolation, for it was followed by the development of the church services in English, two prayer books, compiled by Cranmer, being published in the reign of Edward VI, and the development, also by Cranmer, of the 39 Articles of Religion. The 39 Articles were written to rule out certain Roman beliefs and practices and to assert orthodox Christian belief and practice for the new church, which included the importance of the word of God in the Bible.

Thus, Article VI: Whatever is not read in Holy Scripture, nor may be proved thereby is not required of any man that it should be believed.

Article VIII: That the three creeds of the Church can be proved by most certain warrant of Holy Scripture.

Article XX: That the Church is authoritative but not in matters 'contrary to God's written word'.

And Article XXII: instances this, saying that Purgatory (as an example) is not grounded in warranty of scripture, and so is repugnant to the word of God, and Article I describes God as 'the maker and preserver of all things, both visible and invisible'.

There were difficulties in the development of the Church of England, until the C.17<sup>th</sup>, but with the calling, by the King, of the Hampton Court Conference (1604), which led to the publication of the Authorised Version of the Bible in 1611 and of the Book of Common Prayer in 1662, it became well established. It is difficult to overestimate the significance of these developments for the thinking of church people in the years that followed. An interesting way to glimpse the authority of the bible record in Genesis, for example, is afforded by a look at the published work of Dr Floyer, a Lichfield Physician, who lived between 1649 and 1734. In his 'Advice to a Young Physician'<sup>3</sup>, written for his son, who sadly died in infancy, he rationalises the calling and work of a Physician, as

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<sup>3</sup> Advice to a Young Physician by Sir John Floyer, ed. Gibbs and Wilson 2007

coming from God. Disease, he says, is the result of the Fall (Genesis 3). “Death and disease arose from the poison of the forbidden fruit”. When Adam and Eve ate it “the tranquillity of their minds was disturbed, and this, in time, produced diseases, which end in the dissolution of our bodies. Driven out of Eden, Adam and Eve moved into ‘air more unhealthful and fruits less mature and sweet’, and their descendants developed ‘hatred, revenge, envy, covetousness, tyranny, impiety and lust..’. The flood, he goes on, ‘further corrupted the air, made the earth less fruitful and made men’s lives shorter’. So, all success in the Physician’s practice depends on God, and making proper use of all that he has provided as the ‘Author of Physic’.

This was the heritage of James Bateman, and indeed of all the other scientists whom we shall meet. As with Floyer, the Christian bible-based tradition informed every aspect of their life and work. In essence, when they were growing up, they would have to learn the Catechism (the teaching role of the Clergyman, in this respect, is referred to, often, in the novels of Jane Austen and the Bronte sisters!). They would certainly be expected to be able to recite the Lord’s Prayer, the Creed and the Ten Commandments before Confirmation. They would presumably also learn that creation took place in 6004 BC, Archbishop Usher having worked that out from the ages and periods in the Scriptures; that according to the Genesis text, six days of feverish activity were followed by a day of rest; that Adam and Eve had sinned and so humanity is tainted by sin; that human relationships had deteriorated in succeeding generations and that the flood was used by God to make a fresh start, through Noah, his family and the pairs of animals which survived. During the period of the Enlightenment, others might see cause to speculate about the historicity of this mosaic account of our origins, but James Bateman was moulded by one further factor, he was an Evangelical Christian. In the fifty years or so before his time, developments took place in the Church, which are important for our understanding of the way in which he grappled with his faith and the truth, in the light of the scientific developments of which he was a part. Three main parties developed in the established Church and the sectarian movement grew.

The first of these parties was that of the Tractarians, who grew out of the Oxford Movement, launched by Keble’s Assize Sermon of 1833. The Tractarians, gaining their name from the tracts which they published, sought to make the C of E part of the Catholic (universal, not Roman) Church. They emphasised the frequent celebration of the Eucharist, a title they preferred to Holy Communion or the Lord’s Supper, the discipline of fasting, the practice of personal confession, and the importance of the episcopacy for church order and orthodoxy. As this High Church movement developed, they brought colour back into churches and the liturgy (the work of Pugin for example), with altars adorned with candles, vestments for the clergy and the use of incense. Some significant leaders, like Newman, actually went over to Rome.

The Broad Churchmen, never a party as such, were the heirs of the more radical Reformers and divines of the C.18<sup>th</sup>., and were affected by the rationalism of the Enlightenment. They saw the need to keep theology in line, or at least in a reasonable and constructive relationship, with the growing body of knowledge, especially, of course, scientific knowledge. In church terms, they campaigned for revision of the BCP, and, importantly, for relaxation to subscription to the 39 Articles, expected of all clergy. They were less dogmatic in their ideas about biblical interpretation and inspiration. Their leading exponents were men like Thomas Arnold (1795-1842) Headmaster of Rugby, F D Maurice (1805-72) who was deeply involved with the Christian Socialist movement, and theologians like Jowett (1817-93), Rowland Williams (1817-70) and Frederick temple (1821-1902), who all contributed to the important Essays and Reviews of 1862. The group also included Charles Kingsley, the social reformer and S T Coleridge, poet and essayist. Their liberal views were not acceptable to the rest of the Church and two of the 1860 Essayists were defrocked.

This rejection of liberalism was particularly true of the third major church party, the Evangelicals. They were a product of the church’s period of revival from 1750-1820, and by Bateman’s time were

the dominant party. An article in the Edinburgh Review of October 1853, listed the Broad Church as making up only about 20% of the C of E. The dominant Evangelicals emphasised personal salvation and piety, and sought to protect the Protestant interpretation of the BCP, holding to a conservative, and literal, view of the interpretation of scripture, as opposed to the liberal view coming out of Germany, found in the more radical ideas of Broad Churchmen, and amongst the Sects, which often arose because of dissatisfaction with the main line churches. The Sects were largely anti-episcopal and critical of the inerrancy of scripture, and, because of people like Priestley, who was a Unitarian their views were easily associated with the social unrest, which marked the end of the C.18<sup>th</sup>., and occurred against the background of the French Revolution. This did not inspire confidence!

James Bateman, then, was very firmly, as were the majority of his peers, tied to a doctrine of creation, based on the Genesis narrative, with its 6 day timescale and sequence of ‘events’ occurring around 6004, and to the immutability of species, which were all seen as divine creations, which had survived with Noah and his family. And yet he must have been well informed both from his own work and sharing with others in the field, personally and through their publications, of what was now being suggested. So what did he have to come to terms with, and how did he respond?

It is difficult to time the start of the movement towards evolutionary thinking. Aristotle (348-322) talked about the development of life, and of higher species from lower, Indeed, The Revd Robert Murray in *Science and Scientists in the C.19<sup>th</sup>.*, p .109 in 1925 edition, even suggests that Aristotle’s view of the development of life led to the correct interpretation of the Mosaic account of the creation, and that his view was accepted by St Augustine. “If, he says, the teaching of the African doctor, in this respect at least had remained the teaching of the Church, the triumph of the theory of evolution might have been anticipated by fourteen centuries! However, our story really needs to begin in the C.18<sup>th</sup>., and we could begin with the redoubtable figure of Erasmus Darwin. His studies in fossils and of the living fauna and flora led him, eventually, to publish his conclusion that spontaneous generation had begun a process of development through reproduction<sup>4</sup>. He was speaking of course of evolution.

Organic Life beneath the shoreless waves  
Was born and nurs’d in Ocean’s pearly caves;  
First forms minute, unseen by spheric glass,  
Move on the mud, or pierce the watery mass;  
These, as successive generations bloom,  
New powers acquire, and larger limbs assume;  
Whence countless groups of vegetation spring,  
And breathing realms of fin, and feet, and wing.

Darwin delayed publishing his ideas, fearing that so bold an assertion would lead to ridicule, or worse, and affect his medical practice. The *Temple of Nature* appeared after his death, in 1803, however it would be strange if talk of these ideas did not feature in the meetings of the Lunar Society. Significantly Darwin did not dispense with a ‘creator God’, but, in *Temple of Nature*, spoke of “God the First Cause!- in this terrene abode.”<sup>5</sup>, and in a footnote refers to Paul saying to the Athenians, on the Areopagus “In Him we live, and move, and have our being” (Acts 17.28). In his biography of his grandfather, Charles Darwin cites an ode written by Erasmus, which ridicules Atheism.<sup>6</sup> “Dull Atheist, he says, could a giddy dance of atoms, lawlessly hurled, construct so wonderful, so wise, so harmonised a world?” There can be little doubt that, for all his scientific rigour and challenging conclusions about the process of life, he retains a living faith in a creator

<sup>4</sup> Temple of Nature, 2003 edn., canto 1, line 295

<sup>5</sup> Ibid, line 223, compare the opening lines of canto 1: By firm immutable immortal laws  
impress’d on nature by the GREAT FIRST CAUSE.

<sup>6</sup> Charles Darwin’s *The life of Erasmus Darwin*, edited by Desmond King-Hele, 2002, p.62

God. In a long footnote, in the *Temple of Nature*,<sup>7</sup> having cited others, who had, also, spoken of progressive development, he writes:

Perhaps all the productions of nature are in their progress to greater perfection! an idea countenanced by modern discoveries and deductions concerning the progressive formation of the solid parts of the terraqueous globe, and consonant to the dignity of the creator of all things.

Darwin does not speak of the flood, though he suggests that animal life began beneath the sea,<sup>8</sup> and he adopted a fitting motto 'e conchis omnia' (everything from shells). Canon Seward, however, wrote a satirical verse about him, and insisted it should be removed from his carriage sides. Others were bolder in speaking out, in their lifetime, about the development of species, and in dispensing with the biblical record.

Jean Baptiste Lamarck (1744-1826) was first a soldier, but, retiring in 1766, he then turned to medical studies for a time, before studying Botany, in which he had become interested through visits to the Jardin du Roi, founded in Paris in 1646, under Bernard de Jussieu. He also became an authority on Invertebrates. He propounded the first comprehensive theory of evolution, in a lecture delivered in 1800, and in books published between 1802 and 1822. Animals, he argued, were formed by an ongoing process of spontaneous generation and developed from simple to more complex forms through the inheritance of acquired characteristics, which were the result of adapting to local environments. His studies were monitored by another early evolutionist, George Leclerc, the Comte de Buffon (1707-88), one of those frequently referred to by Erasmus Darwin, and said by Charles Darwin, who also admired Lamarck's work, to be the first modern author to 'treat evolution in a scientific spirit'. He noted that the spread of species from what he termed 'centres of dispersion' could mean that similar environments could support different and distinct species; considered the possibility of a common ancestry for humans and apes and dated the earth, which he saw as spanning seven epochs, at 75,000 years, a figure based on the rate at which iron cooled. Buffon insisted that in spite of these observations he was not an atheist, but he did, explicitly, deny that the flood had occurred. By the end of C.18<sup>th</sup>, criticism of the established Christian biblical tradition had thus been voiced, but the hypotheses advanced could be said to lack scientific rigour.

Writing an appreciation of Erasmus Darwin, in 1879<sup>9</sup>, Ernst Kraus assesses Erasmus Darwin's contribution to science. He associates ED with Lamarck, but sees him as being the first to establish a 'complete system of the theory of evolution'. However, he sees ED as establishing the hypothesis and theories 'out of his fancy, even though they are supported by a very considerable knowledge of nature', rather than, as did later scientists, and especially CD, 'demonstrating them by an enormous number of facts, carrying such a degree of probability as to satisfy those most capable of judging'. This more comprehensive and scientifically based proposal for evolution, with its attendant problems for the biblical record, was to develop in the C.19<sup>th</sup>, with increasing knowledge of the geological record and of the worldwide species of flora and fauna. The forerunner of this advance could, however, be said to be another member of the Lunar Society, and its oldest member.

John Whitehurst was born in Congleton in 1713. A Clockmaker, inventor and scientist, he was, like many of his time, aware of the knowledge acquired through mining and the building of canals, and, by his own careful observation, made a substantial contribution to the growing science of geology. He described the fossils of sea creatures now extinct, speculated as to the formation and age of the earth, and believed that many rocks were formed through volcanic action bursting through growing layers of sedimentary rocks formed before the great flood. Significantly, by his own admission, he had great problems reconciling geology and his faith. His most important publication *An Inquiry*

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<sup>7</sup> Op. cit., footnote to line 122

<sup>8</sup> Ibid, footnote to line 295

<sup>9</sup> Included in *Charles Darwin's The Life of Erasmus Darwin*, p.149

*into the Original State and Formation of the Earth* (1778) put forward his views, being careful not to offend in Part I, but in Part II he gave a far more scientific documentation of the Derbyshire rocks, establishing the successive strata of the Carboniferous. He describes Millstone Grit, for example, as volcanic in origin and coal as formed from vegetation. Erasmus Darwin was perplexed by the differences between the two parts of the book. "I own myself astonished beyond measure, he says in a letter to Thomas Bentley, at the laboured and repeated accounts to bring in and justify the mosaic account beyond all rhyme and reason". Whitehurst was saying much the same thing as another C.18<sup>th</sup>. scientist, Abraham Werner (1749-1817).

Werner was a German geologist, who, like Johann Lehmann (1719-67) before him, who advanced the idea of stratigraphy. Werner defined five successive layers on the earth's surface, which, he said, were precipitated from an initially universal ocean, and then moulded by deposition and volcanic action. He coined the term **Neptunism** (or Vulcanism) for this process. Most members of the Lunar Society were, however, Plutonists.

**Plutonists** followed the lead of James Hutton (1726-97), best known to geologists for 'Hutton's Contact' on the Island of Arran, showing volcanic rock on top of tilted sedimentary beds, but also describing the non-conformity at Siccar Point, near Edinburgh, which left Red Sandstone over vertical layers of Grey Shale. He saw the earth as being continually worn down and reformed in a geological time span with 'no vestige of a beginning and no prospect of an end'. Hutton's ideas, of course, drove a 'coach and horses' through the biblical account of creation and the flood. Others, however, like Whitehurst, were labelled **Catastrophists**, as they tried to assimilate the growing body of geological evidence for the longevity and gradual development of the earth's surface, without abandoning Genesis 1-9, the story of the creation and flood. The term Catastrophism was coined by Cuvier (1769-1832), who compared living organisms with fossils and established the extinction of species. Cuvier was critical of Lamarck's developmental ideas, but made no mention of the Noahian flood, or of religion and metaphysics, talking of a series of abrupt faunal changes on the earth, which he believed to be several million years old. Later Catastrophists followed these ideas, but posited several floods, bringing about successive extinctions and creations, considering that the Noahian flood (Gen.6-9) was the last. A leading exponent of Catastrophism in England was William Buckland (1784-1856), a tutor of Charles Darwin's, in Cambridge, as was the Scot Jamesson in Edinburgh, who was, however, a Neptunist. Another student of Buckland, who greatly influenced the development of evolutionary thinking, was Charles Lyell.

Lyell (1797-1875) built on the work of Hutton and developed the theory of Uniformitarianism, which dispensed with Neptunist and Catastrophist alike, and paved the way for CD's evolutionary ideas. Indeed CD took volume I of Lyell's *Principles of Geology* on the Beagle, receiving vol.2 in South America. Charles Lyell grew up in the new Forest. Given an interest in nature by his father, he came across Geology with Buckland and dabbled in the Science, whilst studying Law at Cambridge. Leaving the Law in 1827, he took the Chair of Geology in London and published the *Principles of Geology* from 1830-33, arguing that the key to the past lay in the observation of the present. The present processes of denudation and rock formation were, he suggested, part of a continuous process, from the beginning of time. Lyell explicitly rejected evolution in volume II, but had grudgingly accepted it by the tenth revised edition. He was deterred by the transmutation of species, which he thought undermined the creative activity of God. He had already been critical of Lamarck's view of progressive development, and favoured the idea of natural development from 'centres of dispersion'. However, he was further moved in the direction of CD's thinking by the views of Agassiz, who postulated more and more 'moments of divine creation' to explain the development of different species, rather than accept natural, progressive development.

Louis Agassiz (1807-73) was born in Switzerland and studied under Cuvier, becoming an expert on fossil fish and later, on glaciation. He followed Cuvier's classification of animals into four groups

in which the progression from simpler to higher, and more complex, forms followed the succession of the fossil record. However, he remained adamantly opposed to Charles Darwin and evolutionary thinking, and spoke of successive species as what he called 'a thought of God'. In his *Essay on Classification*, published in 1869, he wrote:

The combination of time and space of all these thoughtful conceptions exhibits not only thought, it shows also premeditation, power, wisdom, greatness, omniscience, providence. In one word all the facts ... proclaim aloud the one God, whom man may know, adore and love, and Natural History must in good time become the analysis of the thoughts of the Creator of the Universe.

Progressive, natural development, rather than divine moments of creativity, was a difficulty for many Scientists, who were Christians, at this time. John Henslow carried out extensive programmes of growing varieties of *Primula* (cited by Lyell) in order to explain variety, rather than espouse progressive development. Lyell may have rejected the 'tortured' thinking of Agassiz, but he still looked for full scientific evidence before espousing Darwin's evolutionary views, maintaining his hold on a creator God and special creation, even if he no longer held to the biblical account of creation. He would not 'lean' towards Darwin's theory until he was scientifically convinced<sup>10</sup>. His former tutor in Geology, Adam Sedgwick, to whom Charles Darwin owed a great deal, wrote to him, after reading the *Origin*, "If I did not think you a good tempered and truth loving man I should not tell you that- I have read your book with more pain than pleasure. Parts I greatly admired, parts I laughed at, other parts I read with absolute sorrow because I think them utterly false and grievously mischievous."<sup>11</sup> Sedgwick repeats the 'utterly false' in a letter to Miss Gerard, written ten days later and adds "CD seems to have deserted the true method of induction ... and to shut the door on any view (however feeble) of the God of Nature as manifested in his works."<sup>12</sup> No more could James Bateman applaud Darwin's *Origin*. He was very against hybridisation, as usurping the creative role of God, and though he would, no doubt, would have been helped by the Catastrophists, men like Buckland, one of the contributors to the Bridgewater Treatises, he still needed to hold to the truth of the biblical account of creation.

The series of eight Treatises were published in the 1830s at the request, in his will, of the Revd Francis Egerton, Earl of Bridgewater. The writers were to follow the lead of William Paley's *Natural Theology* (of 1802) and explore the way in which God's Power, Wisdom and Goodness are manifested in creation. Whewell, for example, argued for events being brought about not by insulated interpositions of Divine power exerted in each particular case but by the establishment of general laws, which governed the development of species. Be this as it may the biblical record spoke of six days of creation and there were fossils of extinct animals and flowers in the rock, so how did those who wished to keep strictly to the biblical account manage to acknowledge scientific knowledge and yet hold to their biblical faith? Three further ingenious thinkers, who wanted to follow the same path as Bateman, may be noted, before we come back to him.

In 1851, David King published *The principles of geology explained and viewed in their relation to Revealed and Natural Religion*. He suggests, having dealt with the slow deposition and eruptions in the early period of the earth's history that God could, indeed, have performed this work miraculously, in a moment of time, but that the supposition is wholly gratuitous, and even worse than this. It is one thing he says, to admit what God can do, quite a different thing to show what he has done. So, for King, a day (in Genesis) could be a vast duration; the death of animals not the

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<sup>10</sup> See my discussion of Lyell's struggle in

*Charles Lyell-Christian Apologist*, in *The Modern Churchman*, vol.18, p.22, published Winter 1975

<sup>11</sup> *Life and Letters of Sedgwick* by Clark and Hughes, 1890, volume II, p. 356

<sup>12</sup> *Ibid* p.359



result of man's sin, and the flood could have been local. He also cites what he terms many 'friends of biblical truth'.

In a remarkable book, published in 1863 and titled 'The Earth before The Deluge', Figuier follows the same line calling the biblical account of the flood that of an Asiatic deluge. Indeed he cites the work of Marcel de Serres<sup>13</sup>, who translates the Hebrew word for earth ('erets) as region rather than earth. The flood of Noah, he goes on to suggest, was a volcanic and muddy eruption, which preceded the formation of Mount Ararat, on which, of course, the Ark landed.

Philip Gosse went even further. Born in 1810, he was a member of the Plymouth Brethren and wrote many popular books on scientific subjects. In one of these, in 1857, he attempted to 'untie the geological knot', developing the 'Omphalos' theory. The term comes from the tricky question posed to rigorous Biblicists 'Did Adam have a navel?' When creation occurred, he suggested, apparent records of prochronic (before time) events that did not actually occur must have been rife. So, he spoke of non-existent time, predating the biblical creation, and fossils as prochronic artefacts, or, as it is popularly suggested, he said that God had placed fossils in the rocks to deceive mankind! What Bateman said and did was rather more interesting than these slightly implausible compromises.

In his Introduction to *Monograph of Odontoglossi* published in 1874, James Bateman challenges Darwin's use of the variation amongst orchids to support his evolutionary theory of the progressive development of species.

'Not only is the theory in question utterly rejected by Professor Reichenbach, the *facile princeps* of living orchidists, but the greater our knowledge of the order, the less countenance does it seem to yield to the Darwinian view.' He continues 'the marvellous and inexhaustible variety of form (in the Order is not) due to its ancient lineage, nor yet to the vast periods through which endless transformations are assumed to have been continually taking place, because (and this is where he betrays his biblical credentials) Orchids- according to geologic reckoning- are but a thing of yesterday, and have never been found in the fossil state. Yet their constant companions the Ferns trace their pedigree to the earliest vegetation of the primaeval world! To the believer (and here he reveals his true colours!) this problem is not hard to solve. Ferns and other flowerless plants came early in the Divine programme, because the coal, into which they were to be ultimately converted, had need to be long accumulating for the future comfort and civilization of our race; while the genesis of Orchids was postponed until the time drew near when Man, who was to be soothed by the gentle influence of their beauty, or charmed by the marvellous variety of their structure, was about to appear on the scene'

No wonder, then that James Bateman set out to demonstrate a process of creation, which accorded with the seven days of Genesis and yet also accorded with the geological record. By associating the sequenced rock strata and selected fossils with the six days of God's creative activity, each of which he was ready to allow spanned a considerable period of time, Bateman, not only satisfied his scientific and biblical understanding of the truth, he also made a positive statement about the process of Divine creation, which could be followed by others and thus, in a way, must be judged to be a fine Apologist for the faith of the Church.

However, all those, whom we have chronicled as holding fast to biblical authority in the face of advancing scientific knowledge, except James Bateman, have done so by compromising the literal words of the text, whilst still treating them as the revelation of God. What else, we may ask, could the Church have done? The Broad Churchmen, heirs of the Enlightenment, did posit a way forward, even if, perhaps inevitably, their views were largely rejected. S T Coleridge (1772-1834) denied

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<sup>13</sup> *La Cosmogonie de Moise* quoted in *The World before the Deluge*, newly edited and revised by H Bristow, p.482

there was any opposition between the development of science and the essence of Christianity, and held a doctrine of inspiration and of biblical truth, which accorded with this. In a letter to a friend, he writes:

In the Bible there is more that finds than I have experienced in all other books put together ... and whatever finds me brings with it an irresistible evidence of its having proceeded from the Holy Spirit. The Doctrine in question, he goes on, (meaning Plenary Inspiration) requires me to believe that not only what finds me, but all that exists in the sacred volume, was not alone inspired by, that is composed by, men under the activating influence of the Holy spirit, but likewise dictated by an infallible intelligence- that the writers, each and all, were divinely informed, as well as inspired ... This doctrine, I confess, plants the vineyard of the wood with thorns for me, and places snares in its pathways.<sup>14</sup>

Coleridge found it impossible to be a literalist and treat every word of scripture as equally important but preferred to exercise his critical faculties, approaching the Bible in a way which acknowledged its authority, but exercised selectivity towards its content.

Coleridge was not alone. In the decades that followed many battled with questions of inspiration and authority. In *Essays and Reviews* published in 1860, some contributors incurred the wrath of many in the Church by treating scripture in a similar liberal manner. C W Goodwin, for example, in an essay entitled *On the Mosaic Cosmogony*<sup>15</sup>, upbraids the ‘theological geologists’ as ‘anything but respectful’ as they represent the Genesis account of creation as ‘a series of elaborate equivocations’, but ‘If we regard it as the speculation of some Hebrew Descartes or Newton, promulgated in all good faith as the best and most probable account that could then be given of God’s universe, it resumes the dignity and value of which the writers in question have done their utmost to deprive it’. We should treat the text, he goes on, as ‘not an authentic utterance of Divine knowledge, but a human utterance, which it has pleased Providence to use in a special way for the education of mankind.’ An early critic of this essay, annotating a copy, which I inherited, dismisses Goodwin’s writing as childish. The Church was more critical, and defrocked Rowland Williams who wrote appreciatively on *Bunsen’s biblical Researches* and Henry Wilson, another clergyman, who, similarly, applauded the growing liberal views, particularly those coming out of Germany, and argued for the relaxation of subscription to the 39 Articles. In the ‘60s and ‘70s, the careful scholarship of Graf and Welhausen, suggesting that the Genesis material had originated from four writers and not from the pen of Moses, which some saw as allowing an evolution of thinking in the Bible, in a way, was similarly slow to impress the Church. The Mosaic authorship of Genesis had been questioned, as early as the C.12 th., by one Ibn Ezra, but the slowness of the Church to espouse a liberal, critical and positive view of biblical inspiration has meant that as John Kent suggested, it is doubtful whether many have come to terms with the effect of Darwinism on biblical authority and Christian truth, and the Church’s apologetic is the worse for not better enabling the doubter to find faith and discover the truth about the world and humanity, by allowing him or her to reject God because of the Church’s supposed literal reading of the biblical account, and it’s failure to put forward a more positive way of handling it.

Contemporary Redaction criticism treats the text as ‘story’, a term carefully defined so as to avoid the gibe of fiction or fairy story, whilst acknowledging, of course, that there is much historical reference (castles!) in its pages. This frees the interpreter from a slavish following of the literal words, or perhaps worse, a neglect of them, but allows greater freedom of expression to biblically based truth. Many Christians do not come to faith because they believe the truth of the biblical record, but believe the truth of the record because they are people of faith. Pressed by advancing knowledge, which may lead to doubt about inherited Christian, biblically based, doctrine, they look

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<sup>14</sup> Quoted in *Tell us the Story*, A N Barnard, BRF, 1980 and from *Confessions of an Inquiring Spirit*, 1896 edn., p.16

<sup>15</sup> *Essays and Reviews*, 5<sup>th</sup> edn., 1861, p.252-3

for the truth of faith (what could be termed the ‘metanarrative’ that can unite the two positions. In the end, Christian theology can be simply stated. We see humanity as set in God’s creation of a good world, which he sustains. We are called to discover, through trusting obedience to the Divine, to God, the salvation, or fulfilment, which leads to the good life, and which is found by using all that is given by God to enhance the life of others, and to contribute to the fulfilment of the potential of all creation. As Paul says in 1 Timothy 2.4 “God desires everyone to be saved and to come to the knowledge of the truth”.

**A N B 26-09-07**