Shattering the divine symbiosis: the impacts of science on clerics and church members in the Australian colonies, 1830-1890

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This thesis is presented for the degree of Doctor of Philosophy of Murdoch University in 2017.
Declaration

I declare that this thesis is my own account of my research and it contains as its main content work which has not been previously submitted for a degree at any tertiary institution.

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Abstract

Between 1830 and 1890 developments in science challenged the interpretation of scripture and the theology of the Christian churches as never before. The new scientific theories of uniformitarianism, evolution and abiogenesis were rejected as atheistic by most clerics and church members, with the most conservative aspects of British theology and science expressed in the churches and the scientific establishment of the Australian colonies. Early in the century, natural theology, which encouraged the study of nature in order to learn more about its Creator, underpinned by literal interpretations of the creation accounts in scripture, was well established in Britain and among colonial clerics such as Charles Wilton and William Branwhite Clarke in Sydney and John Lillie in Hobart. They also promoted nature study for the improvement of the moral and intellectual life of colonists and to gain practical knowledge about the natural resources of the new land.

From the 1830s however, natural theology and the creation accounts in Genesis were increasingly challenged by geological evidence. Scriptural geology and catastrophism became casualties of science. The image of a benevolent and interventionist Creator was further challenged when *Vestiges of the Natural History of Creation* was published in 1844, proposing that new forms of life and even celestial bodies were created by a continual process governed by natural laws, rather than by God’s direct intervention. Clerical scientists such as Clarke in Sydney and Adam Sedgwick in Britain denounced such a proposal as atheistic and idolatrous. By the end of the 1860s, Darwin’s theory of evolution of new species led to further questions
about the role of God in creation, and was explicitly and controversially extended to humans by Thomas Henry Huxley and Charles Lyell. Even the role of God as provider of the essential life force was challenged by Huxley’s abiogenesis theory.

In the Australian colonies, distinct theological differences arose in response to these challenges, differences between the Christian denominations and also between the colonies. In Adelaide in the 1860s Attorney General Richard Hanson introduced the work of Lyell and Darwin to the public with the cautious support of Adelaide’s Anglican Bishop Augustus Short and Congregational Church spokesman James Jefferis. In contrast, at the same time in Melbourne Anglican Bishop Charles Perry joined Governor Henry Barkly and the conservative scientific community in publicly rejecting Darwin’s theory, although by the 1870s the arrival of Bishop James Moorhouse brought a more liberal theology to Melbourne, more in line with the more pro-science positions of Adelaide’s Bishop Short and Bishop Charles Bromby of Tasmania. New South Wales’ Anglican Bishop Frederic Barker did not contribute to public discussion about the discoveries and theories; that role fell to Clarke, through his public lectures and articles in the Sydney Morning Herald. Melbourne stood out as the place in which the public entered into the debate through public lectures and articles and correspondence in The Argus newspaper, many of which were critical of the lack of engagement of Melbourne’s clergy with the issues of science. The perception of conflict between science and scripture grew as reports of the aggressive support for Darwin from Huxley, Joseph Hooker and John Tyndall in Britain and books referring to ‘conflict’ and ‘warfare’ from American writers Andrew Dickson White and John Draper reached the colonies.
The Presbyterian, Methodist, Wesleyan and Roman Catholic Churches in the Australian colonies in the main rejected the scientific challenges to the creation accounts of scripture. The strict adherence to scripture and traditional theology of the Presbyterian Church in Melbourne defeated the efforts of its minister Charles Strong to introduce new ideas from science and new theology, leading his founding the new, more liberal Australian Church.

While there arose a general understanding in the church and scientific communities that the six days of creation in Genesis could refer to geological eras rather than literal days, most Australian churchmen and scientists continued to adhere to the tradition that the earth was formed in 4004 BCE, with a possible extension of a few thousand years. The exceptions were some leaders in Anglican and Congregational churches who, by the 1870s, found ways of accommodating a much greater age of the earth, and uniformitarian means of creation into their interpretation of scripture and their theology. Some clerics in Britain and the Australian colonies were also cautiously accepting evolution as the means by which God created through natural laws. By the 1880s Sydney clerics William Hey Sharpe and Thomas Roseby and Hobart’s George Clarke conceded that the human body was the product of evolution, with the proviso that God intervened to implant the spiritual nature and the soul, to complete the formation of humans in God’s image.

By the 1870s and 1880s the magnitude of the cosmos demonstrated by improved astronomical telescopes revealed for some an awesome, transcendent and infinite Creator, unknowable to insignificant and finite human beings and only acting in this world through the operation of universal natural laws. The question of whether one could believe in, derive comfort from, and expect prayers to be answered by an infinite and unknowable God was debated in Sydney and Melbourne. On the other hand for others, the very existence and continual operation of natural laws
including evolution not only confirmed the existence of a Creator, but one who was always present and intimately involved in the world by acting through those same natural laws.

While the scientific community within the Australian colonies remained theologically and scientifically conservative, in Britain there were further developments of the theory of evolution, including the ideology of Social Darwinism and the new science of eugenics, both of which found some acceptance in the Australian colonies by the end of the century. The forced sterilisation and elimination of those deemed ‘unfit’ advocated by eugenicists surprisingly brought no objection from any Australian church except the Roman Catholic. This reflected both the lack of engagement of the churches with the concepts of human evolution and Darwinism and the diminished moral and intellectual authority of the churches, which had begun earlier with their loss of control of education, universities and of laws about the Sabbath and marriage.

In the Australian colonies by the end of the period examined in this thesis, public expressions of natural theology had all but disappeared. The opposition of many church leaders to the advances in science meant that many church members perceived the study of nature as an atheistic rather than godly pursuit. The increasing professionalization of science, which discouraged the scientific contributions of amateur naturalists, many of whom were clerics, and the professionalization of ministry also contributed to the demise of natural theology. Biblical literalism remained a barrier preventing most churchmen and scientists, with a few exceptions, from accepting evolution, and its extension to humans and abiogenesis.
Acknowledgements

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My thanks too, to my husband Michael, who has lived through and supported the evolution of a clergy-scientist, for his love and encouragement and his help with editing this thesis.
Notes on use of names in this thesis

Some current names are used for clarity in this thesis.

- **Scientist**: most nineteenth century students of nature regarded themselves as naturalists, philosophers, geologists and so on; the concept and use of the word scientist came late in the century.

- **Australia, Australian colonies**: The colonies became a federation of states called Australia in 1901, but I have used the terms for simplicity.

- **Tasmania**: Van Diemen’s Land was given its current name in 1855

- **Western Australia**: founded as the Swan River Colony in 1829.

- **Anglican Church**: It was not until 1981 that the Church of England in Australia was renamed the Anglican Church of Australia, but the term Anglican is used to be concise.
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1. Introduction

The aim of this thesis is to examine the way the nineteenth century challenges from science to traditional understandings of scripture and the nature and role of God impacted on the theological thinking of church leaders and churchgoers in the Australian colonies.

In the nineteenth century the meticulous study of nature increased, encouraged by the existing natural theology of the Church of England in particular, as a means of learning more about the Creator through his creation. The new discoveries in geology, zoology, botany and astronomy, however, had unforeseen consequences for the churches. As the century progressed, these new discoveries led to development of theories which clashed with traditional understandings of the Christian Bible and of existing understandings of God based on the text of the Bible, leading to questions about the literal truth of scripture, and the role, and even the existence of God.

The geologist Charles Lyell’s theory of uniformitarianism suggested that gradual changes such as erosion over immense periods of time, with contributions from earthquakes, volcanoes and floods, accounted for the continuing process of formation of the geological features of the earth. This theory clashed with the account of the completion of creation in six days in the first book of the Bible, Genesis, and the prevalent geological theory of catastrophism, in which the intervention of the Creator explained the major natural events which formed and altered the earth. Furthermore, in the nineteenth century examination of rock strata revealed human remains co-existent with animals known to be extinct for many thousands of years, and
therefore of much greater antiquity than the 4004BCE date of creation traditionally calculated from the Old Testament scriptures. The fossils found in ancient rock strata also appeared in some strata but not others, indicating sequential creation and extinctions over vast periods of time, rather than the creation of all matter and life in the six days of the Genesis account.

The evolutionary theories of Jean-Baptiste Lamarck, the anonymous author of *Vestiges*, and Charles Darwin took the concept of gradual change rather than divine intervention into the realm of biology as the means of forming new species, again contradicting the Genesis account of creation. They raised questions about the role of God, if any, in such a process. The explicit extension of the evolutionary process to humans later in the nineteenth century, suggesting a common ancestor with the apes, questioned scriptural statements about the uniqueness of humans, created to be above all the animals and made in the image of God. For those who accepted the theory of evolution, questions were also raised about the development of the spiritual nature and the human soul.

Others in the later nineteenth century who embraced evolutionary theory sought to apply it to social structures. The ideology of Social Darwinism and the new science of eugenics became for some a new religion. Its belief in encouraging the survival and breeding of the fittest, and sterilization or removal of those deemed unfit, contradicted the Christian values of all people being equally valued in the eyes of God and of Christ’s teachings on mercy for the poor, the handicapped and the mentally ill.

In the same 1860s decade as evolutionary theory became scientifically credible with the work of Charles Darwin and Alfred Russel Wallace came the theory of abiogenesis, which proposed the initial formation of life from non-living chemicals, which contradicted prevailing Vitalist theory by
denying that God implanted the essential life force into every living creature. So the role of God as initial Creator, benevolent overseer, interventionist operator of the natural world, and implanter of life force and souls was progressively and substantially challenged during the nineteenth century as never before and demanded a theological response.

Churchmen, both clerics and their church members, who chose to come to the Australian colonies in the first half of the nineteenth century were coming to a place with opportunities for a new life, where some could explore a vast new world of nature and embrace a new freedom of worship. New evidences of the creative hand of God in the novel fauna and flora of the land, and of the providence of God in Australia’s vast resources, could be expected to encourage new scientific and perhaps new natural theological insights among the colonists, although others perceived this land as place of wilderness, testing and punishment. Geographical separation from the culture and traditions of the mother churches in Britain, together with a mixed cohort of church leaders from different backgrounds in churchmanship and theology, encouraged some responses to the challenges issuing from science which both repeated but also differed from those at the centre of the controversies in Britain.

The way those challenges from science were received, interpreted and in some cases accommodated by clerics and churchmen in the colonies from the 1830s until the 1890s is the subject of this thesis. Much of the information about their reactions has been sourced from the Australian colonial newspapers of the nineteenth century. In the mid to late nineteenth century, newspapers such as The Argus (Melbourne), the Sydney Morning Herald, the Adelaide (later South Australian) Advertiser and The South Australian Register in particular, reported on public lectures and published correspondence on controversial issues in science and religion. In most colonial newspapers, as
in Britain, scientific and church news formed much more prominent content than they do today. These newspaper reports are complemented as sources by the more academic publications of the various Australian colonial scientific societies and of church synods and committees, and these latter sources also provide insight into public interest in the ideas coming from the scientific community on one hand and church leaders on the other. The reports and views of the colonial press can be compared with the press reports and views from the centre of the controversies in Britain which have been very usefully compiled by Alvar Ellegard.¹ The selection of articles from the British press for reprinting in colonial newspapers also shows what colonial editors regarded as relevant and important for their readers. Reports from colonial Anglican and Catholic synods reveal the many issues within the colonial churches. In addition, clergy, like their English counterparts, also chose to communicate their views on science, if any, through lectures, articles and correspondence published in the newspapers.

The views of the scientific communities in Australian colonies are revealed in the proceedings of the Australian colonial scientific societies, such as the Royal Societies of New South Wales and other colonies, the Philosophical Society of Van Diemen’s Land, the Linnaean Society of New South Wales and the Australian and New Zealand Association for the Advancement of Science (ANZAAS). Until late in the nineteenth century their memberships and leaders included many clergymen with interests in science. The reasons for the later decline in clergy as members of these scientific societies are also investigated in this thesis. Engagement with the new ideas is further revealed in reports from other colonial societies concerned with science and philosophy such as the Church of England Book Society, the Christian

Evidence Society, the Eclectic Society and the Secular Society. Their memberships and topics of interest, and newspaper reports of their public lectures and reports of meetings, reveal the extent of public interest in scientific and religious topics. The Schools of Arts and Mechanics’ Institutes in most major cities were also venues for public lectures on a wide range of subjects, including science for the improvement of the working classes; some of their lectures were reported in the newspapers and are another source of information on topics of interest to the public.

The correspondence of Darwin with his colleagues in Britain and also in the colonies has been collected by the Darwin Project, which began in 1974 and is continuing, led by American and British researchers. A digital version containing 12,000 letters pertaining to evolution is particularly valuable for the historian, not only with links to all the written works of Darwin, but also Charles Lyell and those who shared in the development of theories of uniformitarianism and evolution. Darwin’s correspondence, particularly with scientists in the Australian colonies, has been sourced from this database for use in this thesis.

The chapters of this thesis examine each decade from the 1830s to the 1880s, covering the period in which the important new theories from science stirred the world of science and theology. In particular, the challenges arising from the emerging sciences of geology and biology, which formed the main studies of the natural theologians, are described. Each chapter describes the scientific advances and their impact on the theology of church leaders and their members in the Australian colonies.

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2 www.darwinproject.ac.uk
2. Historiography

The aim of this thesis is to investigate the impact of the new scientific discoveries and theories of the nineteenth century on the understandings of Christian scripture and theology in the British colonies in Australia. This chapter particularly examines how historians have understood the way the new theories of uniformitarianism and evolution developed in Britain and the scientific and theological reactions they provoked in Britain. It then reviews the more scanty scholarly literature about the way the new scientific ideas took hold in the Australian colonies. As Diarmid Finnegan has pointed out, most of the historiography on the interaction of science and religion in the nineteenth century is focused on British rather than colonial settings, with the main exception being the controversies surrounding Bishop John Colenso in Natal.3

The geological theories of Charles Lyell published in 1830-33, the evolutionary theories of *Vestiges of the Natural History of Creation* published in 1844, and of Charles Darwin and Thomas Henry Huxley in the 1860s, and their further development by Herbert Spencer and Francis Galton in the 1870s and 1880s, all had their roots in the Enlightenment of the eighteenth century. The scientists employed the Baconian science which was developed during the Enlightenment and which employed methodical observations and accumulation of facts to explain natural phenomena. Several historians have examined the close connection between the rise of Protestantism and Baconian science. In 1970 Robert King Merton, a pioneer of the study of the sociology of science, argued that in the sixteenth and seventeenth centuries

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the Christian doctrine of a contingent creation, which combined the theology of Augustine and Thomas Aquinas in describing a creation which was contingent (dependent) on, and ordered and superintended by, a perpetual autonomous Providence, led to the adoption of orderly and empirical methods in science and to causo-mechanical explanations of the order found in nature. Merton explained that by the nineteenth century this correlation rested on a combination of the Protestant work ethic with the view that diligent and painstaking scientific enquiries were an example of good works and ‘social utility’.4

Peter Harrison, Professor of History and Philosophy at Bond University, Australia, in The Bible, Protestantism, and the Rise of Natural Science published in 1998, like Merton traced the way the Enlightenment of the seventeenth and eighteenth centuries brought the Baconian method of meticulous studies to natural science.5 Harrison argued that this method, combined with Protestant thinking from the eighteenth century onward, made possible a new conception of the order of nature. Protestant reformers had rejected allegorical interpretation of the scriptures and replaced it with literal, historical interpretation of biblical texts, insisting on the primacy of the literal sense of the text. The Protestant insistence that scripture be given determinate literal meaning combined with the rise of Baconian science to set in train the same approach to nature, precluding the assignment of symbolic meanings to natural objects, which meant that they too could be studied in their own right. The research and theories about the natural world which followed in the nineteenth century were to undermine the very biblical authority the reformers promoted.6 When the new understandings about the

6 Ibid. p.268
natural world appeared to clash with literal interpretations of scripture, there was an unforeseen outcome: it opened up the possibility for the first time that parts of the Bible could be false, disproved by science, rather than literally true.  

The Protestant idea that all could have direct access to God and the Bible without official mediators or interpreters also carried over to the sciences and granted direct access to nature (‘God’s book of works’), for study liberated from classical writings and the censorship of ecclesiastical authorities. As an example, Harrison cited Calvin’s concept of a sovereign and distant deity who laid down arbitrary laws of nature with the same deterministic inevitability as in the sphere of grace; laws which said the universe was regular and lawful and could only be discovered through experimentation and research. Protestant skepticism about Catholic miracles, sacramental ‘magic’, and supernatural intermediaries was also an aspect of Reformed theology which contributed to the idea of a lawful and deterministic universe which was a pre-requisite for scientific investigation. 

Harrison’s view was that the importance of the Protestant approach to interpretation of the biblical texts with the emergence of a literalist mentality had been neglected in previous writing in relation to Protestantism and science. He concluded that the impact of biblical criticism on the development of science had been overlooked by historians because of our contemporary association of biblical literalism with religious bigotry and hostility to sciences. The example that he gave was that of the differences between Galileo and the Catholic Church which were commonly thought to show that literal interpretation of Bible, particularly Genesis, was an

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7 Ibid. p.4  
8 Ibid. p.7  
9 Ibid. p.7  
10 Ibid. p.7  
11 Ibid. p.8  
12 Ibid. p.267
impediment to advancement of sciences. But Harrison argued that, on the contrary, the dispute was more to do with rights of individuals to make their own determinations of how the books of nature and scripture were to be read, free of ecclesiastical restrictions. He pointed out that Galileo himself adopted a literal approach to scripture, albeit with some accommodations.¹²

In earlier works, Merton in 1936 and Dorothy Stimson, an American historian of science in 1935, had attempted to establish a more specific causal relationship between the Puritanism stream of Protestantism which arose in the seventeenth century and the scientific revolution.¹³ John Hedley Brooke’s book, Science and Religion: Some Historical Perspectives written in 1991 also reviewed the historical interaction between the sciences and religion in Britain, including the parallels in the reforms of both up to the nineteenth century.¹⁴ However, Harrison argued against the particular correlation of Puritanism with scientific advances, saying that leading seventeenth-century scientists were better described as latitudinarians or simply Anglicans rather than Puritans, and he pointed out, quite reasonably, that modern science arose well before Puritan revolution of 1640.¹⁵ By 1640, the work of Galileo, Harvey, and Descartes in astronomy, anatomy and physics respectively meant that empirical science was already underway. Another critic of the proposed connection between Puritanism and the rise of science was the Marxist historian Christopher Hill, who gave more weight to the social and political conditions that arose from the Reformation, such as the challenge to

¹² Ibid. p.267
¹⁵ Ibid. p.6
entrenched authorities and the breaking of clerical monopoly control over scriptural interpretation.\textsuperscript{16}

Recently, Diarmid Finnegan has also written on the contribution of Anglicans to the development of science in the nineteenth century, at least until 1860, through their prominent roles in the development of natural theology, the publication of the Bridgewater Treatises which promoted scriptural interpretations of science, the formation of the British Association for the Advancement of Science and the teaching of geology and botany at Cambridge and Oxford Universities.\textsuperscript{17} He focused on Britain, but commented that the way Anglicanism and science were bought into combination may have differed in the colonies. He argued that since the Anglican Church in the colonies was less tied to the apparatus of the state than in Britain, the Church was not the target of a sustained campaign using new scientific ideas to wrest cultural authority from it, as was its mother Church in Britain. The impact on the Anglican and other Churches in the Australian colonies from 1830 to 1890 is examined in this thesis.

Science, church mission and imperialism combined in the drive to explore and expand the territories of the British Empire in the nineteenth century. Exploration and colonization were supported by the Protestant Churches as a means of bringing Christianity to the heathen, but were also strongly supported by the British government and scientists for the economic benefits of the new geological and biological resources to be found and exploited. In \textit{Nature’s Government}, Richard Drayton addressed the role of naturalists in the expansion and enrichment of the British Empire.\textsuperscript{18} In Britain, all of the sciences benefited from new discoveries and new knowledge gained from

\begin{itemize}
\item \textsuperscript{16} Ibid. p.8
\item \textsuperscript{17} Finnegan, "Science and the Bible.", p.38
\end{itemize}
extensive exploration and colonization. According to Drayton, scientists were important collaborators central to the incorporation of Africa, Asia and the Americas into the international life of the empire. Like merchants and missionaries, they often led the approach of the empire into Africa and the Pacific, including Australia. In describing the ‘new imperialism’ of nineteenth century Britain, Drayton pointed out that the engagement of science with the governments of the empire’s colonies was based on old Christian assumptions of the sacred origins, described in the book of Genesis, of Man’s dominant place in nature and Man’s divine right to exploit its resources. Even though natural theology was in decline late in the century Drayton proposed that the providential notions at its centre had justified the extensive collection and curation of samples from the new lands of the empire in scientific gardens such as Kew and museums, not just for scientific purposes but also to support imperial claims of ownership of the lands and their contents and for exploitation to benefit the empire. The huge economic benefits to the empire of the mineral resources and agricultural products such as sugar, tea, and tobacco, cotton and wool from the colonies of the empire confirmed notions of God’s special providence for Britons. In later chapters of this thesis the attribution of the vast natural resources of New South Wales to God’s providence for the British colony by its early clerical scientists William Branwhite Clarke and William Woolls is explored.

In the nineteenth century natural theology, the harmonious and mutually supportive relationship between science and theology encouraged study of all aspects of the natural world to learn more about the Creator through knowledge of his creation. The sacred relationship between Man and nature is the subject of God’s Bounty, the Churches and the Natural World. In his introduction, the editor William Sheils, Professor of History at York University, explained the purpose of the volume, which explored the ways
in which the natural world throughout history has informed people about God. The search of scholars over the centuries for rational proofs from nature of the existence of God, and of a divine plan for humans and the world was described. The volume covered the history of the interactions of humans with the divine, from the portents, plagues and prophecies of ancient times to the more modern invocations of God’s providence for harvest, healing and maritime safety. In the nineteenth century the Romantic Movement in Britain expressed in literature and art the love of nature and Mark Smith of Oxford University traced the way the love of nature as God’s creation was taken up by Broad Church Anglicans seeking to use love of nature as a social bond of sympathy between rich and poor, and town and country folk. An illustration of this was the Flower Ministry, born in the 1870s in London. In this ministry, flowers and plants were distributed to the poor in the cities to enable them to enjoy the beauty of nature, and when it was taken up by evangelicals later in the 1870s as the Bible Flower Mission it spread to the colonies.

Patrick Armstrong, Adjunct Professor of Geography at the University of Western Australia, examined the lives and works of the many English parson–naturalists in the late eighteenth and nineteenth centuries in The English Parson-Naturalist published in 2000. He demonstrated how love of nature grounded in natural theology fostered the enthusiasm of many ordinary Anglican clergy of the Church of England for nature studies, describing their painstaking observations of the geology and biology of their surroundings and their involvement in the formation of many natural

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history societies, museums and libraries in Britain to receive their reports and collections. Although few indulged in speculations or grand theories beyond their world view formed by natural theology, their descriptive work proved a valuable source of information for those who did go further, including Darwin. Armstrong concluded by showing that the tradition of the English parson-naturalist was transplanted into the English colonies as British trained clergy were sent to the colonies, including Australia.22

Coinciding with the enthusiastic and pious pursuit of nature by romantic artists, poets and parson-naturalists, and the unquestioning commandeering of the bounty of nature for imperial aims, the paradigm shift of studying nature for its own sake was leading some scientists into inevitable conflict with the churches, by challenging accepted literal interpretations of scripture. From the work of Lyell in the 1830s onwards, science was increasingly challenging the Genesis accounts of the formation of the earth and the Deluge of Noah’s time. The comfortable symbiosis of science and natural theology was being threatened, and there were accusations from some churchmen that science was undermining faith in the truth of scripture and consequently creating infidels and atheists. To trace the development of the science in the nineteenth century which led to the controversies with the churches, Tess Cosslett, Reader in Victorian Studies at Lancaster University, in 1984 assembled key scientific papers in Science and Religion in the Nineteenth Century.23 The collection illustrates the close relationship of science with Protestant theology that was described by Merton, Harrison and Finnegan. Cosslett started with the 1802 book by the Anglican cleric William Paley, Natural Theology; or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature which defined the natural theology

22 Ibid.
which dominated church and scientific thinking from the beginning of that century.\textsuperscript{24} Introducing an excerpt from Paley, Cosslett wrote that not only did natural theologians seek evidence from nature to confirm the presence and creative action of God, but scientists generally investigated nature with a religious reverence for the wonders of divine design.\textsuperscript{25} Science was therefore accepted as a worthwhile religious pursuit, providing ever more evidence for God’s existence. According to Cosslett, Paley’s careful observations of nature influenced Darwin in his own meticulous studies of biological adaptations recorded in \textit{The Origin of Species}. Darwin had read Paley’s work while a student, but later used Paley’s observations as evidences not of God’s existence, but of the operation of the purely mechanical process of natural selection.\textsuperscript{26} Cosslett described the Victorian ‘conflict’ that followed the publication of Lyell’s theory of geological uniformitarianism in the 1830s not as one between science and religion, but between ‘religious science’ - that is, science which was driven by, and related its purpose and findings to moral and religious values - and ‘irreligious science’, the new, professional, ‘value-free’ science.\textsuperscript{27} Cosslett claimed that the triumph of this new, irreligious science in the modern world explains why we have been so ready to accept the science-versus-religion myth of its partisans such as Huxley.\textsuperscript{28}

Frank M. Turner, Professor of History at Yale University, writing six years earlier than Cosslett claimed that the new development of science as a

\textsuperscript{24} Ibid; William Paley, \textit{Natural Theology; or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature} (1802).

\textsuperscript{25} Cosslett, \textit{Science and Religion in the Nineteenth Century.}, p.25

\textsuperscript{26} Ibid. pp.25,26

\textsuperscript{27} Ibid. p.2; James Moore, \textit{The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900} (New York and Cambridge: Cambridge University Press, 1979).p.84

\textsuperscript{28} Cosslett, \textit{Science and Religion in the Nineteenth Century.} p.2
profession, rather than as a pleasant hobby of gentlemen, contributed to the perceived ‘conflict’ in the late nineteenth century.\textsuperscript{29}

The pursuit of science without reference to scripture or a Creator was clearly demonstrated in the work of the pioneering geologist Charles Lyell from the 1830s, although much less has been written about his life and work than of Charles Darwin. Leonard Wilson, a leading historian of science from the University of Minnesota in a definitive biography, \textit{Charles Lyell, the Years up to 1841: the Revolution in Geology}, analysed the critical years in the 1830s when Lyell was formulating and publishing his theory of uniformitarianism.\textsuperscript{30} Using Lyell’s correspondence, Wilson showed the cautious support Lyell received from some influential churchmen, but also the opposition to his work on theological grounds from Edward Coppleston, Anglican Bishop of Llandaff and Dean of London, who blocked Lyell’s appointment to the chair in geology at Cambridge University.\textsuperscript{31} Claude C. Albritton Jr was another prominent American historian of science and particularly geology. He selected key papers in the history of geology in \textit{Philosophy of Geohistory (1785-1970)} to illustrate the way geologists influenced contemporary thinking about the formation of the earth. His choice of papers from the nineteenth century illustrated the significant challenge to the Genesis accounts and the catastrophism of the scriptural geologists from uniformitarian theories. He started with Scottish geologist James Hutton’s introduction in 1785 of the concept of gradual and cyclical geological changes of the earth in ‘The System of the Earth, its Duration and Stability’.\textsuperscript{32}

As a commentary on the controversies surrounding uniformitarianism,

\textsuperscript{30} Leonard Gilchrist Wilson, \textit{Charles Lyell, the Years up to 1841: The Revolution in Geology} (New Haven: Yale University Press, 1972).
\textsuperscript{31} Ibid. pp.308-312.
Albritton included a paper by William Whewell, ‘The Two Antagonist Doctrines of Geology’ (1877), in which Whewell described and reflected on the conflict between catastrophism and uniformitarianism which split geologists from the 1830s to the 1860s. Albritton also included a paper by Lyell, ‘Prejudices which have Retarded the Progress of Geology’ (1872), in which Lyell described both the scientific and religious prejudices which he and other geologists had faced in developing the uniformitarian theory.

Charles Darwin’s theory of evolution detailed in Origin of Species By Means of Natural Selection: Or, the Preservation of Favoured Races in the Struggle for Life, published in 1859, generated and continues to generate controversy in the worlds of science and religion. A selection of Darwin’s correspondence specifically referring to evolution is found in Evolution, Selected Letters of Charles Darwin (1860-1870) which covers the ten years following the publication of Origin and reveals the way Darwin and his supporters, including Lyell, Tyndall, Huxley, and Hooker continued to refine the theory and how they were attempting, with varying success, to accommodate it into their scientific and religious beliefs. What about Darwin? edited by Thomas F. Glick, is a collection of selected writings about Darwin and his theory, both positive and negative, revealing the reactions to the controversies of many contemporary and later prominent people.

More has been written on the scientific aspects of Darwin’s work than on its theological implications. Reviewing the copious literature on the scientific

33 Ibid. pp.113-125
34 Ibid. pp. 98-112
37 Thomas F. Glick, What About Darwin? (Maryland: The Johns Hopkins University Press, 2010).
aspects of Darwin’s work is beyond the scope of this thesis, but examples of several major works are those of Gertrude Himmelfarb, Michael Ruse and David Young. American historian Gertrude Himmelfarb in *Darwin and the Darwinian Revolution* published in 1996, examined Darwin’s theory, the observations that inspired it, the evidence for the process of natural selection and the significant impact of the theory on the science of the time and later. It includes a short chapter on implications for religion, showing how the theory contradicted the literal interpretations of scripture taught by many of the churches of the time.\(^{38}\)

Michael Ruse, Professor of Philosophy at Florida State University, in 1999 in *The Darwinian Revolution: Science Red in Tooth and Claw* also focused on the scientific aspects of Darwin’s theory and the fierce debates it generated among scientists in period following the publication of *Origin*.\(^{39}\) Clashing with the romantic approach to nature and nature’s reflection of a benign Creator and operator was Darwin’s proposal of a ruthless struggle for survival, characterized by competition for resources, elimination of the weak and extinctions, and Ruse examined how this realization affected the view of nature of scientists and the public. Taking a much broader picture of how the idea of evolution came into being David Young, Professor of Zoology at the University of Melbourne, in *The Discovery of Evolution* published in 2007 described the scientific work which took zoology from the mythical animals of the early English bestiaries through the careful observations of the eighteenth and nineteenth century naturalists, leading to the development of theories of evolution and on to the recent contributions of genetics,

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anthropology, paleontology to the theory.\textsuperscript{40} However, neither Ruse nor Young was concerned with the religious controversies that arose from Darwin’s theory.

James R. Moore is a science historian from Cambridge University who has written extensively on science and religion in the nineteenth century. In \textit{The Post Darwinian Controversies}, Moore treated in detail the scientific and religious controversies in the decades which followed the publication of \textit{Origin}, which in his view had been neglected by previous writers.\textsuperscript{41} He claimed that so much attention has been focused on Darwin that the fifty years of development of theories of gradual change in nature before 1859 and significant further developments in the following fifty years have been neglected by historians of both science and theology. The development of the sciences of genetics and eugenics, which in turn supported and expanded evolution theory, and the philosophy of Social Darwinism have received less attention than they deserve, giving a distorted picture of Darwin’s theory and its impact in isolation from its roots in earlier science and from subsequent developments of importance. Moore also argued strongly that the so-called nineteenth century ‘conflict’ between science and religion, which is generally accepted as true today, was actually a product of the writings of (mostly) American historians of the late nineteenth century, in particular John Draper, the John William Professor of Physiology at New York University in his \textit{History of the Conflict between Religion and Science}, published in 1874, and Andrew Dickson White, the President of Cornell University in the emotively named \textit{A History of the Warfare of Science with...}

\textsuperscript{40} David Young, \textit{The Discovery of Evolution}, Second ed. (Cambridge: Cambridge University Press, 2007).

\textsuperscript{41} Moore, \textit{The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900}. 
Theology in Christendom first published in 1870 and expanded in 1896. Moore linked the popularity and financial success of lectures and publications by transatlantic experts such as Huxley with the promotional power derived from the perception of a conflict between science and religion. Claude Welch, an American Professor of historical theology, writing in 1996 in ‘Dispelling some of the Myths about the Split between Theology and Science in the Nineteenth Century’, supported Moore’s claim that the so-called conflict was largely a product of the writings of the late nineteenth century historians.

Darwin’s own struggles with the conservative science and theology of his day are documented in a definitive biography written in 1992, Darwin: the Life of a tormented Evolutionist, by Moore and Adrian Desmond. They describe Darwin’s early days as a student at Cambridge, the development of his interest in science, and his struggles, both scientific and theological, as he developed his theory. Darwin’s rejection of atheism for agnosticism was also described. The authors later co-authored another biographical work about the impact of the moral issue of slavery on Darwin’s thinking about human evolution, Darwin’s Sacred Cause: How a Hatred of Slavery Shaped Darwin’s Views in Human Evolution.

The conflict of science with Darwin’s own theology is also the subject of two chapters in God’s Bounty. Paul White, who has been associated with the

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43 Moore, The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900, pp.51-76
Darwin Correspondence project at Cambridge University, in ‘Darwin’s Church’ described the formal adherence of the Darwin household to traditional Anglicanism, but combined with a Unitarian belief.47 He followed Darwin’s studies at Cambridge where his initial intention of becoming a clergyman was overtaken by a desire to explore the world and nature. Like Moore and Desmond, White described Darwin’s rejection of atheism and his move towards agnosticism at the same time as he was developing the theory of evolution. The exploration of Darwin’s theology was continued in the chapter by Keith Francis, Professor of History at Baylor University in Texas, ‘William Paley, Samuel Wilberforce, Charles Darwin and the Natural World; an Anglican Conversation’.48 Francis gave a new perspective on the famous disagreement between Darwin and Anglican Bishop Samuel Wilberforce in the public debate between T.H. Huxley and Wilberforce at the meeting of the British Association for the Advancement of Science in Oxford in 1860. Francis pointed out the strong influence of William Paley on the theology and the science of the opponents, although they came to different conclusions about the Creator. Francis contrasted their conclusions. Paley used the analogy of the divine clockmaker, which inferred from the existence of creation the existence of a Creator. Wilberforce’s more nuanced proof came from evidences of intelligent design in nature, implying a divine master Designer. Darwin, according to Francis, either accepted nature itself as designer, or believed that there was no designer at all.

Francis investigated the dissemination of Paley’s and Darwin’s ideas to ordinary, non-expert churchgoers by examining sermons published in the nineteenth century. In ‘Paley to Darwin: Natural Theology versus Science in

Victorian Sermons’ he reasoned that sermons were given to all classes of people by a wide variety of preachers, and that those preachers, as well as directing the thinking of their congregations, also reflected their thinking in their own lives.49 Like Ellegard, who in Darwin and the General Reader examined the impact of Darwin’s theory on non-expert readers, Francis was seeking a better understanding of the reaction of the general public to the ideas of Paley and of Darwin, rather than the more frequently reported opinions of the scientific, theological and academic experts of the time.50 Surprisingly, from 1802 to 1901 Francis found less than one percent of the published sermons had ‘natural theology’ or ‘natural religion’ in the title, although rather more referred to ways of seeing God in nature and even more referred to God’s providence. Francis contrasted this paucity with the numerous books and university lectures relating science to religion; from the time of the publication of Vestiges in 1844 there was a thriving publishing business on the relation of science to theology. Francis concluded that natural theology and the relation of science to theology were seen as topics for academic forums, but were regarded as unsuitable subjects for comment and analysis in the pulpit, unlike doctrines such as atonement which drew detailed academic style discussion from the pulpit. Paley’s own sermons touched on God in nature and providence but did not expound natural theology. Sermons addressed the challenges from science much more frequently after the publication of Origin in 1859. Francis explained that Origin compelled clergy to respond because Darwin had shifted the focus of science from the laws of mechanics, cosmology and geology to the origins and nature of humankind which demanded a theological response. Francis gave the example of Charles Kingsley, a preacher who was at pains to try to

harmonise the wise and loving being that was God with Darwin’s new scientific representation of nature. In sermons after 1859 Kingsley reassured congregations that Darwin was no danger to natural theology, and that God was still active and answered prayers.

The implications of Darwin’s work for the religious beliefs of some of his scientific contemporaries were investigated by Paul Jerome Croce, Professor of American Studies at Stetson University in Florida, who has written on the interaction of science and religion in America. In his paper ‘Probabilistic Darwinism: Louis Agassiz Vs Asa Gray on Science, Religion and Certainty’ he focused on the problem of the loss of certainty about divine guidance and purpose which troubled natural theologians. Croce contrasted the reactions to the uncertainty aspects of Darwin’s evolution of the American scientists Asa Gray, who could accept the uncertainty, and Louis Agassiz, who was unable to do so and consequently rejected Darwin’s theory.51 Theologian John Haught of Georgetown University in Washington DC, in God after Darwin, a Theology of Evolution,52 summarised the problem of Darwin’s theory in what he termed Darwin’s two dangerous ideas for the theologian: first that evolution blurred the lines between human and animal and even between living and non-living matter, and second, that the process of natural selection was a ruthlessly competitive struggle in which some random variations in populations were selected for survival and others were destroyed. The apparent absence of the guidance and the benevolence of God in such a process implied a remorselessly impersonal universe. Haught explored the three different theological responses to these dangerous ideas: opposition, separatism in which the science of evolution and religion were maintained as separate sets of ideas and philosophies, and finally

engagement which attempted to accommodate evolution into the existing understandings of science and religion. All of these responses were publicly aired in the Australian colonies after 1860, reported in the newspapers and they are explored in the chapters on the 1860s and 1870-1880s.

The Australian colonies

Most of the above historical writing, understandably, is focused at the centre of the debate in nineteenth century Britain and Europe, yet the new science and its controversies also captured some intellectual and public attention at the periphery of the empire, in the Australian colonies. Australian colonists were made aware of the new movements in science in Britain and Europe by a flow of books, magazines and scientific visitors, including Darwin, whose visit in 1836 is documented and beautifully illustrated in *Charles Darwin in Australia* written by F.W. and J.M Nicholas commemorating the 200th anniversary of Darwin’s birth and the 150th anniversary of the publication of *Origin*.53 The book is made up from the journals, letters and diaries written by the twenty six year old Darwin on his two month visit in 1836 to New South Wales, Tasmania and Albany in Western Australia, revealing his fascination with the zoological enigmas of the new land and confirming his belief in the One Hand which worked throughout the universe.

The little that has been written on the controversies as they played out between the scientists, freethinkers, churches and their denominations in the Australian colonies shows that the colonists were increasingly developing an interest in intellectual and religious subjects. Biographical works covering the lives and works of some of the colonial clergy-scientists give insight into

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the impact of the new scientific theories on them, their congregations and on
the wider colonial communities. One such biography is the thesis submitted
in 1990 by Anne Player, ‘Julian Tenison Woods (1832-1889)’ on the Roman
Catholic priest and geologist Julian Tenison Woods, which provides a
valuable window on both the scientific world and Roman Catholic Church in
the colonies of South Australia and New South Wales in the second half of
the nineteenth century.54 Player covered the key scientific issues of the
decades from 1850 through to 1880 in which Woods was active in Australia,
including the formation and interests of the scientific societies, as well as the
relevance of Woods’ own studies in geology and biology to his religious
ideas and those of his church. Player depicted Woods as a staunch Roman
Catholic, an active church leader, a skilled geologist and prolific contributor
of papers to the scientific societies of which he was a member. True to his
Church, he remained a scriptural geologist, biblical literalist and critic of
Darwin’s theory all of his life.

The botanist, schoolmaster and later, Anglican clergyman William Woolls
arrived in Sydney in 1832 and was the subject of a biography by Lionel
Gilbert, William Woolls, a Most Useful Colonist.55 Gilbert focused on Woolls’
contribution to botany and education in New South Wales with little
commentary on his theology. Woolls was ordained priest late in life and
adhered to the conservative negative scientific and theological approach to
Darwin’s theory prevalent among his contemporary scientists and
clergymen from the 1860s.

Anglican clergyman Charles Wilton was the first significant naturalist in
New South Wales in the early days of the colony. His biographer, Michael
Gladwin, in Australian Anglican Clergymen, Science and Religion (1820-1850)

54 Anne V. Player, “Julian Tenison Woods 1832-1889: The Interaction of Science and Religion”
(M.A. Thesis, History Department, Australian National University, 1990).
portrayed Wilton as a traditional reconciler and natural theologian, an
enthusiastic naturalist who strongly encouraged the study of nature for the
improvement of the minds of his flock in Sydney.56

Another clergyman-scientist was William Branwhite Clarke, arguably the
most important scientist in the Australian colonies from his arrival in 1839.
There have been more biographical works written on Clarke than any other
colonial clergyman-scientist. The earliest biography was James Jervis’
extensive paper in 1944 concentrating on Clarke’s contribution to science in
‘The Reverend W.B. Clarke M.A., F.R.S., F.R.G.S. the father of Australian
geology’,57 and a book about Clarke’s life by Elena Grainger The Remarkable
Reverend Clarke (1982).58 The information in these earlier books was greatly
expanded in Ann Moyal (Mozley)’s The Web of Science (2003) which contains
an excellent biographical introduction, and a collection of the
correspondence of Clarke in two volumes showing the breadth of contacts
and influence of Clarke with other scientists and clerics in Australia and in
Britain.59 She reveals a traditional natural theologian and gifted geologist, an
energetic parish priest in the mold of the English parson naturalists, full of
enthusiasm for the natural world of the new land. His scientific studies were
always informed by his theology and his belief in the providence of the
Creator for the new colony, but at times conflicted with the parish priorities
set by his bishop. Moyal’s earlier books, Scientists in Nineteenth Century

Bounty? The Churches and the Natural World, ed. Peter and Tony Claydon Clarke (Woodbridge,
Journal of the Royal Australian Geological Society 30, no. 6 (1944).
58 Elena Grainger, The Remarkable Reverend Clarke (Melbourne: Oxford University Press, 1982).
59 Ann Moyal, The Web of Science: The Scientific Correspondence of the Rev. W.B. Clarke,
Australia’s Pioneer Geologist, 2 vols. (Melbourne, Australia: Australian Scholarly Publishing Pty Ltd,
2003).
Australia: a Documentary History,\textsuperscript{60} and A Bright and Savage Land: Scientists in Colonial Australia,\textsuperscript{61} include Clarke and give a wide coverage of other colonial scientists. Considering their contributions, Moyal concluded that during the 1850s Australia’s scientific community was maturing, as evidenced by its role in exploration and new discoveries such as gold and coal deposits, fossil remains, together with the formation of new scientific societies, museums, and the establishment of universities in Sydney and Melbourne.

The most recent work on the life of Clarke comes from Robert Young, a geomorphologist, who in 2015 examined the many facets of Clarke’s life, ‘the cleric, the scholar, the poet and composer of hymns, the draftsman, the geologist, the hydrologist and oceanographer, the geographer, the evolutionary controversialist, the environmentalist, and the social critic’.\textsuperscript{62} Young was convinced that a key to understanding Clarke and his extraordinary range of interests was the interplay of his science and religion, which had not received the attention it deserved. Young showed how these many activities were all grounded in and directed by Clarke’s strong faith, which remained unshaken despite the challenges to scripture which came from the work of Lyell and Darwin.\textsuperscript{63}

The enormous contribution of many Australian clergy to the social and cultural life of the new colonies is explored in Gladwin’s recent book, Anglican Clergy in Australia, Building a British World.\textsuperscript{64} Gladwin conceded with others that the Church through its clergy acted as an agent of colonial

\textsuperscript{60} Ann Mozley Moyal, Scientists in Nineteenth Century Australia: A Documentary History (Melbourne, Australia: Cassell Australia, 1976); Gladwin, "Australian Anglican Clergymen, Science and Religion, 1820-1850."
\textsuperscript{61} Ann Moyal, A Bright and Savage Land: Scientists in Colonial Australia (Sydney: William Collins, 1986).
\textsuperscript{62} Robert Young, This Wonderfully Strange Country: Rev. W.B. Clarke, Colonial Scientist (Thirroul, N.S.W.: Dr Robert Young, 2015), p.4
\textsuperscript{63} Ibid. p.5
and imperial expansion, legitimizing and supporting colonization, including *laissez-faire* and increasingly destructive attitudes to indigenous Australians. However, he demonstrated that Australian clergy contributed more widely and substantively to colonial society, and that the relationship between the clergy and the colonial and imperial state was more complex and ambiguous than previously understood. In his chapter ‘Clergy, Culture and Society’, he listed the many clergy who contributed significantly to the formation and operation of educational and cultural institutions, including museums, libraries, Mechanics’ Institutes, scientific societies and botanic gardens. Usually unpaid by the government for their contributions, according to Gladwin the broad understanding of the clerics of their duties to God’s people gave them a central role which made them a hub from which society radiated. He concluded that their imperial loyalty and patriotic motives were secondary to their mission to establish Christ’s kingdom in the colonies via the Church. He contrasted their motives and actions with those of their parish counterparts in England and attributed the difference to the recruitment of a ‘different kind of middle class’ clergy to the colonies, including many evangelicals, largely via informal channels such as friendships, family and educational networks, often bypassing formal government and High Church processes. Gladwin maintained that rather than being the second-rate failures depicted in some histories, in the absence of the British confessional state and comfortable English parson-squire relationships, colonial clerical identity became increasingly grounded in vocation, episcopacy, mission and service to the wider society in all its social and cultural aspects. As a result, Gladwin pointed out the need to modify recent scholarly conceptions of the Church in the Australian colonies as merely agents of Englishness.
During the 1960s, several Australian historians published papers specifically on aspects of the interaction between science and religion in the Australian colonies in the nineteenth century. According to Timothy Suttor, from the 1860s the interest in new ideas from science carried beyond the academic and religious elite to the more general population in the Australian colonies; he maintained that evolution was still the major question of the day in the Australian colonies around 1900, along with federation.65

In a thesis completed in 1960 Francis Barrymore Smith did explore, with some attention to science, the intellectual and religious life of a brash and prosperous Melbourne in the 1870s and 1880s, depicting a microcosm of England, full of opinionated provincials, mostly adult migrants.66 Organised religion was flourishing, and all denominations were growing with good attendances. Melbourne’s Protestants were similar to their counterparts in Victorian England: austere and moral across all classes.67 However, Smith identified new divisions emerging to cope with new knowledge from science which was suggesting a factually inaccurate Bible, and the conclusion that nature, and perhaps God, was not benevolent.68 He listed these new groupings as Deists, Unitarians, Spiritualists, Secularists, Agnostics and Atheists and explored each of these paths of ‘honest doubters’ in subsequent chapters.69 Like Harrison, Smith agreed that the fundamentals of the evangelical attitude of seeking truth no matter what the consequences had inadvertently led to the questioning of scripture and religion in the later nineteenth century.70 In Melbourne, more than in the other colonies, there was strong clerical reaction to Essays and Reviews, Darwin’s Origin of Species

66 Francis Barrymore Smith, "Religion and Freethought in Melbourne, 1870 to 1890" (University of Melbourne, 1960).pp.2,3
67 Ibid. p.6
68 Ibid. pp.3,4
69 Ibid. chapter 2
70 Ibid. p.8
and Bishop Colenso’s work.\textsuperscript{71} In Smith’s view, the ‘blind stupidity and bigotry of the orthodox’ in their reactions to these works turned Victorian doubters from private critics to public combatants.\textsuperscript{72} Smith gave more weight to \textit{Origin of Species} than \textit{Essays and Reviews} for engendering controversy within the colonial church both because \textit{Essays and Reviews} was published just as church fury over \textit{Origin of Species} was reaching its height, and because Darwin’s theory was the more decisive in its assault on traditional theology and on the church and its traditions.\textsuperscript{73}

Smith investigated why the controversies raised by the intellectual challenges of the mid to late nineteenth centuries gained such pre-eminence in Victoria, compared with, for example, New South Wales where in his opinion there was less theological controversy. He pointed out that Brisbane, Sydney and Adelaide, like Melbourne, had Freethought and Spiritualist movements in the 1870s and 1880s, but these were much smaller than those in Victoria and relatively disorganised.\textsuperscript{74} Melbourne produced the only strong Spiritualist and Secularist Associations and the controversial books of Darwin and Colenso sold particularly well in Melbourne.\textsuperscript{75} Smith attributed the pre-eminence of the controversies in Victoria in part to the age structure of its population in the 1880s. In 1881 Victoria had many more adults aged over 45 than New South Wales, and had lowest proportion of any colony of males aged 20-40. Smith also referred to the vigour of the gold rush generation in Melbourne from the 1850s.\textsuperscript{76} Melbourne’s population was relatively prosperous, and many settlers had left England at peak of industrial and social progress, at the time of Great Exhibition of 1851; whereas those migrant majorities in South Australia, New South Wales and

\textsuperscript{71} Ibid.pp.13-15
\textsuperscript{72} Ibid. p.12
\textsuperscript{73} Ibid. pp.12,16
\textsuperscript{74} Smith, ”Religion and Freethought in Melbourne, 1870 to 1890”. p.343
\textsuperscript{75} Ibid. p.343
\textsuperscript{76} Ibid. p.341
Tasmania had left home before the climate of stimulating optimism surrounding the Great Exhibition. Also, New South Wales had many more adults who were native born. Smith also suggested that political and religious unrest was kept alive in Melbourne by conservative social taboos such as severe restriction of Sabbath activities, whereas in contrast in Sydney the picture gallery, museum, library, markets and concerts were open on Sundays. He concluded that the apparent decline of interest in religion in Victoria by the end of the nineteenth century reflected the growing superficiality of the spiritual experience of the ‘natives’, which in turn reflected the thin texture of a society which he characterized as frivolous and sporting, with an inclination to ‘take life easy, know little about and untroubled by religious theories.’

Jill Roe was an eminent historian of the Victorian period and like Francis Barrymore Smith she identified the 1870s and 1880s as the decades of intellectual flowering in Melbourne. According to Roe, Melbourne in the 1870s and 1880s was full of active discussions of ideas in politics and religion, demonstrated by the founding at this time of the journals Melbourne Review and Victorian Review which had no equivalents in the other colonies; they often published controversial articles on political and religious topics. This contrasts with Smith’s assessment of Melbourne in these last decades as a frivolous place, with little interest in religious theories. While Smith wrote on the rise of religious alternatives such as Freethought and Spiritualism in Melbourne from 1870 to 1890, Roe identified ‘a dreamy utopianism’ which was to be found at public events such as the laying of foundation stones and which revealed idealists, and political, secular and religious reformers.

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77 Ibid. p.341
78 Ibid. p.343
79 Smith, "Religion and Freethought in Melbourne, 1870 to 1890". pp.344,345
optimistic about a new future in the new world.\(^81\) In this new world there was thought to be an opportunity to establish new forms of Christian religion, forms more socially relevant and intellectually respectable than traditional Protestantism.\(^82\) Roe has written in more detail on the differences between the religious worlds of Melbourne and Sydney in the late nineteenth century in ‘Religion: Theosophy and the Ascendancy’ showing the greater uptake of new ideas, such as Theosophy and Spiritualism in Melbourne.\(^83\) In Roe’s view, the active engagement with religious and broader intellectual issues during the late 1870s and 1880s in Melbourne was an important and unique aspect of Australian intellectual and religious history, and ideas brought forward there reappeared in secular movements of radical reform.\(^84\) She found it hardly creditable that historical comparisons of the cultural styles of Melbourne and Sydney had neglected to take religion into account.\(^85\)

In her paper published in 1968, ‘Challenge and Response: Religious Life in Melbourne, 1876-86’ Roe assigned the Christian denominations in Melbourne to two categories depending on their responses to the challenges presented by biblical criticism and Darwinism and institutional challenges: the ‘intellectually accessible’ in which she included the Congregational, Unitarian and Anglican churches, and ‘non-accessible’, the Roman Catholic, Presbyterian and Wesleyan/Methodist churches.\(^86\)

The Presbyterian was the strongest and most influential church in Melbourne; according to Roe their dogmas were inaccessible to liberal

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\(^81\) Francis Barrymore Smith, “Religion and Freethought in Melbourne 1870-1890” (University of Melbourne, 1960).
\(^82\) Roe, “Challenge and Response: Religious Life in Melbourne, 1876-86.”p.153
\(^84\) Roe, “Challenge and Response: Religious Life in Melbourne, 1876-86.”p.166
\(^85\) Roe, “Religion: Theosophy and the Ascendancy.”
\(^86\) Roe, “Challenge and Response: Religious Life in Melbourne, 1876-86.”
thought and the Church suffered more than the others through internal conflict with reformers. In Melbourne in the 1880s Presbyterian minister Charles Strong’s attempt to accommodate contemporary knowledge of nature and the history of the world into his teaching led to his trial for heresy and forced resignation from the Presbyterian Church. Colin Badger has written a comprehensive biography of Charles Strong and a history of the Australian Church from its formation in 1884 until its final demise in 1955 in *The Reverend Charles Strong and the Australian Church*. Badger concluded that the formation of the new Australian Church by Strong and some of his former Presbyterian congregation epitomized the desire for a new more liberal form of Christianity ‘open to any new light of God’ than was demanded by Scots Calvinism.

Writing in 1967, in ‘Evolution and the Climate of Opinion in Australia, 1840-79’ Mozley (Moyal) also described the intellectual, social and ecclesiastical climates in the Australian colonies as well as their differences from Britain, and showed how the differences between the colonies influenced the way they received the new ideas from science. She explored the reactions of scientists and the public to the new findings in science, although she did not focus on reactions of representatives of Christian religions to those findings, except where the few clerical scientists took part in the public debate between science and religion. She concluded that most of the influential scientists in the Australian colonies rejected Darwin’s theory, especially those in Sydney and Melbourne universities, until around 1900; whereas their scientific counterparts in England embraced a compromise between

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87 Ibid. p.159
evolution and religion by around 1873. Mozley claimed that most colonial scientists, most Anglicans, all Catholics, Evangelicals, Methodists and the general public rejected Lyell’s theory of uniformitarianism and Darwin’s theory of evolution until the end of the century, except for a few individuals in the religious and scientific establishments.

Melbourne historian Walter Phillips, writing ten years later in 1975, in his paper ‘The Defence of Christian Belief in Australia 1875-1914: The Responses to Evolution and Higher Criticism’ disagreed with Mozley’s assessment. In his view, she underestimated the extent to which colonial churchmen were open to Darwin’s theory, even if not immediately embracing it. While Phillips did not comment on Mozley’s assertion that Darwin’s reception in scientific circles was generally hostile, he contended that not only did the theory of evolution win wide acceptance among Protestant churchmen in Australia by the late nineteenth century, but by then it had even influenced the way they expressed their religious ideas. In a later paper in 1990, ‘Religious Response to Darwin in Australia in the Nineteenth Century’, he reported that after 1880 there was a flood of colonial churchmen accepting evolution as the new truth and adjusting their belief and expression of it accordingly. This adjustment was probably a reaction to a concerted attack on Christianity by Freethought lecturers who sought to use evolution to discredit the Bible. Phillips documented the changing attitudes to evolution in colonial literary circles from 1860 to 1882, the year of Darwin’s death, demonstrating that, depending on their denomination, the Protestant clergy and churchmen of the colonies were agreeing with evolution to differing extents, although some were still arguing that evolution was against

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90 Ibid.p.430
92 Ibid.
Unlike Mozley, Phillips concluded that in the Australian colonies, by 1900 Anglican bishops, most educated laymen and the general public accepted the truth of evolution, though he questioned the acquiescence of the people in the pews in the light of the rise of fundamentalism in the early twentieth century.\textsuperscript{95}

According to Phillips, intellectual life in Adelaide also flowered and debates on issues in science and religion and on their relationship to each other were at their peak in the 1860s, earlier than in Melbourne, although he conceded that after 1865 the public interest in the question of science and religion in Adelaide subsided.\textsuperscript{96} He referred to Adelaide as the ‘Paradise of Dissent’, as did fellow historian David Hillard because of the prevalence of unorthodox Christian denominations in Adelaide compared with Sydney and Melbourne. Hillard attributed this difference to the recruitment of Dissenters as settlers.\textsuperscript{97} Phillips focused attention on the role of Dissenters in the intellectual life of Adelaide in the 1860s, and in particular on the progressive stance of his own Congregational Church and its minister, James Jefferis. He cited the good attendances at public lectures given in the 1860s by Chief Justice Hanson on geology, especially on Lyell’s work, and those presented by the Congregational ministers Francis Cox and Jefferis, which included evolutionary theory.\textsuperscript{98}

Phillips contrasted the generally positive reception of public lectures on Lyell’s and Darwin’s work in Adelaide in the 1860s, with Sydney’s disinterested, even negative reception.\textsuperscript{99} He reported that what little interest there was in the intellectual challenges from science in Sydney showed itself

\textsuperscript{94} Ibid. p.44,45  
\textsuperscript{95} Ibid. p.50  
\textsuperscript{96} Ibid. p.43  
\textsuperscript{97} David Hillard, "Unorthodox Christianity in South Australia: Was South Australia Really a Paradise of Dissent?,” \textit{History Australia} 2, no. 2 (2005).  
\textsuperscript{98} Phillips, "Religious Response to Darwin.”p.38  
\textsuperscript{99} Ibid. p.44
mainly in public lectures associated with Sydney University, and in the formation of the ecumenical Christian Evidence Society in 1884.\textsuperscript{100} He made no comment on the formation of the Church of England Book Society by Clarke and other Anglicans in the 1840s, or on public lectures given at the many Mechanics’ Institutes and Schools of Arts. In his book published in 1981, Defending ‘A Christian Country’, Churchmen and Society in New South Wales in the 1880s and After Phillips included a chapter on ‘Defending the Faith’, about the attempts of the Protestant and Catholic churches, both clergy and laymen, in Sydney in the last two decades of the nineteenth century to defend the faith against the inroads of Freethinkers, Spiritualists, Secularists and also against the challenge of modern science.\textsuperscript{101}

Phillips, like Mozley, claimed that much of the response of the churches in the Australian colonies to the intellectual assault from science was derivative of the British response.\textsuperscript{102} However, the accounts of Roe, Smith and Badger of the controversies and their impact in Melbourne, at least, argue for emerging ideas of new ways to be church in a new world, as in the case of the Australian Church. Phillips, writing some years later, did not make use of the work of Roe, Smith or Badger in his 1990 paper.\textsuperscript{103}

The most comprehensive recent account of the reactions to Darwin’s theory in Australia is in Tom Frame’s 2009 book, Evolution in the Antipodes: Charles Darwin and Australia.\textsuperscript{104} Frame is an Australian historian, former Professor of theology and an Anglican bishop. Much of the book gives the background of Darwin’s development of his theory and reactions to it in Britain, with two

\textsuperscript{103} Phillips, "Religious Response to Darwin."
\textsuperscript{104} Thomas R. Frame, Evolution in the Antipodes: Charles Darwin and Australia (Sydney: University of New South Wales Press Ltd, 2009).
chapters on Darwin’s own religious journey from orthodox Anglican Christianity to agnosticism. Frame described the rejection of the theory of evolution by most scientists in the Australian colonies, but like Phillips disagreed with Mozley’s conclusion that most colonial scientists resisted Darwin’s theory until the early twentieth century. Rather, Frame cited the considerable engagement of some Australian scientists with Darwin and his science, including the correspondence between Darwin and Clarke and Philip Gidley King, and the support ranging from cautious to enthusiastic from the prominent colonial scientists Clarke, Charles Wilkinson Smith and Gerard Krefft. Frame also drew attention to Darwin’s incorporation of new discoveries in Australian geology, zoology and botany in later editions of *Origin* and his other works. Furthermore, Frame pointed out that in the 1860s, at the same time as Herbert Spencer was adapting Darwin’s biological concept of evolution to the social and political context in Britain, William Edward Hearn, Professor of History and Political Economy at the new University of Melbourne, was adopting the concept of evolution and proposing economic evolution including free trade principles for the colonies. In a chapter on religious responses, Frame named Clarke as the leading scientific cleric, with a cautious and open minded response to the challenges to scripture and doctrine presented by evolution, then contrasted the responses of Bishop Charles Perry, Attorney General George Higinbotham and others. Later chapters examined responses to Darwinism, including creationism and Intelligent Design and their impact in Australia in the twentieth century, after the period covered by this thesis.105

Another Australian historian, Barry Butcher, in 1999, contributed a chapter Darwin Down Under: Science, Religion and Evolution in Australia’, like Frame describing the reactions of colonial churches and scientists to the

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105 Ibid. pp.259-270
theory of evolution, and reporting the lively interest in the theory in each of the colonies from the arrival of *Origin* in the colonies.\(^{106}\)

As Frame pointed out, towards the end of the century one outcome of Darwin’s work was its adoption as a social and political phenomenon called Social Darwinism which took the concept of ‘survival of the fittest’ beyond the world of biology. The concepts of both Social Darwinism and eugenics emerged in the 1870s from the work of Herbert Spencer and Francis Galton in Britain and found considerable support in Britain and America from the 1880s onwards, with some interest appearing in Australia by the end of the century. Historian Mike Hawkins in *Social Darwinism in European and American Thought 1860-1945* defined Social Darwinism as a new world view, larger than simply the concept of ‘survival of the fittest’, an ‘abstract configuration of ideas about time, nature, human nature and social reality.’\(^{107}\) Hawkins showed how many political positions, from anarchism to socialism, imperialism, liberalism, Fabianism, democracy and even anti-democracy had all drawn on the Darwinian tradition.\(^{108}\) He reviewed the vast literature on Social Darwinism, pointing out that much of the input into the concepts came from Lamarck rather than from Darwin’s theory of evolution: the central idea of inheritance of acquired characteristics, such as tendencies to crime, drunkenness and lust owed more to Lamarck than to Darwin.\(^{109}\) Hawkins found the literature was divided between those who saw a close connection between Social Darwinism with Darwin’s theory of evolution and those who saw no such connection.\(^{110}\)

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\(^{108}\) Ibid. p.3

\(^{109}\) Ibid. p.14

\(^{110}\) Ibid. p.3
Francis Galton, a cousin of Charles Darwin, applied the ideas from Darwin’s volumes on selective breeding of domestic animals to the human race, arguing that breeding of humans with superior characteristics should be encouraged and those with characteristics regarded as inferior should be discouraged from breeding. His work formed the basis of the new science of eugenics, which grew to become an essentially atheistic philosophy, which for himself and his followers took the place of traditional Christian religion.111 The Oxford Handbook of the History of Eugenics edited by Alison Bashford and Philippa Levine112 is a fine collection of papers including one by Stephen Garton on the gradual acceptance of eugenics in Australia: ‘Eugenics in Australia and New Zealand: Laboratories of Racial Science’.113 Most of the writing on eugenics in Australia refers to the period after 1900, but Diana Wyndham in a thesis in 1996 ‘Striving for National Fitness: Eugenics in Australia (1910s to 1930s)’, followed by a book in 2003 Eugenics in Australia: Striving for National Fitness, both of which present a small amount of information about the period prior to the turn of the century.114 She showed that the uptake of eugenics ideas was relatively slow in Australia compared with America, due to opposition from conservative medical professionals and politicians as well as the Roman Catholic Church. However, Wyndham did not address reactions of the Australian churches in any detail.

The body of writing I have reviewed gives the background to the development of the challenging new theories from science that

fundamentally changed the world of science and the responses of churches to science, both in Britain and in the Australian colonies. Much of that writing has focussed on Britain. In the period 1830-1890 covered in this thesis, historians interested in the issues in the Australian colonies have concentrated on the lives and works of significant individuals: Clarke, Woods, Jefferis and Wilton. Roe and Smith focussed on reactions of intellectuals in Melbourne near the end of the century, while Frame took a much broader view of the impact of Darwin’s theory in the context of Australian history from the 1860s to the present.

Although each of these writers has touched on the personal beliefs of these individuals and the public positions of their Churches, I have sought to explore in greater detail than they did how individual churchgoers, ranging from church leaders and scientists to the general public struggled with accommodating the new theories from science into their traditions of theology and their understandings of scripture. I have drawn much of this information from the colonial newspapers, using their articles and correspondence columns to a much greater degree than previous writers. I accessed the colonial newspapers through the excellent National Library of Australia’s Trove database which reproduced the pages of the newspapers as well as providing digitised copies of the text to enable searching. All of the major newspapers from each colony were available. Because of the poor state of some of the original pages often the digitised text was very poor and unreliable for the thorough searching of keywords, so in most cases I relied on reading from the scanned copies of the newspaper pages. The nature and content of those newspapers during the 1830s to 1880s made my research possible: each major metropolitan area had more than one newspaper, expressing varying degrees of theological and political conservatism, and by

115 Trove.nla.gov.au
the 1850s their content was increasingly made up of local news and correspondence, with enough reprinting of news from Britain to indicate the topics of interest of colonial editors and their readers. The literature about the way the controversies unfolded in Britain is considerable and is not the subject of this thesis. However, the selections from British newspapers that were reprinted in the Australian colonies are a valuable resource, for they show the information and opinions from ‘home’ to which most Australian readers, who did not receive copies of scientific or theological publications, were exposed to. What was also helpful for my research was that church news and conflicts arising between church and science were regarded as significant news of the day, particularly in the more radical metropolitan newspapers. The apparent freedom from concerns of libel and protection of the anonymity of the many and diverse correspondents offers a direct window into the thinking and opinions of the public about the controversial issues of science and scripture. The scientific and theological conservatism of the colonial scientific establishment was also revealed in extensive newspaper accounts of their lectures to scientific societies and to the public and in reports of reactions to those lectures. Such newspaper reporting of scientific issues and controversies, like the reporting of theological and church controversies, flourished during the period of my research, then declined by the end of the century.

This information gathered from searches of the metropolitan newspapers of the period has allowed me to add to the extant histories of the lives and times of prominent colonial players, and identified others who played a role in the controversies. More importantly, for the purpose of this thesis, it has enabled much of my research into changes in the theological thinking and interpretation of scripture of the clerics, churchgoers and the general public during this significant period in church, scientific and Australian history.
Over the period 1830-1890 while the churches were struggling with local issues, their authority to interpret and pronounce on new ideas from science, on the position of humans in creation and on the role of God was publicly challenged as never before. The newspaper articles and correspondence have provided an insight into the divisive nature of the issues arising from science, both between and within the denominations, and sometimes between church leaders and members of their congregations. From the newspapers and other primary sources this research aims to identify the range of responses, ranging from hostility, through simply ignoring them as irrelevant, to the creative attempts to accommodate the new information. Determining the impact of the challenges from science on the beliefs and the theology of church leaders, their congregations and the general public is the goal of this research.
3. The Early Decades, Including the 1830s

There is very little available from colonial newspapers on the subject of science in this decade. New South Wales and Tasmania were the only Australian colonies. It was not until the 1840s and later that major metropolitan newspapers were published which reported on science-related issues. This chapter provides the background about the state of science and theology in Britain which was transported to the colonies of Australia at the beginning of the period examined in this thesis.

In the early decades of the nineteenth century the churches and science generally shared a harmonious relationship. Natural theology dominated scientific thought and provided the comfortable relationship in which most churches regarded the study of nature as a suitable, mind improving and godly pastime for their clergy and congregations. This decade also brought the first of the theological challenges from geology which were to disrupt that comfortable relationship, starting in the churches in Britain and spreading in later decades to the Australian colonies.

Natural theology was the dominant Christian understanding of the relationship between the natural world and God. For many, natural science and scripture were not just in harmony, but mutually dependent, however, John Hedley Brooke has pointed to a more complex interaction in discussing the resilience of natural theology in Britain.¹ Tess Cosslett has defined natural theology as the use of the evidence of nature to prove God’s existence and his goodness.² Natural theology was becoming important in

¹ Brooke, Science and Religion: Some Historical Perspectives., chapter 5
England at the same time as the rise in empirical science in the age of the Enlightenment. Natural theology in this respect, as a dialogue with science, arose in the late seventeenth century and continued strongly through the eighteenth century until the mid to late nineteenth century. To natural theologians, the Bible was accepted as true in literal detail, including the accounts of the creation of the earth and living creatures found in Genesis. Theologians, clergymen and students of nature sought to use scientific observations as a basis of their natural theology: their purpose was to confirm the existence of a benevolent deity as Creator, to learn about the Creator by studying creation, and to confirm the truth of scriptures by research in geology, archaeology and biology. The Reverend William Paley (1743-1805) produced in his book, *Natural Theology* (1802), the major exposition of the teleological argument for the existence of a benevolent Creator using detailed observations of the beauty of nature, including the elegant adaptations of creatures to their environments. Paley was not just a theologian and clergyman but a keen amateur naturalist who wrote careful descriptions of organic structures and adaptations. He argued in a famous analogy that just as the existence of a watchmaker may be inferred from the presence of a watch, so by analogy the existence of creation implies the presence of a Creator. *Natural Theology* went into thirty-one editions by 1879. Paley assumed a fixed, six-day creation, a once-for-all master plan for a perfect machine as described in Genesis chapter 1.

The natural theologian the Reverend William Kirby referred to nature and scripture as God’s two books, in the seventh volume of the Bridgewater

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3 Ibid. p.2.; Harrison, *The Bible, Protestantism, and the Rise of Natural Science*  
Treatises, *The History, Habits and Instincts of Animals*, published in 1835. He declared his belief that nature could reveal religious truths, and that scripture could reveal scientific truths.

Studies of the biology and geology of the natural world were indeed providing new understandings of God’s creation of the earth and of its inhabitants. Many of the early naturalists were English parsons, their careful observations building on a tradition which grew from the days of John Ray (1627-1705) and Gilbert White (1720-1793). As the science of geology progressed, among the natural theologians were scriptural geologists, also called reconcilers, who sought to reconcile their geological discoveries with scripture. They also supported the theory of catastrophism, which they believed provided for God’s direct and drastic intervention in events to change and improve creation at intervals after the initial six days. Noah’s flood, the Deluge, was seen to be the most recent catastrophe caused by direct intervention by God, as reported in the book of Genesis. The leading scriptural geologists of the early decades of the nineteenth century were the eminent scientists and clergymen Adam Sedgwick, William Buckland, Thomas Chalmers and Hugh Miller. Hugh Miller and Thomas Chalmers were Scottish evangelicals; the others belonged to the Church of England. Sedgwick and Whewell taught at Cambridge University and Buckland taught at Oxford. Most of the clergy of the Church of England in Britain and in the Australian colonies studied at Oxford and Cambridge, and some, such as W.B. Clarke, attended lectures given by the leading scriptural geologists.

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7 Finnegan, "Science and the Bible." p. 7
8 Armstrong, *The English Parson-Naturalist a Companionship between Science and Religion*. pp. 1, 2;
10 Cosslett, *Science and Religion in the Nineteenth Century*. pp. 4, 5
11 Ibid. p. 5
William Buckland (1784-1856) was the leading English catastrophist; he was elected Fellow of Corpus Christi College, Oxford, 1808, and ordained priest in same year. He was appointed Reader in Mineralogy 1813 and to the new readership in geology in 1818. He was elected President of the British Association for the Advancement of Science in 1832. His lectures on geology and mineralogy were for many years the most popular lectures at Oxford University, attended by many senior members of the university colleges, future bishops and archbishops, also John Keble, John Henry Newman, Edward Pusey, Richard Whately and notably Charles Lyell, who became a key figure in nineteenth century geology.12 Buckland’s lectures were entertaining, illustrated by spectacular fossils and mineral specimens. He claimed his geological findings supported a universal deluge in the past, which he equated with Noah’s flood. He was famous for investigating fossil cave fauna, attributing some such accumulations to the Deluge.13 By the time Buckland’s lavishly illustrated Bridgewater treatise, Geology and Mineralogy, was published in 1836 he had abandoned his earlier belief in the universal effects of Noah’s deluge.14 His colourful representation of the history of life on earth showing reconstructed fauna and flora of each geological period strikingly illustrated the idea of a progressive history of life on earth rather than creation completed in six days.15 So Buckland, though an Anglican clergyman, was not a biblical literalist. His attempts to reconcile the creation story of Genesis chapter 1 with geological evidence were either to assume that the six days of creation were not literal days, or that there had been a long period after God’s creation of the earth and the heavens, possibly ‘millions of years’, before the features of the dry land, waters and the rest of

13 Ibid.
creation appeared and the creation of Adam. In this he shared the harmonizing ideas of Thomas Chalmers (1780-1847) an eminent preacher in the Church of Scotland. Chalmers also sought to reconcile geological findings and scripture by allowing for a much greater age of the earth, although not its creatures: ‘The writings of Moses do not fix the antiquity of the globe. If they fix anything at all, it is only the antiquity of the species.’

Adam Sedgwick (1785-1873) was Buckland’s counterpart at Cambridge University, also a clergyman and geologist. He was Woodwardian Professor of Geology at Cambridge for fifty-five years, from 1818-1873. In 1819, with John Stevens Henslow he founded the Cambridge Philosophical Society to encourage new scientific pursuits at the university. His presidential addresses to the Geological Society in 1830 and 1831 showed he agreed with Buckland’s views that geologists had demonstrated a vastly expanded time scale, compared with the six days of Genesis chapter 1. But he distanced himself from Buckland’s earlier attempt to find empirical evidence for a universal flood. In 1832, in a sermon at Trinity College chapel, Sedgwick condemned the way scriptural literalists were focusing their scientific studies on confirming scripture, and were sometimes using invalid interpretations of the science to do so.

The teaching of biology at Cambridge University was further invigorated by the Anglican cleric, John Stevens Henslow (1796-1861). Together with

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16 Ibid.
17 He played an important role as leader of the Evangelical party of the church during the Disruption of the Scottish church in 1843, and may be regarded as the founder of the Free Church, the first assembly of which he was moderator. Stewart J. Brown, Thomas Chalmers and the Godly Commonwealth (Oxford [Oxfordshire] : New York : Oxford University Press 1982).
18 Article from the ‘The Popular Encyclopedia’, published by Blackie & Son, in 1883, accessed on 2/4/15 through www.newble.co.uk/chalmers/biography.html. Moses was traditionally thought to be the author of the first five books of the bible, the Pentateuch, including Genesis.
Sedgwick, Henslow’s teaching at Cambridge was influential in the lives of many British naturalists including Charles Darwin and colonial clergymen such as W.B. Clarke. Henslow was appointed to the chair of Mineralogy in 1822, then relinquished this for the chair in Botanical Science in 1825. In 1824 he was ordained and obtained a curacy in Cambridge. Henslow was an enthusiastic lecturer, who included practical demonstrations and field trips encompassing zoology and geology as well as botany in his teaching. According to Henslow’s biographer, the period from 1825 to 1832, was a golden age for botanical science at Cambridge. Henslow’s lectures and field trips were well attended, as were the Friday evening soirees at his home. By 1830, the emerging science of geology was starting to challenge the comfortable relationship between scripture, the churches and science, and in particular the scriptural geologists. Geologists were revealing that the time scales involved in rock formation and geological transformations were much greater than the periods which had been accepted from the Genesis chapter 1 account of six days of creation, and the calculation by Bishop James Ussher (1581-1656) that the creation took place in in 4004 BCE. 

Although scriptural geology and its associated catastrophism dominated the teaching in the English universities and Church of England in the early decades of the nineteenth century, the Scottish geologist James Hutton (1726-1797) had developed an alternative theory that geological changes were the product of gradual changes, not catastrophic interventions by God. Hutton’s *Theory of the Earth* (1795) proposed that natural processes such as erosion and elevation were the means by which the surfaces of continents were renewed in an endless cycle and fully accounted for the geological features of the

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21 Ibid.
22 Ibid.
23 Cosslett, *Science and Religion in the Nineteenth Century*. p4. Bishop Ussher in 1654 calculated, from Old Testament sources that the creation described in Genesis took place in 4004 BCE.
present world. Hutton also found no evidence in nature of a beginning; he stated that we need to go to revelation to find that. Hutton developed Infinity Theory, to account for the lack of any vestiges of a beginning or an end to the world. An outcome of Infinity Theory was that if the world was infinite in duration, with no beginning, there was no role for an original Creator as described in Genesis chapters 1 and 2. Clearly this approach undercut the main premise of natural theology, and was strongly refuted by Paley and later by scriptural geologists such as Miller.

The concepts of gradual theory were further developed in the 1830s by Charles Lyell (1797-1875) from his detailed geological work. In 1830-33 in three volumes of *Principles of Geology* Lyell put forward his gradual or ‘uniformitarian’ theory to rival catastrophism. In it, he proposed that all past geological changes could be explained by the gradual action of ordinary causes which were still acting in the present, such as erosion, earthquakes and volcanoes. Therefore, in his view, there was no need to propose miraculous catastrophes and divine intervention to explain the geological formation of the earth as we see it today. Supporting his proposal of gradual, very slow geological changes Lyell presented new evidence for the great age of the earth’s geological formations.

Even more challenging to the biblical account of six days of creation was the evidence Lyell presented from the fossil record. New estimations of the deposition rates of rock strata indicated that great periods of time separated the appearances of different species as fossils in the strata. Furthermore, Lyell devoted much of the second volume of his *Principles of Geology* published in 1832 to the way successive species not only appeared in the

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24 James Hutton, *The Theory of the Earth, with Proofs and Illustrations* (Edinburgh1795).
fossil record at different times, but also disappeared, that is, became extinct.\(^\text{27}\) This supported earlier work by the French anatomist Georges Cuvier (1769-1832) who had shown from comparative anatomy of fossil bones that there had been two species of elephants, the mammoth and the mastodon, which were distinct from present-day elephants and were now extinct.\(^\text{28}\) The concept of extinction posed theological difficulties for the churches, as it seemed to imply some fault in God’s creation: if the world was ordered by divine providence, and pronounced good by God when completed, how could a species be driven to extinction?\(^\text{29}\)

Unlike the prominent scriptural geologists, Lyell was not a cleric and was perhaps less impeded by the need to conform his discoveries to scripture; he found that gradualism and natural causation best fitted his findings. His approach contrasted with that of the catastrophists who started with the assumption of divine intervention and design and then sought to conform their evidence to support their assumption. Lyell’s pursuit of science without regard for religious considerations heralded the beginning of a more modern approach to science in the nineteenth century.

Predictably, leading scriptural geologists rose to meet the challenge of uniformitarianism, defending the literal truth of the scriptures.\(^\text{30}\) Although Sedgwick agreed with Lyell’s view that the earth was millions of years old, he rejected Lyell’s claim that geological processes had been uniform throughout all time. He argued that the empirical record of the strata bore

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\(^{27}\) Charles Lyell, *Principles of Geology: Being an Attempt to Explain the Former Changes of the Earth’s Surface by Reference to Causes Now in Operation*, 3 vols. (London: John Murray, 1830-1833); ibid. see also Young, *The Discovery of Evolution*, p. 93

\(^{28}\) Georges Cuvier (1769-1832) was Professor of animal anatomy at the Museum of Natural History in Paris. His expertise in comparative anatomy contributed to classification and reconstruction of fossil vertebrates; he rejected strongly the evolutionary theories of his colleague Lamarck: Young, *The Discovery of Evolution*, pp. 72, 73, 252

\(^{29}\) Ibid. p.72

\(^{30}\) Cosslett, *Science and Religion in the Nineteenth Century*. pp. 4,5
witness to catastrophic events, arguably interventions by God, which were not seen currently shaping face of earth.31

The slow acceptance of gradualism over catastrophism during the nineteenth century was key to significant new understandings of science and forced new interpretations of scripture.32 One way of dealing with the increasing confrontation between the new ideas from science and biblical literalism was the proposal to separate scientific study and its ideas from the theological; a new concept for natural theologians. John Herschel (1792-1871), teaching at Cambridge in 1830, believed this was necessary, but he continued to affirm that science revealed the work of the Creator so there could be no conflict between science and religion.33 Even so, Herschel counselled scientists to concern themselves with the workings of the material world, as it was created, and to leave the first creation, life, mind and soul as the province of the theologian. ‘To ascend to the origin of things, and to speculate on the creation, is not the business of the natural philosopher.’34

While a new generation of colonial scientists and churchmen were being educated in Britain in this stimulating atmosphere of discovery and debate, in the Australian colonies up to and including the 1830s the little science underway was mainly descriptive science pursued for practical purposes. In the first three decades of the nineteenth century, many of the clergymen and educated laymen who travelled to the Australian colonies had received their university education and established their networks of contacts at Oxford and Cambridge where the influence of Paley’s Natural Theology was strong, and the scriptural geologists among their teachers and mentors influenced their literal and reconciler approach to scripture. The Reverend Charles P.N.

31 Secord, “Sedgwick, Adam (1785-1873).”
32 Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79." p. 412
Wilton (1795-1859), Chaplain of Convicts in Newcastle, New South Wales, was a Cambridge-trained geologist, and member of the Cambridge Philosophical Society and the Ashmolean Society. By 1828, he was encouraging the pursuit of science in New South Wales. He founded the *Australian Quarterly Journal*, a magazine of ‘theology, literature and science’ and urged the investigation of natural sciences and geology as studies ‘entirely compatible with the Scriptures.’ The theme of the journal reflected the natural theology of the publisher and the writers: the ways in which ‘Religion and Science may well go hand in hand together.’ The first aim of science was, it maintained, to improve one’s mind and increase one’s knowledge of God. Michael Gladwin, Wilton’s biographer, has drawn attention to this dimension of Wilton’s science. ‘Although religion was doubtless the “chief thing”, it was the true Christian’s “bounden duty” to “improve his mind and his knowledge of God by surveying “the countless wonders of the world…created for his use and instruction.”’ The second aim of the journal was practical: ‘Science further enabled the use of the earth’s resources for prosperity, commerce and national expansion, while the order in creation demonstrated God’s providential order in church, society and state.’

Wilton was a scriptural geologist and a catastrophist, but he disagreed with those who would use the Bible as the only source of learning about nature. He rejected ‘the hypocrisy and cant of the present day – that the Bible was the only book man ought to peruse’ and that ‘human learning’ was ‘to be disclaimed as useless and hurtful.’ Rather, like Herschel, he believed ‘the Bible was designed not to teach Geology but Religion - not the structure of

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35 Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79." p. 417
37 Ibid. p.294
38 Ibid. p.294
39 Ibid. pp.295, 296
the earth, but the way to heaven.’

Gladwin points out that Wilton’s conservative scriptural geology differed markedly from the views of the geology of New South Wales held by two of his contemporaries, the landholder, Alexander Berry, and the explorer Peter Cunningham. They took the uniformitarian view that the geological changes they observed in Australia had occurred gradually and continuously over millions of years rather than by catastrophic events. However, Wilton ‘stuck to his diluvial guns’ in the face of his contemporaries and Lyell’s work; ‘maintaining in a popular almanac in 1833 that there was evidence for minor catastrophes and for that one grand convulsion of nature, the Noachic Deluge.’

When Archdeacon William Broughton arrived in New South Wales in 1829 he believed that unless the Church could be built up the colonists would go astray in the wilderness that was Australia. When he was appointed Bishop of Australia in 1836 he had to deal with local issues as well as the problems coming from the mother church in Britain. The Church of England in Britain was striving for renewal: one manifestation of this striving was the evangelical movement with its focus on mission and personal conversion, and its active support of social issues including anti-slavery campaigns and education. In the 1830s another approach to renewal emerged from the academics of Oxford University. The Tractarians of the Oxford Movement sought renewal of the church by seeking to revive its Catholic identity. Many opposed these Tractarian changes as smacking of popery and they became a major source of conflict within the Church of England in Britain and also in the colonies. Education of the poor and government funding for church schools were also important issues for the church in both Britain and the

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40 Ibid. pp.295, 296
41 Ibid. p.295
42 Ibid. p.296
43 Meredith Lake, "Protestant Christianity and the Colonial Environment: Australia as a Wilderness in the 1830s and 1840s," *Journal of Australian Colonial History* 11(2009). pp. 37,38
Australian colonies. In these early decades biblical scholarship in Germany was raising many questions about the authorship and literal truth of the Bible, however, this scholarship had little impact on the Church of England until the publication in English of *Essays and Reviews* in 1860. The Presbyterian leader in Sydney, the Reverend John Dunmore Lang, shared with Broughton a poor view of the intellectual and spiritual life of the colony. Lang spoke out against the intellectual poverty and lack of interest in science of the colony in the 1830s and the prevalent focus on making money: ‘The only animals whose natural history is deemed of consequence to investigate in New South Wales are the sheep and the bull and the only study that is engrossing all classes was how to make the most of it [money].’

Broughton believed church buildings and able clergymen were lacking in the colony, and there was an urgent need to bring the gospel to settlements remote from the major towns, so he began his campaign to recruit more clergy and build more churches. It was fortuitous for the new colonies that many of the clerics who subsequently arrived in Australia in the 1830s had some knowledge of botany and geology and so were able to contribute to the practical needs as well as the spiritual needs of the colonies. These men included William Woolls (1819-1893), who arrived in Sydney in 1831 and was appointed by Broughton to assist the headmaster at the newly established Kings School in Parramatta. From that time until his death in 1893 Woolls became the colony’s leading botanist, a natural theologian who believed that there was no point of conflict between religion and science,

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46 Lake, "Protestant Christianity and the Colonial Environment: Australia as a Wilderness in the 1830s and 1840s." pp. 37,38
when one could see the harmony between the ‘book of Nature and the book of Revelation.’

He was ordained late in life in 1873. In the late 1830s other Anglican clergy-naturalists arrived in the colony of New South Wales: Richard Taylor and George Edward Weaver Turner. Unfortunately, we have little written evidence of their science or their views on the relationship of science with their faith. However, what we have shows that natural theology informed the lives and the ministry of these clergymen, and undoubtedly through them, their congregations. Turner arrived in Sydney in December 1838, taking over the parish of St Anne’s, Ryde, and began thirty years of parish work combined with botanical studies, making ‘a botanical showpiece of his parsonage grounds . . . as a botanist, the district of Ryde and his description of its botany, stamps him as a mastermind in that science.’ Turner was an important and respected source of botanical information for many in the colony. He was Secretary of the Committee of Management of the Australian Museum and Botanic Gardens from 1847 to 1853; and in 1853 was elected to sit with two clerical colleagues, Robert Lethbridge King and William Branwhite Clarke, on the Board of Trustees of the museum, a post he held until his death in 1869. His memorial plaque in St Anne’s reveals a true natural theologian: ‘His cultivated taste found suitable enjoyment in the admiration and study of the work of the Creator.’

The Quaker James Backhouse was a trained nurseryman who arrived in Sydney in December 1834. He was active within New South Wales seeking to establish temperance and Aboriginal protection societies, local branches of the British and Foreign Bible Society, and encouraging the formation of

48 Ibid. p.18
49 Ibid. pp. 25,26
50 Ibid. p.26
ladies’ committees for prison visiting and improved education for children.  
He also collected and described the new plants he found in his travels.  
Backhouse was a natural theologian, for he wrote that his botanical  
specimens displayed ‘the power and wisdom of the Creator. The more the  
works of creation are understood, the more the evidence of infinite wisdom  
and power in the Creator is seen.’  
He deplored what he saw as idolatry of  
sciences: ‘those who study them, [far] too many make them their idols,  
instead of giving God the glory.’  
His botanical work was unpublished, yet  
he contributed information and specimens to other botanists including Sir  
William Jackson Hooker of Kew, and Sir James Edward Smith, founder of  
the Linnaean Society, and his herbarium specimens were acknowledged over  
a hundred times in Bentham’s Flora Australis.  

The geologist, botanist and natural theologian Richard Taylor arrived in  
Sydney in June 1836. Like Backhouse, he started by visiting the prominent  
intellectual Alexander Macleay at Elizabeth Bay, then the Colonial Museum,  
before taking up his ministry in Liverpool and surrounding areas. After a  
visit to Newcastle he wrote of fossil plants in a coal mine and epiphytic ferns  
that these plants revealed ‘the wonderful contrivances of an all wise  
Providence.’  
He published none of his observations, but left for New  
Zealand where he continued his studies of nature.  
In 1839, the geologist  
and cleric William Branwhite Clarke (1798-1878), later called ‘the Father of  
Australian Geology’ arrived in Sydney under the auspices of the Anglican  

51 Ibid. pp.23,24  
52 Ibid. p.24  
53 Ibid. p.24  
54 Ibid. p.24  
55 Ibid. p.25  
56 Gilbert, “Plants and Parsons.” pp. 25,26  
57 Ann Mozley, "Clarke, William Branwhite (1798-1878)," Australian Dictionary of  
By the end of the 1830s the implications of Lyell’s uniformitarian theory and its challenge to the scriptural geologists back in Britain had made little impression on the churches in the Australian colonies, as they struggled to establish denominational infrastructure and to come to terms with the social problems of a society made up of a mix of convicts, emancipists and free settlers and which was still faced with shortages of food and other necessities. However, the few clergymen with an interest in science contributed significantly to collections and description of the flora and fauna of the colonies, continuing the tradition of the English parson naturalists, and motivated by their natural theology. They firmly planted the reconciler approach to scripture which still dominated the English scientific establishment in the colonies.
4. 1840s and 1850s: Scientific Challenges to Biblical Literalism

During the 1840s in the Australian colonies, rapid economic growth and the pursuit of wealth were leading to some social and political instability. Squatters claimed huge land areas in New South Wales, Tasmania, the Moreton Bay colony in modern Queensland and in South Australia. Wool exports, wheat farming, sealing and whaling all expanded, but there was also a severe depression in all of the Australian colonies in the early 1840s.\(^1\) The gold rushes of the 1850s brought many thousands of new settlers and new wealth to the colonies.\(^2\)

The Church of England, which claimed half of the population of all the growing colonies, was immersed in the significant social problems arising from the depression but was also dealing with internal issues as was its parent church in Britain. Low Church Anglicans distrusted the ‘popery’ of Tractarians, and the *Sydney Morning Herald (SMH)* published letters complaining about popery and ‘Romanists’ in the Church of England.\(^3\) Clarke complained to Sedgwick in 1848: ‘The result of the Pusey principles [Tractarianism] has ripened its fruit.’ Two young New South Wales clergymen had entered the Church of Rome, and Clarke wrote of Anglican divisions: ‘all is difficult, and a more disjointed clerical body never existed…the dissenters and the Romanists go ahead. I have taken my stand with one or two of these.’\(^4\) In his reply to Clarke in 1849 Sedgwick enthusiastically agreed with Clarke’s position on the Puseyites, and

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\(^{1}\) Michael Roe, "1830-1850," in *A New History of Australia*, ed. Frank Crowley (Heinemann Educational Australia, 1974), pp.100-102

\(^{2}\) Ibid. pp.107, 108

\(^{3}\) *SMH* 3 July 1839, p.4 and *SMH* 12 July, p.3

\(^{4}\) Roe, "1830-1850." pp.39,40
forwarded his Cambridge sermon on the subject with his letter. Sedgwick included his rather jaundiced opinion of the new bishops and archbishops in the Church of England, commenting ‘There are two extremes in modern religious opinions - one leans on authority and ends in idolatry of externals and Popery - the other casts off all authority and ends in a rationalism or perhaps Pantheism.’ ‘Popery’ was blamed for causing infidelity: the SMH continued its anti-Roman stance, publishing an article by the Evangelical Bishop of Calcutta who had previously had oversight of the Australian colonies about the danger of popery leading to infidelity in the Church of England. The ecumenical association of Protestant denominations, the Australian Religious Tract Society, also identified Romanism and Puseyism as causes of infidelity, ‘each diffusing their poison by tracts which are circulated by zealous emissaries.’ The Presbyterian Church in New South Wales was also suffering from divisions in the 1840s, which were in part local counterparts of divisions in the Scottish mother church, but also partly due to the quarrelsome nature of its leader in New South Wales, John Dunmore Lang (1799-1878). The Church of England in New South Wales was agitating for establishment status in the colonies (the status it enjoyed in Britain) and increased government support for its parishes and schools, but this was opposed by some radicals and liberals who warned that such government support was a threat to civil and religious liberty. In the late 1840s the Church of England was strongly opposing government plans for secular schooling and the secular nature of the proposal for a University of Sydney. That Church was also concerned that increasing infidelity would

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5 Moyal, The Web of Science, p.242
6 Ibid. p.242
7 SMH 4 April 1843 p.4; the Australian colonies had previously been officially part of the diocese of Calcutta
8 SMH 18 January 1844, p.2
9 Baker, "Lang, John Dunmore (1799-1878)."
10 Roe, "1830-1850. ",p.110
11 Ibid. p.110
result from scarcity of funding for churches, clergy and parochial schools. Bishop Broughton in his address to the Parochial Associations and Provident Societies in Sydney warned that unless the government increased funding for parochial clergy and churches, particularly in country areas, infidelity would increase and Australia would descend into heathenism. Both Broughton and Clarke warned of the dangers of infidelity and atheism if the proposed new education system excluded direct church participation. Lang also strongly opposed the proposed system of education.

Against this background of upheaval within the churches and the significant social changes affecting their congregations in the Australian colonies in the 1840s, natural theology, the study of nature to learn more of its Creator, was still the dominant theology of science, but biblical literalism, previously barely questioned, was being increasingly challenged. Uniformitarianism, as an explanation for the geological formation of the earth and as an alternative to the catastrophism derived from biblical literalism, was gaining more support. By the middle of the 1840s the concept of gradual development was controversially extended from geology to all fields of science. Discussion increased among churchmen about how new findings from science could be reconciled with scripture, and even whether the two could be or should be reconciled at all.

In Britain, the reconcilers continued their campaign in defence of the scriptures against uniformitarianism, but there also arose disputes about interpretations of the Genesis creation stories among the reconcilers themselves, who were usually clergy. In one such dispute in England in 1844, at a meeting of the British Association for the Advancement of Science, the Anglican William Cockburn (1773-1858), Dean of York, attacked his

12 SMH 25 October 1842, p.4
13 SMH 10 Sept 1844, pp.2,3
14 SMH 9 September 1844, p.3
fellow clerics and the Association’s leading geologists, Adam Sedgwick and William Buckland, labelling them reconcilers, maintaining that Buckland’s views were not in accord with scripture.\textsuperscript{15} The British Association had been formed in 1838, with a membership which included many Anglican clerics, and it supported their purpose of maintaining the Baconian compromise between God’s two books, nature and scripture. The compromise did not satisfy Cockburn, who had attacked the Association previously for supporting novel ideas that contradicted scripture aiding ‘the widespread plague of infidelity.’\textsuperscript{16} Cockburn was in fact a reconciler with his own interpretation of Genesis in which he sought to explain using evidence from fossils about the way species appeared and disappeared over great time periods. Cockburn maintained that there had been not just one act of creation but many acts, in which some species had been made extinct, and others appeared, over vast ages. Cockburn therefore regarded the six days of Genesis as six geological eras. This contrasted with Paley’s natural theology design argument which assumed a fixed six-day creation, a once-for-all master plan for a perfect machine. In Cockburn’s view missing links (transitional forms) in the incomplete fossil record spoke against Lamarck’s evolutionary theory of continuous biological development of new species published in 1809.\textsuperscript{17} Rather, they provided evidence of a series of divine creations, each perfectly adapted, ascending progressively to the last and final creation which included man, the culmination of the whole series. This supported Cockburn’s belief in the recent and special creation of man by God.\textsuperscript{18} Notwithstanding his condemnation of Sedgwick and Buckland as reconcilers, Cockburn’s explanations were yet another scheme for reconciling long geological eras to scripture.

\textsuperscript{15} Cosslett, \textit{Science and Religion in the Nineteenth Century.} pp.17,18
\textsuperscript{16} Finnegan, "Science and the Bible.",p.10
\textsuperscript{18} Cosslett, \textit{Science and Religion in the Nineteenth Century.} pp.17,18
In 1845 Buckland was appointed Dean of Westminster, while still delivering his lectures at Oxford. In 1850, a mental breakdown terminated his duties and he died in a mental asylum in 1856. Perhaps more than anyone else, even Lyell, Buckland was responsible for making the vast periods of geological time, possibly even ‘millions of millions’ of years before the creation of Adam, acceptable to the Anglican establishment. By convincing most of his fellow scientists that the earth was significantly older than thousands of years, Buckland unwittingly paved the way for acceptance of the slow geological processes required by uniformitarian thinking, and the Darwinian revolution, which relied on immense time periods for natural selection to operate in formation of new species.

As in Britain in this period, the reconcilers continued to dominate scientific thinking in the Australian colonies. William Sharp Macleay was a distinguished and published scientist by the time he arrived in New South Wales. He had an M.A. from Trinity College, Cambridge, and an interest in zoology, and by 1837 he had been elected to the councils of the Linnaean Society of London and the Zoological Society. He settled in 1839 at Elizabeth Bay, Sydney, with his father Alexander Macleay and began to collect and study marine fauna and insects from his neighbourhood around Port Jackson. He encouraged the scientific work of many in New South Wales, especially his brother George and cousin William John Macleay. His Elizabeth Bay house became a regular meeting place for Sydney men and women and visitors with scientific interests. He was regarded as the colony’s expert zoologist and upheld science against legends and

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19 Haile, "Buckland, William (1784-1856), Geologist and Dean of Westminster."
20 Ibid.
21 Ibid.
23 Lionel A. Gilbert, Mr Macleay's Elizabeth Bay Garden (Canberra: The Mulini Press, 2000)., pp.11-28
superstitions in the colony. For example, after examining a skull which others had claimed to be that of a bunyip, he identified it as the deformed skull of the foetus of a horse, and decried what he called the unintelligible reports of bunyips that had been appearing in Sydney newspapers.24 According to his biographer, he was chiefly interested in the philosophical aspects of zoology especially taxonomy, investigating ‘natural affinities and analogies, and like other leading naturalists in Europe was endeavouring to discover a natural system of classification.’25 Macleay supported a Quinarian or circular system of species connections in the animal kingdom, founded on affinity and analogy of structures which he had developed for insects and which had been recently promoted by Swainson in 1835.26 It was a system Macleay believed to be close to what he called the Natural System, the plan of creation itself, the work of an all-wise, all powerful deity. As Ann Mozley points out the Quinarian system was derived from philosophical speculation rather than biological data, and contributed nothing to classification or determination of the origin of species.27

Macleay was also a leading Anglican layman and struggled to reconcile the new discoveries in science with scripture. He wrote about his attempts to reconcile current science with his understanding of the Genesis chapter 1 account of creation. In one such letter he concluded that the sun must have been created before the appearance of plants, rather than after the plants, but claimed he was still able to believe the Genesis account from Moses that the sun came later:

24 SMH 7 July 1847, p.3
27 Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79.,” pp. 415,416. Carl Linnaeus’s classification system of binomial nomenclature was developed in 1751, and was and is generally accepted; it separated nomenclature from taxonomy and made no inferences about development or affiliations between organisms.
I believe that terrestrial vegetation...followed upon the earth’s appearance out of the primeval deep, but...I do not believe that vegetation preceded the appearance of the sun...Nevertheless, I do not think I am placed in the sad predicament of conceiving the statements of Moses inconsistent with the truth...Nor do I conceive that there is any improbability in some great astronomical change having taken place long prior to the existence of Man. In short, my interpretation of the Bible is that the Sun existed before the fourth day, but the Creator at that epoch made it to regulate the day and year as they at present exist. 28

He said he agreed with the Genesis account that aquatic animals, in the form of primitive Infusoria,29 were created contemporaneously with the first rains: ‘As to the time of creation of aquatic animals, I believe Infusoria to have been almost contemporaneous with the precipitation of water, that is, with the formation of the earliest primitive strata.’30 In fact, according to Genesis chapter 1 water bodies were created on the third day together with plants (v.9), and sea animals were created on the fifth day (v.20). His attempts to reconcile what he knew as a respected scientist with the traditional interpretations of scripture of his Anglican faith exemplify the struggles that emerged in the 1840s.

The Sydney-based geologist and clergyman William Branwhite Clarke was a natural theologian who believed that the study of geology revealed something of the Creator, and of his providence. Clarke was a moderate evangelical Anglican, a leading promoter of science but also defender of

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28 W.S. Macleay to W.B. Clarke, 4 July 1842, Clarke papers, uncatalogued MSS 139/11 quoted by Mozley in Mozely, “Evolution and the Climate of Opinion in Australia, 1840-79”, p.417
29 Infusoria are microscopically small simple animals, such as protozoa
30 W.S. Macleay to W.B. Clarke, 4 July 1842, Clarke papers, uncatalogued MSS 139/11 quoted by Mozley in Mozely, "Evolution and the Climate of Opinion in Australia, 1840-79.”, p.417
scripture and the church against the challenges from science. In 1838 when he was about to set sail for New South Wales, Clarke revealed his belief in catastrophism when he told an audience that geology was not concerned with the original feat of creation, rather it investigated the means which ‘omnipotence’ employed since the beginning in modifying the structure originally formed. Clarke’s enthusiasm for science was recognized soon after his arrival in Sydney in 1839 when he was invited by John Stokes, then editor of the *Sydney Herald (SH)*, to contribute occasional editorials on religion and other matters including science. His appointment indicates that there was some public interest in these subjects in New South Wales. When the *SH* was sold to John Fairfax and Charles Kemp in 1841 Clarke continued as scientific editor, feature writer and correspondent. With the support of the publishers, he set out to educate his readers, informing them about the exciting developments in science overseas and in the colonies, often explaining them in the context of scripture. He wrote on a wide range of subjects including geology, exploration, Aboriginal culture, astronomy, botany, zoology and religion and he sought to relate colonial discoveries to the finds and current scientific thinking of experts in Britain and Europe.

The *SH* under new ownership was renamed the *Sydney Morning Herald (SMH)*. Its pages give a picture of the prevailing public views on the impact of scientific discoveries on Christian beliefs. Natural theology continued to be the predominant public world-view at this time both in the colonies and in Britain, and its influence is seen in *SMH* articles, including summaries of public lectures, which reported the new discoveries in astronomy and

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31 Mozley, “Clarke, William Branwhite (1798-1878).”
32 A lecture on geology delivered at Blandford, North Dorset, 1838, from W.B. Clarke papers uncatalogued MSS 140/11, held by the Mitchell Library, Sydney, and quoted by Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79.", p.416
33 Moyal, *The Web of Science*. p.10. In 1842 the newspaper was renamed the *Sydney Morning Herald (SMH)*.
34 Ibid. p.10
35 Ibid. p.10
geology as evidences of the Creator. For example, the SMH reported the appearance of a comet in 1848, taking the opportunity to remind readers of the power of the Creator, and pointing out that the prodigious extent of the orbit and extraordinary exactitude of its reappearances gave observers ‘an overwhelming sense of the littleness of the observer…a conviction that there is nothing of true importance in the world of nature except the immutable intelligent Power by which all is governed, and the relations between Him and his intelligent creation, whom he has constituted capable of tracing and admiring the laws of His Government.’ The report was unsigned, but the writer was probably the scientific editor Clarke, given its theological message and his other writings about comets; for example, a lecture he presented in April 1843 included much of the material he published anonymously a month earlier on comets in the SMH of 9 March 1843. At that time, following the unexpected appearance of a comet over the colony, Clarke had comprehensively reviewed current knowledge including the movements and constitution of famous comets. He extolled astronomy as ‘a magnificent subject…which, of all the human sciences, has ever been regarded as being the one which is most eminently calculated “to lead man to look from nature up to nature’s God.”’ In addition to conveying current scientific knowledge, his secondary motive was to allay superstitious fears of comets which he had heard among some colonists and instead use the comet to direct their thoughts to God. Day by day, he said, he had heard people attributing the warm weather and the late and present rains to the comet presently visible from the colony; others were fearful that if the comet came close it would burn the Earth or drown it with a deluge from the water in its tail. Still others wondered what the comet might portend. Clarke reassured

36 SMH 22 March 1848, p.3
37 SMH 7 April 1843, p.2
38 Ibid. p.2
his readers that ‘the appearance of a comet is, however, no more a prodigy, and has no more influence upon the fate of men or of nations than the appearance of the moon.’ 39

Soon after his arrival in Sydney, in 1841 Clarke founded the Church of England Book Society. It was to fight the ‘infidel spirit’ of the age with the weapons of science, properly understood and applied, so it presented public lectures in Sydney with emphasis on the theological implications of science, and established a library for its members which held the largest collection of British scientific journals and scientific reference works in Australia.40 Clarke gave an important lecture to the society at the New Grammar School in Sydney on 20 October 1841 entitled ‘The Legitimate Objects and Benefits of Natural History and Science’, which gave insight into his theological position with respect to the science of the time. It also revealed the likely similar understandings of his audience of influential Sydney residents.41 In his lecture, Clarke showed his agreement with his mentor Sedgwick that science and religion were separate pursuits of two different sources of truth. Clarke accommodated the two sometimes conflicting results of these pursuits by believing that in the future the truths from revelation and from nature would be shown to be the same. However, he feared that the emerging interest in science in the colony brought with it a real danger of religious infidelity in those with a wrong understanding of science, by which he apparently meant science without due acknowledgement of the Creator. Clarke condemned what he called the spirit of the age, which he characterized as a hunger and thirst for intellectual display, for knowledge as its own reward, ‘as previously for the desire of money.’42 In Clarke’s view, this ‘thirst for intellectual display’ could be dangerous because it ‘strongly

39 *SMH* 7 April 1843, p.2
40 *SMH* 23 October 1841, p.2
41 Ibid. p.2
42 Ibid. p.2
tends to foster a spirit of infidelity, at least, it certainly does so in England and Continental Europe'. Education, he said, was at the heart of the problem and also its solution. ‘The want of proper education and the increase of improper education…all tend to infidelity in accordance with the leading spirit of the age…We ought therefore to fight this infidel tendency of the age with its own weapons’, that is, with a correct [religious] interpretation of new scientific findings. Clarke pictured a great abyss in which the stream of error was finally swallowed up by truth with scientific pursuits promoting that truth combined with a right knowledge of God and genuine religion. In support of this view he quoted St Paul’s teaching that creation itself reveals God and gives an understanding of God - ‘For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead; so that they are without excuse’ (Romans 1: 20).

In Clarke’s view, knowledge of nature increased man’s spiritual health, and knowledge of nature in the present life would fit people better for enjoyment of eternal bliss. Clarke’s theology appeared to be taking natural theology from a simple belief system to a means of eternal life. Clarke’s aims for the Society were similar to those of the reconcilers in seeking to interpret scientific findings with due reference to God, but differed from the reconcilers in not necessarily conforming scientific findings to scripture. As an example of the damage caused by wrong understanding of science, and revealing his own orthodox theology, Clarke rejected as absurd and infidel any theory that mankind had arisen from more primitive life forms. He was probably referring to Lamarck’s and Lyell’s suggestions. With ‘proper philosophie and religious indignation’ he spoke of the ‘absurd hypothesis that man was originally an untutored savage, and had gradually been

43 Ibid. p.2
44 Ibid. p.2
improved by the advance of civilization.’ 45 He reminded his audience of the Christian doctrine that ‘Man is a fallen, not an improved being’. In support of this statement that man had fallen through sin rather than risen to his present state he listed discoveries which demonstrated that our ancestors were not ignorant savages, but possessed great skill and knowledge: for example, he said, America was discovered by Northmen in the tenth century, 500 years before Columbus, and the Old Testament kings David and Solomon, he claimed, had been skilled in many sciences. In spite of these many excursions into theology, he stated that he did not wish, however, to place scientific research in the same room as theology, but recommended it merely as a useful adjunct. The object of the scientific lectures to the Church of England Book Society, Clarke said, was ‘truth gathered from the contemplation of God’s works.’ 46 Clearly, Clarke felt obliged to defend science against its religious opponents who lacked proper understanding of science: scientific discoveries were, in Clarke’s view, gifts and revelations from God and must not be studied to increase pride or contempt of scriptural authority:

If we enter upon subjects which have sustained much virulence of attack from those who understand them not, or which have been made the themes of vain self congratulation, it will not be to minister to pride or contemptuousness-We shall endeavour to impress you with the idea that what are often called human discoveries and inventions, are, in their real character, gifts and revelations from God. 47

45 SMH 23 October 1841, p.2
46 Ibid. p.2
47 Ibid. p2
Therefore, he recommended a sober, chastened contemplation of God’s creation, deprecating ‘infidelity on the one hand and enthusiasm on the other’. He criticized doubters as ‘self sufficient amateurs [sic] [amateurs], who have walked into the mirror of nature merely to see themselves’, but commended the excellence of the scientific work of Lyell and Buckland.

Finally, Clarke deplored the state of science within the Australian colonies, the lack of colleges and higher schools, libraries, museums and associations for the study of science and nature, and compared scientific studies in the colony of New South Wales unfavourably with those in Tasmania, which had just published its first scientific journal. He looked forward to the day when, assisted by societies such as the Church of England Book Society and its lectures, colonial scientists would study the unexplored and unknown resources of nature in their surroundings, contributing to the store of the world’s knowledge of nature and God.48

Anglican Bishop William Broughton was the chairman of the meeting featuring Clarke’s lecture, which was also attended by the resident clergy of the diocese, ‘a number of respectable ladies’ and Judge Alfred Stephen, a leading lay Anglican and member of the Australian Diocesan Committee who became Attorney General in 1845.49 Broughton was a supporter of science and its contributions to ‘Truth’. During the 1840s the Bishop stated that the Church ‘bears no hostility to science.’ On the contrary, it was anxious ‘to receive the homage of its professors and to embrace them as her sons.’ However, he warned ‘Science itself, could never lead alone to Truth; men required above all the knowledge of God.’50 The interest of Bishop Broughton and Judge (later Attorney General) Stephens in attending Clarke’s lecture at the inaugural scientific meeting of the Church of England

48 Ibid. p2
50 Mozley, “Evolution and the Climate of Opinion in Australia, 1840-79.” pp.417,418
Book Club in 1841 is noteworthy considering the many other issues of importance to them in the colony at the time.\textsuperscript{51}

In 1843 Clarke gave an introductory public lecture on geology to the Society at St James’s Grammar School in Sydney, which was reported at length in the \textit{SMH}.\textsuperscript{52} Clarke clarified his own position on geology and scripture: he sought to reconcile geological findings with scripture, yet disagreed with the efforts of scriptural geologists who distorted and misused geological findings to fit with literal interpretations of the Genesis creation stories. Clarke warned of the harm reconcilers would do to ‘divine truth’ if scripture was used to build up a theory which observation could refute, or if scripture was used to explain what it was never intended to explain. Clarke criticised the ignorance of scriptural geologists, saying they demonstrated inadequate knowledge of modern geology: ‘where among all the authors of Scriptural Geology is there one professing to reconcile Scripture with Geology who either professed to know or took the pains to learn what it is that geologists teach?’ Clarke did not include his teacher and correspondent Sedgwick in his criticism of scriptural geologists, perhaps because Sedgwick too was a defender of geologists and geology against some reconcilers in Britain. He had attended a meeting in York, and wrote to Clarke about a remarkable paper from Richard Owen on the fossil mammals of Australia, and another criticizing geologists by Dean Cockburn of York ‘a grand Theological paper against all geology and geologists, I did battle with him.’\textsuperscript{53} Richard Owen (1804-1892), later Sir Richard, was one of the foremost anatomists and palaeontologists in Britain. Sedgwick continued to update Clarke on the

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\textsuperscript{51} SMH 23 October 1841, p.2
\textsuperscript{52} W.B. Clarke, “Church Book Society. W.B. Clarke’s First Lecture on Geology,” \textit{Sydney Morning Herald}, 7 April 1843, p.2
\textsuperscript{53} Adam Sedgwick to Clarke, 9 October, 1844, reproduced as letter no 55 in Moyal, \textit{The Web of Science}
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latest papers and presentations on geology and fossils from Murchison, Owen and Lyell.  

Clarke defended the science of geology, now more than ever under attack for contradicting the scriptural accounts of creation and the Deluge and as a consequence seen as encouraging atheism: ‘its opponents had attacked it unfairly… had misinterpreted what geologists said.’ Clarke rejected the criticism of geologists, saying they had only just begun to reveal the geology of the earth and what it told of the Creator: ‘undoubtedly geologists were not agreed among themselves and were but pioneers in the march of truth… and explained but part of the ways of God.’ In particular he defended geologists against charges of atheism, declaring that many might be found among them who openly professed their belief in the Christian religion. Clarke maintained that any subject could provide fuel for atheistic opinions and therefore if atheists chose to use geology it was not necessarily the fault of geologists: ‘a person of skeptical habits and feelings would find food for infidelity in any subject, as well as in geology…. If there were infidel geologists it was not geology which had made them infidels, but general infidelity which led them to turn geology to its own advantage.’

He praised the rigorous work of modern geologists contrasting them with those, presumably some scriptural geologists, who advanced theories ahead of or even in contradiction to the geological findings. He upheld the evidential basis for geology: ‘excluding fancy they [modern geologists] sought for facts, instead of building up hasty and imperfect theories of the Earth, they were contented to plod patiently and wearily over the surface in

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54 Roderick Impey Murchison (1792-1871) influential Scottish geologist, President of the Geological Society, 1831-1837, and later knighted and appointed Director of the Geological Survey of Great Britain.
55 Clarke, "Church Book Society. W.B. Clarke's First Lecture on Geology."
56 Ibid.
57 Ibid.
search of those foundations of theory which could not be gainsaid.’ Clarke commended to his listeners the first volume of Lyell’s *Principles of Geology* ‘where many of the early doctrines and systems of geology were ably exposed and criticised.’ In doing so Clarke showed his open mindedness because in this volume Lyell proposed his new uniformitarian theory, which was generally seen by reconcilers as atheistic, denying the literal truth of the creation stories in scripture and by inference denying the existence of God.

Clarke pointed out how those accusing geologists of infidelity were in fact showing their ignorance of some of early Church’s teachings:

> it was remarkable that some of the Christian Fathers of the early Church, without any knowledge of the principles of modern Geology, had openly stated doctrines respecting the world, which the Christian world never suspected of heresy till the same doctrines appeared as the deductions of geologists; yet the persons who would dread to differ from the Fathers, would, on account of sentiments actually used by them, imprison and fine and excommunicate the geologists.

Clarke took issue with a statement that the date of the Earth’s age was revealed to Moses, saying that ‘he had never been able to find where Moses said so.’ In building his case against those reconcilers whom he argued distorted science to support scripture, Clarke then reviewed some of the works of the early scriptural geologists, including Burnet, Woodward, Leibnitz, Buffon and Whiston, dismissing their clumsy attempts at reconciling geology with scripture. According to Clarke, it was not until 1790 that any correct observations of the real nature of the surface of the Earth were made. These observations were made by Mr William ‘Strata’ Smith

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58 Clarke, "Church Book Society. W.B. Clarke’s First Lecture on Geology."
59 Ibid.
60 Ibid.
(1769-1839), named by Clarke and others as the parent of English geology. Clarke dated the science of geology from the early decades of the 1800s when Smith’s observations of stratigraphy showed that bands of rocks and clays always succeeded one another in certain order, and that certain distinguishing fossils were always found in the same bands. From Smith’s time onwards, Clarke said, geologists made correct observations, without falling into the old mistake of developing new theories ahead of their data. Clarke assured his listeners that he was confident that when such theories of the geological history of the earth were constructed based on proper observations they would be in full accord with the scriptural account of creation:

not only in England but on the Continent, men of science, had commenced a new era, and crude and undigested speculations had ceased to employ the student and philosopher... modern geologists contented themselves with observation, and left theory to a time when some Newton should arise to put together the scattered elements of what was truth, and frame therefrom the only true history of the Earth, which he [Clarke] earnestly believed would be in strict accordance with the written records of creation.61

The SMH summarised the intention of Clark’s lecture as informing his listeners of the history and claims of geology, defending geologists from the attacks of ‘scriptural geologists’ and showing that geology did not mitigate against the claims of scripture.62 Clarke was not a reconciler of science to scripture, he was natural theologian who sought to learn more of God through his studies of science, with full confidence that the books of

61 Ibid.
62 Ibid.
scripture and the book of nature must always reveal the same truth when
they were both properly understood.

Clarke’s theology was not threatened by discoveries of fossils, even with
their implications of appearances and extinctions of species in different time
periods, and he made this clear to the readers of his newspaper articles. In
1842 and January 1843 he contributed to the SMH a series of six articles
about fossil bones. Although the articles were contributed anonymously, he
is the only likely author. The senior zoologist of the colony, Macleay,
acknowledged Clarke as the foremost expert in New South Wales on fossils:
in a letter to Clarke dated 31 May 1844 he advised Clarke not to rely on
English geologists to classify Australian fossils, rather Clarke and other
Australian geologists should classify them according to their position in the
New Holland strata. Clarke introduced the first article by saying that the
subject of fossil bones had recently been brought to public notice by
discoveries in caverns around Wellington in New South Wales by the
explorer Thomas Mitchell and sent to Cuvier in Paris for identification.
They had been identified as bones from species unknown to zoologists of the
day, extinct species of kangaroos and others, strangely including even an
elephant. After examining the same fossil bones at the British Museum
Richard Owen excluded the elephant, but confirmed that these bones were
not from any species known outside Australia or any known existing species
at all, but were of extinct, or at least undiscovered, species. Furthermore, the
extinct kangaroo, wombat and sloth were larger than the largest known
living species. Clarke then speculated on how the bones came to be in the
caverns and whether they had been washed there by land floods or oceanic
current in previous times when this part of the land was under the sea. This
led to his discussion of the work of Buckland and consideration and rejection

63 Young, This Wonderfully Strange Country: Rev. W.B. Clarke, Colonial Scientist, pp.68,69
64 SMH 8 October 1842, p.2
of the biblical flood as a possible explanation for the depositing of the bones in the caverns. He reported Buckland’s recent conclusion that the many different bones found as fossils in caverns in Yorkshire had not been carried there by the great flood as Buckland had previously written, but rather the bones had been carried into their den by hyenas. Clarke also wrote about marine fossil finds in caves in France and Sardinia which were thought to have been deposited under the sea then later elevated onto land as land masses moved.

In this 1842 article Clarke made clear his own beliefs as a leading clergyman and scientist. First, that fossil evidence indicated some species had become extinct. Clark proposed this interpretation at a time when the scientific world was still arguing about extinction. Cuvier argued that species did become extinct, though he recognized the theological difficulties this posed; but Lamarck asserted that there was no extinction, rather species evolved into other species. Second, Clarke was subscribing to the idea that the massive elevation of land from under the sea over time in past eras was a natural process, and contributed to the formation of the land in Australia and other parts of the world, as evidenced by the finding of marine fossils on land. This supported uniformitarian theory, but contradicted scripture, traditional church doctrine and the ideas of the natural theologian Paley and others of a once-for-all creation of the land from the sea on the third day of creation, with creation of animals on the fifth day, after the creation of land was finished. The evidence showed that land forms were changing significantly at times after marine animals were created; as they died their bones were deposited in rock strata under the sea as fossils, then the seabed had been elevated to form new geological structures on land. ‘There can be no

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65 Brook, “The Rev. William Buckland, the First Paleoecologist.” and Young, The Discovery of Evolution. pp. 85, 86
67 Young, The Discovery of Evolution., pp.78, 79
question that nearly the whole of Australia, so far as has yet been explored, has, in comparatively recent times, been under the ocean; and the evidences of elevation are too numerous to admit of doubt." Reporting on the evidence of fossils collected by Count Strzelecki, himself and others, Clarke wrote that this showed that there were plants and animals inhabiting Australia before the land masses of Europe were elevated above sea level and populated with plants and animals, marvelling at 'the enormous antiquity of the singular classes of indigenous animals and plants inhabiting Australia.' Therefore, it was not surprising that the indigenous animals and plants of Australia were different from those found in fossils and in the present day in Europe. The vast separation in time of formation of land and plants and animals in each place, would argue against the simultaneous, world-wide, six-day creation sequence of Genesis chapter one, but Clarke did not comment on this contradiction.

Third, Clarke speculated on the antiquity of humans in relation to these fossil animals, but took a cautious approach to this fundamental question, waiting for more evidence before accepting that humans had lived on the earth in times well before those calculated from scripture, and had been contemporaries of animals now extinct. He said he was unable from the few examples yet discovered 'to ascertain whether man was or was not contemporaneous with the [extinct] animals that have left their remains entombed…it may be the safest course for a geologist to pursue, to collect and register facts as they arise, instead of presuming to decide a difficult and complicated question, as yet sub judice upon insufficient testimony.'

In the third article in the series on fossil bones, about the discovery of fossil bones of a gigantic bird in New Zealand, he made some joking remarks.

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68 Clarke, "Fossil Bones."
69 SMH 27 March 1846, p.2
70 Clarke, "Fossil Bones."
about the catastrophist Buckland: ‘a box of bones...was despatched to
Professor Buckland, whose appetite for fossil bones is as insatiable as that of
Maouri [sic] cannibals would be for the bones of Dr Buckland himself.’\textsuperscript{71} He
even found an agreement with scripture, commenting that ‘at one period the
earth was tenanted not only by enormous lizards, but by such birds as might
lead us to say with scripture “There were giants in those days”.’\textsuperscript{72}

Complementing Clarke’s natural theology was his great faith in providence,
and his desire to hand that faith on to others. He was confident providence
would provide answers, through science, to the questions and the dangers
from the natural world, and even to the challenges of new theories about the
natural world. For example, in an article commending the British Parliament
for taking action to reduce the dangers of lightning strikes on buildings and
ships by using lightning rod conductors, Clarke wrote, ‘Providence never
allowed man to be menaced by his other instruments without teaching him
how to avoid the danger.’\textsuperscript{73} In the same article he castigated some local
authorities and (probably) clergymen for their ignorance of science and its
practical applications, ‘Some blockheads whom we could name, (who) fancy
that all wisdom lies in abstract theories of moral or religious obligation, and
that questions of science are beneath the dignity of the statesman or the
divine.’\textsuperscript{74} As Gladwin has commented, for Clarke scientific endeavour was a
partnership with divine providence to benefit one’s fellow man in a fallen
world. \textsuperscript{75} The benefits of such a partnership with providence extended even
further. In an article in 1846 on the recent geological survey conducted by
Strzelecki in New South Wales, Clarke showed his belief that the huge coal
deposits found by Strzelecki and Clarke himself were established by

\textsuperscript{71} Clarke, Fossil Bones III, \textit{SMH} 26 July 1843, p.2
\textsuperscript{72} Ibid. p.2
\textsuperscript{73} \textit{SMH} 10 November 1845, p.2
\textsuperscript{74} Ibid.
\textsuperscript{75} Gladwin, "Australian Anglican Clergymen, Science and Religion, 1820-1850." p.301
providence for the benefit of God’s people and the purposes of God: ‘the whole of the great sandstone territory of New South Wales...contains vast deposits of that useful mineral...which hereafter may be employed by our descendants in extending the boundaries of civilization, arts and manufactures, and in assisting the spread of scriptural truth.’76 In the previous decade, Sydney geologist and clergyman Richard Taylor also wrote that the fossil plants in a coal mine he visited in Newcastle revealed ‘the wonderful contrivances of an all wise Providence.’77

Clarke was arguably the first person to discover gold in New South Wales.78 His biographer, Moyal, remarked on Clarke’s complete reversal from his initial concern about the potential adverse effects of gold on colonial moral life. As a scientist and clergyman he came to see in the discovery the providence of God, remarking that ‘Strength, vigour and life itself would be infused...into the community and social moral and religious advancement ...assisted.’79

Clarke’s correspondence reflects the motivation of a sincere churchman to demonstrate to the interested public the providence and beneficence of God in scientific discoveries. In his lectures and writing Clarke revealed himself as an enthusiast for the scientific and practical opportunities the new continent offered. In this he differed from many of his fellow colonial clerics, including Broughton, Lang and John Wollaston in Western Australia who saw the continent as a wilderness, akin to the wilderness in which the nation of Israel was severely tested according to Genesis accounts.80 Clarke’s scientific eye saw providence and potential where they saw hardship and

76 SMH 27 March 1846, p.2
77 Gilbert, "Plants and Parsons.", p.25
78 Moyal, The Web of Science., p.14
79 Ibid p.17
80 Lake, "Protestant Christianity and the Colonial Environment: Australia as a Wilderness in the 1830s and 1840s." pp.37,38
trials. In particular, Clarke believed science confirmed that providence favoured the British: ‘It is indeed a remarkable fact, that wherever the Anglo-Saxon race have established themselves, those deposits of fossil fuel are found to exist.’

Clarke was echoing the prevailing view of providential imperialism, tempered for him by notions of trusteeship and accountability to God. In advocating scientific exploration of Australia in an article published in 1847 Clarke wrote that Britain had received a fifth of the globe ‘in trust from Providence’, so the ‘destiny of Australia’ must be ‘the civilization and evangelisation of thousands and tens of thousands of immortal beings’. Gladwin links Clarke’s providential enthusiasm with that prevailing in English missionary circles at the time. Gladwin also links Clarke’s moderate Evangelicalism with his enthusiasm for science.

However, it is more likely that much of Clarke’s enthusiasm for science was nurtured in his studies at Cambridge with eminent lecturers such as Sedgwick, whose encouragement of Clarke’s scientific studies continued until Sedgwick’s death.

In 1842, the Reverend Robert Allwood, a natural theologian and reconciler, reminded the audience in a lecture to the Church of England Book Society that the purpose of the study of nature was to reveal and glorify the Creator. Allwood (1803-1891) was the incumbent from 1840 to 1884 at St James’ King Street, the principal church and pro-cathedral in Sydney. Educated at Cambridge, his main interest was education through his parish school and in training denominational teachers, but charges of Tractarian influence in the 1840s made his college for teacher training unpopular with

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81 SMH 27 March 1846, p.2
82 Gladwin, "Australian Anglican Clergymen, Science and Religion, 1820-1850.", pp.301, 302
83 SMH 1 January 1847, p.2
84 Gladwin, "Australian Anglican Clergymen, Science and Religion, 1820-1850.", p.302
85 Ibid. p.304
86 SMH 1 September 1842, p.4.
clergy and laity. Allwood praised the recent establishment of the Church of England Book Society and its library of three hundred books covering the topics of natural history, philosophy and the ‘truths of Revelation’. Much of his lecture appears to be a stronger warning than Clarke’s of the dangers of science if pursued for its own sake or for self-satisfaction, rather than to the glory of God. He held up the positive example of the Earl of Bridgewater’s financing of the writing of scientific treatises to prove the Creator’s handiwork as an example for proper use of the Creator’s best gifts. He warned of the dangers of scientists forgetting the Creator as they studied creation - ‘so absorbed in contemplation of the Creator’s works, in tracing the various processes through which they pass, and the various laws to which they are subject, as to forget the high attributes of the Creator himself’. He criticized the pride and foolhardiness of the unbelieving scientist who ‘with uncurbed pride, rejected the evidence for the truth of his revealed word, has denied his providential interference in the transactions of the earth; and plunging yet deeper into the abyss of unbelief, has joined the fool of old, in denying his very existence.’ Like Clarke, he warned of the danger of ‘improper education’ giving men knowledge of nature without the corresponding knowledge of the Creator, ‘elevating men to a lofty pinnacle without giving what alone can prevent them being made giddy by the height.’ Allwood’s understanding of the purpose of the Society was to counteract the danger of men cultivating intellectual accomplishments in

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87 K.J. Cable, "Allwood, Robert (1803-1891)," *Australian Dictionary of Biography* (1966), http://adb.anu.edu.au/biography/allwood-robert-1701/text1841. His interest in education continued, and in 1855 he was elected fellow of the new St Paul’s College of the University of Sydney. Its first classes were held at his church, St James. In the same year he became the first Anglican cleric to serve as a member of the senate of the university and became its Vice Chancellor from 1869-1882.

88 When the Right Honourable and Reverend Francis Henry, Earl of Bridgewater died in 1829 he left eight thousand pounds to print a thousand copies of a work ‘On the power, wisdom and goodness of God, as manifested in the creation’. The published work consisted of 8 volumes, covering aspects of zoology, geology, astronomy and chemistry. The authors included Buckland. From www.victorianweb.org/science/bridgewater.html, (accessed 4/4/15)

89 *SMH* 1 September 1842, p.4

90 Ibid. p.4

91 *SMH* 1 September 1842, p.4.
science at the expense of personal piety. Like Clarke, Allwood named this
danger as the spirit of the age.92

Allwood took the literal position of six days of creation in the year 4004 BCE,
and he was confident that all current and future discoveries of science would
eventually confirm this literal truth. He shared Clarke’s faith in a future
convergence of the truths revealed by science and scripture; but Allwood’s
faith was based on reconciler science confirming literal scripture
interpretation, whereas Clarke was a natural theologian less dogmatic in
adherence to literal interpretations of scripture and more flexible in his
understanding of extended timescales and gradual geological changes in the
earth. Allwood gave one positive (though erroneous) example in which
science triumphantly confirmed scripture. According to Allwood, the recent
research of the French archeologists Champion and Wilkinson in
deciphering the Egyptian language proved the pre-Mosaic dates in current
Egyptian research to be false and confirmed the Mosaic account.93

As Gladwin has commented ‘Anglican clergymen played a key role in
Australian debates about science and religion in the formative second
quarter of the nineteenth century.’94 Gladwin found their use of the popular
literature, journals, newspapers and almanacs for their articles striking.95
Reporting on the period 1788-1850, he listed the considerable journalistic
work of many colonial clerics, as editors and correspondents, commenting
on issues such as the humanity of Aborigines and the scientific exploration
of Australia. many wrote anonymously, but prominent were Wilton and

92 Ibid. p.4.
93 Presumably a mis-spelt reference to the French linguist Jean-Francis Champollion who deciphered
the hieroglyphs on the Rosetta stone in Paris in 1822.
94 Gladwin, "Australian Anglican Clergymen, Science and Religion, 1820-1850.", pp.303-304
95 Ibid. p.305

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Clarke, Lillie and J.D.Lang. In the 1840s and 1850s there were virtually no scientific journals or societies in the Australian colonies for presenting their ideas and reports. Also, they had a strong motive to educate the public in what they believed to be the correct religious interpretation of the new ideas from science, and for this purpose the popular literature, together with lectures presented to Mechanics’ Institutes as well as schools and church organizations, were the best existing media. As seen in the extracts from British newspapers such as the Spectator and other countries such as the American New York Times, which were reproduced frequently in colonial newspapers, the trend of popular press presenting and interpreting scientific ideas and discoveries was also prevalent in Britain and in America.

Both Clarke and Allwood used their lectures to address the underlying concern shown in some of the newspaper articles at this time that new discoveries in geology were starting to undermine belief in the literal truth of scripture, such as the account of the biblical flood. Geologists had found no evidence for a universal flood as depicted in the biblical account of the Deluge. Clarke alluded to this controversy in an article on fossil bones, not arguing against the Diluvial account, but agreeing with Buckland’s claim that geology ‘deals with several such catastrophes.’ However, Clarke reiterated his warning against those who would seek to reconcile science with scripture, however well-intentioned, by going against the evidence being revealed by science. ‘And although persons of strong faith in revelation, and still stronger prejudices as to the province of faith, many consider Diluvial theory the most prudent and only certain one, religion will gain nothing by the adoption of views which cannot be independently

97 Clarke, "Fossil Bones.".p.2
followed out.’ Clarke, in his review in the SMH in 1846 praising the author of a pamphlet on the origin and antiquity of the Australian Aborigines, drew attention to two Aboriginal traditions recalling a great flood, purportedly covering the Blue Mountains; but then he criticized the author of the pamphlet for not taking the opportunity to relate these Aboriginal traditions to the ‘deluge of Noah.’ The leading Presbyterian clergymen in New South Wales, John Dunmore Lang, delivered a series of lectures on the subject of the Deluge and the Mosaic account of creation during 1843. Lang accepted the historical truth of Noah’s Deluge, but agreed with the interpretation that each of the six days of creation represented a long period of geological time. The historical truth of the Deluge had been asserted by the influential scriptural geologists and biblical literalists in Europe and Britain. To the French scientist, Georges Cuvier the Deluge explained the presence of ancient marine fossils inland, and he believed that it had been the latest of many such catastrophic events. As we saw in the chapter on the 1830s, Buckland’s research in the 1820s and 1830s had also been directed at finding proof of the Deluge.

Finding evidence for the Deluge was clearly of interest to the public in the Australian colonies, judging by the amount of attention it received in colonial newspapers. The Morning Chronicle in Sydney in 1846 printed a report from Oregon in America on findings of marine shells and fossils high on hills, as in some mountains in Europe, as being ‘incontestable vestiges of the Deluge.’ A short article entitled ‘The Deluge’ in the miscellaneous section of the Hobart Colonial Times in June 1848 likewise revealed stubborn reconciler thinking in the face of the increasing geological evidence.

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98 Ibid. p.2
99 Review,” SMH, 3 October 1846, pp.2,4
100 Mozley, “Evolution and the Climate of Opinion in Australia, 1840-79.” p.419
102 Brook, “The Rev. William Buckland, the First Paleocologist.”, pp.85,86
103 Morning Chronicle 17 June 1846, p.4
‘Geologists are now converging to the opinion that there are no sensible vestiges of the deluge upon the earth’ the writer concluded, but went on to propose that this was because after the Deluge, waters arising from openings in the bottom of the sea or from fountains of the great deep being broken up could have been dispersed without any vestiges of the event remaining in the geological record of the physical surface features of the earth.\footnote{Colonial Times (Hobart) 6 June 1848, p.4, under the heading ‘Dr Chambers Daily Scripture Readings’}

Some more stretched reconciler thinking about the Deluge was shown in ‘A Commentary on Husbandry’ by ‘Agrarius’, a letter published in the SMH in November 1842. The writer insisted that mankind’s knowledge of agriculture and husbandry came from God and not from technological developments or science. From references in the book of Genesis he concluded that the earth was skillfully cultivated before the Deluge. He further concluded that Noah, who lived six hundred years in the world before the flood, had naturally obtained all of the information he had about the arts and sciences including husbandry from his grandfather Methuselah, with whom he lived for the six hundred years. Further, Methuselah who lived for two hundred and forty three years contemporary with the progenitor of mankind, Adam, provided the link between the knowledge of science given to Adam by God and his grandson Noah.\footnote{SMH 7 November 1842, p.2}

Among the natural theologians in New South Wales who shared Clarke’s view of the essential compatibility of science with scripture was William Woolls.\footnote{Gilbert, William Woolls. A Most Useful Colonist., p.53, 54. Walker later became the first incumbent of the parish of Marsfield, from 1843 to 1847, then Rector of Liverpool from 1847 to 1854. Woolls ran his own successful school in Parramatta in New South Wales from 1841 to 1865.} Woolls’ basic training in botany came while he was a junior master at the new King’s School at Parramatta from 1832 to 1836, from the headmaster, James Walker, another clergyman botanist. Like Clarke, Woolls
saw no threat to Christian beliefs in the teaching and study of nature. According to his biographer, Woolls believed that Christian ministers should rejoice in dissemination of knowledge and direct their people in the study of nature.¹⁰⁷ Woolls believed education in all subjects was important, particularly in a penal colony, in teaching the lower classes to do their duty; however it must not cause them to have feelings of contempt towards their superiors.¹⁰⁸ He saw no need for conflict between science and religion, seeing ‘the harmony that exists between the book of Nature and the book of Revelation’; a true natural theologian, he sought to look through nature up to nature’s God.¹⁰⁹ He shared Clarke’s belief that God had provided for every need of his people. Every plant had a special purpose, and only through ignorance had such purpose not yet been discovered. The role of science was to reveal God’s plan and God’s provision for his people.¹¹⁰

Interest in science for its own sake, and in the controversies between the reconcilers of scripture and science, was not limited in this period to leading clerics and scientists in the colonies, but now extended to the general public. In New South Wales, Tasmania and Victoria in the 1840s there were large attendances at public lectures on science in the Mechanics’ Institutes, School of Arts and the Church of England Book Society. The Mechanics’ Institutes had originated in Scotland in 1821, and spread throughout Britain and in much of the settler colonies of the British Empire, including Australian cities and many country towns. They provided adult education, with reading rooms, libraries and lectures for ‘artisans, skilled workers and tradespeople’ (termed ‘mechanics’) which was otherwise only available to the wealthy.¹¹¹ The first Mechanics’ Institute in the Australian colonies was founded in

¹⁰⁷ Ibid. p.51
¹⁰⁸ Ibid. p.39
¹⁰⁹ Gilbert, "Plants and Parsons." p.20
¹¹⁰ Ibid. p.20
¹¹¹ www.utas.edu.au/library/companiontoc...history/M/Mechanics%20Institutes.html (accessed 28/10/16)
Hobart Town in 1827, and the first in Victoria in 1839. They spread rapidly throughout the towns of colonies, sometimes called Schools of Arts or athenaeums, wherever a hall or library or school were needed. Nearly one thousand were built in Victoria alone.\textsuperscript{112} At its peak Australia had three thousand such institutes.\textsuperscript{113} The forums of the Mechanics’ Institutes’ lectures in the colonies provided for the expression of new and sometimes radical ideas on many subjects, with lectures by educated professionals and those in the public life of the colony.

One of the most successful Mechanics’ Institutes in the Australian colonies was the one in Launceston, which was established in 1842 and whose lecture topics included science.\textsuperscript{114} A series of lectures in 1843 at the Launceston Mechanics’ Institute concerned science and the scriptures. Two lectures on natural theology were given by Dr Udny, a surgeon, artist and photographer visiting from Britain.\textsuperscript{115} In his second lecture Udny declared that the study of scripture alone was not sufficient to give knowledge of the Creator, for the study of nature was a necessary auxiliary to revealed religion.\textsuperscript{116} In an attack on scriptural geologists, the reconcilers, and their insistence on the literal interpretations of scripture, he declared that the discoveries of geology were not to be distorted to conform to religious dogmas: ‘we are not to shift and shuffle the solid strata of the earth to suit the dogmas of any class of men nor are we to distrust the evidence of one of those senses with which our creator has endowed us, merely for the purpose of supporting a generally received though erroneous doctrine.’\textsuperscript{117} The lecture was so popular it was repeated in

\textsuperscript{112} \url{www.utas.edu.au/library/companiononto...history/M/Mechanics%20Institutes.html} (accessed 28/10/16); \url{home.vicnet.net.au/~mivic/historyofmechanics-institutes.html} (accessed 28/10/16)
\textsuperscript{113} \url{www.theaustralian.com.au/mechanics-institutes.../398b3136f10ac623b2b9af99817f...} (accessed 28/10/16)
\textsuperscript{114} \url{www.utas.edu.au/library/companiononto...history/M/Mechanics%20Institutes.html} (accessed 28/10/16)
\textsuperscript{115} \url{www.daao.org.au.bio/dr-udny/biography} (accessed 28/10/16)
\textsuperscript{116} \textit{Launceston Examiner} 17 June 1843, p.4
\textsuperscript{117} \textit{Launceston Examiner} 17 June 1843, p.4
the following week. Quite early in the life of the Mechanics’ Institutes in Australia they were providing a forum for speakers on controversial subjects. Later in the year the Reverend Mr Hastie delivered a series of lectures to the same Institute, on the connection between knowledge and religion with the stated purpose of disarming hostility to science ‘true science contained nothing inimical to true religion.’118 He reaffirmed the traditional understanding that the author of the Pentateuch was Moses, drawing on knowledge from Egyptian wisdom but inspired by God. Hastie defended the advancement of knowledge, saying it was inseparably connected to Christianity; even the controversies arising from the apparent conflict between knowledge and scripture had served to sharpen the intellect of Christian scientists.119 But his attempt to show the comfortable relationship between science and religion did not convince the correspondent ‘Observer’, who wrote objecting to Hastie’s affirmation of the literal truth of the Genesis creation stories as written by Moses, saying that Hastie had ‘consigned the opinions of geologists to oblivion.’120

Charles Nicholson (later Sir Charles, 1808-1903), an Anglican, was a frequent lecturer on scientific topics at the Sydney Mechanics’ Institutes. Nicholson had trained in medicine at the University of Edinburgh, had an extensive practice in obstetrics in Sydney in the 1840s as well as many business interests and was interested in the classics, history and education.121 Nicholson summarized the role of the Mechanics’ Institutes with respect to science: ‘science should be made accessible to all... [and ] through the instrumentality of the Mechanics’ Institutes, their libraries, and the joint

118 Launceston Examiner 27 September 1843, p.4
119 Launceston Examiner 4 October 1843, p.6
120 Launceston Advertiser 19 October 1843, p2
influence of the press, scientific facts may be at once communicated to, and
apprehended by the popular student.’122 These lectures were often reported
in the SH and its successor the SMH again demonstrating considerable
public interest.

Nicholson gave an introductory lecture at the Sydney Mechanics’ Institute,
called the Sydney Mechanics’ School of Arts123 in May 1840 as its vice
president, and it was reported at length in the SH.124 After stating the aims of
the organization, he emphasized the separation he believed must lie between
science and moral and religious issues, and gave the clear assurance that
only matters of the physical world would be subjects for consideration:

The objects of all human knowledge may be considered as divisible
into two great classes, that having relation to the moral attributes and
moral destinies of our species; and that having relation to the external
and mere physical world. These two great divisions of human
investigation ought never to be confounded; the objects and
phenomena they present are essentially distinct and it is as
unphilosophic as it is injudicious to apply the reasoning and results
derivable from the one, to enquiries belonging to the other.125

Nicholson, like Udny in Launceston, defended science against those who
would misuse it, such as scriptural geologists, and those who attacked it for
creating infidels, including some churchmen.126 He reassured his audience
that knowledge of science gained from lectures at the Mechanics’ Institutes
would not render men sceptical or indifferent to the great truths of religion:

\begin{footnotes}
122 SH 29 May, 1840, p.2
123 The Sydney Mechanics’ School of Arts founded in 1833 is the longest running School of Arts and
lending library in Australia, \url{www.smsa.org.au}, (accessed 29/10/16)
124 SH 29 May, 1840, p.2
125 Ibid. p.2
126 Ibid. p.2
\end{footnotes}
I make these remarks, because it is a charge too frequently brought against institutions professing to enlighten the popular mind, that they have a tendency to create a skeptical and dogmatic spirit, a disposition to draw rash and precipitate conclusions on matters to which the reasoning applied is altogether inadmissible.\textsuperscript{127}

Nicholson’s means of accommodating seemingly incompatible science with scripture was like Herschel’s in the previous decade - to demand separation of the two studies, in both their information and style of reasoning.\textsuperscript{128} Scientific reasoning, he asserted, should not apply to moral and religious issues: ‘religion and morals-[are] subjects of transcendent importance but not to be elucidated by arguments and observations derived from the mere physical part of the creation.’\textsuperscript{129} The Mechanics’ Institutes would not trespass on grounds beyond science: ‘Let us not then attempt to trespass beyond the boundary of so ample a domain as that which she [nature] has assigned us; let enquiries into the abstract principles of our being be ever held distinct and separate from those relating to matter.’\textsuperscript{130} Nicholson was more optimistic than Clarke in reassuring the fearful that knowledge of science could not cause infidelity or indifference to religion: ‘let those whose province it is to investigate, and analyse the moral relations, and moral settings of our species, on their part cease to fear, that a knowledge of the works of the creator, can render men either skeptical of or indifferent to the great truths of religion.’

Nicholson proceeded to speak about the physical sciences, then moved on to geology, including fossils, quoting Buckland’s insights on coal deposits formed by extinct species: ‘we prepare our food, and maintain our forges

\textsuperscript{127} Ibid. p.2  
\textsuperscript{128} Hull, \textit{Darwin and His Critics}. p.6  
\textsuperscript{129} \textit{SH} 29 May 1840, p.2  
\textsuperscript{130} Ibid. p.2
and furnaces and the power of our steam engines, with the remains of plants of ancient forms and extinct species.’ He spoke of the past condition of the earth’s surface being very different in ‘periods infinitely remote’. He described as ‘startling’ geology’s findings that a long time existed before the creation of simple organic beings, the first tenants of the earth, which were then swept away [presumably by the Deluge] and their races became extinct to be followed by other beings higher in the scale of animal and vegetable life.131 This reveals his understanding, and perhaps that of some of his audience, that geologists were claiming that creation of the earth and its inhabitants were separated by great time periods and not days, as described in Genesis chapter 1. He was alluding also to the new ideas about extinctions, succession of species and of increasing complexity in species over time coming from Cuvier, Lyell and others. He spoke of the ‘extraordinary revelations’ of past climate change and consequent population changes, of fossils of tropical plants and animals found in regions now temperate and polar and of fossil remains of giant, now extinct animals. Nicholson’s lectures to the School of Arts continued until 16 November 1841.132

Despite Nicholson’s claim that the Institute would exclude religious topics, defence of scriptures was taken up in a lecture by John Rae on the English language to the Sydney Mechanics’ School of Arts in September 1842.133 Rae, the first full-time town clerk of Sydney, was also a writer and a painter, and had been educated in law and literature at the University of Aberdeen. In contrast to Nicolson, he took for granted the literal truth of the biblical text. His interest was in language, and he spoke of the origins of speech as a gift

131 Ibid. p.2
132 SH 18 November 1841, p.2
from the deity to Adam and Eve, then about the diversity of human languages as stemming from the biblical tower of Babel, and concluded that written language was a gift from the deity to Moses.\textsuperscript{134}

In Tasmania in the 1840s a leading Presbyterian cleric, John Lillie, promoted local interest in the sciences with wide support from the clergy; like Clarke and Woolls in New South Wales he encouraged interest in science as a means of moral and intellectual improvement for the colony.\textsuperscript{135} Lillie was well supported by the new Lieutenant Governor, Sir John Franklin, who led the colony from 1837 to 1843. Franklin was an experienced explorer, who supported education and furthered the work of scientists such as John Gould and Count Strzelecki. Before he left the colony in 1843 he founded the Tasmanian Natural History Society, some of whose members in 1855 founded the first Royal Society outside Britain in Tasmania, and Franklin also subsidized the publication of the \textit{Tasmanian Journal of Natural History}.\textsuperscript{136} This was Australia’s first scientific journal, and was published in Hobart from 1842 to 1846.\textsuperscript{137} In his introductory paper to the first issue Lillie wrote that the purpose of the journal was ‘to furnish original papers upon the Natural History and Physics of Tasmania...more particularly the departments of Zoology-Botany-Geology-and Meteorology...though not professedly devoted to moral or religious subjects.’\textsuperscript{138} Notwithstanding this disclaimer, Lillie commented on the importance of the circulation of a scientific journal in having a salutary effect on morals, by leading people to the study of Nature. The study of Nature would exercise minds for the good, which could otherwise ‘become relaxed...or narrowed... with petty details;

\begin{footnotesize}
\textsuperscript{134} SMH 29 September 1842, p.2
\textsuperscript{135} Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79.", p.418
\textsuperscript{137} This is undoubtedly the journal which Clarke had received and used to contrast the absence of any such journals in New South Wales, as reported in the \textit{SH} of 23 October 1841, p.2
\textsuperscript{138} John Lillie, "Introductory Paper," \textit{The Tasmanian Journal of Natural Science} 1, no. 1 (1842),p.1
\end{footnotesize}
or still worse to be given up to the sordid passion for accumulating wealth’ due to their seclusion from European society. 139 Those studying Nature would improve their minds well as gaining enjoyment; they ‘may receive valuable exercise to their mental powers and open up new and most productive sources of pleasure and enjoyment.’ 140 Lillie’s published testimony was to natural theology: he affirmed a wise and benevolent Creator in public lectures including ‘Subserviency of the Works of Nature to Religion’ (Hobart, 1842).

In New South Wales the study of science was also supported by political as well as church leaders as an antidote to the prevalent pursuit of wealth. A leading article in the SMH, commended the formation of the Australian Botanic and Horticultural Society in 1848. 141 Such societies, of a purely intellectual kind, it said, were rare in the colony, and it was the duty of the public press to encourage such schemes. The article pointed out that pains had been taken to frame the society upon principles of union of all classes, and asserted it was a means of raising the intellectual and moral tone of the colony in the face of the predominant pursuit of wealth:

a new order is dawning upon us… Now, when our population rivals that of an English city, when we have prospect of naval stations and national militia; when Bishops abound and the embryo Parliament is past its leading strings, it behoves the citizens to show themselves…not altogether deserving of the charge made against them by some, that they are children of Mammon…If rightly supported it (the Society) will help accomplish it (this end). 142

139 Ibid. p.1
140 Ibid. p.1
141 SMH 27 June, 1848, p.2
142 Ibid. p.2
The new society’s president was Governor Fitzroy and Alexander Macleay and Charles Nicholson were among its vice-presidents. Anglican clergy made up much of the committee: Clarke, the Reverends W.H. Walsh and G.E Turner, along with prominent Anglicans William Macleay, George Macleay, William Macarthur, and Thomas Woolley.¹⁴³

However, notwithstanding the confidence of those clergymen and leading laymen in the Australian colonies who in these mid-Victorian decades looked to the pursuit of nature studies to support traditional beliefs about God and God’s creation, and therefore to bolster the moral and intellectual tone of the colonies their views were to be challenged in the next few years with disturbing new concepts of the origin of species and the role of God in the world.

¹⁴³ *SMH* 20 June 1848, p.1
5. 1840s and 1850s: Vestiges and New Theories of Evolution

In 1844 the uniformitarian concept of gradual changes in geology was controversially extended to biological systems, even to the creation of the universe, in the book *Vestiges of the Natural History of Creation* [Vestiges].

Vestiges was not the first publication to present a theory of evolution, meaning gradual development of new species from older species. An early proponent of evolution, Jean-Baptiste Lamarck (1744-1829), in his 1809 treatise *Philosophie Zoologique* had suggested parallel lines of evolution of new species from earlier existing species, with different starting points in time; his concept of evolution differed from the later theory of Darwin in that it did not propose a branched evolutionary tree with common ancestry and did not include extinction. Lamarck argued that evolution into new species was a better explanation for the disappearance of ancient species from the fossil record than extinction; at the time, particularly in Britain, people rejected the idea of extinction of species on theological grounds, because it seemed irreligious, perhaps implying mistakes on God’s part, though none of Lamarck’s proposals implied the intervention of the Creator.

*Vestiges*, however, was the first English book about the concept of the development of new species in the plant and animal kingdoms. It sparked one of the greatest sensations of the mid-Victorian era, drawing adverse reactions from the churches and from many naturalists. As historian James

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2 Lamarck, *Zoological Philosophy. An Exposition with Regard to the Natural History of Animals*.
4 Chambers, *Vestiges of the Natural History of Creation*.
5 See for example Darwin’s letter to Charles Lyell of 16 June 1848 mentioning Robert Chambers ‘If he be, as I believe the Author of the Vestiges this book for poverty of intellect is a literary curiosity’ Letter 1186, Darwin Correspondence Project, www.darwinproject.ac.uk/darwinletters/calendar/entry-1186.html
Secord wrote, ‘The book was banned, it was damned, it was hailed as the gospel for the new age.’ It was published anonymously amid much speculation about its author, who was posthumously revealed to be Robert Chambers (1802-1871), Fellow of the Royal Society of Edinburgh from 1840 and Fellow of the Geological Society of London, an influential Scottish author, journal editor and publisher. Anonymity was probably prudent judging by the poor reception of the work by scientists and churchmen alike. However, the book was very popular with the public and went to twenty editions by 1860.  

The writer was clearly a natural theologian who had embraced the concept of gradualism from geology, envisioning it as a natural force and plan flowing from the mind of God. The first chapter applied gradualist theory to the creation of the thousands of worlds in the heavens, claiming that they were all in different stages of physical and moral development, some more complete in these respects than the earth. Chambers claimed that the continuous development described in these ‘cosmical arrangements’ also applied to the organic world, rendering unnecessary the active intervention of the Creator in the formation of each species on each world:

how can we suppose that the August being who brought all these countless worlds into form by the simple establishment of a natural principle flowing from his mind, was to interfere personally and specially on every occasion when a new shellfish or reptile was to be

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7 Ibid.
8 Chambers, *Vestiges of the Natural History of Creation*. p.9
The author reasoned that the Almighty through his law of development commissioned all things from the start, as life originated from inorganic chemicals and God through his providence continually supported the whole system. Under the direction of God’s law of development increasingly more complex forms evolved. Progressive development within the human type was also proposed, again as expression of the divine will, from the lowest form to the ‘highest point yet attained on the animal scale’, in Chamber’s view, the adult Caucasian. However, he proposed that this law could operate in both directions for humans: under advantageous environmental conditions, what he called the more primitive forms such as the Negro could, in an American civilized household, improve and become more like the Caucasian. Likewise, under poor conditions retrogression could occur. This statement reveals the writer’s belief in the racial superiority of Caucasians and in particular Britons, expounded by David Hume in the eighteenth century and which remained prevalent in the nineteenth century.

It was the same in the Australian colonies. In the early decades of the century, settlers in the colony of New South Wales were already calling Aborigines ‘tailless-monkeys’; and one writer in 1834 placed them ‘at the very zero of civilization, constituting …the connecting link between man and

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9 Ibid. p.154
10 Ibid. pp. 55, 56, 156, 157 and 170-180
11 Ibid. p.148
12 Ibid. p.156
13 Ibid. pp.217, 218
14 David Hume (1711-1776) was a Scottish philosopher whose theories on the superiority of white Britons above other white races and even further above Negroes were widely read and used to support the lucrative slave trade; Aaron Garrett, "Hume's Revised Racism Revisited," Hume Society, www.humesociety.org/hs/issues/v26n1/garrett/garrett-v26n1.pdf. (accessed 30/10/16)
the monkey tribe’. Importantly, in addressing the place of humans in evolution, Chambers took issue with the Quinarian classification system proposed by William Sharp Macleay in 1817 and promoted by the naturalist William Swainson, which separated humans from the orders of animals and placed them as a race apart, between ‘unintelligent forms and angels’. This idea was ridiculed in *Vestiges*, with Chambers demanding that the anatomical similarities between humans and the apes, particularly the ‘orangs’, needed to be acknowledged in their classification. He therefore designated a new order, Cheirotheria, which included all mammals which possessed hands. Humans were at the top of this order, but it also included the apes and lemurs. The close relationship between humans and apes in this system of classification implied the evolution of humans from ape-like ancestors, and evolution within the human race, from the ‘low and barbarous condition’ as seen in Australian Aborigines to the ‘beauty of the higher ranks in England’. Furthermore, future development of humans was a possibility: ‘are there yet to be species superior to us…a nobler type of humans?’ The author acknowledged that his proposal of a law of development to explain the creation of species was a ‘startling announcement’ and appeared to contradict the usual understanding of the creation expressed in Genesis Chapter 1. However, he proposed that it fitted a new interpretation of Genesis: that God was commanding each step of creation as an expression of his will through his law, rather than by his own direct acts, and that the wording of the Genesis creation account was due to the ignorance of the natural world of the original writer. ‘The prevalent ideas

17 Chambers, *Vestiges of the Natural History of Creation*. p. 266
18 Ibid. p.267
19 Ibid. p.280
20 Ibid. p.276
about the organic creation appear only as mistaken inference from the text, formed at a time when man’s ignorance prevented him from forming there-from a just conclusion.’

In the conclusion of *Vestiges*, Chambers reflected on the way the system of nature might reveal more about the character of the Creator. He wrote that the system showed benevolence as a leading principle of the divine mind, but that benevolence seemed not to act invariably. In acknowledging the difficulty of reconciling the sometimes violent actions of the law of development with the traditional image of a benevolent God he admitted ignorance, saying that the present system must in fact be part of a larger whole, simply a stage in a ‘Great Progress’.

In November 1845, the *South Australian Register* introduced *Vestiges* to its readers by reprinting a very comprehensive and positive view of its contents from the *New York Times*. The review highlighted the proposal for gradual development of life forms including humans from primitive forms, coming into being at different times but preordained and under God’s law of development. ‘The whole train of animated beings to be a series of advances of the principle of development…those advances to have been arranged from the first in the counsels of the Divine wisdom, as under necessary modifications gradually to take place.’ The review did not back away from *Vestiges’* inclusion of humanity in this process of development, which began, the reviewer accurately stated, at the stage of the ‘animicule’ (or simple protozoan). Then development towards human beings passed through ‘conditions generally resembling a fish, a reptile, a bird and the lower mammalia, before it attains its specific maturity… He [the author of *Vestiges*]

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21 Ibid. p.156  
22 Ibid. p.385  
23 *South Australian Register* 22 November 1845, p.4  
24 *South Australian Register* 22 November 1845, p.4
acknowledges the difficulty in this argument is the observation that like forms appear to beget like forms.’ 25 This was indeed a difficulty that needed to be addressed as the concept of evolution developed: how could one species develop into another when offspring always closely resemble their parents? The reviewer reflected, however, that this difficulty was the case in the ‘historical era’ - presumably meaning the time since mankind appeared, but may have been different in ‘the ages preceding it’. 26 He was implying that there had been ages, not the days stated in Genesis, in which the world existed before the appearance of humans, agreeing with Lyell’s proposal that the earth was much older than previously accepted. The publication of the review shows that some of the revolutionary ideas contained *Vestiges*, including evolution and even evolution of humans from primitive life forms, were starting to appear in the public press in the Australian colonies before the book itself was more widely available. The reviewer earnestly recommended it to the attention of thoughtful men, as an ‘extraordinary book’, ‘the first attempt that has been made to connect the natural sciences into a history of creation.’ 27

Uniformitarian views on gradual change and adaptation of species of animals, not yet named as evolution or referenced to *Vestiges*, were beginning to appear in the press in Australia from the later 1840s. An article on extinct animals from the South American pampas in a series of ‘Miscellaneous Extracts’ from British sources was published without comment in the *SMH* in 1845. As well as dealing with extinction of species, the wording is very suggestive of development of new species adapted to particular environments:

25 Ibid. p.4
26 Ibid. p.4
27 *South Australian Register* 22 November 1845, p.4
at a very recent geological period, and perhaps not long before the actual introduction of man upon the earth, a multitude of strange and monstrous animals tenanted various districts; that each group was then …as it is now, distinct from the rest. Though so organized as to perform the same part in nature; and yet more, that each group possessed certain peculiar characters, exhibiting a relation with the animals still inhabiting the same districts, although the actual species are much changed, being modified in form, in proportions and in habits.  

The writer noted the apparent relationship between extinct species and their modern-day counterparts, which prompted questions about the origin of species and the possible action of gradual change in forming them. ‘It would not be easy to imagine sets of phenomena more instructive or more suggestive of new ideas and new views of creation; nor can any plan we can conceive have indicated so clearly the uniformity of action, and the multitude of different means used to bring about the same great end.’ The writer concluded that as yet the process of origin of species was not known. The article and its publication in the SMH show the openness to ideas of species extinction and species adaptation that was in the public arena in the late 1840s.

**Reconciler challenges to uniformitarianism and Vestiges**

As might be expected, in Britain reconcilers attacked *Vestiges*, as did others on more scientific grounds. An immediate reaction to the theological implications of the proposals of evolution in *Vestiges* came from the

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28 *SMH* 16 October 1847, p.3
29 Ibid. p.3
influential William Whewell (1794-1866), Master of Trinity College Cambridge, co-founder and president of the British Association for the Advancement of Science, a polymath, theologian and author of *The Philosophy of the Inductive Sciences* (1840), a treatise describing the application of rigorous scientific method to the study of the sciences. In 1845 he published *Indications of the Creator* to counteract the evolutionary concepts in *Vestiges* on theological as well as scientific grounds. Likewise, the scriptural geologist, Hugh Miller, a natural theologian and influential evangelical journalist, regarded as one of Scotland’s premier palaeontologists, also challenged the evolutionary ideas in *Vestiges* on both scientific and theological grounds. He argued that the appearance of complex animals early in the fossil record refuted the naïve ideas in *Vestiges* of simple progression from primitive to advanced organisms. His argument was based on incomplete data, as later discoveries showed that simpler primitive forms dominated the fossil record in even earlier rock strata. Miller particularly opposed the evolutionary theory in *Vestiges* because it appeared to reduce humans to animals with animal origins.

*Vestiges* was challenged on theological grounds by the scriptural geologist Adam Sedgwick who passionately opposed all attempts to explain the origin of new species through natural laws, and was very concerned that the publication of *Vestiges* was introducing evolutionary ideas to a wide public. Sedgwick held that such views threatened to undermine the moral and spiritual basis of Christian society by proposing that the development of humans was governed by the same law of development that regulated the universe, rather than solely under God’s law. ‘That man, as a moral being, is under law we believe true; but when it is affirmed that this law... is of the

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same order with the mechanical laws that govern the undeviating movements of the heavenly spheres, we believe the affirmation to be utterly untrue.’32

In spite of its popularity with the public, Vestiges’ science was poor; for example, with no evidence it inferred universal laws which claimed that the speed of human mental processes was the same as the speed of light in astronomy and the speed of transmission of electricity.33 Vestiges used the data from one phenomenon to try to explain the observations of an unrelated phenomenon by invoking the existence of a universal law of development, a type of argument to which contemporary scientists objected. This proposal was reported in the first reference to Vestiges in an Australian newspaper, the Colonial Times of Hobart in September 1845, but no mention was made of the growing controversy over the work in Britain.34 The science of Vestiges was also questioned in Britain by T.H. Huxley, Darwin and others,35 even though the idea of evolution and the species question were topics of much serious discussion in England at the time, with Herschel, Lyell and Whewell all taking active part.36

The South Australian Register maintained its interest in Vestiges, keeping its readers up to date on the controversy being played out in the pages of The Times in Britain. One letter it reported from The Times, signed ‘Anti-Megatherium’, attacked geologists for causing controversy, labelling them as ‘idol theorists’.37 The excerpt from The Times also included a letter, signed

32 Adam Sedgwick, Discourse on the Studies of the University of Cambridge, Fifth ed. (Cambridge: Cambridge University Press, 1850), p. cxlviii
33 Chambers’ ideas on origin and composition of nebulas were criticised by Prof J.P Nichol of the University of Glasgow, reported in the SMH of 13 April 1847, and his imaginative deduction of the speed of human thought was reported without comment in Hobart’s Colonial Times on 23 September 1845, p.4.
34 Colonial Times (Hobart) 23 September 1845, p.4.
35 See for example Darwin’s letter to Charles Lyell of 16 June 1848 Darwin Correspondence Project, www.darwinproject.ac.uk/darwinletters/calendar/entry-1186.html
36 Young, The Discovery of Evolution, p.108
37 South Australian Register 6 December 1845, p.2
‘Umbra’, which referred to the recent letters on the subject of geology, one of which had suggested that the minds of young men of the present day were attracted to the subject of geology by works such as Vestiges and the Bridgewater Treatises. ‘Umbra’ wrote, he said, as one of these young men, stating that there must soon be a contest between the revelations of science and those of the inspired narrative, these being in his mind ‘in perfect antagonism’. The writer argued that there must be a great mental bondage in being required to own an implicit belief in any system which labours under the disadvantage of being contradicted by every discovery brought to light by men of science. The Times introduced this letter as ‘a sign of the times, and of the boldness with which freedom of opinion begins to be asserted.’ Such statements about the essential conflict between the new discoveries in geology and scripture appearing in an influential newspaper such as The Times and reprinted in the colonial press, brought into the public view the challenge the churches were facing from the new discoveries and concepts from science. The South Australian Register in January 1846 wrote [incorrectly] that ‘Lady Lovelace …is the writer of Vestiges of the Natural History of Creation which has run through four editions.’ But there was virtually no further mention of Vestiges in this newspaper after 1846.

The controversy surrounding Vestiges was mentioned in the press in New South Wales a year after it appeared in South Australia and Hobart, with Clarke’s peripheral but critical comment on its ‘mischievous and unphilosophical’ nature in a review of a pamphlet on origin and antiquity of Australian Aborigines. The reviewer was unnamed, but undoubtedly was Clarke, the scientific editor. He commended the pamphlet’s author for his adherence to orthodox Christian doctrine in the face of the challenge from

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38 Ibid p.2
39 Ibid. p.2
40 South Australian Register 25 January 1846, p.4
41 SMH 3 October 1846, pp.2,4
Vestiges, and gave his own thoughts about the flawed and damaging nature of Vestiges and its proposal that man had developed from lower forms of human and of apes rather than being created in the image of God and then fallen through sin: 42

[The author was] evidently a well-read person, conversant with the Scriptures, and imbued with the true Scriptural doctrine relating to the natural condition of man as a fallen being, [he] comes to the enquiry with many advantages, his conviction on the last point not the least, and one which, in the present day, when such mischievous and unphilosophical works as the ‘Vestiges of Creation’ are rashly considered as exponents of the truth, it is gratifying to see boldly and successfully maintained.43

Interestingly, the subject of Vestiges does not appear in the considerable correspondence between Sedgwick and his student Clarke in New South Wales in the years following its publication. Perhaps neither of them wished to give more credence to a publication they believed had little value: certainly Clarke was quite dismissive of Vestiges, giving it little space in his considerable writings. In an anonymous letter to The Sydney Guardian in 1849, attributed to Clarke by his biographer Young, frustrated by the seeming public approval of Vestiges which had reached its seventh edition by 1847, Clarke called it ‘trash’ and wished it ‘buried in oblivion’. His objections to it were both scientific and theological: he stated that the transmutation of one species to another had not been proved and furthermore the theory contradicted scripture.44

42 SMH 3 October 1846, pp.2,4
43 Ibid. pp.2,4
44 The Sydney Guardian 1 May 1849, quoted by Young, This Wonderfully Strange Country: Rev. W.B. Clarke, Colonial Scientist., p.137
There was criticism of the science of *Vestiges* in the *SMH* on 13 April 1847, in an article reprinted from the British journal *The Atlas* containing quotations from J.P. Nichol, Professor of Astronomy at the University of Glasgow.\(^{45}\) The article referred to recent discoveries with telescopes which resolved ‘nebulous spots’ into many stars, and the implications of these findings on understandings of the complexity and magnitude of creation. Among other theories, the article claimed, this finding of the composition of nebulas ‘dissipates the “fire-mist” of the *Vestiges of Creation*, with other ethereal-built speculations.’ \(^{46}\)

An anonymous correspondent, ‘M’ from Queanbeyan, agreed with this criticism of the astronomical claims of *Vestiges*.\(^{47}\) This may have been William John Macleay (1820-1891, later Sir William), a man with some scientific education and cousin of the naturalist William Sharp Macleay and who was farming in the region in 1847. ‘M’ replied quickly and at length to points made in Professor Nichol’s article.\(^{48}\) He agreed that the findings from the new telescopes on structure of nebulas ‘undoubtedly overthrow the bold speculations of the author of “*Vestiges of Creation*” respecting new systems in misty embryo in the vast abyss of space’ referring to the ‘fire mists.’\(^{49}\) ‘M’ pointed out that none of the new findings refuted La Place’s hypothesis on the formation of planets of the solar system.\(^{50}\) ‘The cosmogony of La Place consists in forming the planets by the gradual condensation of the solar atmosphere, supposed to have been primitively extended by extreme heat to the limits of our system, and to have been successively contracted by

\(^{45}\) ‘Dr Nichol on the System of the World’ (From the Atlas) Thoughts on some important points relating to the system of the World, by J.P. Nichol L.L.D., Professor of Astronomy in the University of Glasgow. Edinburgh: Tait 1846, *SMH* 13 April, 1847, p.3
\(^{46}\) Ibid. p.3
\(^{47}\) *SMH* 24 April, 1847, pp.2,3
\(^{48}\) Ibid. pp.2,3
\(^{49}\) Ibid. pp.2,3
\(^{50}\) Pierre Simon LaPlace (1749-1827) a French astronomer and mathematician applied Newton’s gravitational theory to define planetary movements, [www.famousscientists.org/pierre-simon-laplace](http://www.famousscientists.org/pierre-simon-laplace) (accessed 2/3/16)
cooling.’ 51 ‘M’ then reaffirmed the scriptural account of creation, reassuring his readers that none of these new findings conflicted with the Mosaic cosmogony and the precepts of natural theology and upholding his belief in ‘The Great First Cause’:

Nor do these speculations at all interfere with those more cherished opinions, which rest on the conviction of reason and conscience, and which faith and hope combined to consecrate. The loftiest doctrines of natural theology appeal to us with more irresistible force when science carries us back to the Great First Cause, and points out to us in the atmosphere of the sun all the elements of planetary worlds so mysteriously commingled. In considering our own globe having its origin in a gaseous zone, thrown off by the rapidity of solar rotation, and as consolidated by cooling from the chaos of its elements, we confirm rather than oppose the Mosaic cosmogony, whether allegorically or literally interpreted; and when we read in holy writ, that the heavens shall be dissolved, and the elements shall melt with fervent heat, we anticipate the conclusion of that mighty cycle when our planet shall be reunited with the sun, and engulfed in its devouring furnace. 52

He concluded by drawing the moral lesson of the need for intellectual humility from the findings of the vastness of the heavens: ‘If pride of man is ever to be mocked, or his vanity mortified, or his selfishness rebuked, it is under the influence of these studies that he will learn humility and meekness and charity.’ 53

51 SMH 24 April, 1847, pp.2,3
52 Ibid. pp.2,3
53 Ibid. pp.2,3
The reactions to *Vestiges* highlighted the debate between different kinds of natural theology. *Vestiges’* accommodation of science to theology supported the image of a remote Creator who established the law of development, which nature and the universe then gradually and continuously followed. This contrasted with the views of the catastrophists who envisaged direct, sequential intervention and control by the Creator, and sought to accommodate the science into the literal understanding of the Genesis creation stories.

In the new list of books advertised by W. Ford, Sydney bookseller and stationer, in the *SMH* of 28 September 1847, *Vestiges of Creation* headed the list, its popularity shown by being the only title advertised in capital letters.\(^{54}\) In the next month, books advertised by W.A. Colman, bookseller, stationer and bookbinder, also included *Vestiges of Creation*, followed in the list by an answering publication, *Masons (Monck) Creation, by the Immediate Agency of God, as opposed to creation by Natural Law, being a refutation of the Work entitled ‘Vestiges of the Natural History of Creation’*. Later in the list a new edition of Charles Lyell’s *Principles of Geology* and his two volume *Elements of Geology* were advertised. Among new theological books advertised by Coleman were Whewell’s *Indications of the Creator* (second edition) and his *Lectures on Systematic Morality*.\(^{55}\) *Vestiges* did not appear on further booklists advertised in the *SMH* up to 1850, but then it reappeared. Lyell’s works were increased by the addition of *Geology of North America*, and Charles Darwin’s *Geological Observations of South America* appeared for the first time on the booklist of W. and F. Ford, advertised in the *SMH* on 16 May 1849.\(^{56}\)

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\(^{54}\) *SMH* 28 September, 1847, p.3  
\(^{55}\) *SMH* 9 October, 1847, p.1  
\(^{56}\) *SMH* 16 May, 1849, p.1
A search of the main Melbourne newspapers, *The Argus* and *The Melbourne Argus*, in the decade of the 1840s found no articles about *Vestiges* or related issues until some commentary emerged in the 1850s. The *Courier* in Hobart had one further brief reference to *Vestiges* in an article in January 1849. Responses to *Vestiges* continued in the Australian colonies during the 1850s and many of them were disparaging, even flippant, though it reappeared on the advertised lists of booksellers in Sydney for the rest of the decade.

*Vestiges* continued to be the target of those who insisted on reconciling science with scripture and accusations of its supposed underlying atheism increased. The Melbourne magazine, the *Australasian*, in April 1851 printed an article from an unnamed British periodical which, the *Australasian* assured its readers, contained a ‘masterly refutation of the infidel doctrines propounded by the author of *Vestiges of the Natural History of Creation*; to the poison of which the reviewer [in the original British article] has selected antidotes, in Mr Miller’s *Footprints of the Creator* and Professor Sedgwick’s *Discourses on the Studies at Cambridge*.’ The antidotes applied were from scriptural geologists, selected to refute ‘the mischievous tendency of false philosophy and quackery to dog the steps of advancing science.’ Arguably, the same accusation could have applied to some of the manipulations of geological findings by scriptural geologists to fit literal interpretations of scripture. A summary of the article in the *Australasian* was printed in the *SMH* on 17 June, headed ‘Geology versus development.’ More ‘antidotes’ were forthcoming to refute the so-called atheism of *Vestiges* and to insist on

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57 *The Melbourne Argus* was published from 1846-1848, and *The Argus* was published from 1848 to 1954. The searches used the NLA Trove newspaper digitisation project databank.
58 *The Courier* (Hobart) 27 January 1849, p.4
59 For example: in the advertising of P. McCormick and of W. and F. Ford, *SMH* 11 and 13 January 1851 respectively; by 1857, John Cooke Bookseller were advertising *Vestiges* for 14s 6d and also *Explanation of Vestiges* for 6s 6d in the *SMH* of 14 October 1857. *SMH* of 24 October 1859 still carried advertising for *Vestiges*.
60 *SMH* 17 June 1851, p.2, see also commentary in this chapter on the opinions of Adam Sedgwick and Hugh Miller.
61 *SMH* 17 June 1851, p.2
the accommodation of science to scripture. In Sydney in 1855 the Australian Religious Tract and Book Society, which produced books on astronomy, zoology, and other sciences as well as religious tracts, declared that their own literature was sorely needed in a society where people were reading *Vestiges*.\(^{62}\) This Society had been established in 1823 to provide ‘cheap and pious reading’ for the ‘poorer classes’ and young people, with a committee made up of Anglican, Presbyterian and Wesleyan clerics and lay people.\(^{63}\)

In 1857 the *SMH* reported a lecture on ‘The existence of God’ given at the Young Men’s Christian Association rooms, in which the lecturer, J.J. Halley, declared he doubted the belief in God of the author of *Vestiges*, despite his many allusions to the divinity. ‘The theory of development as propounded by the author of the *Vestiges of Creation* in that celebrated work, he regarded as arguing materialism, notwithstanding the author’s professed theistical beliefs.’\(^{64}\) Criticism of the poorly applied scientific method of induction of *Vestiges* continued, aside from its theory of species transmutation and its theology. In an article probably by Clarke as scientific editor of the *SMH* some of the new advances in electro-biology, the science of electrical phenomena observed in the actions of nerves and muscles, were explained.\(^{65}\) Clarke used the article to continue his criticism of *Vestiges*, claiming that electro-biology was exacting in its scientific authenticity and reproducibility, unlike the theories presented in *Vestiges*:

> The Electro-Biologist appeals to facts, which is the test of every theory. He does not, like the author of “*Vestiges of Creation*” for instance, excogitate a theory or system, decidedly opposed to facts, and

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\(^{62}\) *SMH* 29 May 1855, p.5  
\(^{64}\) *SMH* 24 September 1857, p.5. In the next day’s *SMH* 25 September 1857, p.4, corrections to the text were made, including correcting the important word ‘atheistical’ to ‘theistical’  
\(^{65}\) *SMH* 15 February 1853, p.2.
involving difficulties which cannot be answered and illustrations altogether inconclusive and conjectural, and then call upon us to accept them for proof. This would indeed expose us to the epithet of dupes.66

In the Australian colonies the popular opposition to Vestiges, as distinct from the scientific or clerical one, focused on the idea, not true to the text, that humans were descended from frogs, which was thought ridiculous. In an unsigned report from the goldfields of Braidwood, a correspondent joked: ‘What with the night work at pumps, the clothes wringing wet when put on as when taken off, and the constant immersion in mud and slush and the fact that man continues to exist at all favours the theory started in the Vestiges of Creation viz. that mankind is directly descended from the frogs and tadpoles of an antediluvian era.’67 Even a prospective politician got into the act. Dr Sherwin, a candidate for the Legislative Assembly in the County of Cumberland, New South Wales, referred jokingly to mankind’s descent from frogs.68 If his intention had been to impress the voters with his knowledge he was singularly unsuccessful, coming last in the poll declared the next day. In front of 100 people, the returning officer commenting that Dr Sherwin’s speech had been full of nonsense: ‘he quoted from a work called Vestiges of Creation (in which, they were aware, there were many odd things); the author had shown how men proceeded from frogs.’69 These flippant remarks indicate that after a decade the ideas introduced by Vestiges in the colonies had moved from the informed criticism of churchmen and of scientists, into the mind of the general public as a ridiculous idea, a subject for jokes. However, the concept of evolution which formed the main thesis of the work was a topic of growing interest among scientists in Britain.

66 Ibid. p.2  
67 SMH 21 March 1854, p.5  
68 SMH 19 August 1856, p.4,5  
69 SMH 26 August 1856, p.4 SMH 28 December 1855, p.8
New evolution theories

In 1855 Anglican clergyman Baden Powell, Savilian Professor of Geometry at the University of Oxford, stood against the trend of dismissing the evolution concepts within *Vestiges*, defending it against charges of atheism. His defence came without comment to the colonies in an article published in the *SMH* in December 1855, which reprinted an article from the *British Spectator* of 15 September 1855. The article contained a review of the recent book by Powell entitled *Essays on the Spirit of Inductive Philosophy, the Unity of Worlds and the Philosophy of Creation*. Importantly, the review and Powell’s book strongly supported the concepts of evolution of species proposed in *Vestiges*. Powell had declared that in his view, the preponderance of arguments were in favour of progression from one species to another according to laws ‘originally impressed’, and not by successive creations, as some of the scriptural geologists had proposed. Powell also supported *Vestiges’* proposal that organic life forms had evolved from inorganic elements: ‘there must have been some stage at which there took place a first evolution of animal life out of inorganic elements; perhaps at several times in history.’ Powell conjectured that perhaps after the primitive organic stock had been constituted there had been further development of new species in response to environmental factors: ‘they were also subjected to certain laws of modification of form, to come into operation under the particular combinations of external conditions which were to mark future epochs, and that so new species were to be evolved out of the old.’

Powell’s ideas published in the *SMH* took the theories of species evolution expressed in *Vestiges* to revolutionary new heights. First, he proposed that

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70 *SMH* 28 December 1855, p.8
72 *SMH* 28 December 1855, p.8
73 Ibid. p.8
74 Ibid. p.8
life had originally arisen from inorganic elements, perhaps more than once in the history of the earth. Second, that these primitive life forms were subsequently modified according to unknown but natural laws, and also under the influence of external environmental factors to form new species derived from the old. Powell was proposing that the formation of new species was a gradual process, analogous to the uniformitarian theory of geological processes. As such, his proposal was very close to the theory that Charles Darwin was developing on the role of natural selection in the slow and gradual process of development of new species.\(^5\) The reviewer of Powell’s book pointed out the theological difficulties, that such a process of gradual development of new species by means of a natural law was antithetical to the Genesis description of God’s creation of species and it appeared to deny a role for God in the process of creation of life, except, perhaps in the creation and imposition of the natural laws to govern the process of creation of life. The reviewer concluded that Powell believed that transmutation, the evolution of one species out of another, was possible despite ‘the theological view which denounces this possibility in any organic thing, and insists more specially on the unity of race in man.’\(^6\)

Powell had attributed even more controversially the development of species of humans to this process of evolution. Powell speculated that the differences between races of man, between Africans and Europeans for example, were so vast as to be called different species in lower animals.\(^7\) He wondered how long it would have taken for such differences to have developed out of the original stock. Powell understood the opposition to the idea of a physical process or origin of organic life on the grounds that it would also include

\(^5\) Darwin, *The Origin of Species*.
\(^6\) *SMH* 28 December 1855, p.8
\(^7\) Incorrectly, according to later paleontology and genomics, all are *Homo sapiens*; also according to the prevalent definitions of species then and now, interbreeding between Negroes and Europeans would be impossible.
man as well as other species, and ‘represent the human race as at some remote period gradually developed out of an inferior species which, it is alleged savours of materialism and lowers the moral dignity of man.’78 However, he argued that theories about man’s moral and spiritual nature must be held independently from any theories about his animal existence. Powell reconciled his science with his theology by suggesting that mankind, rather than being created ‘in the image of God’ and then fallen through sin as recorded in Genesis, could instead have had an animal origin before God’s gift of a moral and spiritual nature transformed him into the image of God. Subsequently, from this peak man fell through sin. This reconciliation allowed Powell to support the scriptural view of the recent date of ‘creation’ of man, and of man’s fall through sin, if God’s gift of a moral and spiritual nature defined and therefore created the first man, differentiating him from his animal-related predecessors. If this were so, Powell argued, it would explain why human remains might be found in deposits corresponding to immensely more remote eras than commonly supposed. Powell also questioned the scriptural doctrine of ‘permanence of species’ which came from the verses in Genesis claiming that plants reproduced ‘after their own kind’ and ‘have their seed in themselves’, which appeared to deny the possibility of evolution of new species from old.79 The published excerpt also voiced Powell’s scepticism of the chronology and dating of creation and man from the Hebrew scriptures.80

Some response from churchmen or scientist readers of the SMH to this reprinted review of the startling new ideas from Baden Powell’s book would have been expected, but there was no response at all in the SMH issues in the

78 SMH 28 December 1855, p.8
79 Genesis 1:11,12
80 SMH 28 December 1855, p.8
three weeks following publication of the review. The most likely commentator and critic of Powell would have been Clarke who rejected evolution and particularly the inclusion of humans, however he may not have seen the article or been able to respond to it. As well as being the Christmas season, a busy time for a parish priest, this was a period of months of ill-health and exhaustion for Clarke following arduous years of field work (1851-53), cataloguing and dispatch of samples (1854) and reporting on gold for the government. In March of 1856, ‘frail and ill’, Clarke conducted the funeral of his scientific colleague and good friend, Phillip Parker King; then on Easter Sunday, in the same month Clarke collapsed in his pulpit from a stroke. In January of 1856, just days after the publication of the review of Powell’s book, the SMH reprinted a very positive review, unsigned but most likely Clarke’s, from the latest Papers and Proceedings of the Royal Society of Van Diemen’s Land (volume III), however this was probably written some time earlier for the Proceedings and taken some months to reach publication. In the years from the date of publication of the review of Powell’s work (1855) to the end of 1859, the only reference to Powell in the SMH was in a paper by G.A. Rowell about ‘Rain and Thunderstorms’ taken from the British Spectator; in it the author referred only to lectures given by Powell on the physics of light. It is possible that the appearance of the review at Christmas time meant that many active Christians in Sydney were busy and missed seeing it to comment on it; however, this was not the case in Melbourne, so it probably confirms the lack of interest in Sydney clerics in the challenges from science expressed by Baden Powell.

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81 SMH from 31 December 1855 to 19 January 1856 was searched.
82 Freed from his duties by his Bishop, Clarke went to Tasmania to recuperate; Moyal, The Web of Science, Biographical Introduction, pp.27,28
83 SMH 16 January 1856, p.3
84 SMH 30 August 1859, p.3
In Melbourne, Powell’s views brought considerable public comment from reconcilers accusing both Vestiges and Powell of atheism, with lively responses from defenders of the concept of gradual development. *The Argus* in 1858 reprinted an article from the British *Westminster Review*, which blamed Powell and other academics for the increasing atheism of the age.\(^85\) Among others, the article singled out ‘Oxford Professor Baden Powell’ for ‘affirming that the contradiction between the whole view opened out to us by geology and the narrative of the creation in the Hebrew Scripture is utterly irreconcilable.’\(^86\)

A correspondent to *The Argus*, in a letter reprinted in the *SMH*, defended *Vestiges* against charges of atheism which had been made in a public lecture in Melbourne by a Mr Blair, who had declared that ‘Atheists are wicked people - ergo, the evolution theory is untenable as an explanation of certain natural phenomena.’\(^87\) The correspondent pointed out that *Vestiges* had stimulated much thought and discussion by scientific thinkers of the day, including Whewell, Sedgwick, Owen, Powell and Louis Agassiz (1807-1873), the Swiss-born and renowned American naturalist. Some of these scientists had been ‘stimulated to refute’ the evolution arguments of *Vestiges*, but the correspondent correctly observed that Powell, although disputing some of the philosophy of *Vestiges*, had proposed ideas similar in ‘argument and tendency’. The correspondent was looking forward to the eleventh edition of *Vestiges* and denied that its authorship by Robert Chambers was an established fact.\(^88\)

At the Mechanics’ Institute in Melbourne a local doctor, John Murray, gave a series of lectures in 1858 entitled ‘The Age of the Earth’ which stimulated

\(^{85}\) *The Argus* 21 December 1858, p.6

\(^{86}\) Ibid. p.6

\(^{87}\) *SMH* 11 March, 1859, p.6

\(^{88}\) Ibid. p.6
vigoroues correspondence in *The Argus* about the ideas of *Vestiges* and Powell. The correspondence revealed the passion in the divide between the reconcilers (as Murray was labelled by his critics) and their opponents in Melbourne, and also revealed the considerable extent of local knowledge of the latest thinking on the issues of science and religion. As Murray’s lectures were not published the actual content is unknown, but some idea of it can be reconstructed from the comments of his critics and supporters, bearing in mind their own positions and prejudices. According to the correspondent ‘Opipher’, Murray had declared the theory of progression (evolution) to be absurd; agreeing with the views of the eminent French anatomist Georges Cuvier, who opposed the ideas of evolution coming from Lamarck. However, ‘Opipher’ maintained that *Vestiges* had countered Cuvier’s rejection of evolution successfully. 

‘Opipher’ continued, appearing to support the concept of gradual change and evolution of species:

‘advancement is a law or method of nature. Life itself is change and its form depends on its relative external conditions.’

‘Opipher’ criticized Murray’s theology as obsolete, bracketing his ‘defunct biblical geology’ with that of British geologist Hugh Miller. He criticised their attempts to reconcile science with theology, saying that science must be presented as pure science without fear of ‘the charge of infidel tendencies in such a course, for it is not alone to geology that such exception has been taken, but to the cultivation of all natural science.’ He defended those who were reviled as infidels when they declared they ‘see no necessary connection between a simple physical fact and a bygone religious dispensation.’ He accused Murray of ‘dubiety’ (hypocrisy); of being unwilling to sacrifice the science that he loved to the

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89 For Cuvier, the concept of extinction posed religious difficulties as it seemed to imply some fault in God’s creation. Georges Cuvier (1769-1832) was Professor of animal anatomy at the Museum of Natural History in Paris. His expertise in comparative anatomy contributed to classification and reconstruction of fossil vertebrates; he rejected strongly the evolutionary theories of his colleague Lamarck. *Young, The Discovery of Evolution*, pp. 72, 73, 252

90 *The Argus* 23 August 1858, p.6

91 Ibid. p.6
demands of ‘a theology he must bow before.’ It appears from this correspondence that Murray had contended that all things originated with an all-wise Creator, but that ‘subsequent natural arrangements’ may be traced. If so, Murray appeared to be suggesting that after the initial creation of life an evolutionary process began, following a natural law and producing all subsequent species. In this, wrote ‘Opipher’, Murray betrayed his hypocrisy, as he was admitting that the existing organic world evolved according to a series of regularly adjusted laws out of its primitive elements, but was unwilling to avow ‘such an obnoxious tenet.’ Contrary to ‘Opipher’s assertions, Murray’s view as quoted by ‘Opipher’ was like the opinion Clarke expressed later in the decade: that science and religion should be addressed separately. According to ‘Opipher’ Murray had said:

The Scriptures are a vehicle of religious truth, not a system of science. They were adapted to the comprehension of the men to whom they were addressed…The narrative as a whole, as it cannot be received as historical, may be regarded as a poetical representation; adapted, as it was addressed to the Israelites.

That is, Murray believed that the scriptures were not a historical record, but a poetical representation adapted to the state of knowledge of the original recipients in Moses’ day. This liberal interpretation of scripture, however, was not enough to satisfy ‘Opipher’. In his view Murray, like Hugh Miller, while knowing the historical facts, must have racked his brain ‘to suicidal insanity… torturing the facts’ to make them fit the ancient writing. Furthermore, ‘Opipher’ was concerned that the very efforts of scriptural geologists to reconcile geology with scripture, which he asserted were dishonest, were damaging the moral and intellectual health of the

92 The Argus 23 August 1858, p.6
93 Ibid. p.6
94 Ibid. p.6
community: ‘What are we to expect in the way of probity from a community where falsehood may thus be made with applause to take the place of truth?’ 95 ‘Opipher’ was pessimistic, but seemed to hope that ‘religion’ might change in the future to accommodate science. ‘The world has still to wait for a religion which shall grow stronger with every development of sound scientific acquirement.’ 96

Murray’s reply and several related letters appeared in The Argus two days later. Murray denied ‘Opipher’s claim that his views or object paralleled those of Hugh Miller. Murray disagreed with Miller’s attempt to show that the six days of creation could be interpreted as six geological periods of immense duration, writing of Miller’s attempt: ‘to show a specific and special accordance with the Mosaic account of Creation …in which he has, in my opinion, failed, and this I implied in my objections to his theory of the six days of immense duration.’ 97 Disagreeing with ‘Opipher’s claim that science and religion could never be reconciled, Murray explained that indeed they could be, although not in the way suggested by Miller. Murray’s object, however, appeared to be the same as Miller’s, to promote reconciliation of scripture with geology: ‘removing the prejudices against geology as contradicting Scripture, to show that there is nothing in the sacred narrative to contradict geologic fact and induction; and to incite more general study.’ 98 In this also, Murray’s views concurred with those of Clarke. Murray refuted claims of hypocrisy and ‘Opipher’s interpretation of Murray’s views on progression. He restated his view that there was no development of organic life from the inorganic, rejecting the proposal that ‘the elements of the inorganic or natural kingdom were created in one promising mass of chaos, and that by the action of chemical, electrical and mechanical laws subsided

95 Ibid. p.6
96 The Argus 23 August 1858, p.6
97 The Argus 25 August, 1858, p.7
98 Ibid. p.7
and concreted into our present stratified and crystalline formations.’

Instead, he believed that organic life was created by God rather than developing in accordance with natural laws: ‘I said that organic life was a distinct and specific act of creative power and wisdom in all its various types and not the result of a law of development or convertibility.’

Thus Murray rejected *Vestiges’* claim, supported by Powell, of evolution from the inorganic to organic and biological, and also the inclusion of humans in the evolutionary process, the ‘infidel theory of development by law, and the convertibility of monkeys into men’ and rejected ‘Opipher’s’ defence of such theories. He accused ‘Opipher’ of being enamoured of evolution and suggested that ‘Opipher’ must have commenced existence ‘as a monad and passed through the whole series of a zoophyte, shellfish, fish, reptile, quadruped to quadruminana (sic) - from the highest of which, the ourang outing (sic) and chimpanzee, came forth the brains, such as they are, and the physical form of ‘Opipher’.’ ‘Opipher’, as a believer in evolution, may well have agreed with this statement from Murray. Murray insisted that the public would never accept the concept of the evolution of humans from animal ancestors: ‘the public will not approve of this mode of the creation of man, the highest and best work of God.’

Another correspondent ‘A.B.’ criticized ‘Opipher’ for misquoting *Vestiges*. Two more letters followed: one from a medical doctor, E. Bowmans, who supported the concept of evolution but with the process guided by God. He pointed out to Murray that the doctrine of Cuvier (drawn from comparative anatomy of fossils and recent animal species), which Murray had commended, had been superseded by the new concept of species development (evolution) as drawn from the development sequences seen in

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99 Ibid. p.7  
100 Ibid. p.7  
101 Ibid. p.7
embryology, the concept called by Owen ‘Unity of Organisation.’ As ‘Opipher’ had pointed out, *Vestiges* had employed this argument from embryology to support the path of development of species, from simple to more complex organisms, based on the superficial similarities between the developmental stages of the human foetus compared with the proposed evolution of animal species from simple forms, through more complex aquatic forms to higher animals including humans. According to Bowman, ‘Unity of Organisation’ gave no support to the ‘pantheistic, transmutational or any other form of atheism’. Rather, he argued teleologically, that the Divine mind, with foreknowledge of the future existence of human beings, and which foreknew all the modifications necessary to produce those beings, had planned and guided the evolutionary process. That the process resulted in human beings confirmed the action of God in the process. Bowman concluded that science was distinct from scripture yet did not deny the action of God, for science wrote the history of nature’s operations, untrammelled by the cosmogony of any sect or race, but without taking away from the Divine power. The concept that the process of evolution of animals and including humans was guided by God, and indeed proved the existence of God was an attempt at reconciling the process with natural theology, but it did not overcome the reconcilers’ adherence to a six-day creation, in which all animals were created at the same time on day five.

A letter signed ‘A Lover of Truth’ took Murray to task for the incompleteness of his scientific references, and accused him of shallowness and evasion in his lectures. This correspondent echoed most of the criticisms that ‘Opipher’ had made of scriptural geology and the attempt by Murray to reconcile science with religion. While commenting that he thought the

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102 *The Argus* 25 August 1858, p.7
103 Ibid. p.7
104 Ibid. p.7
theories of *Vestiges* ‘peculiar’, the writer commended to Murray and readers a selection of the current relevant works.\(^{105}\) These included the works of Powell who he defended as ‘no infidel man of science but an orthodox Professor at Oxford’.\(^{106}\) The letters criticising Murray brought in reply a letter from ‘A Student’ who contested ‘Lover of Truth’s’ claim of the orthodoxy of Baden Powell.\(^{107}\) This correspondent was very concerned that the criticism of Murray had received would make it difficult to attract lecturers to the Mechanics’ Institutes now and in the future to inform the public, saying ‘I do know that lecturers are much wanted.’\(^{108}\)

In South Australia during the 1850s and 1860s there were also public lectures on the apparent conflict between the biblical account of the creation and the Deluge and the new findings of Lyell in geology, given at various venues by the Chief Justice, Richard Davies Hanson (1805-1876). Hanson, a Nonconformist, spoke of the need to read the Bible with a spirit of inquiry rather than accepting its infallible authority. A lecture on the theme of non-literal interpretation of scripture to the South Australian Library and Mechanics’ Institute in March 1859 was not published, but reportedly shocked his audience.\(^{109}\) Adelaide’s Anglican Bishop Augustus Short joined the debate to respond to Hanson’s provocations. Short had earlier presented his own reconciler views when he spoke on the reconciliation of Genesis and geology to the Philosophical Society in Adelaide in April 1859.\(^{110}\)

The Roman Catholic priest and geologist, Julian Tenison Woods was a staunch opponent, and remained so, of Hanson’s publicly expressed ideas on biblical literalism and particularly on the antiquity of man and evolution of

\(^{105}\) Ibid. p.7  
\(^{106}\) Ibid. p.7  
\(^{107}\) *The Argus* 26 August 1858, p.5  
\(^{108}\) Ibid p.5  
\(^{110}\) Phillips, "Religious Response to Darwin."p.38
species, but his views were not published until the next decade.\textsuperscript{111} For ten years from March 1857 he was in charge of the mission at Penola, with Mother Mary McKillop, ministering to the people of the district and pursuing his interest in geology.\textsuperscript{112} In 1858, Woods, sponsored by botanist Ferdinand von Mueller and John Ignatius Bleasdale, a Melbourne-based Catholic priest and scientist, was unanimously elected an ordinary member of the Philosophical Institute of Victoria.\textsuperscript{113}

In 1858, Woods supported Buckland’s idea that some cave remains of fossil bones, like those he had found at Mosquito Point in the Murray River, could point to the Noachian Deluge.\textsuperscript{114} However, his biographer Anne Player has pointed out that Woods had changed his mind about the source of fossils found in the caves by the time of writing his book, \emph{Geological Observations}, in 1862.\textsuperscript{115} Player suggested that this change may have been prompted by a letter written by F.W. Cox, a Congregational minister in Adelaide, suggesting that the remains in the cave may have been the result of gradual accumulation, rather than an instantaneous deposit such as in a single flood. By this time the influential British geologist Buckland had changed his opinion that the Noachian Deluge had caused the accumulation of fossil bones in a British cave, and undoubtedly Woods, like his fellow colonial geologist Clarke, was aware of this.\textsuperscript{116} Cox also pointed out the possibility that evidence of widespread flood in a local area could be mistaken for the Noachic Deluge.\textsuperscript{117}

\textsuperscript{111} Anne V. Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion" (Australian National University, 1990), pp.97, 98
\textsuperscript{112} Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion"., pp.9,10
\textsuperscript{113} Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion". p.19
\textsuperscript{114} \textit{South Australian Register} 29 March 1858, p.3
\textsuperscript{115} Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion"., pp.15,16
\textsuperscript{116} Brook, "The Rev. William Buckland, the First Paleoecologist.", pp.85,86
\textsuperscript{117} Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion"., pp.95, 96
Towards the end of the 1850s, the growing perception of conflict between the new science of uniformitarianism and evolution with traditional reconciler interpretations of scripture was leading to renewed calls in the Australian colonies for separating the study of science and religion. The view of Hanson, ‘Opipher’ and Powell that scripture and science should be considered separately for the benefit of both, had been proposed as early as the 1830s by Herschel, but now it was gaining ground.118 It was shared, for instance, by the Reverend William Scott, the government astronomer in New South Wales. With regard to scripture and its purpose and its limitations, in 1858 Scott wrote that the book of nature was the only book God gave to mankind with which to learn about nature. The early writers of scripture were ignorant of more recent knowledge from science:

believers should know that their Scriptures contain…a revelation of religion alone; and that the book of nature is the only book which God has given to man in which to read the laws of material creation…the writers of those books (scripture) were ignorant of the truths which astronomy and geology have since brought to light.119

In his less measured way, ‘Opipher’ in Victoria had demanded such a separation: ‘nothing in geology bears the smallest resemblance to any part of the Mosaic cosmogony.’120 Furthermore, he asserted that the desire to reconcile science with religion arose from a misconception of the proper limits of philosophy and theology and led to an incongruous mixture of the two.121

118 Hull, Darwin and His Critics., p.6
119 ‘On the Plurality of Worlds’ Sydney Magazine of Science and Art (1858) 135, quoted by Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79.,” p.419
120 The Argus 23 August 1858, p.6
121 Ibid. p.6
In the 1850s Clarke became a victim of the increasing uneasiness of the leadership of the Church of England in New South Wales with his mixture of ministry with science and scientific comment. This change of attitude contrasted with the attitude of Bishop Broughton in the previous decade. Broughton had granted Clarke leave of absence from his parish for his geological work, because he regarded Clarke’s field trips as a rare opportunity for ministry to the scattered populations of the country regions. Clarke combined ministry with geology; he always carried his vestments and communion set with him, and conducted many Sunday services, baptisms, and funerals during his journeys. His field-work in the 1840s and 1850s was dedicated to serving the urgent practical needs of the colonists as he carried out geological surveys to define regions bearing gold and coal. He undertook a great many arduous field trips and wrote reports for the government while still acting as the parish priest at St Leonards in North Sydney. By 1847 Clarke’s geological work and his writing commitments as well as his parish work were growing, and he wrote to Sedgwick:

what with writing sermons, visiting the sick, exploring new haunts - and the multivarious business which falls on me as Committee man to this church’s institution - and amongst other matters co-editor or contributor to our ‘Morning Herald’ - I am compelled to turn night into day.

Broughton, however, did not support all of Clarke’s non-clerical interests: in 1850, under pressure from Broughton, Clarke declined a seat on the senate of the new University of Sydney, although he was an enthusiastic supporter of

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122 Moyal, The Web of Science, p.17
123 Moyal, The Web of Science, p.17
124 Ibid. Letter from Clarke to Sedgwick, 19 June 1847
the foundation of the university, because Broughton opposed the secular nature of the university. Clarke’s explanation was given to a Select Committee of the university in 1859: ‘I thought it proper to consider if I should be wise to involve myself in a quarrel with the Head of my Church, and therefore I declined.’ But generally the bishop was a supporter of Clarke’s scientific work, as long as it could be combined with pastoral outreach. Broughton had chaired the meeting of the Church of England Book Society in October 1841, at which Clarke presented his inaugural lecture and Broughton had declared his general support for science in the 1840s.

But Broughton left the colony for Britain in 1852, and died there in 1853. After Broughton’s departure, the leaders of the Church increasingly regarded Clarke’s scientific work as a distraction from ministry, rather than accepting its practical value to the colony. While his active participation in scientific work and his scientific writing added legitimacy in the eyes of the scientific community and the newspaper reading public to his orthodox interpretations of science and theology on behalf of the Church, this was not appreciated or valued in the Church. After Broughton’s departure, Clarke was informed that his parishioners were complaining about his absences on field trips, they were ‘tired of hirelings and want a good shepherd’ and in 1853 he wrote to fellow scientist P.P. King ‘I must be home by 1 July, or I shall lose St Leonards by the hooks and crooks of the management.’

Nonetheless, Clarke’s public standing as a scientist was increasing. In spite of the restrictions imposed on his non-clerical work, in 1851 he was elected to the council of the Philosophical Society of New South Wales, and as its Vice-President in 1858. In 1853 he was made an honorary member of the New Zealand Society. He was appointed a life fellow of the Royal Geographical

125 Ibid. p.30
126 Mozley, “Evolution and the Climate of Opinion in Australia, 1840-79.” quoting lectures given in 1835 and 1841
127 Moyal, The Web of Science, p.22
Society in 1855, and in 1857 appointed a member of the Société Géologique de France.\textsuperscript{128} He continued to report enthusiastically and regularly on exploration and new findings of scientific interest in the \textit{SMH}.

The new bishop of Sydney, Frederic Barker (1808-1882), arrived in 1855 and began to discourage Clarke’s scientific activities. In 1858, under pressure from Barker, Clarke declined the offer of appointment as Geological Surveyor of Tasmania.\textsuperscript{129} Barker threatened: ‘I fear if you did accept the proposal it would not be possible to retain possession of St Leonards as a cure of souls.”\textsuperscript{130} Whereas Broughton had been an orthodox high church theologian with an interest in the intellectual issues of the day, Barker, according to his biographer, was a lifelong firm adherent of the Evangelical Party in the Church of England which was narrowly focused on the scriptural basis to belief and personal salvation through the death and resurrection of Christ, with a strong sense of mission and social justice.\textsuperscript{131} He recruited fellow evangelicals from Britain as well as graduates of the same mind from the new Sydney diocesan theological institution, Moore College, to build up the influence of Evangelicals to overcome what he deplored, the increasing tendencies to both liberalism and Tractarianism in New South Wales.\textsuperscript{132} Barker had learned about the new developments in science and theology in Britain at the end of the 1850s from his evangelical colleague Mesac Thomas when he installed him as bishop of Goulburn in 1862, and was shocked, viewing them with dismay.\textsuperscript{133} Although these new developments in biblical criticism and science were having an impact in the colony as well as in Britain, Barker was uninterested and seldom mentioned

\textsuperscript{128} Ibid. p.29
\textsuperscript{129} Ibid. p.30
\textsuperscript{130} Ibid. p.489
\textsuperscript{132} Ibid.
\textsuperscript{133} Ibid.
them. He regarded his task as senior pastor as mission conversion of all the souls under his care.\textsuperscript{134} To assist in this mission, he significantly increased the infrastructure and clergy numbers of the Church.\textsuperscript{135} Barker’s appointment provided an effective counter to the threat of ritualism which, he believed, had been a major and divisive issue in the Church in the colony in the 1840s, and a counter to the high churchmanship of Broughton, but it did little to answer the need for the church to engage with the scientific challenges of the day.

Barker’s lack of engagement with issues arising from biblical criticism and science in the late 1850s was due in part to the other serious concerns of the churches at the time. Judging by letters to the SMH in the 1850s, infidelity had become an issue of some importance. Infidelity was being attributed to diverse factors, but many were of these were secondary effects of the growth in population and wealth. The pursuit of wealth decried by churchmen John Lillie and Clarke among others in the 1840s was accelerating. By the end of the 1850s, memories of the depression were fading, the economies of the Australian colonies were improving, and the pastoral industry was growing strongly.\textsuperscript{136} The discoveries of commercial quantities of gold in the early 1850s in Victoria, New South Wales and Queensland paved the way for a long economic and population boom between 1860 and 1890.\textsuperscript{137}

Some correspondents blamed increasing infidelity on intemperance: ‘the spirit of infidelity so rife among the lower classes (is) sure sign of the

\textsuperscript{134} Ibid.
\textsuperscript{135} Ibid. During Barker’s episcopy of 27 years the number of churches and clergy in New South Wales more than doubled, Moore College was established for the training of theological students and new diocese were established: Goulburn in 1863 and Bathurst in 1869.
\textsuperscript{137} Discoveries of gold in the 1850s trebled the population of the Australian colonies in that decade. By 1861 there were more people in Victoria than in all of the colonies in 1850, and the total population of all the colonies reached 1,168,000 .I.D. McNaughtan, “Colonial Liberalism, 1851-92,” in \textit{Australia, a Social and Political History}, ed. G Greenwood (Sydney, Australia: Angus and Robertson, 1955). p.99
unhappy effects attendant on the immoderate use of ardent spirits.’ The colonial press itself was blamed in a lecture to the Young Men’s Christian Association by the Reverend John Dougall of St Andrew’s Scots Church in Sydney: ‘The press, though not infidel itself, is lax and vague…(advocating submission) to no restraints that reason does not dictate…sneers at high toned devotion.’ ‘Mormonism’ and the Church of Rome also drew letters accusing them of promoting infidelity.

Anti-church sentiment was also apparent. A letter to the SMH in 1854 blamed the poor performance of the Church of England itself for the rise in infidelity: ‘the deadness of the English Church, the fewness of our churches, the unfinished and ruin-like state of our Cathedral - the wretched stipends of the clergy, their small number and frequent want of zeal.’ It warned of the ‘fearful growth of vice, the secret yet spreading infidelity which pervades this land.’ The hiatus between the death of bishop Broughton in 1853 and his replacement in 1855 by Barker, probably contributed to the perceived problem of ‘want of zeal.’

In spite of the expansion of the infrastructure of the Church of England under Barker in its attempt to meet the demand of population increase and spread, its influence was being reduced by changes in the field of education and by the foundation of secular universities, both of which that Church and others had vehemently opposed. Lay and clerical members of the churches in the late 1840s and early 1850s had warned that the proposed secular Irish

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138 SMH 9 March 1855, p.2
139 SMH 12 October 1855, p.6
140 SMH 1 April 1853, p.2; SMH 27 April 1853, p.2
141 SMH 17 January 1854, p.5
system of school education and establishment of secular universities were likely to increase infidelity by restricting the teaching of scripture.\textsuperscript{142}

In the 1850s, while the colonial churches were concerned with their own internal issues, intellectual pursuits, including science flourished, perhaps because economic survival was becoming of less concern. The Philosophical Society in New South Wales was founded in 1850, and in 1867 the society became the Royal Society of New South Wales, with Clarke serving as its inaugural and influential Vice-President for seven years.\textsuperscript{143} The Philosophical Society of Adelaide was founded on 10 January 1853\textsuperscript{144} and the Philosophical Institute of Victoria was formed in 1855 when the Victoria Institute and the Philosophical Society of Victoria amalgamated; it published the first of its Transactions of the Philosophical Institute of Victoria in 1856.\textsuperscript{145} The interest of the public in controversial new ideas in science and theology continued to be seen in the columns of some newspapers.

As well as receiving recent books and journals sent by associates in Britain, colonial scientists such as Clarke maintained their connection with the science and ideas of Britain and Europe through active correspondence with former colleagues. Clarke continued his collaboration with his professor and mentor, Adam Sedgwick of Cambridge, and their correspondence reveals some of the issues within science and within the Church of England exchanged between Britain and the Australian colonies during these decades. Clarke had written to Sedgwick on 18 August 1840, reporting on a fossil fish from the coal beds which he examined with William Sharp Macleay. He also had ‘read Mr Darwin’s book with great pleasure, it is a truly philosophical work’ though Clarke disagreed with Darwin’s conclusion...

\textsuperscript{142} Many letters appeared in the SMH in November and December 1852, including 27 November p.5, 11 December p.3 and 25 December p.2
\textsuperscript{143} Moyal, The Web of Science. p.46
\textsuperscript{144} It later became the Royal Society of South Australia
\textsuperscript{145} Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion". p.20
that the continent of Australia opposite the Barrier Reef was sinking. He was referring to *The Voyage of the Beagle*, published in England in 1839, indicating that Clarke received a copy sent soon after publication.\(^\text{146}\) This shows the speed at which new scientific publications reached those with scientific interests in the colonies.

The colonies were contributing significantly to scientific knowledge in Britain and Europe. Many samples of flora, fauna and fossils were dispatched to experts and museums in Europe and Britain by Clarke and others. Some of Britain’s most influential naturalists visited the colonies. As mentioned, Charles Darwin had visited Australia on the *Beagle* in 1836 and published his findings in 1839; Thomas Henry Huxley spent the years 1847-1850 in Australia as naturalist on the *Rattlesnake*; and Joseph Hooker collected flora from Tasmania as botanist on Ross’s survey ship in 1842.\(^\text{147}\) Although Mozley summed up the scientific contribution of the colonies as largely derivative and dependent for stimulus on activities and ideas from Britain, this reflected local emphasis on the needs for practical geology, botany, zoology, hydrology, meteorology of settlers in an environment with challenges totally different from their experiences in Britain.\(^\text{148}\) However, as we saw, new ideas from Britain and Europe were enthusiastically read about and discussed in the Mechanics’ Institutes, the Church of England Book Society and in the new scientific societies.

By the end of the decade, the booksellers W. and F. Ford had increased their advertised offerings of science books,\(^\text{149}\) now including three books of Lyell including *Principles of Geology*, books by Liebig on chemistry, physics and biology, and Charles Darwin’s *Geological Observations of South America* and

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\(^{147}\) Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79," p.413

\(^{148}\) Ibid. p.420

\(^{149}\) *SMH* 16 May 1849, p.1
But support for science and its separation from the strictures of scripture and from the churches was growing.

At the end of the 1850s, natural theology that had been pre-eminent in the 1830s still remained the main theological position of the churches with respect to science. The reconcilers and biblical literalists remained strong in Britain and dominated theological thinking in the Australian colonies, among them were Anglicans William Sharp Macleay and Allwood. Lyell’s uniformitarian theory for the geological formation of the earth was gaining adherents in Britain and the colonies, in spite of its challenge to the Genesis account of creation. In Adelaide Hanson had presented public lectures which supported uniformitarianism and its challenge to biblical literalism, and even the scientific and theological conservative Clarke in Sydney accepted the evidence for uniformitarianism. But Reconcilers continued to oppose the theory, maintaining that God’s catastrophic interventions had shaped the earth. Notwithstanding this position, whether the Deluge was evidence of God’s last major intervention was widely debated, for in spite of much research no geological evidence for a universal flood had been found. Public interest in new ideas from science and philosophy was growing as the number of well-educated settlers increased in Sydney, Melbourne and Adelaide. Scientific societies were formed in New South Wales, Tasmania, Victoria, and South Australia and lectures, sometimes on controversial subjects, were drawing good attendances at forums such as the Mechanics’ Institutes and Schools of Arts in Sydney, Melbourne, Adelaide and Launceston. However the conservative position of natural theology backed by biblical literalism was increasingly failing to meet the challenges from uniformitarian and evolution theories.

150 Presumably the *Voyage of the Beagle*. Listed separately by Ford as “Murrays’ Colonial Library”
6. 1860s: The Evolution Theory of Darwin and its Reception in the Australian Colonies

The 1860s brought the greatest challenges from science to the churches in the nineteenth century and led to a scale of conflict between those supporting the new ideas from science and the churches that had not been seen before. Until the 1860s, natural theology was still the glue that bound together scientific study and Christian understanding of the role of God in the minds of most clergy, scientists and the churchgoing public. In the 1860s however, knowledge in geology, biology and astronomy was expanding more rapidly than ever before, forcing development of new theories to account for the new data. The rush of new ideas often contradicted traditional understandings of scripture, creation and God’s role in the world, faster than church leaders were able to assimilate it and formulate a coherent theological response. Although in most cases the intentions of those promoting the new ideas from science were to advance human knowledge, not to challenge the authority of the churches and scripture, conflict inevitably grew.

This chapter identifies the reactions of churchmen in the Australian colonies to the challenges of the 1860s. It examines the causes of the conflict between the new science and theology, conflict to which both the churches and scientists contributed. Responses to the challenges to scripture and church tradition were most public in Adelaide, Sydney and Melbourne and the differences in the ways churchmen from these colonies reacted will be investigated.

By the end of the 1850s, the stage was set to pull together Lyell’s evidence for the great antiquity of the earth, and the ideas of Lamarck, Vestiges, Powell
and others that a process of evolution could explain the diverse yet close relationships of the plants and animals of the earth. By the late 1850s, Charles Darwin and Alfred Wallace were collaborating on a theory of evolution by means of natural selection acting on variants within populations.¹

Darwin and Wallace launched the latest evolution controversy with their joint paper ‘On the Tendency of Species to Form Varieties; and on the Perpetuation of Varieties and Species by Natural Means of Selection’ in London in 1858, which was communicated to the Linnaean Society of London by Charles Lyell and Joseph Dalton Hooker (1817-1911, later Sir Joseph).² Herbert Spencer (1820-1903), Joseph Hooker and Charles Lyell had been among the group of scientists in discussions with Darwin on the subject and it was Lyell and Hooker who had urged Darwin to publish this paper.³ Spencer had published The Development Hypothesis in 1852, in which he coined the terms later used by Darwin, ‘evolution’ and ‘survival of the fittest’.⁴ However his ideas on evolution were not taken as seriously as those of Darwin and Wallace later in the decade, perhaps because he adhered to Lamarck’s theory of evolution.⁵

Darwin’s comprehensive book The Origin of Species (Origin) was published late in 1859, and it supported the theory introduced in 1858 with extensive zoological research.⁶ Darwin envisaged evolution as a process of gradualism: a biological example of the uniformitarianism that Lyell’s latest editions of Principles of Geology applied to the geological processes of the

² Ibid.
⁵ www.victorianweb.org/philosophy/spencer/spencer.html (accessed 10/11/16)
⁶ Darwin, The Origin of Species.
earth. Furthermore, just as geological uniformitarianism opposed the prevailing concept of catastrophism which implied interventions by God to explain geological formations on the earth, evolution opposed the prevailing concept of special design and creation of species through God’s intervention. Origin was not the first theory of species evolution, but it was the first to offer the plausible mechanism of action: the selection and preservation of advantageous natural variations in populations and the loss of other variations, with the cumulative changes gradually leading to the formation of new species. These new species retained the characteristics which best suited their environment and so were better at surviving and reproducing, passing on those positive characteristics to their offspring. Origin also presented a comprehensive supporting natural history, illustrating many examples of adaptations of species to their environment. In his controversial essay in Essays and Reviews ‘On the Study of the Evidences of Christianity’ the influential Baden Powell praised Origin, ‘Mr Darwin’s masterly volume’ saying it offered a workable theory about the self-governing powers of nature, which in turn revealed the means by which God worked. Origin caused a greater perturbation than Vestiges and Powell to traditional biblical views of God and creation, judging by the reactions reported in the British and colonial press, because it proposed that natural laws explained the origin and continuing creation of species; this appeared to contradict the truth of the accounts of creation presented in the book of Genesis, and hence the verbal inspiration by God of the Bible. Copies of Origin were advertised for sale in Melbourne from 9 February 1860 and Sydney from 18 April 1860, and there was an early mention of Darwin’s ‘genius’ in a Sydney newspaper

7 In 1865, the Austrian monk Gregor Mendel published research which showed that the basis of variation within species was traits, now called genes, which recombined in reproduction producing new variants. The support which Mendel’s work and the new science of genetics gave to Darwin’s theory was not realised until around 1900.
9 The Argus 9 February 1860, p.3
in March 1860. More editions of Origin followed, including a second edition published two months after the first in January 1860, in which Darwin inserted an acknowledgement of the Creator, missing from the first edition, in response to accusations by Sedgwick and others of Origin’s implicit atheism. At the end of the book Darwin added ‘There is a grandeur in this view of life with its several powers, having been breathed by the Creator into new forms or into one.’ The sentence remained in all subsequent six editions.

Darwin’s next major work was The Variation of Animals and Plants under Domestication which appeared in 1868. In two volumes, he described the breeding of new varieties of domestic animals as a process analogous to natural selection in nature but with human intervention as the selecting agency rather than environment. The work provided more evidence in support of evolutionary theory, yet mainly attracted the attention of lay people with farming and animal breeding interests.

Not long after the publication of Origin, two books were published in Britain which focused public attention on the place of humans in the evolutionary process. The extension of the process to humans had been inferred but not explicitly stated in Origin. New evidence of the great antiquity of humans, a necessary factor if the evolutionary process were to be applicable to humans, had been the subject of Charles Lyell’s 1863 book The Geological Evidences of the Antiquity of Man, with Remarks on Theories of the Origin of Species by Variation. Lyell compiled over 500 pages of information from discoveries of human artifacts in rock strata alongside bones of extinct mammals, and new discoveries of primitive human remains in the Neanderthal valley in Germany and the Mississippi delta in America. Using calculations well-

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10 SMH 5 March 1860, p.8
11 Powell, "On the Study of the Evidences of Christianity." pp. 91-114
accepted in the scientific world to estimate geological age, he estimated that
the advent of man on the earth dated back not the 6000 years generally
inferred from scripture, but 100,000 years.13

Also in 1863, the close anatomical relationship between humans and apes
was used as evidence for their evolutionary relationship by Thomas Henry
Huxley in Evidence as to Man’s Place in Nature.14 Although neither Lyell nor
Huxley focused on the way their ideas challenged the scriptural account of
the special creation of man in God’s image, reviewers and readers responded
to their implicit challenge to verbal inspiration and literal truth of the
Genesis creation stories.

The challenge from the scientific publications to scripture and the traditions
of the church was not the only one to arise in the 1860s. Essays by leading
Anglican clergy and lay members within the innocuously titled Essays and
Reviews published in 1860 brought to readers of English some of the German
scholarship of biblical criticism, related in some cases to the new scientific
findings and theories.15 The essays included comparisons of new information
from science with the biblical creation stories and brought strong reactions
from the church in Britain; the Archbishop of Canterbury and the Anglican
episcopate of England and Ireland issued a pastoral letter condemning
certain of the opinions in the collection. Two of the Anglican clergymen,
Rowland Williams and Henry Bristow Wilson, who were authors were
suspended from duty and were tried and convicted of heresy, then acquitted
on appeal to the Privy Council.16

Essays and Reviews attracted less attention than Origin in the Australian
colonies. The most comprehensive review of Essays and Reviews appeared in

13 Ibid.
15 John William Parker, ed. Essays and Reviews (London: John W. Parker and Son, 1860).
Sydney in the *SMH* in June 1861, 17 reprinting a scathing review from the English *Quarterly Review*. The review pointed out that several of the authors had questioned the literal truth of Genesis, for example Rowland Williams (then a tutor at Cambridge University)\(^{18}\) and Henry Bristow Wilson (a Fellow at St John’s College Oxford University),\(^{19}\) had written that the story of Adam and Eve and their descendants related in Genesis was a form of narrative, rather than an undoubted historical fact. Contributor Baden Powell was accused of atheism because he wrote of the way astronomical observations of the movement of planets and stars contradicted the letter of scripture,\(^{20}\) as was Charles Wycliffe Goodwin (a Fellow of St Catherine’s College Cambridge) who had written of ‘the frank recognition of the erroneous views of nature it [scripture] contains.’\(^{21}\) The rather xenophobic reviewer found *Essays and Reviews* of little literary merit, and dismissed it as of little interest to the English whose minds were of a higher class that the German exponents of biblical scholarship: ‘well-suited as its speculations may be to the metaphysical mind of Germany… they are not of a class which has commonly attracted many English readers.’\(^{22}\) He concluded that what had attracted the attention of readers was the reputation of its mostly clerical writers, whose participation he decried for undermining scripture and the basic doctrines of the Church of England. ‘That such as these should be the putters forth of doctrines which seem at least to be incompatible with the Bible and the Christian Faith as the Church of England has hitherto received it… a set of skeptical metaphysical speculations regarding many long-

\(^{17}\) *SMH* 5 June 1861, p.2  
\(^{18}\) Rowland Williams, "Bunsen's Biblical Researches," in *Essays and Reviews*, ed. John William Parker (London: John W. Parker and Son, 1860), pp.50-93  
\(^{20}\) Powell, "On the Study of the Evidences of Christianity." ibid. pp.94-144  
\(^{21}\) Goodwin, "On the Mosaic Cosmogony."ibid. pp. 207-253  
\(^{22}\) *SMH* 5 June 1861, p.2
received fundamental truths.’ Although accusations of poor biblical scholarship or theology, such as those aimed at the anonymous author of *Vestiges*, were less easily applied to the authors of *Essays and Reviews* whose theological and academic reputations, though often controversial, were widely acknowledged, the reviewer took exception to what it called the ‘great principle’ of the essayists; namely that scripture should be read like any other book. Even worse, what the reviewer regarded as the greatest truths had been incidentally sacrificed: for example, rather than man being created in the image of God, beginning with ‘glorious communings’ with his maker then falling through sin, to be lifted up again by the marvel of redemption through the Incarnation of our Lord, the essayists shared liability for the opposite belief - that man, ‘the reclaimed savage is raised mainly by intellectual processes inherited from age to age by successive generations until the “colossal man” at last passes to his slowly developed maturity of greatness.’ There was no significant criticism of *Essays and Reviews* in colonial public lectures, sermons or in the press, but much of its content probably fuelled the lectures and correspondence in Sydney, Adelaide and Melbourne later in the decade about verbal inspiration of the Bible and in particular of the Genesis accounts of creation of the earth and the universe.

The three major scientific works of the decade, those of Darwin, Lyell and Huxley were centred around the same theme; that animal species had derived from ancient ancestors through the process of evolution, a process of gradual and slow change, similar to that termed uniformitarian in geology, and that humans were part of that gradual process. Most of the responses, positive and negative, were to this overarching theme. Therefore, in

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23 Ibid.
24 *SMH* 5 June 1861, p.2
examining responses after 1863, in this chapter and the following one I will generally examine the responses to these three together, but note specific references to a particular work.

In Britain and in the Australian colonies the opposition from prominent churchmen to the theories of Darwin, Lyell and Huxley often took the form of challenging the scientific validity of the works, but had the underlying motivation of defending the literal truth of scripture and the role of God in creation. They often added warnings about the danger to morals and society if the truth of scripture was questioned or denied. It was feared that denial of the authority of scripture and the rules for behaviour it defined for society could lead to the denial of the authority of the church as the teacher and defender of those rules. Some feared that widespread atheism and subsequent breakdown of society could follow.

In Britain, one with concerns about Darwin’s implicit denial of the role of God in creation was the clergyman-scientist Adam Sedgwick, who wrote of his dismay and his fears when his former student Darwin sent him a copy of *Origin of Species* in 1859. Sedgwick’s criticism was in part scientific, questioning Darwin’s lack of good scientific inductive reasoning and testable assumptions. Darwin in his last year at Cambridge was exposed to Herschel’s work and teaching on inductive reasoning, which he used in developing his theory of evolution.\(^2\) Induction involves reasoning from facts to reach a new truth or hypothesis. In science there is usually an interplay between inductive and deductive reasoning. Deductive reasoning works in the opposite direction from inductive; it starts from a hypothesis then seeks facts to test the hypothesis. At the time, Sedgwick and others believed that Darwin’s inductive reasoning was based on too many assumptions and few

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\(^2\) Hull, *Darwin and His Critics*, pp.5,6; Herschel, *Preliminary Discourse on the Study of Natural Philosophy*. 
facts, and the ways it could be tested through the deductive process were not obvious or available.

But Sedgwick also had theological objections to Darwin’s process of natural selection. He was disappointed that Darwin had not attributed natural selection to the will of God acting through natural laws for the good of his creatures. Sedgwick criticized *Origin’s* theological implications and implied atheism, for displacing the role of God as Creator; his criticism was even stronger than his earlier criticism of *Vestiges*, ironically because he respected Darwin’s scientific work more highly:

> it [*Origin*] is the system of the author of *Vestiges* stripped of his ignorant absurdities...it seems to shut the door upon any view (however feeble) of the God of Nature as manifested in His works...contradicting-point blank the vast treasure of facts that the Author of Nature has, during the past two or three thousand years, revealed to our senses. Why is this done? For no other solid reason, I am sure, except to make us independent of a Creator.

Some influential British lay churchmen echoed Sedgwick’s criticism on what they perceived as Darwin’s attack on the scriptural account of creation. The palaeontologist Richard Owen, head of the Natural History Department of the British Museum, was also deeply hostile to Darwin’s theory of evolution on scientific and theological grounds, because, according to his biographer, it challenged his own position as a ‘successive and continuous creationist’. Owen held that each species had been created by God only once, then...

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27 Hull, *Darwin and His Critics*, p.169
28 Moyal, *The Web of Science.*, p52; Owen had received fossil bones, casts and reports from Clarke and Owen consolidated his research into the publication in 1877 of *Researches of the Fossil Mammals of Australia*. Clarke also sent finds of bones of a *Trionyx* and teeth of a crocodile to Professor Huxley, Darwin’s supporter, during the 1860s (*SMH* 20 May, 1869, p.3).
diffused out through its own law of reproduction influenced by external circumstances. This he called a ‘law of succession’ which worked within a purposeful, unified plan in the animal kingdom, and which he attributed to an ‘all-wise and purposeful First Cause’.\textsuperscript{29}

Among those who objected to Darwin’s theory because they perceived its main consequence to be fostering atheism and the disruption to morals and society that atheism would engender was George Campbell the eighth Duke of Argyll, President of The Royal Society of Edinburgh; Owen had been his mentor. In 1862, he accused Darwin and Lyell of deliberately misinterpreting their data to challenge scripture and promote atheist views.\textsuperscript{30} He spoke again at the Royal Society of Edinburgh in December 1864 on ‘Creation by Law’, upholding the role of God as the instigator and maintainer of life. He disagreed with the theories of Darwin, Lyell and Huxley because they ignored the spiritual dimension of humans and the mystery of God’s work. His speech was reported in the English \textit{Spectator} and reprinted in the \textit{SMH},\textsuperscript{31} and in \textit{The Mercury} in Hobart on 31 March, entitled more perceptively ‘The Spirituality in Science’.\textsuperscript{32} Employing Vitalist theory, Campbell maintained that there was a ‘Vitalizing organizing element’ which was responsible for life, arguing that the chemical changes which took place in unorganized matter were entirely different from the chemical changes which take place in living organisms: ‘organisation is not the cause of life, but life is the cause of organisation.’\textsuperscript{33} Reiterating a common theological objection, Campbell asserted that Darwin had concentrated on the consequences of this theory while neglecting to seek the underlying cause [God] of the natural law.\textsuperscript{34}

\textsuperscript{29} \textit{Ibid.} p.52
\textsuperscript{30} \textit{SMH} 8 March 1861, p.8
\textsuperscript{31} \textit{SMH} 9 March 1865, p.3
\textsuperscript{32} \textit{The Mercury} 31 March 1865, p.3
\textsuperscript{33} \textit{SMH} 9 March 1865, p.3
\textsuperscript{34} \textit{Ibid.} p.3
A year later in Britain, in 1866 George Moore (1803-1880), a Scottish medical doctor, published a book that took issue with Darwin, Lyell and Huxley on the origin of man, joining the criticism of them for being atheistic and a danger to public morals. His book *The First man, and his Place in Creation, considered on the Principles of Science and Common Sense, from a Christian Point of View, with an Appendix on the Negro* was reviewed in the *Athenaeum* in Britain and that review was reprinted in the *SMH* of 14 March 1867. Moore was a biblical literalist, defending the factual existence of a single first man, Adam, but gave his defence of literal interpretation of Genesis a new twist by maintaining human identity was defined by emotional, moral and intellectual characteristics, rather than any anatomical characteristics. The reviewer dismissed Moore’s book as too late to be of great interest to the public, though it might be helpful for ‘young and religiously disposed persons’ who cared little for pure science.

Early in the decade reporting on the controversies in some of the newspapers in the Australian colonies consisted of simply reprinting reviews from British and European newspapers, keeping their readers up to date with views from ‘home’, with little or no local comment. By the middle of the decade, however, local commentary and opinion on the issues was appearing in colonial newspapers, which were the main source of information on the issues for the colonial public. They covered the content of local public lectures, key scientific articles and included lively correspondence from the public. By this time Sydney, Melbourne and Adelaide each had two major newspapers, generally reflecting different political views and different degrees of conservatism in relation to church matters. The newspaper

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36 *SMH* 14 March 1867, p.6
37 Ibid.
38 Ibid.
reports show that each Australian colony had a distinctive public response to the challenge to traditional interpretation of scripture from the new ideas from science. Adelaide, Melbourne and Sydney each had one or two strong opinion leaders, both clergy and lay, who led the public debate and inspired others, clergy and lay, to join in. They also each had one main newspaper actively interested in informing readers of the opinions and controversies. Less interest in theological aspects of the issues was apparent in the press in Tasmania, Brisbane and Perth.

**The controversies in Adelaide**

Hostile responses from churchmen in the Australian colonies to Darwin’s theory began first in South Australia stimulated by the provocative public lectures from 1860 onwards presented by Richard Hanson, MP and later Chief Justice, in which he continued his role of enthusiastically introducing controversial new ideas from science to the public. *The South Australian Advertiser* took on the role of informing the public of Hanson’s ideas. The newspaper was founded in 1858 by John Henry Barrow, a Congregational minister, and its second editor was William Harcus, also a Congregational minister.39 It continued its reporting of the issues around evolution and biblical literalism throughout the decade.

Hanson was a keen amateur theologian and scientific thinker who came from a Nonconformist family.40 The reactions to Hanson’s talks came mainly from clergy; the response from lay people came later. Early in the 1860s Hanson’s focus shifted from his previous interest in the geological formation of the earth to the formation of new species through evolution, and he began

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40 Phillips, “Religious Response to Darwin.,” p.38
to challenge more strongly the accuracy of the biblical creation narratives. He was aware of the way Darwin’s theory challenged the Genesis accounts of creation, so he was at pains to affirm his own Christian belief, echoing Powell’s conviction that there was no essential conflict between the new discoveries of science and revelation. Hanson proposed that in spite of the new ideas coming from science, science and scripture should be in agreement on the issue of creation, and gave two explanations for the conflict he was witnessing, in Britain and locally. The first, he said, was the demonstrable astronomical, geological and biological inaccuracy of the Genesis account of creation, and the second was the misinterpretation of scripture by theologians. When science was linked with ‘right’ interpretation of scripture by theologians, he assured his listeners, the discoveries of science actually enhanced man’s understanding of God. These views were presented in a paper to the Philosophical Society in Adelaide, in the presence of the Governor and the Anglican Bishop of Adelaide, Augustus Short, on ‘the relations of Scripture to science, especially with reference to geology’, and much of its content was reported in The South Australian Advertiser on 30 August 1860. Hanson questioned the literal and scientific truth of the scriptural account of creation in Genesis, and explained its scientific inaccuracies by proposing that Moses (traditionally understood to be the author) had obtained his account of creation from the ‘imperfect opinions of Egyptian philosophers’ of his youth. In a subsequent lecture to the Society in 1861 Hanson rejected criticism that the current tendency to attribute all events and phenomena to natural laws was atheistic. In support of this position he reminded his audience that the church had

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41 The South Australian Advertiser 30 August 1860, p.2
42 Ibid.
44 The South Australian Advertiser 30 August 1860, p.2
45 Anglican Dean Cockburn and Hugh Miller were of this view, see chapter 1850s
46 The South Australian Advertiser 19 July, 1861, p.3
attacked science in the past, citing the heliocentric theory of Copernicus which had initially appeared to contradict the scriptures, but when it was fully understood, he claimed, it was found to be compatible with the Bible. This was a rather dubious claim as the Genesis account of the creation of sun and moon as lights travelling across the dome of the sky each day was radically different from the heliocentric solar system proposed by Copernicus, with the earth and other planets orbiting around the sun. Hanson believed that the discoveries of science were not damaging, but rather enhanced man’s image of God: ‘our conceptions of God as the creator and Governor of the universe have become enlarged and elevated in proportion to the increase of our knowledge of the magnitude, number, order, and beauty of his works.’

Hanson courted public controversy in a series of six lectures on the importance of natural laws versus God’s interventions, that is, catastrophism. This time his audience was working people at the South Australian Institute, which was a venue for presenting improving lectures and new ideas to the working classes by interested educated citizens. In his first lecture in July 1861, entitled ‘The Tendencies of Modern Thought’, he proposed that there was a universal order and there were natural laws which connected all natural phenomena and human experiences. Among such natural and universal laws he counted Darwin’s theory ‘which attempted to show that all existing forms of life, animal or vegetable, might have resulted from the operation of known laws.’ He was one of few in the colonies who differentiated the quality of the science and theory of Darwin’s *Origin* from *Vestiges*, discounting *Vestiges* as ‘that interesting and philosophical

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47 Ibid.
48 The South Australian Institute was established by an Act of Parliament in 1856, to incorporate a library, museum and public lectures; it grew from an earlier South Australian Mechanics’ Institute founded in 1837. [www.sahistorians.org.au](http://www.sahistorians.org.au)
49 *The South Australian Advertiser* 19 July, 1861, p.3
50 Ibid.
romance.’\textsuperscript{51} Walter Phillips has claimed that apart from a long, unfortunately unrecorded discussion with Bishop Short at a Philosophical Society meeting of March 1863, Hanson’s support of Darwin’s theory of evolution drew no other hostile reaction.\textsuperscript{52}

As before, Hanson was the first to bring to colonial scientific circles the controversial new proposals from Lyell. In March 1863, Hanson gave several lectures to the Philosophical Society supporting the scientific content of Lyell’s new book *The Geological Evidences of the Antiquity of Man*.\textsuperscript{53} In a paper entitled ‘Law in Creation’ Hanson boldly argued that the earth was extremely ancient and that Lyell’s fossil evidence showed the human race was much more ancient than generally understood from the Mosaic records. Nonetheless, the new evidence coming from geology should enhance belief in an even greater God: it would lead people ‘to take a higher and worthier view of the Creator’s wisdom and beneficence.’\textsuperscript{54} He repeated these arguments in a public lecture at the Mechanics’ Institutes in Mount Gambier and in Robe on 28 April.\textsuperscript{55}

Hanson’s views on verbal inspiration and on evolution became stronger and in February 1864 he gave a highly controversial lecture to the Philosophical Society on the ‘Relation of Science to Revelation’, which was perceived, at least by the clergy present, as a direct attack from science on the truth of scripture.\textsuperscript{56} Hanson repeated his assurance that the two should not necessarily be in conflict, but then presented examples of how science contradicted the biblical account: science had shown that man and animals had been on the earth much longer than Genesis allowed, and there was no

\textsuperscript{51} Ibid.
\textsuperscript{52} Phillips, “Religious Response to Darwin.”, p.39
\textsuperscript{53} Lyell, *The Geological Evidences of the Antiquity of Man, with Remarks on Theories of the Origin of Species by Variation*.
\textsuperscript{54} *South Australian Register* 1 April 1863, p.3
\textsuperscript{55} Player, “Julian Tenison Woods 1832-1889: The Interaction of Science and Religion”., p.97
\textsuperscript{56} *The South Australian Advertiser* 24 February 1864, p.3
scientific evidence for the existence of the universal Deluge of Noah’s time. With respect to the Deluge, Hanson was sharing the view of Bishop Colenso of Natal; the bishop had caused a furore in South Africa and Britain by questioning the literal truth of some of the book of Genesis from his knowledge of geology, writing that ‘a Universal Deluge such as the Bible manifestly speaks of, could not possibly have taken place in the way described in the book of Genesis.’ As we saw in the chapters on the 1830s, 1840s and 1850s, the lack of geological evidence for a universal flood had not diminished interest in the Deluge in the colonies.

Like Colenso, Hanson now questioned the Mosaic authorship of the Pentateuch, rather than blaming Moses’ inaccurate ideas from Egypt for the poor science in Genesis as he had in 1860. He increased his attack on theology and theologians, although not specifically the churches, accusing theologians of causing the conflict with science. Science he commended for continually advancing in contrast with theology, which in Hanson’s view had not advanced since the Reformation and had been compelled to admit that Nature was as much a revelation from God as was any book. In spite of the recalcitrance of theology, Hanson expected that its really important doctrines would remain unimpaired by science. In his view, the onus of proof had now shifted from science to theology, and it was up to theology to demonstrate the harmony of new scientific discoveries with scripture, as it had done in the past in harmonizing Galileo’s findings in astronomy with scripture. He must have been referring to Protestant theology, as the Roman Catholic Church had still not officially accepted Galileo’s findings. It is curious that although Hanson read and commented on both Origin and

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58 Ibid.
59 The South Australian Advertiser 24 February 1864, p.3
60 Ibid.
Lyell’s *Antiquity of Man* within a year of their publication, he did not specifically refer to *Essays and Reviews* published in 1860, although he appears to have based some of his arguments on the chapters by Powell and Goodwin, both of which supported his own statements about the discrepancies between geological science and Genesis.

The first concerted opposition in South Australia to the theories of Darwin, Huxley and Lyell, and in particular to their challenge to the literal truth of scripture, exploded in response to the provocation from Hanson’s 1864 lecture, when some of the clerics who attended strongly reasserted their traditional, literalist views of Genesis and verbal inspiration. The angry discussion which followed Hanson’s lecture showed that he had been misunderstood on at least one count. It was believed that he had claimed that the theory of progressive development had made the doctrine of the fall of man through sin erroneous. Darwin and Huxley had proposed that humans had risen through evolution from primitive forms to a higher form; this contradicted the Christian doctrine that humans had been created perfect then fallen through sin. Hanson had not said this, however it was a logical consequence of the proposal of evolution of humans from more primitive ape-like ancestors.

In the ensuing discussion Hanson admitted that he did not think the Bible was infallible throughout, but that did not make it worthless: rather he regarded it as educational, ‘God’s great instrument for the education of the world’ and more valuable than any other literature in fitting man morally for his present and future life. This did nothing to appease the biblical

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63 Ibid., pp.207-253
64 Ibid.
65 *The South Australian Advertiser* 24 February 1864, p.3
66 Ibid.
literalists. At the time, Hanson was the President of the South Australian Bible Society and these statements outraged the conservative views of that Society and led to calls for his resignation. He resigned within the year. 67

Two Anglican clergymen rose to respond to Hanson, both joining in the defence of the literal truth of scripture. George Farr reminded the audience of the inspired character of the writings of Moses, and Richard Needham was dubious of the processes of reasoning by which geologists came to their present conclusions, contradicting the evidence Hanson had presented from Lyell’s work and reaffirming the accuracy of the Mosaic records. 68 Hanson had the support of one un-named non-clerical speaker, who endorsed Hanson’s views on the imperfect nature of the scientific knowledge in the face of recent discoveries in geology. 69

John Gardner, a Free Presbyterian minister present at the lecture, joined his clergy colleagues in strongly defending the literal truth of scripture and the Mosaic authorship of the Pentateuch. 70 Gardner expanded his criticism of Hanson’s views in a lecture entitled ‘The Harmony of Science and Revelation’ presented at a public meeting at St Andrew’s Presbyterian Church on 15 March, attended by 400 to 500 people including the elders of the church. 71 He defended the literal truth of scripture strongly, but used arguments which sometimes lacked logic. He rejected as libellous any assertion that Christians were opposed to science because they feared for the impact on their religion. While echoing Hanson’s opinion that the Bible was not given to teach us science, he appeared to contradict this view by saying the Bible was the most scientific book on earth. He conceded that the term ‘day’ in Genesis chapter 1 may not have literal meaning, saying it included

67 Phillips, “Religious Response to Darwin.”, p.41
68 *The South Australian Advertiser* 24 February 1864, p.3
69 Ibid. p.3
70 Ibid. p.3
71 *The South Australian Advertiser* 26 March 1864, p.5
the whole period of creation, but he did not state how long he thought that whole period had been: he added his disclaimer: ‘lengthy periods of time were merely the conjecture of geologists and anyway, the question of time is of no importance.’ 72 Gardner disagreed with Hanson on uniformitarian theory, instead affirming God’s power to create exactly as he wished: ‘the changes at the present time going on cannot prove to us what the creator can do in the exercise of his power over the elements; and God could have done all the works in six days if it had pleased him.’ 73 Likewise, he disagreed with Hanson on the truth of the Genesis account of Noah’s Deluge: he maintained that it was within God’s power to find a way to get all the animals into Noah’s ark. In response to the claim there was no scientific proof of the Deluge Gardner rather illogically asserted that the silence from Nature merely gave assent to the scriptural account.74 Gardener was not alone in maintaining his belief in the Deluge despite the failure of geologists to find any evidence of a universal flood. His statements demonstrated that, unlike Hanson, for Gardner, many of his fellow clergy and perhaps his audience meeting in the Presbyterian Church scripture took precedence over reason: he said it was the province of reason to examine the evidence of revelation, but having ascertained that scripture was revealing God’s word, reason should stop there. However, he joined Hanson in blaming theologians for discrepancies between science and scripture, such as the belief that the earth was the centre of the solar system and the sun moved around it, by saying that it was theology and not revelation which had been wrong, presumably meaning that God had revealed the truth in scripture, but theologians had misunderstood it.

72 The South Australian Advertiser 24 February 1864, p.3
73 Ibid.
74 Ibid.
For Gardner, as for the members of the Bible Society, Hanson’s remarks revealed impiety rather than a deep thinking or logical mind, because ‘the only true piety was built on a belief in the truth of God, and where these were rejected, there can be no piety.’ Two other Presbyterian ministers acclaimed Gardner’s lecture: J. McBean of Inverbrackie in the Adelaide Hills joined in the denial that religious ministers were averse to science, pointing out that the most eminent geologists were ministers and earnest Christians. James Lyall from the large Flinders Street Presbyterian Church warned of the coming serious struggle for the truth of the Bible against infidelity, comparing it with the struggle against the open attacks from the scientific advances of the Enlightenment in the previous century. He urged ministers to refute the attacks with evidence from the Bible.

Sustained opposition to the challenge from the theories of Darwin, Lyell and Huxley to verbal inspiration of the creation stories as presented by Hanson also came from the Roman Catholic priest Julian Tenison Woods, the most prominent geologist in South Australia, in line with the official views of his church which demanded that science and its interpretation should come under the authority of the church. In the Syllabus of Errors condemning ‘the monstrous and portentous opinions, which prevail in the present age’ which accompanied the encyclical Quanta Curia sent to all Catholic bishops by Pope Pius IX in 1864 the Catholic Church had adopted a strong conservative defensive stance with respect to its authority and its place in society. The pope enumerated many errors prevailing ‘to the very great loss of souls and even to the detriment of civil society’ including liberalism, rationalism and Latitudinarianism. Error number 57 was the belief that ‘The science of

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75 The South Australian Advertiser 24 February 1864, p.3
76 The South Australian Advertiser 26 March 1864, p.5
78 Ibid. p.136
philosophical things and morals and civil laws may and ought to be kept aloof from divine and ecclesiastical authority.79 Like the Presbyterian opponents of Hanson, Woods was a reconciler, a catastrophist, asserting the supremacy of scripture and seeking to adapt the new scientific discoveries to fit the literal interpretation of Genesis and its description of God’s direct intervention in creation.80 Woods did distance himself from the literal measure of ‘day’ in Genesis, however, he disagreed with Lyell’s proposal from the fossil record and supported by Hanson that humans had shared the earth with ancient animals, believing that humans had appeared in a period much closer to the present time.81 Woods wrote in defence of the recent and special creation of humans by God: according to his biographer Player, ‘Woods certainly wrote to reverse what he believed to be harmful to religion in Lyell’s theory on the antiquity of man.’82 Curiously, Woods ignored Darwin’s theory of evolution for six years after its publication before denouncing its atheistic denial of the sustaining power of God in nature. When he finally acknowledged it in 1867, Woods maintained that his main objection to Darwin’s theory was on scientific grounds, but his greatest objection was the inclusion of humans in the process of evolution; ‘a theory which made of man a”civilised gorilla” denied the unity of the human race and reduced the creative power of God to a minimum.’83 John Bleasdale, a prominent Catholic priest and scientist in Melbourne shared this opinion. In 1865 Bleasdale, president of the Royal Society of Victoria, disparaged Huxley’s inclusion of humans in evolution, saying it was a ‘swindle. It tumbled to pieces when it was investigated and was only suited to the half-

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79 Fremantle, ed. The Papal Encyclicals., p149 and www.papalencyclicals.net/Pius09/p9sylI.htm (accessed 16/11/16)
81 Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion"., pp.97, 98
82 Ibid. p.103
83 Ibid. p.115
educated intellect fashioned in mechanics institutes.’84 There was no mention of evolution or of any issues between science and religion at the Roman Catholic synod held in Melbourne in 1862.85 This contrasted with very open discussions led by Anglican Bishop Short at Anglican synods in Adelaide in the 1860s.86

The attacks from the Presbyterian and Roman Catholic clerics on uniformitarianism and evolution stimulated by Hanson’s lectures were focused on the way these theories challenged biblical literalism. There were more moderate responses to the challenge to literalism from some members of the Congregational and Anglican churches in Adelaide. The Congregational minister, James Jefferis, and the Anglican Bishop Augustus Short, both agreed with Hanson that the Bible was not an infallible guide to science, and that it was a spiritual and religious revelation and not an infallible authority on science. Both however, had more reservations than Hanson about Darwin’s theory, with Short the more cautious.

Jefferis supported Hanson’s call for freedom for people to question the literal truth of scripture when it was contradicted by science, pointing out that many scientific doctrines now regarded as true had been rejected by the churches and the work of many scientists in their time rejected, ‘previously scouted as the wild imaginings of a disordered brain.’87 As before, The South Australian Advertiser continued its reporting on the controversies. Jefferis cited the demonstrably incorrect claim taken from scripture that the sun moved around an immovable earth, saying ‘the science of the Bible is the science of the times when the Bible was written; is not inspired science and is

84 The Argus 25 July 1865, p.6
86 Adelaide Observer(Supplement) 7 May 1864, p.2
87 Ibid.
not infallibly correct.’ SCRIPTURE provided a spiritual and religious revelation but with regard to other matters, scientific method and reason must prevail: in ‘science, history &c, men must follow the light of reason and be guided by the established laws of proof and rules of evidence.’ Jefferis pointed out that it was not only contemporary science which questioned the accuracy of parts of the Bible, but there were also some internal historical inconsistencies, such as those revealed in the books of Kings and Chronicles. He urged that discrimination and reason be used whenever the Bible touched on geology, astronomy, topography, genealogy and on questions of numbers and dates.

Going further, Jefferis strongly condemned those who blindly and literally adhered to scripture in all matters, those who would ‘as easily accept that Jonah swallowed a whale as that a whale swallowed Jonah’ simply because they believe what is written in scripture. He presented a startling new definition of infidels as those who blindly adhered to the literal word of scripture in the face of reason and scientific evidence: ‘their credulity is the worst species of infidelity; it is an abnegation of intellect and an outrage upon the understanding that the Creator gave to man when he made him in his own image.’ Further, he claimed that it was an insult to understanding and to religion to suppose that the Bible would not bear the test of enlightened examination. The man who objected to respectful and honest discussion showed the weakness and not the strength of his faith, this was spiritual cowardice. Jefferis took the unorthodox position that it was only through exercise of reason that people could believe in a First Cause [God]

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88 Ibid.
89 Adelaide Observer(Supplement) 7 May 1864, p.2
90 Ibid.
91 Ibid.
92 South Australian Register 26 March 1864, p.5
93 Ibid.
and give credence to revelation. Just as human reason had decided which books of the Bible were canonical, so reason should also decide what part of the scientific content of these books was valid.

In a sermon he presented some months later at the North Adelaide Congregational church, Jefferis repeated his attack on what he called the popular belief in the verbal inspiration of scripture. He also repeated his warning of the danger of making the bible an authority in matters of science because compelling scientific evidence contradicting scripture could undermine the confidence of those who relied on scripture and the churches for the truth. He reiterated Hanson’s warnings to theologians of the danger to the church if they ignored science.

Focusing on how the proposals of Darwin and Lyell could be reconciled with scripture, like Woods Jefferis was open to Lyell’s proposals of the greater antiquity of humans but not to the inclusion of humans in the evolutionary process. On 7 September 1863 The South Australian Advertiser ran a long article about Darwin’s theory entitled ‘The Conflicts of Modern Thought’, based on a talk by Jefferis to nearly 400 people at his church in North Adelaide. Jefferis asked his listeners to suspend their conclusions about Lyell’s proposals of the great antiquity of man, first because science continued to make new discoveries so more information would be forthcoming, and second and importantly the estimation that creation took place 6000 years ago did not form part of the inspired Word of God. Jefferis explained some of the evidence which supported Lyell’s proposal that humans had existed for more than 100,000 years, saying fossil discoveries

94 Ibid.
95 South Australian Register 26 March 1864, p.5
96 South Australian Register 25 June 1864, p.4
97 Ibid.
98 The South Australian Advertiser 7 September 1863, p.3
99 Ibid.
showed that mastodons and humans had coexisted, yet mastodons had become extinct 100,000 years before the present. According to Jefferis there was a great deal of doubt and misunderstanding of evolution and he sought to clarify the issues. Jefferis ridiculed the idea of including humans in the process of evolution, and laughter erupted from his suggestion that Caucasian man, such as himself and his audience, was descended from a jellyfish. However, he said that neither laughter nor a sneer was an appropriate answer to Darwin for a wise man; such a response in fact showed an overweening pride that man was the ultimate repository of wisdom. Jefferis praised a recent [March 1863] ‘masterly paper delivered to the Philosophical Society’ by Hanson, who, he noted correctly, generally also concurred with Darwin’s views.\textsuperscript{100} Acknowledging that Darwin’s theory was agitating the public in Britain, Jefferis declared that the theory was made more acceptable by Darwin’s concession that God had created the first life form, ‘whose life was breathed at the first by the Creator.’\textsuperscript{101} Jefferis was quoting from the last paragraph of the second edition of \textit{Origin} which was not included in the first edition.\textsuperscript{102} Jefferis largely agreed with Darwin that there had been only a few progenitors of plants and the same number for animals, from which all others derived.\textsuperscript{103}

Jefferis assured his audience that he had no fear, as some did, that speculations such as Lyell’s and Darwin’s would impugn the veracity of scripture. In fact, he rejoiced in the intellectual strife these new ideas were causing, for from the struggle truths would emerge: ‘for only in this way would they arrive at the truth which was beyond.’\textsuperscript{104} He had no fear that the free thought and free enquiry expressed in \textit{Essays and Reviews} and \textit{German

\begin{footnotes}
\item[100] Ibid.
\item[101] Ibid.
\item[102] \textit{Origin} First edition, was published 24 November 1859, the second edition was published on 7 January 1860.
\item[103] \textit{The South Australian Advertiser} 7 September 1863, p.3
\item[104] Ibid.
\end{footnotes}
biblical criticism would diminish the value of the Bible. In welcoming the intellectual strife that the publication of Darwin’s book had caused, Jefferis evidently did not share the fear he attributed to theologians that it would result in atheism by excluding the creator from creation: ‘as if He were no longer necessary for the world.’

Perhaps Jefferis had not counted on the amount of intellectual strife that would be generated by Hanson’s freedom of expression of his beliefs about verbal inspiration of the Bible in his controversial lecture to the audience of conservative clerics in 1864. In Jefferis’ opinion Hanson had been treated unfairly in having his good faith as a Christian questioned, and being called on to resign from the Bible Society. Jefferis pointed out that although Hanson had criticized theology for its lack of progress, he had not questioned the authority of the Bible in matters of religion, rather questioning it as an infallible guide to science. Jefferis strongly defended open and free speech against accusations of infidelity and atheism, asserting that the ‘cry of “infidel” will not stop the mouth of any sensible man.’ He continued: nor would The South Australian Advertiser evade the question on the pretext that ‘it is unsuited to our columns’, a criticism aimed at rival newspapers which were not reporting the controversies.

Jefferis concluded by reiterating, like Hanson, that science and religion should be studied apart, and even if they seemed to differ it did not follow that they could not eventually be reconciled. Jefferis exemplified the scientifically informed, thoughtful and open-minded response of some Anglican and Congregational clergymen to Darwin’s theory even though he maintained some reservations as to its scientific veracity. Nonetheless, he

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105 Ibid.
106 Ibid.
107 The South Australian Advertiser 26 March 1864, p5
108 Ibid.
was confident that eventually the new science and revelation would be found to be in harmony in spite of present apparent difficulties. Jefferis presented these views again in Melbourne, in 1866. The Argus reported a lecture given by Jefferis in the Albert Street Baptist Church in Melbourne, on ‘Conflicts of the Modern Mind’, which was later reported in The South Australian Advertiser.\(^\text{109}\)

Another Adelaide Congregational minister, the geologist Francis William Cox, agreed enthusiastically with Hanson’s positive evaluation of Lyell’s Antiquity of Man. Cox entered the public debate with a lecture on ‘The Ancient Races of Man’, based on Antiquity of Man, to the Young Men’s Association of the Hindmarsh Square Congregational church in November 1863.\(^\text{110}\) He introduced Lyell’s book as ‘a marvel’ from ‘one of the ablest and most cautious geologists of our day’, and pointed out the questionable nature of some of the Old Testament chronologies: ‘every Bible student had long since known that the usual chronologies were not in any way to be depended upon’, and there was also the silence of the Bible as to when mankind had appeared on earth - ‘[the Bible] said nothing on the subject of when man appeared.’\(^\text{111}\)

The Congregational ministers in Melbourne appear to have had rather different views from Cox and Jefferis. In 1867, the Rev Anketell Matthew Henderson, president of the Congregational College in Melbourne, delivered an address in the Town Hall at Flemington on ‘Philosophy of Creation, as exhibited in geology’, refuting ‘the doctrines advanced by Professor Huxley, Mr Darwin and others on the origin of species’, reasserting the literal truth of scripture.\(^\text{112}\) Two months later he spoke again on the subject in the Wesleyan

\(^{109}\) The South Australian Advertiser 1 May 1866, p.3
\(^{110}\) South Australian Register 6 November 1863, p.2
\(^{111}\) Ibid.
\(^{112}\) The Argus 21 May 1868, p.5
Henderson travelled to Adelaide in April 1867, where he presented his lecture ‘The philosophy of Creation as exhibited in science’ at the Stow Memorial Church, to ‘refute the theories of Darwin and Huxley’. No comments on the reaction of his audiences were reported.\textsuperscript{114}

In Adelaide, Anglican Bishop Short echoed the moderate response of Jefferis; he was an example of one who gradually adapted his theology to accommodate the new theories as the decade progressed.\textsuperscript{115} His 1859 paper to the Philosophical Society, ‘Paleontic Geology, Illustrative of the Book of Genesis’, showed that he agreed with Hanson and Jefferis that the book of Genesis did not contain a scientific account of the creation. Short explained the discrepancy between the six days of creation and geological evidence by attributing the apparent conflict to deficiency in the knowledge of the translators of the Authorised Version of the Bible\textsuperscript{116} rather than to Moses’ misunderstanding, as Hanson had proposed. As well as suggesting that the word ‘day’ in Genesis chapter 1 should not be taken literally, Short believed the process of creation had been progressive, for some of the geological periods represented in the various rock strata showed the presence of animals and other organic life forms ‘in a progressive [transitional] state.’\textsuperscript{117}

In saying this, Short appeared to be conceding that creation had been continuous over geological time rather than a single event, and that there was some evidence for development or evolution of species. Both were radical concessions at a time when belief in verbal inspiration and literal truth of the creation stories were the norm in the Anglican Church and in other churches.

\textsuperscript{113} The Argus 27 July 1866, p.4
\textsuperscript{114} The South Australian Advertiser 10 April 1867, p.2
\textsuperscript{115} Short’s diocese included all of South and Western Australia
\textsuperscript{116} Also known as the King James Bible of 1611, the version in use by the Church throughout this period
\textsuperscript{117} South Australian Register 18 April 1859, p.5
Short’s openness to new ideas about the verbal inspiration of the scriptures increased during the 1860s and he kept his clergy informed of his views. In his address to the diocesan synod on 2 May 1864, against the background of controversy caused by Hanson’s February lecture and the subsequent letters from Jefferis in the press, Short presented his own view on verbal inspiration of scripture.\textsuperscript{118} He said that God’s inspiration of the writers applied only to the main spiritual and moral message being conveyed, not to peripheral issues: ‘not the literal inspiration of every jot and tittle of Holy Writ…the inspiration which guided the sacred writers does not necessarily imply direct revelation on all points not relevant or necessary to the spiritual and moral message intended to be conveyed.’\textsuperscript{119} Short preferred to speak of God guiding rather than dictating to the writers of the scriptures, moving them to write to suit their particular purposes and audiences, ‘according to their individual characters, [but] their minds and judgment as well as memory were nevertheless so guided as to choose the fittest modes of expressing the subject according to the age or the purposes on which they were “moved” to write.’ Short then supported, albeit conditionally, the open discussion of controversial opinions that Jefferis and Hanson had called for, as long as the discussion was factual, calm and motivated by a reverent spirit, for most of the difficulties that had arisen with scripture were, he believed, due to the want of more detailed information. In 1865, Short continued to encourage members of his synod to be open to the new ideas coming from science saying, ‘Protestant Divines should not take up a position \textit{vis à vis} modern science like that taken by the Roman Inquisition to Galileo.’\textsuperscript{120} With respect to verbal inspiration of the scriptures he declared that true theology should not repudiate the evidence of the senses or ignore the legitimate conclusions of

\textsuperscript{118} \textit{Adelaide Observer(Supplement)} 7 May 1864, p.2
\textsuperscript{119} Ibid.
\textsuperscript{120} \textit{The South Australian Advertiser} 16 May, 1865, p.3
intellect. He reminded his clergy that Protestants believe that scripture is given under God’s inspiration to be profitable for the church’s doctrine, for reproof or correction and for instruction in righteousness. Therefore, Short declared, unless statements in scripture relating to science or history were given under inspiration for these purposes, they may not be exempt from error and were open to enquiry from philosophers, critics and historians.\textsuperscript{121}

Adelaide Wesleyan minister William Evans was another clergyman well informed on recent scientific developments. He presented a positive review of Lyell’s recent book and the theory of evolution, including humans, in a lecture to the Wesleyan Mutual Improvement Association in Adelaide in September 1863.\textsuperscript{122} Evans presented two current theories of the development of the human race and their implications for theology in his lecture on ethnology. The first was the theory of the American scientist Louis Agassiz that different races of humans had originated from different original stocks, and that the Adam of scripture was the founder of only the white races. Evans disagreed with this theory, suggesting that all of the differences observed between the human races were attributable to differences in climate, situation and civilisation, and this tended to support a second theory that the human races represented simply departures from the one original stock. He pointed out that Lyell’s \textit{Antiquity of Man} gave considerable support to the time frame needed for all of the observable developments to take place from one original stock. Evans admitted that this theory and the time frame it demanded represented a departure from the ordinarily accepted scriptural idea of the antiquity of man, and commented that ‘stronger evidence to support it would be needed than what had yet been adduced.’\textsuperscript{123} Nonetheless, his attitude was rather more liberal that the

\textsuperscript{121} Ibid.
\textsuperscript{122} \textit{The South Australian Advertiser} 18 September 1863, p.2
\textsuperscript{123} \textit{The South Australian Advertiser} 18 September 1863, p.2
generally conservative literalist Wesleyan and Methodist churches of the time.

The controversies in Sydney

In New South Wales, there was no Hanson to explain and promote the theories of Lyell and Darwin to the public, rather the subjects were first introduced by British articles reprinted in the SMH. The SMH of June 1860 reported comprehensively but derivatively on Origin to bring some of its controversial aspects before the public, but showed an even handedness in its approach. In that year it published two reviews, one negative and one positive. The negative review was extracted from an article of forty-six pages that had come from the Edinburgh Review which supported the special creation and catastrophist views of Cuvier, Owen and the American Agassiz, in opposition to the evolutionist views of Lamarck, ‘Vestiges’, Powell and Darwin.124 However, a second article was taken from a positive review by Auguste Langel in the Revue de Deux Mondes which commended the dissemination of Darwin’s views to assist the practical purpose of acclimatization of animals and plants.125

The SMH of 5 November 1860 kept its readers up to date with the controversy underway in Britain with a brief report of the famous acrimonious debate concerning ape ancestry of mankind between Huxley and Bishop Samuel Wilberforce at the British Association meeting at Oxford.126 The brevity of the reports and lack of additional comments reveal a conservative approach to controversial topics by the SMH early in the decade.

124 SMH 26 June 1860, p.3
125 Ibid.
126 SMH 5 November 1860, p.8
In New South Wales, the main public voice on scientific issues, Clarke, echoed the cautious response to verbal inspiration voiced by Jefferis, but more strongly objected to Darwin’s theory on scientific grounds. In May 1862, the SMH reprinted an article from the British Cornhill Magazine presenting details of Darwin’s theory in the form of a parody, which ridiculed the theory on scientific grounds, but which actually presented to Sydney readers a very comprehensive explanation of Darwin’s theory and its perhaps unpalatable consequences in nature and in theology, entitled ‘A Vision of Animal Existences.’ In the parody, a woman, personified as the ‘Originator of Species’ had a son, ‘Struggle–for-Life’, and denied ‘creation’ as ‘miracle law’, except for the creation of one primordial form which the Creator had called into existence. The character ‘Natural Selection’ also denied the catastrophist views that all extinct and fossil species were extinguished by terrestrial catastrophes, and that all succeeding species were called into existence by successive miraculous acts of creation. Darwin’s theory was correctly explained as perpetuation of small advantageous variations in animal forms, eventually making what was called a species. The brutality of the struggle for existence was graphically described as never before in the local press, as ‘Struggle for Existence’ (the ‘diabolical child’) selected the strongest and most savage individuals through starvation and slaughter of the weakest. Strength would therefore prevail, as dominant and overbearing brutes and men triumphed: and ‘the milder qualities of humility, forbearance, modesty, self-denial are causes for suppression and extinction of those endowed with them’. There was no hope or sympathy for the weak, either for animals or humans. The original article concluded with an offhand mention of God, saying that although an infallible judgment on the theory could only be given by an Intelligence capable of tracing the

127 SMH 26 May 1862, p.3

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workings of nature throughout all time, yet it conceded that Darwin’s theory offered a rational and logical explanation of many things hitherto unexplained; it is ‘conscientiously reasoned and patiently written’, ‘a sincere effort after truth’. Clarke as scientific editor may have selected this article for publication to make readers aware of the brutal outcomes of the processes of natural selection and the survival of the fittest proposed by Darwin.

Clarke had obtained an early copy of *Origin* in May 1860, and his occasional and dispassionate commentary on its scientific content kept Darwin in the public view in New South Wales. Clarke’s regular writing in the *SMH* showed both his reasoned openness and respect for Darwin’s theory, which in spite of Darwin’s supporting extensive data he regarded as unproven, and his equal respect for its opponents in Owen and Sedgwick. In December 1861 Clarke read a paper entitled ‘Geology of Australia’ before the Philosophical Society of New South Wales correcting some misunderstandings of Darwin and others about the origins of Australia and its fauna and flora; many of the misunderstandings in his view reflected the paternalistic arrogance of scientists in Europe with respect to the natural world in the colonies and to colonial naturalists. Clarke spoke as a vice-president of the Society and the president, Governor Sir William Young, was also present. The paper compared some Australian and European geological formations. Clarke pointed out many similarities between the two locations, including the antiquity of the geological formations which, he said, contrasted with the reasoning of one eminent philosopher (Blumenbach) that since the marsupials of Australia were so bizarre that it likely that New Holland had been formed by a corner of the sun, knocked off by a comet and tumbling

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128 *SMH* 26 May 1862, p.3  
130 *SMH* 2 December 1861, p.2
into the Pacific Ocean. Clarke also argued against the view of the author of *Vestiges* that marsupials were recent and imperfect species, ‘only an imperfect development of life upon the more recently formed lands, such as Galapagos and Australia.’ Clarke maintained that just as Blumenbach was wrong in proposing that Australia’s land had originated from a comet, so the author of *Vestiges* was wrong in denying ‘as great antiquity to parts of Australia [and presumably to its fauna] as to any other part of the world.’ Clarke further commented that Darwin was also wrong in his assertion in *Origin* that among all the islands in the earth’s oceans none had any remnant of Palaeozoic or Secondary geological periods. Clarke made it clear that he was not passing any opinion on the evolutionary hypotheses within *Origin* and *Vestiges*, however he wished to present evidence which refuted their statements about the geological structure of Australia, and nearby oceanic islands. Clarke’s disagreements with Darwin and *Vestiges* were based on broader and sounder scientific evidence than the disagreements voiced by Woods. Clarke kept to the scientific findings and conclusions and he made no comment on their theological implications in his paper.

Clarke was the first Australian scientist to correspond with Darwin, although no mention of evolution is found in their extant correspondence. Clarke’s publication of evidence for past glaciations in the Australian alps which indicated that there had been an Ice Age on the continent, was used by Darwin to support his idea that species migration and isolation led to development of new species such as those found in Australia, and he included Clarke’s findings in the third edition of *The Origin of Species* which was published in 1861.

At Darwin’s request, Clarke carried out a modest

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131 Ibid.
132 Ibid.
133 Moyal, *The Web of Science*, p.19
scientific experiment on bees. Clarke’s correspondence with Darwin continued, and Darwin became one of the sponsors for Clarke’s election to the Royal Society in 1876. Clarke’s address as Vice President to the Royal Society of New South Wales in 1867 pleaded for open minds among the conservative members of the Society with regard to the theories of Darwin.

Clarke’s lack of prejudice and open mind can also be seen in his unconditional acceptance of the Roman Catholic priest Woods as a scientific colleague in the learned societies of which they were members, despite the culture of anti-popery in the Anglican Church at the time. In the same way, he accepted and respected the German-born professed atheist Dr Johann Krefft, the Director of the Australian Museum, as a scientific colleague. Clarke showed a tolerance which Krefft complained other colonial scientists lacked. Clarke’s respectful treatment of scientific colleagues with whose ideas he disagreed contrasts with Woods’ prejudice against Hanson for his attacks on the literal truth of scripture. In 1864, the *SMH* published a review by the scientific editor, Clarke, in which he referred to the controversy of the origin of species. The book was the first volume of *Flora Australiensis* written by George Bentham, assisted by Ferdinand von Mueller, with contributions from many Australian botanists, including William Woolls. This was the first definitive book on Australian botany and the review was very favourable. Clarke used the opportunity to note that Bentham had used the traditional, Linnaean definition of a species, Clarke stating that it would be inappropriate in his review to open up ‘the abstruse question on the origin of

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135 Moyal, *The Web of Science*. p.53
136 Ibid. p.53
137 *SMH* 11 June 1869, p.2
species which has of late been agitated by men of such ability as Darwin and Lyell.’

In 1863 the *SMH* published a review of Lyell’s *Antiquity of Man* by its scientific editor, Clarke, which demonstrated his opposition to Lyell’s ideas on ancient human history. The review showed that Clarke was concerned about the danger to traditional beliefs it presented, for he warned that the intention of the book was an ‘entire subversion of popular human chronology and together with it of popular beliefs in man’s distinct creation and separately supreme place in Nature.’ Although Clarke disagreed with Lyell’s extension of humanity back hundreds of thousands of years, such a warning about the author’s subversive intention reveals a deep felt concern and differs from Clarke’s usual restriction of his reviews to the scientific content of the books being assessed. Yet the sentiments agree with Clarke’s own as expressed several months later at a meeting of the Philosophical Society in which he objected to Lyell’s implication that the present race of humans was descended from a race which was not endowed with the same faculties as humans of the present day. Clarke warned that Lyell’s ‘demand’ of more than 6000 years of mankind’s existence on earth was being supported by ‘many anatomists, ethnologists and others.’ Worse still in Clarke’s opinion, Lyell had embraced Darwin’s doctrine of transmutation (evolution) and included humans in the process of evolution; ‘the whole volume is designed as an auxiliary to that well-known theory of Mr Darwin.’ Clarke warned of the difficulty believers would have in reconciling the theories of Darwin and Lyell with the Genesis account of creation and with natural theology:

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138 *SMH* 13 January 1864, p.3
139 *SMH* 9 May 1863, p.7
140 Ibid.
141 *SMH* 12 November 1863, p.8
142 Ibid.
if the Darwinian and Lyellian opinions are fully admitted, the present
believers in revelation will find it necessary greatly to modify their
opinions, and [will find it] very difficult to reconcile the Lyellian and
Darwinian tenets with Biblical and with natural theology, at least in
so far as the Mosaic account of the creation and fall of man is
concerned, and many consequences deducible from it.143

In Clarke’s view, Darwin’s theory commended itself more for its harmony
with Lyell’s uniformitarian principle in geology than from any body of
evidence supporting it. He correctly noted that Darwin had endeavoured to
do for ‘animated nature’ what Lyell did years before in geology, showing
that phenomena presently observable in the surface of the earth had been
produced by laws now in action, assuming enough time were allowed to
elapse. Clarke accepted the evidence supporting Lyell’s uniformitarian
theory, but maintained correctly that Darwin’s theory was as yet purely an
hypothesis.

Clarke continued to maintain his disagreement with Darwin’s theory
throughout the decade. In 1869 he wrote a letter to the SMH entitled ‘Extinct
Species’ commenting on a letter from the Rev D.P. Meek Hulbert on the
subject of fossils of Australia and New Zealand.144 Hulbert had queried
aspects of an earlier communication by Clarke, in which Clarke had
applauded Krefft’s announcement of the find of a femur identified as
belonging to an extinct bird, Dinornis, related to the large moa of New
Zealand. Hulbert, in contrast to Clarke, appeared to embrace fully Darwin’s
theory of evolution. He proposed an evolutionary process with
environmental factors as natural selective agents to account for the
similarities between present day emu and ostriches and fossil forms of the

143 SMH 9 May 1863, p.7
144 SMH 11 June 1869, p.2
giant birds. Clarke responded by taking his fellow clergyman Hulbert to task for accepting evolution of species. Clarke acknowledged the relatedness of modern species to extinct fossil forms, but rejected evolution as the explanation, emphasizing that all species were made by the Creator:

I cannot subscribe to another [of his views] viz that recent animals are the offspring of the olden forms. I believe that species as such were made by the Creator, and that they are not the result of accidental conditions, but however related are independent of their predecessors.

Clarke’s articles and letters in the SMH show he accepted fossil evidence of the appearance and extinction of species in different geological ages and was open to uniformitarianism in geology, but would not accept evolution as the means of development of new species, instead attributing them to the actions of God in creation. Clarke’s rejection of Darwin’s theory supports Moyal’s naming of him as a ‘uniformitarian and evolutionist in geology who recognized the appearance and extinction of species over infinitely changing eras of geological times… however [Clarke] remained a Creationist in the biological and theological worlds.’

Clarke moved on from his objections to the scientific bases of the work of Darwin and Lyell to join Hanson and Jefferis in focusing on the challenge from science to the verbal inspiration of scripture, and the need for freedom to discuss contradictions of science with scripture. Like Hanson and Jefferis in South Australia, Clarke advocated open discussion without fear of accusations of infidelity, but freely pointed out the atheistic implications of

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145 SMH 31 May 1869, p.2  
146 SMH 11 June 1869, p.2  
147 Moyal, The Web of Science., p.53  
148 SMH 6 March 1865, p.5
some writings and lectures. He was concerned that science, as extolled by Hanson, would undermine the confidence of the public in the scriptures and the church’s teaching, which would in turn jeopardise the moral fabric of colonial society. He particularly objected to a proposal from Hanson’s third lecture, that human intellect was the only effective instrument for advancing humanity. Rather, Clarke defended the contribution of scripture to the great moral advances made in response to the Mosaic scriptures, presumably referring in particular to the Ten Commandments. He also defended the contribution of the churches to humanity, citing the teachings of Christ and the apostles, the reformation of Luther and revival of Wesley. In his view the progress of humanity consisted of a positive alternation between moral advance mediated by the scriptures and intellectual development. When reporting on the last three of Hanson’s controversial lectures which contained Hanson’s views on the discrepancies between revelation and science, Clarke, in ‘reassuring the timid’, stated, as he had in earlier decades, that any contradictions arising between science and scripture were only temporary and due to incomplete scientific knowledge: there could be ‘no permanent contradiction in Divine teachings, though owing to partial knowledge, or temporary misapprehension there may be apparent contradictions.’

In Clarke’s view there were sources of revelation which complemented scripture: as a natural theologian he viewed nature as one of those sources: ‘the eternal power and Godhead may be clearly seen from things that are made. Nature then is also a revelation.’ This was not a new idea, as in the seventh volume of the Bridgewater Treatises published in 1835, The History, Habits and Instincts of Animals, the cleric William Kirby had also commended

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149 Ibid.
150 SMH 6 March 1865, p.5
151 Ibid.
nature and scripture as God’s two books, declaring that nature could reveal religious truths, and that scripture could reveal scientific truths. Clarke added a third book: human nature itself as another source of revelation, teaching duties to man and God. Clarke summed up his belief in these three kinds of revelation: ‘the book revelation, the man revelation and the nature revelation are all Divine teachings, which mutually confirm and authenticate each other.’ If understood rightly they could not be at variance, and if they appeared to contradict one another it simply showed that some opinion was held in error. Clarke echoed Hanson’s stated belief, and that of natural theologians, that the purpose of science was to enhance our understanding of the Creator. ‘The more we learn from science, the more comprehensive is the view we gain of the Divine method of action.’ Clarke’s position was that of a confident scientist and natural theologian; whereas Hanson, also a natural theologian, was critical of the way theologians resisted the input from science. Clarke concluded with further reassurance that the truly devout mind need not fear that knowing more of that plan of Divine action would shake his faith.

Six of Hanson’s lectures to the Adelaide Philosophical Society and the South Australian Institute were republished as ‘Law in Nature’ and reviewed in the SMH in March 1865 by Clarke. Clarke summarized the overall theme of Hanson’s lectures as an endeavour to prove the supremacy and universality of law in nature, noting that Hanson had thanked science for replacing the common belief of the arbitrariness of nature. Clarke agreed with this endeavour, but pointed out that understanding the laws of nature did not

152 Finnegan, “Science and the Bible.” p.7
153 Ibid.
154 Ibid.
155 Law in Nature by Richard Davies Hanson, Chief Justice of South Australia, Adelaide, W.C. Rigby, reviewed in SMH 6 March 1865, p.5
explain the ‘why’ of nature and its phenomena: ‘when asking why these laws operate we can only get a woman’s answer, “because they do”’. Clarke generally restricted his scientific conclusions to his own observations, but underpinning his science was his belief that God would eventually provide whatever reconciliation was necessary between the new ideas from science and revelation. In 1845, Clarke had written ‘Providence never allowed man to be menaced by his other instruments without teaching him how to avoid the danger.’

There were some scientists in New South Wales who were open to Lyell’s views expressed in *Antiquity of Man* that humans had existed for longer than the generally accepted 6,000 years, but there was complete opposition to the 100,000 years that Lyell proposed, not for scientific reasons but because this seemed to be irreconcilable with the accepted chronology from scripture. John Smith, Professor of Chemistry and Experimental Physics at Sydney University, led a discussion at the Philosophical Society meeting held in Sydney on 11 November 1863, presenting evidence from Lyell’s *Antiquity of Man* that man had co-existed with animals that were now extinct. Smith was a churchgoer who served on the committees of several religious organizations, including as Vice-President of the Young Men’s Christian Association in Sydney. Smith concluded that Lyell’s evidence was compelling enough to add ‘several thousand years’ since creation, to the ‘vague’ chronology of the Old Testament. In trying to accommodate the

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156 Clarke’s disparagement of women’s understanding of science was typical of the time, yet neglected the significant scientific work being undertaken by some women in the colonies in collecting and classifying plant and animal specimens.  
157 *SMH* 10 November 1845, p.2 see also chapter 1840s  
158 *SMH* 12 November 1863, p.8  
159 Professor Smith was secretary of the Philosophical Society of NSW from 1856-60, and Councillor, then Vice-President and President of the Royal Society of NSW for 18 years (Michael Hoare, Radford, Joan T., “Smith, John (1821-1885),” *Australian Dictionary of Biography*, http://adb.anu.edu.au/biography/smith-john-4608/text7581.)  
160 *SMH* 12 November 1863, p.8
discoveries of ancient human remains which appeared to date back much further than 6000 years he thought it was quite conceivable that a human race had existed before the Old Testament record of the creation of man, and that it had been entirely destroyed to make way for the new race. He thought the Bible did not exclude the possibility that a great gap had occurred between this first human race and the one of biblical record, a great gap with no humans but in which all of the animals, including those now extinct, had been created. Lyell’s evidence of the finding of ancient human remains and implements mixed with remains of extinct animals in fact excluded this possibility and Clarke appeared to be the only one to understand this difficulty. Clarke questioned Lyell’s conclusions, saying he could not see how the supposed antiquity of man could be deduced from the discovery of these implements, or how it could be argued that because savages had made these tools there must have been a race of men before the present race. He said he did not so much object to the addition of several thousand years to the commonly received chronology, as to Lyell’s implication (repeated by Smith) that the present race of man was descended from a human race which was not endowed with the same faculties as ourselves. Governor Sir John Young joined the general discussion, apparently also amenable to adding several thousand years to the biblical 6000 years of creation with a comment (without explanation) that the foundations of the first temple of Memphis had been laid fourteen thousand years before the present time. While a general conversation about the antiquity of man ensued, Clarke was the only one to oppose the idea of a primitive race of humans existing before the present race, including Adam and Eve as described in Genesis. His reason was theological: such an implication challenged the central church doctrine...

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161 Ibid.
162 Ibid.
163 SMH 12 November 1863, p.8
of the fall of mankind through sin from God’s original perfect creation, and man’s later redemption. In their attempts to reconcile Lyell’s (and by implication Darwin’s) evidences with scripture, Smith, Young, Clarke and the members of the Philosophical Society had either deliberately or mistakenly misunderstood the time frame that Lyell and Darwin had attached to the evolution of mankind. It demanded hundreds of thousands or millions of years, not merely the addition of a few thousand years to the generally accepted 6000. It must be noted that Woods was likewise able to accept the addition of several thousand years but nothing greater, showing this was a widespread compromise accepted by churchmen at the time.

Among other people with interests in science in Sydney, views diverged dramatically. Opposition to the science behind the theories of Darwin, Lyell and Huxley was often expressed in private and scientific gatherings. Much of the antipathy came from several influential scientific conservative sources. A leader among the intellectual elite of Sydney, William Sharp Macleay (1792-1865), like Clarke, disputed Darwin’s theory of evolution ostensibly on scientific grounds, but basically on theological grounds saying the scientific evidence it reported was not sufficient to justify its serious challenge to the authority of scripture and the initial and continuing role of God in his creation. Macleay’s rare letters to the press did not express these views, only scientific matters. Macleay was a prominent and influential scientist, an Anglican, and for some years a member of the National Board of Education, serving on the Executive Council under Governor Sir William Denison in 1855. He frequently entertained local and visiting scientists in his home, Elizabeth Bay House, on Sydney Harbour, where he had established gardens famous for the exotic shrubs and trees planted there under his supervision. His circle of friends included most of the intellectuals of Sydney including

164 Ibid.
165 Gilbert, *Mr Macleay's Elizabeth Bay Garden*.
Clarke, Robert Lowe (later Viscount Sherbrook), Charles Nicholson and James Macarthur.\textsuperscript{166} Macleay made his views on Darwin’s theory clear in a letter to Lowe written in May 1860.\textsuperscript{167} Macleay stated that he was better able to believe in the ‘direct and constant government’ of creation by God, than Darwin’s view that God had created the primordial cell then left the world to manage itself.\textsuperscript{168} He wrote that he regarded himself as a pantheist, seeing God in everything, and believed that God was the constant and active sole creator and all-wise Administrator of the universe. He had found Darwin’s book most interesting, as it posed questions about the nature of mankind: ‘What am I? What is Man? a created being under direct government of his creator, or only an accidental sprout of some primordial type that was the common progenitor of both animals and plants.’\textsuperscript{169} Macleay was content to leave the issue of the Mosaic account of creation to theologians, but as a naturalist found himself in a dilemma: special creation of species, or evolution from a primordial cell by natural selection. In his view Darwin’s theory, though giving God a role in creating the primordial life form, denied the role of God in management of his creation. Macleay stated that in his view Darwin’s theory propounded the same system (presumably evolution, the progressive development of species) as Vestiges but had been written by a much more able naturalist. Macleay said he regarded Lamarck too as an able naturalist, and judged the only difference between Lamarck’s theory and Darwin’s was that Lamarck thought that creation had existed of itself from all eternity.\textsuperscript{170} Macleay had misunderstood Darwin’s key concept of natural

\begin{footnotes}
\textsuperscript{166} Macmillan, "Macleay, William Sharp (1792-1865)." Macleay died in Sydney in 1865, leaving his Elizabeth Bay house to his brother George, and his library and collection to his cousin William John Macleay, and this collection was a consequently transferred to the Macleay Museum at the University of Sydney.
\textsuperscript{167} Glick, \textit{What About Darwin?}, pp.263-265, quoting a letter from Macleay to Robert Lowe, Viscount Sherbrook, written in May 1860
\textsuperscript{168} Ibid.
\textsuperscript{169} Ibid.
\textsuperscript{170} Glick, \textit{What About Darwin?}, pp.263-265, quoting a letter from Macleay to Robert Lowe, Viscount Sherbrook, written in May 1860
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selection, believing that Darwin’s theory was identical to Lamarck’s in which
acquired physical characteristics were inherited by future generations. Also,
Macleay did not differentiate between Lamarck’s theory which called for
many different original types all evolving into new species in linear descent,
and Darwin’s theory based on only one or very few original life forms from
which many branches arose to form all plants and animal species. Macleay
misstated and ridiculed Darwin’s theory that ‘the black bear …became a
whale’, and did not believe Darwin’s assertion that human progenitors
originally had gills [which Darwin had erroneously inferred from the new
science of embryology], and which had been lost due to want of use.171 He
rejected Darwin’s proposal of sexual selection, which, however, he
proclaimed was the only original part of Darwin’s theory: ‘if anyone can
believe that the sexes of every animal were originally alike: that the cock for
instance, owes his comb, wattle, …to the taste of the hens who have
constantly sought such a type to breed from-why all I can say is that such a
believer must have a very wide swallow.’172 Ironically, in view of his own
misunderstandings, Macleay concluded that the wide reception of Origin by
the English public meant either that they did not understand it, or worse, did
not believe in God’s continuing management of creation:

what is termed Revealed Religion and particularly the Mosaic account
of the Creation, sits somewhat uneasily in the minds of a great many
thinking persons. The theory [Darwin’s] is almost a materialist one-
nay ever so far atheistic, that if it allows of a deity at all, He has been
ever since the institution of the primordial type of life fast asleep. 173

171 Ibid.
172 Ibid.
173 Glick, What About Darwin?, pp.263-265, quoting a letter from Macleay to Robert Lowe, Viscount
Sherbrook, written in May 1860.
Macleay’s struggles with reconciling evolution with scripture were probably similar to those of others within his circle. Clarke shared Macleay’s misgivings about the inadequate amount of scientific evidence for the theory, but not Macleay’s misunderstandings of the differences between the evolutionary theories of *Vestiges*, Darwin and Lamarck. The Parramatta schoolmaster William Woolls, a prominent botanist later ordained as an Anglican clergyman, shared the scientific opposition to Darwin’s theory, and particularly opposed Darwin’s attempts to invoke the process of hybridization as a mechanism for providing new variants on which natural selection could act leading to formation of new species. However, he was forced to concede that in some Australian plant genera, including *Eucalyptus*, there was an ‘astonishing’ amount of variation. Rather than regarding this as support for Darwin’s theory by providing evidence of extensive natural variations within genera, the raw material on which natural selection could act, he blamed loose and inadequate descriptions by botanists working from dried specimens. He commended the work of von Mueller, and thought that his studies of fresh plant material would resolve the taxonomic problems by reducing the number of known variations within genera.174

Another influential opponent of Darwin’s theory was William Denison (1804-1871), Governor General of all the Australian colonies from 1855-1861, and according to his biographer, C.H. Curry, an Anglican and fervent fundamentalist to whom Darwinism was anathema.175 He had strong scientific credentials: he was a keen amateur geologist and naturalist, with a special interests in conchology, the study of shells, and in geology, and actively supported the scientific societies of New South Wales and Hobart, where he previously been Governor. Yet according to Curry, Denison lacked

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174 *SMH* 7 July 1863, p.2
understandings of philosophy and humanities which may have made him more sensitive and open to changing concepts in science.176

On the other hand, there were some supporters of Darwin’s theory in Sydney, several of whom found in science a more believable explanation than what was offered by scripture for the uniqueness and diversity of the flora and fauna of Australia. One was Robert Fitzgerald, a New South Wales government surveyor who, like Darwin, studied orchids. Butcher considered Fitzgerald as ‘one of the first Australians to turn to Darwinism both as an alternative to orthodox religious doctrine and as a potential source of inspiration in interpreting the natural production of the continent.’177

Another prominent supporter of Darwin’s theory was the declared atheist Johann Ludwig Krefft (1830-1881), Curator of the Australian Museum from 1864 to 1874.178 Krefft had a long disagreement with Owen concerning the classification of a *Thyacoleo* fossil found in the Wellington caves in New South Wales.179 The dispute may have fostered his antagonism to Owen’s negative views about Darwin’s theory and Krefft’s own openness to Darwin’s ideas, and he corresponded with Darwin at length. Krefft actively supported and promoted Darwin’s ideas against considerable opposition from the Royal Society of New South Wales as well as the Linnaean Society of London (of which Krefft was a fellow).180 In a letter to Darwin, complaining about the general rejection of Darwin’s theory and specifically referring to the people of Melbourne and their bishop, he wrote ‘The

176 Ibid.
177 Quoted in Frame, *Evolution in the Antipodes: Charles Darwin and Australia*, p.94
179 Krefft to Darwin 15 May, 1872, Review of Owen’s Cuverian principle of paleontology, DCP-LETT-8331
180 Frame, *Evolution in the Antipodes: Charles Darwin and Australia*, p.93
ignorance of even well educated people is dreadful...the believers in a “happy life hereafter” do not like you.’

Towards the end of the decade, the public, at least in Sydney showed continued positive interest in the progress of evolution science and the controversies ‘back home.’ In 1867 an article in The Australasian from the British Spectator commented that the British botanist, Joseph Hooker’s conclusions about the struggle for survival of plants in competition fitted well with Darwin’s concept of struggle and survival of the fittest. The SMH reported another lecture by Hooker to the British Association, supporting Darwin’s ideas that species of animals and plants had been carried by various means from one place to another and on isolated islands had developed into different species by the process of natural selection.

The controversies in Melbourne and in other colonies
The debate about evolution was introduced to the public of Melbourne when The Argus of 8 November 1860 reported briefly on the famous acrimonious debate concerning ape ancestry of mankind between Thomas Henry Huxley and Bishop Samuel Wilberforce at the British Association meeting at Oxford. In December 1861 The Argus presented a comprehensive update on the progress of the debate about Darwin’s theory in Britain. It reported the marked shift in the attitude of the British Association to Origin from the position of its President, Lord Wrottesley a year earlier. The Argus reported, ‘a rather remarkable discussion [which] arose in the section of

181 Quoted by Frame, p.93.
182 The Australasian 13 July 1867, p.8
183 SMH 9 August 1867, pp.6,7
184 The Argus 8 November 1860, p.6
185 The Argus 30 December 1861, p.7
zoology of the British Association of Science on the origin of man.’ As background, *The Argus* pointed out that scientists in Britain were divided ‘into two great sections: Darwinites and anti-Darwinites.’ Professors Owen and Sedgwick were listed as anti-Darwinites, and Sir Charles Lyell, Professor Huxley and Dr Joseph Hooker were Darwinites. A speaker at the British Association of Science meeting in 1861, Sir John Lubbock, had defended Darwin’s theory, while admitting that Darwin himself acknowledged that geologists had not yet found the transitional forms needed to confirm his theory of gradual transmutation of one species from another. Furthermore, in Lubbock’s view, the theory was not intrinsically atheistic, for a role could be found for God in Darwin’s theory, perhaps as the provider of the original common ancestors. According to Lubbock, Darwin believed that his theory did not detract from the attributes of the Creator. However, another member, Joseph R. Napier MP, objected on theological grounds that Darwin had contradicted ‘what we knew of the origin of life’ from scripture. Another member in turn objected to Napier’s objection and was supported by the chairman, both saying that they were met for scientific, not theological discussion. Several speakers commended the natural history that Darwin had advanced in his work while not agreeing with Darwin’s theory. The meeting concluded by reassuring Darwin that the British Association ‘considered he was pursuing a perfectly philosophical and logically correct method, and was doing everything a man could do to establish a theory on the subject of the origin of species.’

In Melbourne, the reaction to the theories of Darwin, Lyell and Huxley took the form of a strong alliance between the Governor, the Anglican Church,
and the conservative scientific community to reject the theories and their challenge to the literal truth of scripture. As in Sydney, there is also evidence of some interest in the evolution controversies among the general public and some clerics in Melbourne. The Melbourne Mechanics’ Institute was occasionally a forum for lectures on the debate. In its lecturing season for 1860 there was a lecture from David Blair on ‘True and False Science; or the Vestiges of Creation Exploded’. A public lecture by a Melbourne medical doctor named only as Dr Fox at the Kew Athenaeum in July 1861 consisted of a ‘brief digest’ of Origin and his wait-and-see opinion on its scientific credentials. Charles Wilkinson Smith, an Anglican and a senior officer in the Victorian Geological Survey and Fellow of the Geological Society of London, lectured widely to the public on science and religion; he was one of the few scientists who defended Darwin, describing him as ‘one of the great apostles of Truth’. The main reaction of the Melbourne public to the new scientific ideas was to come later in the decade, in the ‘Science and Sermons’ debate in the pages of The Argus.

Concern about the way the challenges to the truth of scripture could endanger Christianity and its influence on the morality and stability of society motivated Melbourne’s Governor Henry Barkly to speak against Darwin’s theory. Similar concerns about the danger to morality of undermining the authority of scripture had been expressed by Campbell and Moore in Britain and Clarke in New South Wales. In his presidential address to the Royal Society of Victoria in 1860, Barkly had proclaimed his support for science and the cause of scientific freedom and his belief that the

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191 The Argus 24 April 1860, p.4
192 The Argus 8 July 1861, p.4
194 Argyle in SMH 8 March 1861, p.8; Moore, The First Man, and His Place in Creation, Considered on the Principles of Science and Common Sense, from a Christian Point of View, with an Appendix on the Negro. Clarke in the SMH 6 March 1865, p.5
study of nature, revealing its design, would strengthen the case for religious belief. This statement was similar to the opinions of Clarke and Jefferis. However, Barkly’s confidence in the benefits of science for strengthening religious belief appears to have been shaken a year later when Darwin’s theory was being discussed widely in the colony. By April 1861 Barkly clearly believed that scientists and scientific freedom had gone too far, and he attacked both Darwin’s theory and Lyell’s uniformitarian theory, apparently recognizing their implicit denial of God’s direct role in creation, and believing that therefore they presented a great danger to Christianity. In his 1861 presidential address to the Royal Society of Victoria, Barkly called on scientists to unite to strengthen the case for Christian belief by refuting Darwin’s dangerous theory, which he called a theory ‘so pernicious to the very existence of Christianity.’ Barkly considered that however true Darwin’s ‘doctrine’ might be within the limits of species, when pushed to its extremes to suggest that genera and even ‘natural orders’ of plants and animals derived from just a few ‘originals’, it denied divine creation. Yet Barkly was no obscurantist when it came to science. A great supporter of the application of scientific research in furthering the prosperity of the colony through mining and agriculture, he was the patron of the Acclimatization Society of Victoria. Significantly, the conservative anti-Darwinian stance of the patron and committee members led to their disregard of Darwin’s warnings of the ecological damage that could result from introduction of new species into the colony, such as had been observed in the extermination of native species of animals and plants in the ‘struggle for life’ on the island.

195 Quoted by Frame, *Evolution in the Antipodes: Charles Darwin and Australia.*, pp.102,103
196 *The Argus* 9 April 1861, p.5
197 Ibid.
of St Helena, and the extinction of the dodo in Mauritius due to introduced predators.198

Barkly’s concern for the impact of Darwin’s ‘atheistic’ theory was not simply for its potential to damage the faith of Christian individuals, but for the damage that might follow their questioning of the church’s teachings not just on interpretation of scripture, but on moral and social issues. According to Frame, Barkly particularly feared Spencer’s extension of the theory to social evolution which threatened established values and institutions, ‘doubly subversive, undermining both individual morality and class and social stability.’199 So when introducing Bishop Perry’s public lecture in 1861, Barkly encouraged the clergy to come to grips with the new ideas from science, warning the bishop and clergy of the danger to the church if a time came when clergy knew less of such subjects than laymen: ‘the church would lose its hold on the educated classes and her influence generally would be upon the decline.’200

The Melbourne Anglican leadership joined Barkly in opposing the theories of Darwin, Huxley and Lyell, in contrast to the more moderate ‘wait and see’ attitude from Clarke in New South Wales and the Adelaide churchmen Short and Jefferis. Bishop Charles Perry (1807-1891), first Bishop of Melbourne, gave several opposed public lectures to the Philosophical Society of Victoria, introduced and strongly supported by the President, Governor Barkly. Perry claimed his opposition to the theories of Darwin and Huxley was on scientific grounds, but his main motivation was to answer their contradictions of scripture. Perry had been labelled as ‘a pious but somewhat narrow-minded Evangelical who was out of touch with contemporary thought’ by his contemporary, the Melbourne banker, historian and

198 The Argus 14 September 1863, p.4
199 Frame, Evolution in the Antipodes: Charles Darwin and Australia., p.103
200 Ibid.
The Evangelical movement in Britain was opposed to the concept of evolution. Its reasoning, based on natural theology and biblical literalism, was expressed by Thomas R Birks, Professor of Moral Philosophy at Cambridge University in 1872: since the Bible said that creation declared the glory of God, it was important to insist that all species of plants and animals were created and set in their place by God. This basic tenet of natural theology was understood to support a similar divinely ordered hierarchy in human society, so the alternative process of evolution was seen by some not only as atheistic but as a threat to the order of society, its classes and the privileged status of the Anglican Church. Yet Perry had been educated at Cambridge University, spending time as a student then tutor at Trinity College, where William Whewell was Master, so he had been exposed to the latest ideas from scientists, and particularly Whewell. In his Bridgewater Treatise, Whewell wrote that natural laws, rather than interventions by God, determined events in the material world: ‘But with regard to the material world, we can at least go so far as this - we can perceive that events are brought about not by insulated interpositions of Divine power, exerted in each particular case, but by the establishment of general laws.’ This adaptation of natural theology, proposing that God created through operation of God’s natural laws, had been adopted and developed further by the author of *Vestiges.* Darwin used this quotation on the title page of *Origin;* his use of this quotation on natural theology could have blunted the attacks by Perry and others on what they termed Darwin’s atheistic intentions, but apparently it did not. Perry shared Whewell’s natural theology to some extent, as he admitted some natural laws such as

203 Darwin, *The Origin of Species,* title page
uniformitarianism as a means of creation in geology, but he rejected those proposed for the origin of species. In this, Perry shared the view of Sedgwick who had criticised Darwin’s theory for denying the possibility of gaining knowledge of the Creator from studying natural laws, and had denounced Darwin’s intentions as atheistic, saying that Darwin had set out ‘to make us independent of a Creator.’

Perry delivered his first comprehensive public lecture on *Origin* in St Paul’s school room in July 1861, and set out his church’s conservative position on Darwin’s theory for the Melbourne public. While Perry ostensibly supported the openness of scientific inquiry, like Clarke accepting uniformitarian theory, he completely rejected Darwin’s theory that over the same period of millions of years another gradual process could account for the development of new species of plants and animals. He asserted that Darwin had presented insufficient scientific evidence to warrant such a significant contradiction of Genesis chapter 1. Perry conceded that as more pages in the book of nature were read they might modify the interpretation of the Word of God, but they would never be found contrary to it. This confidence in eventual harmony between science and scripture he shared with Clarke and Jefferis. Perry argued for the permanence of species, that creatures only begot like creatures, on which permanence scientists had constructed their classification systems. He opposed the concept of the struggle for existence with the survival of the fittest, saying that all existing species continued on, without tending to interfere with or destroy one another, and he neglected to address the issue of extinction of species. The bishop’s view of fixed species followed the design argument from natural theology, and voiced the objection that no animals in a state of transition, what he called ‘monsters’, had been found. This was a spurious but common

204 Hull, *Darwin and His Critics.*, p.169.
205 *The Argus* 12 July 1861, p.5
argument, as according to Darwin’s theory different species such as antelopes and tigers did not transition from one to the other, rather their relationship came through a common ancestor. Perry found it unbelievable that all the kangaroos came from one pair, and that all the animals of Australia did likewise. This rather contradicted the biblical story of Noah saving just one pair of each species, from which pair all of the descendants on the earth derived, but he did not mention this. In summing up his arguments with Darwin’s science Perry concluded that all species had been individually created by God, apparently without the operation of natural laws as proposed by Whewell and Darwin. Perry declared, ‘The obvious inference from all these considerations was that they (species) were thus created by God.’

In spite of his assertion that Darwin’s theory must be challenged on scientific grounds, Perry’s main objection was, like Sedgwick’s, theological; that Darwin did not attribute the process of natural selection to God, rather, according to Perry, attributing to nature itself the attributes of providence and forethought. To do so, according to the bishop, was contrary to the fundamental principle of natural philosophy that nature acts by ‘fixed laws, incapable of change except by the Author of nature himself.’ Perry was misinterpreting Darwin, whose theory did not attribute providence or forethought to nature, rather the opposite, that random variations were simply acted on by environmental factors, resulting in natural selection of the individuals most suited to their environment. Darwin’s theory did in fact support the proposal that nature acted by fixed laws; the laws of natural selection and survival of the fittest. Perry concluded that with all the evidence he had presented it seemed almost absurd to have to argue with Darwin’s theory, and he could only account for its prominence because of

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206 *The Argus* 12 July 1861, p.5
the spirit of religious scepticism of the age, as well as Darwin’s reputation as a scientist and the interesting contents of the book. Darwin, Perry declared, should not be regarded as a philosopher, as he did not believe in the scriptures; for although Darwin appeared to believe in God as the author of the world, he obviously did not believe in God as the author of the Bible. Perry finished by asking whether it was probable that all the diverse species of animals came from the same parents, or whether according to some biblical and inspired historian, God called upon the earth and the waters to bring forth the living creatures and the herbs of the field ‘after their own kind?’

In September 1869 Bishop Perry was prompted to restate his church’s views on evolution and the support lent to it later by the new books of Darwin, Lyell and Huxley. His address showed that the new works had not changed his stance since 1861. Perry spoke for over an hour and half in the Princess Theatre in Melbourne to a large crowd, which included the Chief Justice, some members of parliament, the Anglican Dean of Melbourne, many clergy and lay Anglicans and Professor Frederick McCoy from the University of Melbourne; Perry’s lecture was clearly regarded as important for it was reported verbatim over three pages in The Argus. Perry repeated his earlier criticism of Vestiges, and restated his belief that there was not and could not be any quarrel between the Bible and science, although he believed that some unwise friends of both, perhaps referring to Hanson and some of The Argus’ clerical correspondents, had tried to set them at variance. He used little science and mostly ridicule as he weighed up the scientific claims against the ‘truth’ of the Bible and defended the literal truth of scripture. Perry concluded that Vestiges did not offend religious feelings.

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207 Ibid.
208 The Argus 21 September 1869, pp.5,6,7
209 Ibid.
except for ignoring the Biblical account of creation of species; for Perry found that *Vestiges* at least attributed the phenomena and laws of nature to God.

In contrast, moving on to the more recent works, Perry, like Sedgwick, regarded Darwin’s motivation in writing *Origin* as atheistic. Perry stated that Darwin’s theory rested on three hypotheses: first that there was a constant struggle for existence due to high rates of increase and limited resources and that the trend to greater structural diversity maximized the number of species which could be supported in an environment; second, that there was variability inherent within species from which natural selection, like man’s own selective breeding programmes, selected favourable characteristics for survival. These two were accurate assessments of Darwin’s theory. Perry listed a third hypothesis which did not come from Darwin, that nature took care of all organic beings, however that did not reflect the ruthless struggle for survival Darwin depicted, rather Perry’s own construct of a gentle, beautiful natural world.

Perry’s scientific objections to Darwin’s theory were many. Perry wrongly believed that Darwin had claimed that natural selection must be a characteristic inherent within animals and was exercised independently of any external influence, whether by man or a ‘superior being.’ However for Darwin, natural selection was not an inherent characteristic of animals but an effect of external environmental forces on them. Perry’s misunderstanding led to him to infer that such a faculty inherent in animals implied forethought for the future well-being of the animals’ successors and their community. Perry rejected this (as Darwin himself would), saying it could not be true as only man was endowed with forethought. He then ridiculed the idea that an antelope could benefit by having flesh tasty to lions and tigers. In fact he was arguing against his own faulty inference, but did not see his own lack of logic. As he did in his criticism of *Vestiges*, he labelled
as fatal flaws the weaknesses that Darwin had himself acknowledged in his theory; for example, the theory could not account for how an eye or the fine structure of a bat’s wing or the instincts of hive bees could gradually evolve, since without all components finally assembled and working together there was no selective advantage to the creatures: no path for slow and gradual improvement each conveying small advantages could be imagined. Darwin had also admitted the geographical distribution of the same species over the whole earth was difficult to explain if there had been one single origin in one place, and he attributed the wide distribution of some species to migration; to Perry this was a poor explanation and another fatal flaw. Perry’s last, ‘absolutely insuperable’ objections, were the absence of transitional forms between species in the fossil record or in the present day and the sterility of hybrids, such as the mule, which should preclude interbreeding between species to form new species. Once again, these were objections that Darwin himself had raised. Perry concluded that Darwin’s theory was ‘pseudoscience of the modern skeptical school’ and unworthy of the favour accorded it. In his view this favour stemmed from two possible sources: ignorance or wilful atheism. Either those who read Origin were so blinded by the many interesting facts it contained that they were also blinded to its argument; or worse, some people would accept anything which confirmed their unbelief: ‘a credulity of skepticism’ made men who rejected the authority of the Bible blind to the fallacies of the argument. Perry quoted St Paul, saying that God had sent such men a strong delusion so that they believed a lie. He recommended that those who read Vestiges and Origin compare them with some of the biblical passages on creation found in the psalms and the book of Job.210

210 Ibid.
Perhaps due to positive and deferential editorial sentiments expressed by The Argus after Perry’s lecture there was no subsequent correspondence criticizing it published.

Perry’s 1869 address did not reflect the position of all Melbourne Anglicans. In the month before Perry’s address, he had chaired a meeting of the Early Closing Association at which a senior Anglican cleric, Dr John Bromby, delivered views contrasting significantly with those of his bishop. Bromby had assumed the position of public champion for the theories of Darwin, Lyell and Huxley. Bromby was the headmaster of the prestigious Church of England Grammar School at St Kilda, a former Warden of the Senate of Melbourne University and brother of the Bishop of Tasmania. On 9 August 1869 at the Princess Theatre, he gave a lecture to the public, including many of the working class, which touched on verbal inspiration of the scriptures, entitled ‘Pre-Historic Man.’ His lecture was one of a series arranged by the Early Closing Association, which had been formed by some prominent Melbourne citizens who were concerned about the subversive influence of antireligious and free thinking groups on the ‘uneducated classes.’ The Association arranged for businesses to close early to give their workers the opportunity to attend such improving lectures as Bromby’s. Bromby explained the ideas of Huxley and Lyell about the antiquity and animal origins of man, using them to dismiss the literal interpretation of creation in Genesis and giving his own interpretation. The lecture attracted great public interest and was printed immediately with verbatim copies advertised for sale at 6d for several months. Bromby pointed out, as had Hanson, Clarke, Jefferis, and Bishop Short before him, that scripture was not meant to teach

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211 Dr Bromby’s Lecture ‘Pre-Historic Man’ verbatim, 6d, Sullwell and Knight, Coolins Road East and all booksellers, see advertisement The Argus 17 August 1869, p.7 and in later issues
212 Butcher, "Darwin Down Under: Science, Religion, and Evolution in Australia.”, p.45
213 The Argus 10 August 1869, p.6.
man science or history. Bromby’s view of verbal inspiration was, like theirs, that much of the apparent discrepancy between science and scripture was due to the intrusion of man-made and cultural traditions into scripture as well as inadvertent mistranslations. He pointed out internal contradictions in scripture, including that there were two different creation accounts in Genesis chapters 1 and 2 with another in chapter 5. Bromby did not mention Lyell’s work *The Antiquity of Man*, yet much of his evidence had come from it; he agreed with Lyell’s dating of the existence of humans back hundreds of thousands of years, from a time ‘so remote that the 6000 years calculated by Archbishop Ussher from the sacred records sank into utter insignificance.’

Bromby described the writings in the Bible as simple and unpretentious, but replete with religious truth, if not direct verbal inspiration. Accordingly, he offered his new explanation of how the great antiquity of man might be reconciled with the biblical chronologies. In his view, there had been several waves of human population moving over the earth, the first being the most primitive, and this wave was followed by a second and a third. These waves of increasing and competing populations would have necessitated increasing social organisation and development of intellect. He believed the biblical Cain, son of Adam and Eve, was a member of this third population, and the first man to assume any individuality, as the first tiller of the ground and builder of cities. Bromby’s proposal was more complex than the earlier proposal from Professor John Smith of Sydney University who thought it conceivable that one human race had existed previous to the Old Testament record of the creation of man, and that it had been entirely destroyed to give place to the new race. Clarke had strongly objected to Smith’s proposal that there had been a race of humans which lacked the full moral and mental

214 Ibid.
215 Dr Bromby’s Lecture ‘Pre-Historic Man’ verbatim, 6d, Sullwell and Knight, Collins Road East and all booksellers, see advertisement in *The Argus* 17 August 1869, p.7 and in later issues
characteristics of God’s creation of man in his own image, so Bromby’s proposal of several earlier races would have been even more at odds with the position of his fellow Anglican, Clarke. 216

Compared with Adelaide and Sydney, in Melbourne the scientific debate about evolution and the place of humans in it, together with the subsequent theological implications, focused more on Huxley’s work, The Evidence as to Man’s Place on Earth, than on Origin and Lyell’s fossil evidence presented in Antiquity of Man. Huxley’s work supported Darwin’s inference of an evolutionary link between apes and man and was based on comparative anatomy particularly of the brain, hands and feet. Opposition to Huxley’s work was dominated by George Britton Halford (1824-1901), Professor of Anatomy, Physiology and Pathology at Melbourne University, who had collaborated in research with Owen before leaving Britain. 217 Halford publicly rejected Huxley’s anatomical evidence and conclusions of ape-like ancestors for man, and Darwin’s theory which Huxley’s work supported. 218 Halford sought to use anatomical evidence to support his theological view that man was essentially different from other creatures, because he was the recipient of God’s revelation and as such was subject to moral expectations. 219

Halford affirmed his own religious faith while questioning the validity of the new scientific theories, perhaps wanting to distance himself from accusations that scientists were atheistic. 220 At the time, traditional views on religious matters correlated with scientific conservatism at the university as in the

216 SMH 12 November 1863, p.8
218 Huxley, Evidence as to Man’s Place in Nature.
219 The Argus 17 July 1863, p.5
220 Ibid.
wider intellectual circles of Melbourne. That leadership was appointed by the Governor, from the high ranks of public service and government. Conservative Melbourne scientists who opposed Darwin, Lyell and Huxley served as Presidents of the Professorial Board of the university, Halford from 1872 to 1873, and McCoy in 1874 and 1875, and 1880 to 1885.

Halford continued to give public lectures to community leaders rejecting the theories of Darwin and Huxley. In one such lecture before the Chancellor and Vice Chancellor and fifty others, reported in *The Argus* on 17 July 1863, he rather emotively reassured his audience that they could banish the ‘nightmare’ that they were descendants of apes from their minds: ‘there can have been no gradual development from apes to man...Professor Huxley says we are certainly not of them…I say we are not of them or from them. We are different to these brutes, to whom nothing has been revealed, and from whom nothing is expected.’

Halford discussed in some detail Huxley’s recent work, and denied Huxley’s claims that similarities in the anatomical structure of the hands and feet of apes to those of humans showed that humans were derived from apes. He took exception to Huxley’s remarkably prescient question, ‘in still older strata do the fossilized bones of an ape more anthropoid or a man more pithecoid (ape-like) await the

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221 At Melbourne University, the first Chancellor appointed by the Governor was Sir Redmond Barry (1853-1880) a judge, and according to his biographer, Peter Ryan, a traditionalist, ‘a little behind the times’ in such ideas as evolution, occasionally in conflict with Bishop Perry over aspects of his private life and with the less conservative Chief Justice Higinbotham over appointment of judges. He was also the founder of the Melbourne Mechanics’ Institute. During the 1860s the Vice Chancellor was Sir Anthony Colling Brownless (1858-1887), a medical doctor and active Roman Catholic, later knighted by the pope. The Reverend Dr John Bromby had an unusually short tenure as Warden of the Senate (July 1867-August 1868), perhaps because of his less than conservative views on science and religion which became very clear to the Melbourne public in his 1869 lecture. He was rapidly replaced by another ex-MLC, William Edward Hearn (August 1868- August 1875) previously President of the Professorial Board (1862-1865). Interestingly, at the time when it was claimed that Halford had been prevented by his university from lecturing on Darwin’s theory, Hearn, Foundation Professor of History and Political Economy at Melbourne University, was one of many in Australia and overseas who attempted to follow Spencer and apply Darwin’s evolutionary theory to disciplines beyond biology, in Hearn’s case, economics.


223 *The Argus* 17 July 1863, p.5
researches of some unborn palaeontologist?’ Halford said that Huxley himself had acknowledged that the majority of his readers would find his views repugnant, not wishing to believe that they were just a ‘better sort of ape.’ Huxley had professed sympathy for the objection that man has a conscience, knowledge of good and evil and human affections and that these attributes raise man above the apes, but he had declared it irrelevant in the face of the anatomical evidence. For this statement Halford attacked Huxley saying his work had tendencies which ‘might have been written by a devil.’

The startling description of Huxley’s work as ‘demonic’ was reported in the local newspapers and relayed to journalists in London and consequently Halford and the University of Melbourne became the subject of some international ridicule.224 Yet according to Frame and Butcher, the Melbourne politicians, churchmen and colonial heads of state who attended Halford’s lectures invariably favoured his anti-Huxley stance.225 The highly influential and conservative Australian Medical Journal also supported Halford.226 Later in the decade, the British science journal *Nature* reminded its readers of Halford’s ‘demonic’ assessment of Huxley’s work when it commented on Melbourne’s reception of Huxley’s *Protoplasm* concept in 1869.227

In a letter to *The Argus* in 1869, the Reverend Henry Higginson of the Unitarian Christian Church accused the university authorities of not allowing Halford to give lectures to students on the subject of Darwin and Huxley’s theories and publicly criticized such an action by the university.228 Higginson concluded that the university authorities must incline to a

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224 Frame, *Evolution in the Antipodes: Charles Darwin and Australia.*, p.100
225 Ibid. p.100, Butcher, "Darwin Down Under: Science, Religion, and Evolution in Australia.", pp.41,42
226 Ibid. p100
www.nature.com/nature/about/first/protoplasm.html (accessed 10/11/16)
228 *The Argus* 20 August 1869, p.7
theology which was deeply antagonistic to science.\textsuperscript{229} Halford made no comment on this allegation of antagonism to science, which proved to be unfounded. Science lectures were given at the university on the subject of evolution, but strongly rejecting the theories of Darwin and Huxley. Frederick McCoy, (1823-1899, later Sir Frederick), Curator of the National Museum of Victoria and Professor of Natural History at the University of Melbourne who was, like Halford, an Anglican who rejected the theories of Darwin and Huxley, used his lectures to students at the university to denounce the theories during the 1860s and the following three decades.\textsuperscript{230} He had relied on the patronage of Sedgwick and Murchison for his appointment and adhered to their conservative scientific and religious views.\textsuperscript{231} McCoy was the antithesis of the geologist Clarke: determined to apply knowledge of European geology to the antipodes and conducting little field research, he advised the Governor and miners wrongly in the gold explorations, losing credibility with both.\textsuperscript{232}

Halford’s lecture criticizing Huxley for linking humans with ape ancestors also drew heated responses from the public, in correspondence to \textit{The Argus}. As we saw above, ‘Opipher’ had been a regular correspondent to \textit{The Argus} during the previous decade attacking scriptural geologists, reconcilers and biblical literalism; most probably it was he who reappeared in the 1860s with a slightly different spelling, ‘Opifer’, to object to Halford’s lecture. ‘Opifer’ in Latin is an adjective meaning ‘bringing help’, perhaps indicating the motivation of the correspondent to assist the understanding of readers. ‘Opifer’ criticized both the science and the religious bias of disputants such

\textsuperscript{229} Ibid.
\textsuperscript{230} Butcher, "Darwin Down Under: Science, Religion, and Evolution in Australia." pp.45-46
\textsuperscript{231} R.J.W. Selleck, "Rocks in His Head: Imparting European Science to a Nineteenth Century Australian University," \textit{Paedagogia Historica} 37, no. 1 (2001)., pp155-158
\textsuperscript{232} Ibid. pp.153, 160-162
as Halford: ‘what they lack in physiology they make up in ethics.’ 233 ‘Opifer’ criticized the anatomical comparisons Halford had made, and also objected to Halford’s selective omission of some of Huxley’s statements in order to make more of a sensation; for example, Halford’s omission of Huxley’s important disclaimer that no important intermediate forms had yet been found. 234

The anatomical arguments from Halford’s lecture were printed in a pamphlet Not Like Man, Bimanous and Biped, nor yet Quadrumanous, but Chiropodous [Not like man, with two hands and two feet, nor yet four handed, but with feet modified for grasping and climbing] published in 1863, which was scathingly reviewed at length in The Argus on 1 September. 235 Halford appeared to have taken some of the criticism of his ‘demonic’ assessment of Huxley’s work to heart and significantly edited his lecture before the pamphlet was printed. Provocatively invoking Darwinian terminology, the anonymous reviewer joked that there had been a ‘progressive development’[evolution] of Halford’s arguments against Huxley’s anatomy between the lecture and printed version, an ‘astounding transmutation’ in fact, from the devil, who Halford claimed in his lecture to have prompted Huxley’s book, to the ‘equally out of place’ interventionist Creator in the printed pamphlet, ‘who is mechanically occupied putting a short muscle in an imaginary hand.’ 236 The reviewer argued at length against Halford’s anatomical conclusions, claiming ‘the erudition of the professor of anatomy would appear to be as defective as his logic is fallacious’, and he criticized Halford and those who misrepresented the work of Darwin,

233 The Argus 17 July 1863, p.5
234 Ibid.
235 The Argus 1 September 1863, pp.5,6, George Britton Halford, Not Like Man, Bimanous and Biped, nor yet Quadrumanous, but Chiropodous (London: Wilson and Mackinnon, 1863).
236 The Argus 1 September 1863, pp.5,6
Huxley, Lamarck and *Vestiges*.237 The arguments of the anonymous reviewer were very similar to those of the correspondent ‘Opifer’.

Halford continued to give lectures rejecting Huxley’s work. In 1865, in a lecture on the topic to the Royal Society his rejection of ape ancestry for humans had the strong support of the President and Chairman, the Catholic priest John Bleasdale. Halford was also supported by McCoy who had worked with Sedgwick for four years before coming to Australia and shared Sedgwick’s conservative views of evolution. At the conclusion of Halford’s lecture, McCoy assured the audience ‘the world may now be relieved from the influence of the clever, uninformed, very credulous, sceptical writers of modern critical essays, and of all notions that the passage between man and the inferior mammalia was to be bridged over by a creature like the gorilla.’238

A prominent member of Melbourne’s Presbyterian clergy, using theological rather than scientific arguments, joined Halford and McCoy in opposing Huxley’s proposal for the relationship between man and apes.239 In a presentation to the Presbyterian Young Men’s Association in 1864, the Reverend Duncan Fraser spoke of the immeasurable structural and functional superiority of the anatomical and physiological characteristics of man over lower animals, and of man’s unique ‘sensational, intellectual and emotional natures.. the original, normal and primordial character of man is Lordship and that he is generically distinct from the brute creation.’240 Fraser declared that he did not attach much importance to the theories of Huxley and Darwin that man was only a more advanced kind of animal, strangely

237 Ibid.
238 The Argus 25 July 1865, p.6
239 The Argus 7 June 1864, p.5
240 Ibid.
equating them the theories of Owen, who had actually argued for the essential differences between man and ape.241

By the middle of the 1860s, in Melbourne as in Sydney the concept of ape ancestors for man and the concepts of progressive development from Vestiges and Darwin were fairly well known to the public. There was a joking reference to both in 1865 in an editorial criticising the ‘arbitrary and outrageous decisions’ taken by the Attorney General George Higinbotham in appointing judges; ‘one would not encounter such startling examples of ‘progressive development’ in Dr Darwin’s book or in the ‘Vestiges’’.242

Several months before the 1869 lectures of Perry and Bromby, there had been a public and acrimonious debate, played out in the pages of The Argus, revealing the perception among the public that the churches were avoiding engagement with the serious challenges confronting them and scripture from science. The Argus named the debate ‘Science and Sermons’, and it ran from November through December 1868. Correspondence came from some holding traditional, usually reconciler beliefs, and others who were more open to new views from science than to traditional church teachings. The former often labelled the latter as atheistic, but the letters reveal that they were more often anti-church than atheistic. While neither Perry nor Bromby referred to the correspondence in The Argus and the accusations that the churches were avoiding the challenges from science, it was probably the Science and Sermons debate which prompted their lectures in the following year. Participants in the debate presented all of the positions that had emerged earlier in the decade and more, with respect to science, the churches and the literal truth of the Bible. The intense public debate was confined to Melbourne with no parallel in other colonies. The difference between the

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241 Ibid.
242 The Argus 26 December 1865, p.4
intensity of the debate in Melbourne and in the other colonies of South
Australia and New South Wales was probably due to the latter two being
better served by some prominent more open-minded clerics prepared to
accept and address the challenges from science. In addition, there was a
strong undercurrent of anti-clericalism in the Melbourne correspondence
which was not evident in other colonies. In part, this was due to local clerical
scandals, which several correspondents mentioned in their letters, and to the
culture of ignoring or rejecting the new scientific theories of the 1860s as
championed by Bishop Perry, the mainstream churches and the scientific
establishment of Melbourne. The controversy was carried on in pulpits and
scientific meetings, but grew into heated public exchanges as both clergy and
laity wrote passionate letters to The Argus. Little or nothing of the debate
spilled over into the other major but more conservative Melbourne
newspaper, The Age during this decade.

The controversy began when Anglican the Reverend C.T. Perks presented a
lecture with the seemingly innocuous title ‘The Reformation and Henry the
Eighth Reviewed’, one in a series he presented in the schoolroom adjoining
his Richmond church. The Argus carried a very brief report of it, noting that
while the treatment of the subject had necessarily been brief and sketchy, it
was ‘a vigorous and scholarly resumé of the principle events of the
Reformation.’ 243 Unfortunately, the report gives us no idea of what was said
that was controversial, but judging by the reaction of some who attended, it
appears that the lecturer must have strayed into the area of the conflict
between new scientific ideas and revelation. Several days later the ‘Science
and Sermons’ correspondence in The Argus began.

The correspondence demonstrated, at least in Melbourne, a great depth of
frustration with clergy. This frustration was first voiced by a correspondent

243 The Argus 20 November 1868, p.4
who named himself ‘Habitans in Cedar’. He had attended Perks’ lecture and agreed with its apparently conservative reconciler theme, labelling it an attempt ‘to adjust ... the conflicting teachings of science and revelation...to bring Moses and Lyell into full accord and to demonstrate that a most beautiful harmony exists between the doctrines of St Paul and the doctrines of Darwin.’ However, ‘Habitans in Cedar’ then proceeded to berate the rest of the local clergy for their failure to respond in a similar way to the threats to the truth of scripture coming from science. He demanded some response from the local Church of England to these serious new challenges to scripture and natural theology, clearly believing that natural theology, including the doctrine of God’s special creation of humans, still expressed the understanding of the churches and the public of God’s role in nature. He criticized the Church for its focus on local clerical scandals, which had been taken up by the media. ‘If the church’s answer to the men of science takes the sole practical shape (as it has taken here of late) of a series of clerical scandals of variable degrees of atrocity, the church’s prospects are none of the brightest.’ He denounced such intellectual evasion as ‘cowardice of the basest kind, and treachery to a sacred trust as well’, warning that ignoring the theory of evolution from Darwin and his supporter Hooker threatened the very survival of the Church.

Perks replied briefly to the criticism of clergy, stating that he was too busy to answer more fully, and justifying the sceptical opinion he had expressed of Hooker’s ideas by saying that the same opinion had come from a non-clerical source, in a recent leader in *The Times*.246

Unsatisfied, ‘Habitans in Cedar’ wrote again, strengthening his demand for an immediate response from the local church, using as an example the report

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244 *The Argus* 24 November 1868, p.7
245 Ibid.
246 *The Argus* 26 November 1868, p.6
of the strong attendance at a lecture in Britain in which the Bishop of Cork pleaded for Christianity against the aggressive assertions of the men of science.247 ‘Habitans in Cedar’ quoted the French author Camille Flamarion’s recent book *God and Nature*, published in 1867: ‘the question...is no longer to determine what is the nature of the creator, the character of the scheme of mediation, the influence of grace, nor any like theological discussions. The real question is to determine whether God exists, or whether God does not exist.’ ‘Habitans in Cedar’ warned again that if clergy continued to avoid or deny the important challenges coming from science they would lose their congregations: ‘[if they continue] to shirk a paramount and primary duty by a hypocritical pretence of ignorance...in a few years more the whole adult population of Victoria may be found sitting at the feet of the Hookers and Tyndalls ... and turning a contemptuous back upon that powerless and outworn institution - the pulpit.’248

‘Habitans in Cedar’ continued his campaign to raise the awareness of the churches to the challenges facing them. In a provocative and avowedly final letter, he warned the churches and the public of the danger to their religious beliefs by naming the threats that he called sarcastically science’s new ‘eternal truths’.249 The ‘truths’ he warned against were those of uniformitarianism and evolution and would probably all have been accepted by Darwin, Lyell and Huxley: that matter and force were inseparable and indestructible; that life was a form of force in organized structure; that all varieties of life on earth proceeded by spontaneous evolution from one original type through a continuing scale of organization; that species were formed by continuous accumulation over great periods of time of minute variations from the primal type; that man was included in this process; and,

247 *The Argus* 1 December 1868, p.6
248 Ibid.
249 *The Argus* 9 December 1868, p.6
finally, that physical changes to the universe had proceeded through incalculable periods of time. His purpose in listing these ‘eternal truths’ was undoubtedly to provoke a strong reaction against them by clergy and churchgoers, because he warned his readers about the ‘dangerous’ inferences men of science were drawing from these ‘eternal truths’. The ‘dangerous inferences’ he claimed to be drawn from the work of Darwin, Lyell and Huxley were that ‘special creation’ as described in Genesis was a proven impossibility; that the earth had existed for ‘countless myriads of ages’; that humans were simply the apex of the animal series; and that there was no place for an interventionist God in the theories - the ‘idea of an Omnipotent Will operating without and above the immutable laws was a manifest incongruity.’ Once again, Darwin, Lyell and Huxley probably would have agreed with each of these ‘dangerous inferences’. Finally ‘Habitans in Cedar’ declared that scientists believed that any revelation claiming to be divine but at variance with the ‘truths’ of science was to be discredited as spurious.

He concluded by revealing the reason why he was fearful of the consequences if the challenges from science went unanswered by the churches: he feared that the very social and political fabric of the colony would be destroyed. ‘Habitans in Cedar’ claimed, essentially correctly, that these ‘dangerous inferences’ were views firmly held by many atheistic positivists and materialists in Britain, France and Germany. He warned that they posed a serious political and social danger because they could contribute to an atheist-led revolution in the colony, ‘an atheistical revolutionary convulsion, still more terrible than that which shook the old world to its centre at the end of the eighteenth [century].’

250 Ibid.  
251 Ibid.  
252 Ibid.  
253 The Argus 9 December 1868, p.6  
254 Ibid.
of revolution’, he feared, was sweeping around the earth and would break on the ‘ancient faith’ on every shore.\textsuperscript{255} He was echoing the fears of the social impact of atheism expressed by Governor Barkly. ‘Habitans in Cedar’ remained anonymous, but the wording of his attacks on clergy was very similar to those contributed by the recently appointed editor of \textit{The Argus}, Frederick William Haddon, later in the debate.\textsuperscript{256}

The accusations from ‘Habitans in Cedar’ that the Melbourne clergy were avoiding the issues raised by science and its challenge to traditional interpretations of scripture were refuted by some clergy, but also drew agreement from other correspondents. The responses that came from the clergy and their supporters were varied and included the following: counter attack on scientists and science, attack on the laity of the church (suggesting that the laity was simply using the issue to attack the clergy), and perhaps most provocatively, and demonstrating the avoidance of issues that had motivated ‘Habitans in Cedar’ to write in the first place, declaring that the issue was irrelevant to the clergy and its congregations.

The only person who actually denied that he and his church had avoided the challenges of which ‘Habitans in Cedar’ complained was the Unitarian church leader, Higginson.\textsuperscript{257} Higginson denied having a ‘discretely reticent attitude’ towards the challenges from science; in fact he clearly had an openly hostile attitude, as a reconciler and biblical literalist.\textsuperscript{258} He pointed out that he had given many talks from his pulpit over the previous ten years attacking each of the new ideas from science. He listed the topics of some of his sermons: ‘Genesis and Geology’, ‘the Animal races in Australia, how introduced, when we consider the Scriptural Narratives of the Creation and

\textsuperscript{255} Ibid.
\textsuperscript{256} \textit{The Argus} 5 December 1868, p.4
\textsuperscript{257} \textit{The Argus} 11 December 1868, p.6
\textsuperscript{258} Ibid.
the Deluge’, ‘Professor Huxley’s Ideas of Monkeys and Man and Professor Halford’s remarks thereon’, ‘Darwin’s Theory and an Extension thereof by a High Legal Functionary of an Adjoining Colony’ this last presumably referring to Hanson’s lectures on Darwinism in South Australia. Higginson had also spoken about Essays and Reviews and Colenso’s work. He complained that the responses of the small Unitarian church had been overlooked by correspondents like ‘Habitans in Cedar’ ‘for it is small and despised’. He drew their attention to its freedom from creeds which had been added on to scripture and its belief in verbal inspiration of scripture. Its adherence to the literal truths of scripture, as inspired by God, Higginson maintained, enabled the Unitarians to fight the atheism flowing from the challenges from science, exhibiting a ‘pure and rational Christianity, to stem the tide of deism and atheism…ere it become irresistible.’

The Melbourne clergyman, E. Digby Smith, joined the attack on science and scientists, demanding that before parsons were called on to reconcile science and revelation, science itself should rest on proof rather than theory. This was a reasonable response, as at this time proofs of the theories of Darwin and Huxley in particular were scarce, although the fossil record was providing substantial evidence to support Lyell’s proposals of the antiquity and development of animal and human life on earth. In spite of his questionable denial that he found any conflict with science, Smith then proceeded to label as unproven theories Darwin’s pangenesis doctrine [common origins of all species], Lyell’s pre-Adamite theories [primitive forms of humans existing before the biblical Adam] and Huxley’s theory on the generation of life from chemical precursors, which he named as ‘atheistical’. He called on young Victorians for whose faith ‘Habitans in

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259 Ibid.
260 The Argus 11 December 1868, p.6
261 The Argus 4 December 1868, p.7
Cedar’ feared, to return to their faith: ‘to glorify their Maker in their lives, rather than making brutes of themselves from a belief in the identity of man’s nature with that of lower animals.’

Smith attacked the science behind the eight eternal truths listed by ‘Habitans in Cedar’, reiterating the call for scientific proof of the controversial theories. The inclusion of humans in the proposed evolutionary process was Smith’s main objection: he declared that for Christians man was the apex and lord of animal life and yet more - a living soul with the breath of God in his nostrils, and clothed with the Divine image. He declared that Christian revelation was not at variance at any point with scientific truth, as revelation was accepted by faith, needing no further proof.

The Reverend Robert Potter also questioned the validity of the ‘eight eternal truths’ of science as defined by ‘Habitans in Cedar’, saying that they would not be accepted as truths by the British Association and agreeing with Smith that they were a mixture of theories and unprovable assertions. He was ignoring the fact that the British Association had moved in 1861 strongly to support Darwin’s theory.

A new correspondent, ‘Habitans in Deserta’, added to the controversy in December 1868 by vehemently attacking scientists and their motivations. He labelled all scientists atheists, as ‘infidels who called themselves men of science’ and accused them of having only half-truths and theories which they presented as facts. The following day ‘B.R.’ rejected the slander from ‘Habitans in Cedar’ and others that men of science did not believe in a

262 Ibid.
263 Ibid.
264 The Argus 30 December 1868, p.7
265 The Argus 4 December 1868, p.7
266 Ibid.
Creator, and he imagined that the Creator approved of scientists: God ‘is well pleased with those investigating the laws of his creation’.267

A plea for caution and for patience in awaiting more scientific evidence before criticising the new theories from science came from a supporter of science with a firm belief in God’s role in formulation of the laws of nature. ‘Medius inter Adversos’, from his name and his response was seeking to mediate between the adversaries, and echoed the counsel of Clarke and Jefferis for patience, citing the examples of recent premature attempts at reconciliation between geology and scripture, each of which had foundered on a new scientific discovery.268 He gave the examples of Lyell’s recent amendment of the estimated period of man’s existence on earth, and Lyell’s reversal from his early position of multiple creations to his more recent support of Darwin’s development theory. In the view of this correspondent, nature’s laws were not changing, only scientists’ understanding of them. He obviously had more faith in science and its laws than did ‘Habitans in Deserta’. ‘Medius inter Adversos’ believed nature’s laws were perfect and unchangeable, because God had instituted them. He quoted from Professor Ansted’s recent work Physical Geography,269 that the laws of nature ‘can only be biding and unalterable because they cannot be changed with advantage; in other words, because they are perfect, being instituted by the One who is Himself perfect.’270

An Anglican clergyman sharing these moderate views, ‘An Incumbent’, wrote to defend both scientists and clergymen from these attacks.271 He claimed that a number of scientists were the opposite of atheistic

267 The Argus 5 December 1868, p.6
268 Ibid.
269 Presumably David Thomas Ansted, Elementary Course of Geology, Mineralogy and Physical Geography (London: J. van Voorst, 1856).
270 The Argus 15 December 1868, p.6
271 The Argus 12 December 1868, p.7
materialists, citing Owen as an example; not a very apt example, perhaps as Owen was a reconciler and was not issuing the challenges that were causing the conflict. ‘An Incumbent’ sought compromise, asserting that it was just as easy to believe that God made matter as to believe that matter made itself. He reassured readers that no essential conflict existed, as there was nothing in ‘revelation that contradicted sound reason, an enlightened conscience or a pure heart.’

A non-churchman, ‘A Free Thinker’, wrote to defend the charge from ‘Habitans in Deserta’ that those who rejected the scriptures had a ‘diseased conscience’. Rather, he said, rejection of the scriptures as well as the authority of the church by Freethinkers stemmed from a moral repugnance towards a God who acted in barbaric ways, presumably referring to the depiction of an angry and vengeful God in some books of the Old Testament. ‘A Free Thinker’ rejected the suggestion that Darwin, Huxley, Colenso, Lyell and many others such as himself were infidels who had discarded the Bible to allay their ‘diseased consciences’ and suggested that they all had characters beyond reproach.

Attacking the laity of the church for causing the trouble was another response of clergy to criticism. Digby Smith suggested that clergy were being asked to do the impossible by the laity, to reconcile the irreconcilable systems of science and revelation which ‘Habitans in Cedar’ himself declared to ‘stand towards each other in eternal and irreconcilable opposition.’ In a later letter Smith refuted the accusation that clergymen were the opponents of science, citing the presence of clergy on the subscription lists of every

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272 Ibid.
273 *The Argus* 11 December 1968, p.6
274 Ibid.
275 *The Argus* 4 December 1868, p.7
scientific association in England. He went on to excuse the clergy in the colony from any similar involvement in science, complaining that clergy had too many heavy calls on them for building churches and schools and in local charities to allow them to assist their scientific brethren. He neglected to mention the contribution of the clergy scientists in other colonies, including Clarke, Jefferis and Woods.

The complaint of ‘Habitans in Cedar’ was about the culture of denial, or at least avoidance of the challenges from science, by the churches, yet some of the correspondents chose to reassert that very denial. J. H. Gregory, a clergyman from St Kilda, rejected the criticism of the Church and the clergy and firmly denied that any answer to the challenge from science was needed. Gregory argued that the church need do nothing because all the apparent contradictions would be resolved at some time in the future. He based his argument on a quote from Cardinal John Newman, reassuring readers that ‘if anything seems to be proved by astronomer, or geologist… in contradiction to the dogmas of faith that point will eventually turn out, first, not to be proved; or secondly, not contradictory; or thirdly, not contradictory to anything really revealed, but to something which had been confused with revelation.’ Newman had counselled patience and waiting, for time would reveal the truth. This was the attitude of Clarke in Sydney as well, and probably the prevalent attitude of many in the Church of England in Britain and Australia at the time. However, unlike Gregory, Clarke chose to engage with the science while waiting for resolution, rather than ignoring it.

Habitans in Cedar’ was not satisfied and wrote again, contradicting the assertions of Gregory and Newman that there was no serious conflict and no

276 The Argus 12 December 1868, p.7
277 Ibid.
278 The Argus 28 November 1868, p.6
need for the church to be involved in it.\textsuperscript{279} He voiced his disapproval of anything Newman said on principle.\textsuperscript{280} This view from a lay person reveals another issue of the time: antagonism to the perceived Roman Catholic tendencies of some of the Anglican churches and ritualism in their churchmanship, as personified by Newman, a leader of the Oxford Movement and convert to Roman Catholicism.\textsuperscript{281}

Three more correspondents wrote justifying clergy avoidance of the challenges from science, all declaring that these challenges were irrelevant for the church and would draw valuable clergy time away from their main mission, the preaching of the gospel and the saving of souls. ‘Habitans in Deserta’ may well have been a clergyman, for he wrote a second time defending clergy against the accusations from ‘Habitans in Cedar’ of cowardice or imbecility for not answering the attacks on the Bible by ‘scientific infidels’.\textsuperscript{282} It was unnecessary and a waste of time, he wrote, for clergy to respond to every sneer the moment it was uttered, as many other speakers and writers with intellectual gifts the equal of the scientists were already doing so. It was the role of clergymen to deal with the ‘diseased conscience rather than the perplexed intellect.’\textsuperscript{283}

The assertion of ‘Habitans in Deserta’ was that there was no need for clergy to waste valuable pulpit time answering the challenge to faith from scientific ‘infidels’ met with the approval of another clergyman, Peter Menzies. He agreed that the work of rectifying the relations between science and theology was irrelevant to the mission of the Church. He attacked even the relatively moderate writers such as ‘Habitans in Cedar’, warning that their writing

\begin{footnotesize}
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\item The Argus 1 December 1868, p.6
\item Ibid.
\item Since Newman had converted from Anglicanism to Roman Catholicism, and at a time of strong feelings against the ritualism influencing the Anglican services from Catholicism, rejection of Newman and his views by some Anglicans was to be expected.
\item The Argus 9 December 1868, p.6
\item Ibid.
\end{enumerate}
\end{footnotesize}
would damage young people by causing them to doubt scripture and the Church, and could ‘plunge many a generous young heart into the misery of doubt.’ A lay correspondent, Henry Richard Rae, agreed with Menzies, although Rae objected to the use of the term ‘infidels’ for those who questioned the belief of the church because of science’s new discoveries. In Rae’s opinion, the term ‘infidels’ should be reserved for the atheistic ‘bloodstained fiends’ of the French Revolution ‘who said in their hearts there is no God’, not the genuine seekers after the truth of the existence of God. The verbal inspiration and literal truth of scriptures were reasserted as an antidote to the challenges from science by the correspondent ‘Habitans in Sylva’, who reassured readers that approaching the scriptures with an earnest wish to discover the truth would remove the need for any arguments with the sceptics from the pulpit, and would free clergy for the more profitable teaching of Christ crucified.

The clergyman writing as ‘An Incumbent’ agreed that it was not the role of the clergyman to be involved in the conflict. He denied that any essential conflict existed between science and the revelations of scripture, but maintained that even if such a conflict existed, the role of a clergyman was to tend the souls rather than the minds of his congregation. He proposed that an occasional lecture on ‘Science and Revelation’ by one qualified to do so would be more useful than treating it by means of sermons. Another clergyman, ‘W.C.’, joined the defence of clergy against the accusations of inaction, giving the excuse of the extreme busyness of clergy lives and duties. He also introduced a new defence of clergy inaction by admitting

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284 The Argus 12 December 1868, p.6  
285 The Argus 15 December 1868, p.6  
286 Ibid.  
287 The Argus 11 December 1868, p.6  
288 The Argus 12 December 1868, p.7  
289 The Argus 15 December 1868, p.6
their lack of specific scientific education. It suggested that some of the clergy avoided the challenges from science because they did not understand them, or did not have the confidence to engage in the debates. ‘WC’ concluded with a dire warning for ‘Habitans in Cedar’ and his like, suggesting that eternal salvation or damnation rested upon believing in the scriptures and rejecting the challenges to them: ‘He that believeth shall be saved, but he that believeth not shall be damned.’

The excuses offered by the clergy for their avoidance of the challenges from science stimulated further responses antagonistic to the church. The division between the clergy and the rest of the correspondents was quite evident, as the clergy correspondents were in turn attacked for their positions. A new correspondent, ‘S’, objected to the attacks of Smith, Potter and the clergy correspondents on science and scientists. Citing Smith’s argument that the theories of Lyell and Darwin lacked sufficient proofs, ‘S’ challenged Smith to prove a single doctrine of the religion he taught, and warned him not to cast stones at the tireless and diligent work of the scientists, ‘which many members of his profession would do well to emulate’. He concluded that responses such as Smith’s harmed religion instead of answering the needs of the people by grappling with the leading questions of the day and was like ‘offering a stone instead of the bread’. ‘S’ then moved to defend the laity from attacks by the clergy correspondents. He accused the clergy of being indignant that their ‘feathers had been ruffled’ because the superiority of clerical over lay opinions and the ‘infallibility of clerical opinions’ had been questioned. ‘S’ complained about the poor quality and irrelevance of the preaching from the clergy: ‘alas, it [the pulpit] is not powerless in this

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290 Ibid.
291 Ibid.
292 The Argus 9 December 1868, p.6
293 Ibid.
294 Ibid.
It is the head and front of boredom.'295 He accused Smith and the clerical mind of being utterly incapable of apprehending the questions which agitated the public. Certainly, their repeated denials of any conflict had seemed to inflame ‘S’ and others, as it had ‘Habitans in Cedar’.296 Smith’s rather arrogant reply probably confirmed the views of ‘S’ and ‘Habitans in Cedar’ about the state of denial among the clergy: he complained that ‘S’s letter was too narrow and ‘too rhapsodical’ to warrant any reply.297

Frederick William Haddon, the editor of The Argus, intervened in the debate on 5 December 1868, when The Argus carried a leading article stating its own position in the debate, which was to join in the criticism of clergy and their attitudes.298 Haddon had been appointed editor of The Argus in 1867; with ‘bohemian’ ties and close friendship with the radical Marcus Clarke.299 With considerable editorial freedom from the board, Haddon had continued the tradition of provocative and often anti-establishment publishing at The Argus.300 This explains why the debate appeared in the pages of The Argus, rather than in the more conservative pages of its competitor The Age.

Haddon, for The Argus, claimed that most intelligent people agreed with the criticism from ‘Habitans in Cedar’ that the clergy were failing to address the challenges from science, and Haddon reflected how poorly the ‘ninety nine hundredths of the men of highest culture in the present day regard the hostile, the apathetic, or the discreetly reticent [attitudes] assumed by the teachers of religion towards the teachers of science.’301 He took the clergy to task for acting as if the laws of nature and universe were the work of an ‘Evil Principle’ at war with the God of the Bible, and for imagining that belief in

295 Ibid.
296 Ibid.
297 The Argus 12 December 1868, p.6
298 The Argus 5 December 1868, p.4
300 Ibid.
301 The Argus 5 December 1868, p.4
supernatural agencies and events was incompatible with a ‘clear comprehension of the natural laws prescribed by Infinite Wisdom.’ 302 As Bromby did in the following year, Haddon decried what he called ‘biblidolatory’, worship of the scriptures, which he believed many well-meaning people confounded with reverence for God and revealed religion. He contrasted the failure of the clergy with the open mindedness of the laity. ‘No such timidity or antipathy towards science and its teachings are to be found among highly cultivated laymen.’ 303 Haddon was ignoring some of the clergy of the Anglican and Congregational churches of Adelaide and Sydney who had shown considerable knowledge of contemporary science. Among laymen, Haddon claimed, there was declining respect for rigid dogmas and narrow theologies and an eager search for a religious faith founded on a more elevated conception of spiritual life and a lively spirit of inquiry. He echoed the position of Hanson, Jefferis and Clarke, that both science and scripture reveal truth, therefore there could be no essential conflict and eventually harmony must prevail. Furthermore, science’s valid role was to interpose and correct errors of physical fact and natural phenomena which were inaccurate or obscure in scripture, due to ‘the infirmity or error of the sages and prophets who transcribed the scriptures’. Clearly, Haddon and The Argus rejected the notion of verbal inspiration, and he finished by warning the clergy, as did ‘Habitans in Cedar’ who had started the correspondence, that if they refused to meet the challenges of science they would become isolated and irrelevant. 304 Arresting the progress of science was impossible, but it could be an ally of religion: ‘pressed into the service of religion it is

302 Ibid.
303 The Argus 5 December 1868, p.4
304 Ibid.
capable of being an invaluable auxiliary; but being treated as an enemy, it will prove a constant source of danger and alarm.'

As the debate drew to its close before the Christmas season, an uneasy truce settled, although the issues had not disappeared. In July of the following year, 1869, Dr Arthur W. Bateman wrote to *The Argus* defending Darwinians against charges of atheism. He insisted that Darwin had not denied that God made all the plants and animals on the earth, but had tried to show how the Creator had produced the forms that existed. This was an interpretation of evolution as the means by which God had created all life that not appeared in the Science and Sermons correspondence. Bateman also considered that some species were rapidly becoming extinct at the same time new species were being created. He found Darwin’s theory, while not proven, yet explained many phenomena and therefore was superior to the only other theory that had been advanced (by the Church from scripture), that new forms of animal and plant life had simultaneously appeared on various parts of the earth in a miraculous manner. He commented perceptively that the people who were convinced by Darwin’s theory were either those who found Darwin’s theory compatible with revealed religion (as he did) or those who ignored the existence of revelation, presumably the atheists. On the other hand, those who were not convinced by Darwin’s argument were those who considered it contrary to revelation. Bateman believed these people would eventually become reconciled to the theory when it was shown to be reconcilable with religion.

Bishop Perry’s 1869 lecture confirmed his stance of rejecting of the new ideas from science but at least, like Bromby, he addressed the issue. The Melbourne clergy correspondents in the debate appear to have held

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305 Ibid.
306 *The Argus* 2 July 1869, p.6
stereotypical views of scientists as essentially alien and atheistic, and of the laity as leaning towards atheism and lacking proper respect and support for their clergy. Their corresponding lay opponents also seem to have held very stereotypical views of the clergy which were in fact confirmed by the some of the contributing clergy: narrow and literal minded, incapable of understanding the issues that were troubling their congregations or the wider world.

The controversies in the other Australian colonies

Although most of the interest in the new theories was expressed publicly in Melbourne, Sydney and Adelaide, the other Australian colonies were also kept informed of the progress of the controversies in Britain by local newspapers reprinting articles from British journals and newspapers. In Tasmania in 1862 the Launceston Examiner carried a short quotation from Sir David Brewster (1781-1868) an eminent Scottish physicist, mathematician, astronomer and inventor, and a devout member of the Church of Scotland who had helped to found the British Association for the Advancement of Science in 1831. The Launceston Examiner reported his objections to Darwin’s theory on the grounds of immutability of species and on the absence of transitional variations in the inhabitants of the earth in the fossil remains of the ‘pre-Adamite era’, the weakness Darwin himself had admitted and which had been pointed out in the British Association meeting late in 1861. Brewster ridiculed Darwin’s theory: ‘When such strata with such indications are discovered, when the instinct of the elephant shall have...
expanded into reason, and the chatter of the parrot have its climax in speech, we may claim kindred with the brutes that perish.’\textsuperscript{308}

Positive responses appeared as well. In 1866 the Hobart \textit{Mercury} reprinted a letter from the \textit{Glasgow Weekly Herald} from the cleric George Gilfillan, about the considerable depth of antagonism provoked in Britain and elsewhere by the suggestions of Huxley and Lyell of the derivation of man from ape-like ancestors. Gilfillan wrote to defend what he called their ‘Continuity’ theory against charges of infidelity, explaining that the Genesis account of Adam and Eve was allegorical.\textsuperscript{309} He pointed out that the almost unanimous support by the British Association by then of the ‘Development Principle’ was a startling and serious fact to be met calmly and charitably by all enlightened professors of the Christian faith.\textsuperscript{310}

The \textit{Launceston Examiner} in May 1863 carried a positive local review of Lyell’s book on the antiquity of man, and of Huxley’s anatomical evidence of human ancestry.\textsuperscript{311} ‘H.E.D’, the reviewer, agreed with Lyell’s final chapter on the position of man in creation, which opposed the proposals of Cuvier that man and apes should be separated into two orders, Biomana and Quadrumana. The reviewer wrote that Cuvier’s proposal that the genus \textit{Homo} was a representative of a distinct class of Mammalia, had been demolished by Huxley on anatomical grounds and reported Lyell’s comment that the scientific world had been surprised by Owen’s stubbornly held opinion which was grounded on ‘notoriously false arguments’.\textsuperscript{312} The Tasmanian reviewer appeared to find in Lyell’s book no conflict with revelation: ‘What a beautiful science is that which teaches to decipher His
writings in the rocks, and from the scattered fragments to read, or catch a
glimpse of, the might, solemnity and grandeur of His doings in the past.’

A lecture by Huxley at the Royal Institution on human origins and referring
to Tasmanian Aborigines was reprinted in 1866 in Hobart in *The Mercury*
from the British *Reader*. Huxley had described his theory of the single origin
of human races from a more primitive animal form, and gave as an example
of such a primitive form the Aborigines of Tasmania. He thought that of all
human races, Tasmanian Aborigines were probably the closest to the animal
ancestors based on their primitive skull shape. This was an example of the
use of science to support the generally accepted concept of the inferiority of
non-Caucasians in the late nineteenth century. The reviewer in the *Reader*
agreed with Huxley’s idea of the unity of the human race and its derivation
from more primitive animal forms, but argued instead for multiple
evolutionary origins of humans, proposing a wide distribution of the animal
progenitors which in several places had evolved into humans. The reviewer
also reported that Huxley had disagreed with Wallace’s contention that
civilisation interfered with natural selection. Wallace had suggested that
moral tendencies such as benevolence interfered with natural selection, for
example, by feeding the weak rather than letting them die of hunger.
However, Huxley had taken the view that civilisation introduced its own
dangers and diseases, against which the strong would always contend more
successfully than the weak.  

There was some support for open discussion of the new theories in the small
town of Perth, Western Australia. In January 1862 in an article entitled ‘The
Pulpit, Platform and Pen’, reprinted in the Perth newspaper from the British
*Saturday Review*, the famous Baptist preacher, Charles Spurgeon, was taken

313 Ibid.
314 *The Mercury* 3 September 1866, p.3
to task for failing to address seriously the scientific content of Darwin’s theory. As in Britain, the restating of the orthodox position in George Moore’s book *The First Man, and His Place in Creation, Considered on the Principles of Science and Common Sense, from a Christian Point of View, with an Appendix on the Negro*, did not stir much interest in the colonies, but one Australian reviewer and newspaper took a complimentary approach to Moore’s book, agreeing with its defence of scripture and its criticism of the rejection of the spiritual aspects of humanity, and launching a tirade against atheistic science. The *Perth Gazette and West Australian Times* reprinted a review from the *Australasian*, which gave a slightly different name to the book: *Men and Monkeys, the First Man and his Place in Creation*. The *Australasian* reviewer had marvelled that the subject of the origin of mankind should be questioned at all in the face of the truth from scripture, the centre of a ‘raging controversy… in the teeth of the explicit declarations of Holy Writ’, and attributed the controversy to the inquiring spirit of the age. He proceeded to attack scientists for their atheistic theories which undermined the truth of scripture and neglected the spiritual nature of humanity. For the reviewer, even if he could accept the findings of the geologists, Darwin’s theory of development and Huxley’s particular extension of it to humans were unreasonable and atheistic, ‘especially as brought practically forward [to include humans] by the Doctor’s ablest disciple, Professor Huxley, [it] cuts directly at the root of reason as well as revelation.’ The reviewer criticized the ‘chief apostles of development’, including Lamarck and the author of *Vestiges* for their conclusions that mankind had evolved from lower animals and for their subsequent neglect of the spiritual nature of mankind.

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316 Moore, *The First Man, and His Place in Creation, Considered on the Principles of Science and Common Sense, from a Christian Point of View, with an Appendix on the Negro*.
317 Ibid.
318 Ibid.
319 Ibid.
'The spiritual side of nature goes with them for nothing…the semi-divinity of our nature, which puts man a little lower than the angels, is so completely shoved aside that it counts for nothing in the discussion.' This one reviewer saw Moore’s book as an antidote to the ‘poison’ of such books as Vestiges working their mischief among young and half-educated people.

In Queensland in 1868, The Brisbane Courier printed an accusation that the British botanist Joseph Hooker was contemptuous of theology. Using an article from the British Daily Telegraph, the Courier reported Hooker’s election as President of the British Association, and his inaugural speech in which he had defended Darwin’s theory strongly and advised that physics and metaphysics should be pursued separately. The newspaper’s comment was that this was ‘advice given evidently under a strong feeling of contempt for popular theology, or indeed, we imagine, for any theology at all’.

The situation at the end of the decade

Early in 1868 Darwin’s new volumes The Variation of Animals and Plants under Domestication appeared, to a mixed reception. They brought a major negative review in the British Athenaeum, reproduced in Melbourne’s The Age and in April in Hobart’s Mercury and May in the SMH. It criticized their expression of evolutionary theory as based on unsubstantiated scientific claims, but made no reference to any theological implications of evolution. However, in the Australian colonies the reception was generally more

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320 Ibid.  
321 Ibid.  
322 The Brisbane Courier 14 November 1868, p.3  
323 The Brisbane Courier 14 November 1868, p.3  
325 The Age 21 April 1868, p.7  
326 The Mercury 28 April 1868, p.3  
327 SMH 4 May 1868, p.3
positive. In Melbourne, The Argus’ 1868 review was encouraging, endorsing the content and the underlying evolutionary theory, as well as defending Darwin against accusations of atheism.\footnote{The Argus 9 May 1868, pp.5,6} The reviewer found it hard to believe that the author of such wonderful assemblies of scientific facts could be regarded as godless or ‘a shallow infidel who lives for the hideous ambition of making out that man is descended from monkey.’ Rather, Darwin’s work in elucidating the process of origin of species was glorifying God the Creator. ‘Who can administer more to the glory of the Creator than he who teaches us of the infinite ways in which creatures are bound together, and who endeavours to explain the process of their gradual evolution?’

In the Australian colonies, Darwin’s new books attracted the attention of lay people with farming and animal breeding interests. This may indicate some general understanding of the evolutionary theory but more interest in the practical outworking of it rather than the theological implications. In Queensland there was particular interest among farmers and amateur scientists in the practical application of Darwin’s theory to domestic animal breeding. They were grateful for information relevant to breeding new varieties of animals suitable for a difficult new country, and expressed little concern or interest in any theological implications. In an article on selective breeding of merino sheep for fine wool, the writer said he did not know whether zoology and Christian belief had benefited much from Darwin’s investigations, however, they had enlightened the breeders of domestic animals on the laws of inheritance and variation.\footnote{The Queenslander 30 November 1867, p.11}

In September 1868, a curious article appeared in the SMH, reprinting an article from the British Liverpool Albion, which restated the embryological ‘evidence’ supporting evolution of higher forms of life from more primitive
forms, but did not refer to Darwin’s new books except to refer to ‘wad[ing] through the ponderous details of the volumes he has already put forth.’ It is hard to see what this article added to what had previously been published by the SMH, unless it was simply to keep the feeding the public’s interest in Darwin’s controversial ideas and stirring interest in Darwin’s new books. In Melbourne, the appearance of Darwin’s new books prompted little new controversy or correspondence.

The decade had been a turbulent one in the history of science and the churches, in the Australian colonies as in Britain. In the colonies for the first time some divergence from the British responses to these challenges from science started to appear among scientists and among Anglicans. Newspaper accounts of the conflict moved from simply reprinting from overseas publications early in the decade, to more local reporting and commentary by the end of the decade; this change correlated with public expression of some ideas which were not simply derivative of those from Britain, particularly in the Science and Sermons debate. In particular, the SMH, The Argus and the South Australian Register kept the public up to date on the controversies, with the editor of The Argus taking an active part in the acrimonious ‘Science and Sermons’ debate, a public debate about science and the churches which was unique to Melbourne.

Spurred on by the challenges, some church leaders used their sermons, hosted public lectures and contributed newspaper articles and letters to bring their views on science to the public. The Mechanics’ Institutes and Schools of Arts provided venues for lecturers with diverse backgrounds and opinions to bring the controversial new theories to the attention of the general public, often with more positive interpretations than those of the churches. In contrast, throughout this decade, the scientific societies and

330 SMH 14 September 1868, p.6
universities remained generally more conservative than their British counterparts, opposing any new theories that challenged biblical accounts of creation without major supporting evidence.

There were some differences in the responses between the denominations. Many, particularly members of the Roman Catholic, Presbyterian, Methodist and Unitarian churches saw the theory of evolution as a direct challenge to scripture as the inspired word of God, and therefore rejected the theory. Reconcilers such as Woods found evolution intrinsically atheistic for denying a role for God in creation and maintenance of his creation. This denial of God’s role, even God’s existence, when added to the challenge to the literal truth of scripture gave rise to the fear, as voiced by Barkly, Woods and Clarke, that atheism would lead to moral then social disruption, even revolution in the colonies.

Among the Anglicans, with the exception of Bishop Perry, there was growing openness to considering the new theories. Bishop Short of Adelaide became more open to the theories as the decade progressed, urging his clergy to stay abreast of the findings and keep open minds. Sydney’s Bishop Barker was essentially silent on the issues, but Clarke and some other Anglican clergy were actively and openly engaged. The Congregational clergy likewise had a mixed response. The positive response from Jefferis and Cox in Adelaide to the new science contrasted with a negative response from Henderson in Victoria. The Presbyterians of Adelaide were staunch opponents of any science which challenged biblical truth, yet Lang in Sydney supported the pursuit of science by all. One Wesleyan minister, Evans, in Adelaide, supported some of the new science against a general background of biblical literalism in his church.
Even among those churchmen who were open to the theory of evolution as a means of new species development, the inclusion of humans in the process of evolution was unacceptable. It challenged three important doctrines of the church: first, that the Genesis accounts of creation including humans were literally true; second, that humans were uniquely made in the image of God and therefore could not be simply highly evolved animals; and third, that humans had originally been created perfect in God’s image then fallen through sin so could not have descended from more primitive humans or ape-like ancestors. Perry, Clarke, Woolls and Halford, among others, rejected these challenges to doctrine.

Responses to the challenges had also differed between the colonies. The new challenges from Darwin, Lyell and Huxley were first brought to the attention of the Australian public in South Australia, through the lectures of Hanson and then Jefferis and Short. Woods too, even in his rejection of the new theories, also kept the new scientific ideas before the interested public of South Australia. Hillard has argued that the deliberate recruitment of Dissenters as settlers formed a culture which was ‘to some extent’ open to new ideas, democratic, pluralist, participatory and a little experimental.\textsuperscript{331} The settlers fostered a strongly Protestant religious culture in which minority and unorthodox Christian denominations thrived to a greater extent than in Sydney and Melbourne. Compared with the eastern towns, the Church of England and Roman Catholic communities in Adelaide had harmonious relations, but Dissenters were suspicious of their ecclesiastical hierarchies and their claims to privilege: Bishop Short complained that dissent was powerful and hostile to the Anglican Church.\textsuperscript{332} Hillard claimed the principle of religious liberty was stronger in all classes of society than in any other

\textsuperscript{331} Hillard, "Unorthodox Christianity in South Australia: Was South Australia Really a Paradise of Dissent?,"p.38-1,2
\textsuperscript{332} Ibid.,p38-2
colony in Australia; a person could openly profess any church affiliation and still maintain his standing in the community. Yet Hanson had been forced to resign from the Bible Society for his liberal interpretation of the Bible, and published anonymously his book ‘The Jesus of History’, which denied Jesus’ divinity and miracles.333

In Sydney there was general opposition from the churches, but it had been moderated by pleas for patience and reason led by Clarke. He led the way by bringing the issues and his interpretation of them to the public through the Church of England Book Society, and in his role as scientific editor of the SMH. His well-reasoned opposition to the theories of Darwin, Lyell and Huxley was joined by other scientists such as Macleay and Smith, with stronger opposition coming from Allwood and Dennison. However, like Melbourne, in general Sydney’s conservative scientific community strongly opposed the theories and ostracized and excluded the museum Director Krefft who supported Darwin.

In Melbourne, the same conservatism characterised the scientific establishment, with Halford, McCoy and von Mueller all rejecting the theories of Darwin and Huxley. Opposition from the churches in Melbourne was vehement and often not well reasoned. Bishop Perry, the clergy and the scientific community united in strongly opposing every aspect of Darwin, Lyell and Huxley’s theories. The frustration of some educated parishioners with the poor response from the Melbourne clergy became clear by the end of the decade in the acrimonious ‘Science and Sermons’ correspondence. In contrast to both Melbourne and Sydney, there was a small, but positive

333 Ibid.,p.38-5
response to Darwin and Lyell’s work in Tasmania, perhaps due to the positive influence of Bishop Charles Bromby, who arrived in 1865.\textsuperscript{334}

As the decade progressed, churchmen proposed various ways of reconciling the new ideas from science with traditional interpretations of scripture. Woods and Short suggested that there had been mistranslations of Genesis from the original Hebrew, and Hanson proposed that Moses, as the purported author of Genesis, had been misinformed by ancient Egyptian traditions. Hanson even blamed theologians for deliberate misinterpretations of scripture. Arising from the conflict came calls from Clarke, Jefferis, Short, Bromby and others for freedom to discuss matters of science and scripture without being labelled atheists or infidels. Leading churchmen such as Clarke, Short, Jefferis, Bromby and even Woods, as well as some scientifically informed laity such as Hanson and Smith generally acknowledged that the ‘days’ of creation in Genesis were not to be understood as literal days, but rather could have represented geological eras. Furthermore, Clarke, Woods, Smith and others agreed that the appearance of humans on earth could be extended back several thousand years, perhaps to nine thousand years without opposing tradition; however, they would not concede the millions of years demanded by Darwin, Lyell and Huxley. The difficulty of reconciling a human presence for only 9000 years with the discoveries of human remains mingled with bones of animals extinct for much longer led to the suggestions from Smith and Bromby that there had been races of human-like creatures before the present race of humans, and only the most recent human race was the subject of scripture. However, as Clarke pointed out, the descent of humans from more primitive ancestors contradicted the church’s doctrine of humans first created perfect then fallen through sin.

\textsuperscript{334} Geologists were honoured in Tasmania in the naming in 1863 of Mount Lyell, bounded on each side by Mount Owen and Mount Sedgwick.
Faced with the apparent contradictions with scripture, moderate commentators such as Jefferis and Clarke advised that the evidence from science was not yet complete and patience and caution were needed before making decisions. Many in the colonies including Hanson, Jefferis, Short, Clarke and Bromby agreed with the compromise that the Bible was the source of spiritual truth and revelation and not meant to be a scientific work. Huxley, Jefferis and Clarke argued that science and theology were different systems of thought and should be studied separately. Furthermore, Clarke maintained that nature and its study was a valid source of God’s revelation equal with scripture, and he was confident that God would provide answers to the apparent conflict arising between the studies of nature and scripture at some time in the future.

In the Royal Societies of London and Melbourne well-meaning attempts to compromise by bringing theology into discussions of evolution science were firmly rejected. This curtailed the damaging debates that had ensued when personal religious beliefs had been questioned and disparaged, but it was also important in fostering the image of scientific professionalism of those societies. It represented a dramatic change from previous decades, when scriptural references were common, even expected, in scientific papers and discussions. This change dealt a significant blow to natural theology, still the dominant belief for most Christians. When the eminent scientists Huxley and Sir John Lubbock denounced natural theology as a dangerous weapon and false science the perception of major conflict between science and theology would have increased for many.335

The development of science itself was influenced by the acrimonious debates during the decade. The move to exclude discussion of issues relating to

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religion from the scientific societies would have been unthinkable at the beginning of the decade. The gap between the scientific amateur members of the societies, many of whom were clergy, and the newly professional scientists such as Hooker and Krefft was starting to widen as well, as the scientists with professional appointments and funding began to dominate scientific meetings, publications and government appointments. In addition, acrimonious and public discussions involving the sensitive issue of personal beliefs had damaged relationships between those sharing scientific interests, such as Hanson and Woods in South Australia, and Krefft and McCoy and Krefft and Owen.

After a turbulent decade, most churchmen and scientists in the colonies were still opposed to the theories of Darwin, Lyell and Huxley. Yet some were starting to come to terms with the theories which they had previously rejected, finding ways of accommodating them with their religious beliefs. For example, Nature had commended Halford for his recent concession in changing his mind about Huxley’s proposal of the close relationship of humans and apes in ‘Man’s place in Nature’ which he had attacked using anatomical evidence in July 1863.336 Even so, Halford declared that he agreed with Professor Owen who, while holding the ‘materialistic terminology’ of science, yet had faith in the Biblical revelation of the core belief of resurrection to eternal life.337 Halford’s position by the end of the decade was similar to that which Jefferis, Short and Clarke had held throughout: they seemed content to live with the tension of faith in revelation against new scientific findings which apparently contradicted scripture, while not quite seeing how they complemented each other.

336 The Argus 17 July 1863, p.5
337 The Argus 2 July 1869, p.6
By the end of the decade, it was clear that for the first time in the Australian colonies the authority of the churches to pronounce on scientific matters was being seriously challenged. At the same time other issues were eroding the influential position of the churches in the colonies. Some of these issues differed from those faced by their parent churches in Britain. Unlike the Church of England in Britain, the Church in the Australian colonies did not have ‘established church’ status with official government support. All denominations in the fast growing colonies were losing influence as lack of funds meant few clergy and church buildings in the expanding country regions. Church control of children’s education was being lost, and the attempt by the Church of England to gain control of the new universities in Sydney and Melbourne following the model of Oxford and Cambridge Universities had failed. Because resources of time and finances were stretched, most clergy had little time or inclination for intellectual pursuits, with some rare exceptions, such as Clarke and Jefferis. This distanced the churches further from the intellectuals who were influential in colonial society and politics.

By the end of the tumultuous 1860s the course of science and the relationship between science and the churches had changed forever in the Australian colonies as in Britain. During the next decade, some churchmen and scientists were actively seeking ways of accommodating the new theories from science into their theologies and their church and scientific traditions.
7. 1870s and 1880s: Theological Developments from the Challenges of Evolution and Abiogenesis

Some churchmen and scientists who were attempting to accommodate the new theories from science within their theologies and their church and scientific traditions were clearly finding it difficult, including some of the leading proponents of the theory of evolution. Wallace, who had co-authored the first paper on evolution with Darwin in 1858, had become involved in spiritualism, and suggested that the complexity of the human brain and such attributes as musical appreciation could not have evolved without spiritual input.1 Lyell too wrote to Darwin, questioning how the human brain could have evolved, hailing Wallace’s suggestion that ‘there may be Supreme Will and Power… which may guide the forces and laws of nature.’2 But Darwin never wavered: he wrote to Wallace saying, ‘I hope you have not murdered completely your own and my child.’3 In 1872, three years before he died, Lyell still found it necessary to defend uniformitarianism against catastrophism mediated by divine intervention in geology. In a chapter on ‘Prejudices that have retarded the progress of geology’, without naming scripture as the source of such prejudices, he pointed out how prepossessions regarding the short duration of past time and the simultaneous creation of all animate beings had supported theories of catastrophes to explain the apparently short time in which events such as formation of rivers and mountains species had been formed. Supernatural explanations had wrongly been inferred to account for many changes in

1 Wallace, A.R. 1869 ‘Sir Charles Lyell on geological climates and the origin’ Quarterly Review 126: 359-394
2 Lyell to Darwin, May 5 1869, Darwin correspondence project DCP-LETT-6728.
3 Darwin to Wallace March 27 1869 Darwin Correspondence project DCP-LETT-6684
geological features which in fact had occurred gradually over great lengths of time.4

By the 1870s in Australia Darwin’s theory of evolution was widely known and continued to be a popular topic of conversation for the following decades. An article in The Argus in Melbourne in 1890 reported the wide public interest in Darwin’s theory.5 The theory of development of species by natural selection, it claimed, was still being keenly discussed, and in certain quarters was still opposed just as strongly. The article summarised the changes in both opposition and accommodation to the theory. Early opponents, it claimed, had found it incredible that all the species on earth should have evolved from a few primitive forms of simple structures, and that man, the ‘lord of creation’, should be merely a descendent of an ascidian or even of an anthropoid ape. However, the evidence gathered by Darwin and his followers was growing, and gradually many thinking people, especially young people - ‘all of the youngest students of biology, as well as the more intelligent portion of the public’ - had begun to adopt the development theory.6 It seemed that Darwin’s elucidation of a plausible mechanism for evolution, namely natural selection acting on natural variations, was converting many who had not been convinced by the arguments of the older school of evolutionists, such as Lamarck and the author of Vestiges. The Argus, rather prematurely, declared the old argument - creation versus development/evolution - was now a thing of the past. It claimed the argument was now whether some factors in addition to natural selection also contributed to development of new species. Some held that a Lamarckian contribution may occur and some physical changes may be

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4 Charles Lyell ‘Prejudices which have retarded the progress of geology’, (1872) reprinted in Albritton Jr, ed. Philosophy of Geohistory (1785-1970).pp. 98-103
5 The Argus 26 July 1890, p.9
6 Ibid.
inherited, for example, in the proposal that the effect of tropical sun over many generations may darken the complexions of some races.7

That the topic was still of public interest in the colonies is remarkable, because of the many other important issues claiming public attention in Australia, including rising nationalism and demands for federation, and an unprecedented economic boom followed by a severe depression, with high unemployment and many banks and businesses bankrupted in the 1890s. There was an increase in radical and anti-establishment thought which was in part a reaction to the tactics of squatters, banks and merchants in their accumulation of land and wealth.8 Workmen generally supported political parties branded as radical or liberal.

While public interest in the new theories from science continued to be strong in Australia, the churches which opposed them were arguably losing their influence on society. A divergence in the stances of the churches on public issues was increasingly apparent. State aid to churches for education had been withdrawn in the last of the colonies in Victoria in 1870 and Western Australia in 1895, against the protests of the Anglican Church but supported by the Congregational Church, and replaced by a ‘free, compulsory and secular system’ of education for children.9 Changes liberalising divorce and marriage laws had been strongly opposed by most churches, with the Presbyterian Church denouncing the ‘immoral legislation’ on the grounds that it contradicted Old Testament teaching.10 The churches’ opposition went against the prevailing public opinion, highlighting the difference between clerical and lay opinion on this subject, resulting in weakening of

7 Ibid.
8 McNaughtan, "Colonial Liberalism, 1851-92." p.122
9 Ibid. p.112
clerical control over family life and morality.\textsuperscript{11} The Wesleyan and Presbyterian Churches had also strongly opposed the opening of public museums and libraries and railway travel on the Sabbath, and had been defeated. In contrast, Melbourne’s Anglican bishop, James Moorhouse, who arrived in the colony in 1877, supported the opening of the Public Library and the Art Gallery on Sundays.\textsuperscript{12} Strong public sentiment on the issue of acceptable activities for the Sabbath was shown in the considerable correspondence in Victorian newspapers.\textsuperscript{13} \textit{The Argus} strongly supported the anti-Sabbatarian cause, which supported a wider range of Sunday activities.\textsuperscript{14} Moderate views which ultimately prevailed, broadening the range of permitted Sunday activities, were led by the Sunday Society in Melbourne, which included the Anglican John Bromby and the Presbyterian Charles Strong as leaders.\textsuperscript{15} By the 1880s, public support for new laws governing Sunday activities and family life indicated that secular considerations were more important in Australian society than traditional ecclesiastical ones.

Disputes within the churches also weakened their authority in the eyes of many. Alfred Barry (1826-1910), Bishop of Sydney from 1884 to 1889, was at odds with many Sydney evangelicals over liturgical changes they saw as Tractarian.\textsuperscript{16} Liturgical changes aroused strong feelings in Melbourne as well, although Adelaide Anglicans, under Bishop Short were more amenable to change.\textsuperscript{17} There were acrimonious battles in some Presbyterian and

\textsuperscript{11} Ibid. pp.82,83
\textsuperscript{13} Breward, \textit{A History of the Churches in Australasia}. p.81
\textsuperscript{14} \textit{The Argus} ‘Notes and Comments on what the Sabbatarians do not care to see’ 22 February 1888, p.11
\textsuperscript{15} Breward, \textit{A History of the Churches in Australasia}. p.81
\textsuperscript{17} Breward, \textit{A History of the Churches in Australasia}. p.77
Congregational churches over the introduction of organs.\textsuperscript{18} The rise in suburban living had drawn many churchgoers away from the large city churches and a new form of suburban Christianity was developing, with a focus on education of children and adults, charity, sport and cultural activities.\textsuperscript{19} Even James Jefferis’ popular Pitt Street Congregational church in Sydney, which in the early 1880s boasted a congregation of two thousand, was by 1888 starting to lose members to suburban churches.\textsuperscript{20} Loss of clergy control of schools confined the authority of clergy to church and parish, with increasing expectations on parish clergy.\textsuperscript{21} New patterns of churchgoing were emerging, with a decline in family worship and Bible reading. Christianity was still highly regarded and sacred, but had become a private matter rather than a public demonstration for many liberal Australians.\textsuperscript{22} In spite of these changes, preachers with strong reputations were still influencing public opinion on the major issues before the public, including the new theories from science and drew crowds to city churches. Although his congregation was slowly decreasing, Jefferis still drew crowds of up to two thousand to hear his preaching between 1877 and 1889, and his fellow Congregational minister Dr Llewelyn Bevan in Melbourne also attracted similar numbers.\textsuperscript{23} Bishop Moorhouse regularly filled Melbourne Town Hall with his special lecture series between 1877 and 1889.\textsuperscript{24}

\textsuperscript{18} Ibid. p.77
\textsuperscript{19} Ibid. p.74
\textsuperscript{21} Breward, \textit{A History of the Churches in Australasia}. p.71
\textsuperscript{22} Ibid. p.83
\textsuperscript{23} Ibid. p.55
\textsuperscript{24} Ibid. p.55
The new challenge: abiogenesis

In the early 1870s a new challenge from science to the churches arrived from Britain, with the proposal from Huxley to extend the concept of evolution to the formation of life from chemicals. Huxley’s essay ‘The protoplastic theory of life’ was published in the issue of the British journal *The Fortnightly Review* and had reached Melbourne by July 1869. Huxley proposed that the earliest life forms had evolved from inorganic matter, and that life itself was simply an expression of the complexity of inorganic and organic matter. He was not the first person with this idea. In 1844 *Vestiges* had proposed that life had evolved from elements in limestone sediments which provided the carbon needed for organic life forms, and discussed ways in which inorganic chemicals may have been combined to form living organisms. In 1855 Powell agreed: ‘there must have been some stage at which there took place a first evolution of animal life out of inorganic elements; perhaps at several times in history.’

Huxley had first introduced his theory in 1868 when invited to give the Sunday ‘lay sermon’ at a progressive Presbyterian church in Edinburgh. He frankly warned his audience that it would challenge their religious beliefs. ‘I bid you beware that, in accepting these conclusions, you are placing your feet on the first rung of a ladder which, in most peoples’ estimation is the reverse of Jacob’s, and leads to the antipodes of heaven.’ The pamphlet rallied the Vitalists to an all-out offensive in Britain, denouncing Huxley’s theory as materialist and atheistic. Vitalism, along with the design argument of Paley, was still a strong natural philosophy in the 1860s. Vitalists believed that living things were animated by a life force operating within the

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25 *The Argus* 1 July 1869, p.5
Chambers, *Vestiges of the Natural History of Creation*.
27 Ibid. pp.57,58; *SMH* 28 December 1855, p.8
28 An allusion to Genesis 28: 10-12, ‘On the Physical Basis of Life’
http://aleph0.clarke.edu/huxley/CE1/PhysB.html, (accessed 2/6/15).The substance of this paper was delivered in Edinburgh on 8 November 1868
organism but sourced from outside, generally meaning from God. Not only were scientists claiming that humans were derived from the same ancestors as apes, but Huxley was claiming that life itself was simply an expression of a certain degree of chemical complexity. Huxley’s protoplasmic theory questioned both the existence of such a life force and the role of God in providing it, proposing that protoplasm was simply matter possessing a molecular constitution which permitted it to manifest life; no additional or external Vitalist force was necessary. He claimed his protoplasmic theory was a victory for the scientific and mechanistic over the Vitalist conception of life. Furthermore, Huxley proposed that protoplasm was common to all forms of life and that humans, animals and plants all shared the same cellular structure; it was the ‘unifying matter of life, common to men and algal mats.’29 This was another blow to the belief that humans were essentially different from all other created life.

The sermon was published immediately in the next issue of the influential *The Fortnightly Review* on 1 February 1869; this journal was regarded as ‘the principal organ of mid-Victorian progressive and rationalist thought.’30 According to the modern science writer G.R.Welch, Huxley had focused the attention of the scientific community for the first time on the sub-cellular basis of life.31 His dismissal of Vitalism opened the way for significant advances in the sciences of biochemistry and cell biology and for new ways of thinking about the life of cells. Huxley’s own view, given at the end of his talk was that the pursuit of scientific truth must be freed from religious constraints, yet it should never believe that it had the full truth: ‘we can (and must) carry out the business of science in materialistic vein: but we must keep in mind the caveat that we may never know what really lies behind our

29 Ibid.
31 Ibid. p.482
terms and symbols.' Huxley subsequently coined the term ‘agnosticism’ to encompass this state of uncertainty and questioning about God.33

Protoplasm was the subject of sermons and correspondence in Melbourne from July 1869, when mention of it was made in The Argus, although strangely neither Perry nor Bromby referred to it in their lectures several months later.34 Most of the reactions of Australian church leaders and scientists came in the 1870s and 1880s, and it was sufficient in extent to be commented upon in one of the principal British scientific journals. According to the first issue of the British scientific journal Nature, the essay on protoplasm ‘gave rise to an epidemic there [Melbourne] of controversial science in a very alarming form’, although it claimed, with some superiority, protoplasm had already ceased to be a major topic of dinner conversation in Britain.35 Differing opinions appeared in the Melbourne press. Nature reported that the Melbourne Daily Telegraph had declared itself proud that the city had come far enough intellectually to be a supporter of science and be positively ‘agitsted by proteinaceous theories’.36 The initial public attack on Huxley’s work was reported on 1 July 1869 in The Argus. Unitarian minister Higginson had been quick, as before, to enter into the controversy defending the literal truth of the biblical creation accounts.37 The Argus reported that he had ‘torn the theory to shreds’ in a ‘singularly able’ discourse at his church. Nature commented on the report in The Argus, and defended scientists against attacks such as Higginson’s, saying scientists worked for the benefit of mankind and must not be hindered from telling the world what they

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32 ‘On the Physical Basis of Life’ http://aleph0.clarke.edu/huxley/CE1/PhysB.html (accessed 2/6/15). The substance of this paper was delivered in Edinburgh on 8 November 1868
33 Welch, "T.H. Huxley and the 'Protoplasmic Theory of Life': 100 Years Later.", p.484
34 ibid.
35 anonymous, "Protoplasm at the Antipodes." Nature volume 1, 1869 www.nature.com/nature/about/first/protoplasm.html (accessed 12/08/16)
36 Nature volume 1, 1869 www.nature.com/nature/about/first/protoplasm.html (accessed 12/08/16)
37 The Argus 1 July 1869, p.5
learned. Nature, somewhat patronizingly, declared that the controversy over ‘protoplasm’ showed signs of the beginning of national character in Australia, and trusted that scientific zeal might become one of its features. Higginson spoke for those who were outraged at the denial of God’s role in providing the Vitalist force essential for life. The Argus reported in full Higginson’s lecture in an article entitled ‘Professor Huxley’s Theory of Protoplasm’, to which Nature had referred, and which Higginson had repeated at the Mechanics’ Institute to a crowd of over two hundred people. Higginson objected to Huxley’s notion that protoplasm was essentially the same building block in all organisms, whether plant or fungus or animal. He particularly objected to the claim that inorganic minerals had the power to become plants, animals and even man. The reporter noted that this statement brought laughter from the large audience, which showed some popular sympathy for Higginson’s views, at least among this audience. He concluded by assuring his audience that the theories did not ‘in any way affect religion so far as the process of creation was concerned.’ This was an empty reassurance, for although evolution and formation of life from a chemical soup were still only theories the correspondence which had erupted in The Argus labelled as ‘Science and Sermons’ showed that evolution and the place of humans in it were already affecting religion profoundly, by challenging the biblical role of God in the creation of all life on earth, including humans.

Higginson had beaten Halford to become the first person in Melbourne to reject Huxley’s protoplasm theory. On 2 July 1869 The Argus had carried a brief letter from Halford, who had just seen the protoplasm essay. He promised he would soon show how physiologists had been coming to the

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38 Nature volume 1, 1869 www.nature.com/nature/about/first/protoplasm.html (accessed 12/08/16)
39 Ibid.
40 The Argus 1 July 1869, p.5
41 Ibid.
conclusion of formation of life as proposed by Huxley, but in the face of Huxley’s new challenge to the Author of Life Halford was compelled to reaffirm his Christian faith: ‘our faith in a future life and resurrection from the dead rests on the grounds of their being parts of a Divine revelation.’42 Halford attended Higginson’s lecture and after the speaker had finished rather provocatively commented that clergy were not qualified to interfere in matters of science. Halford’s statement reflected his view as a scientist and a churchgoing layman that clergy were ignorant and ill-informed on science. He was disregarding the contributions of clergy scientists such as Clarke and Woods, but may have been influenced by the prevailing anti-clericalism in Melbourne.43 Responding in The Argus, Higginson insisted that as long as Huxley’s lecture was heard and read by a wide audience it was appropriate for clergy to take part in discussing it.44

In 1870 Huxley coined the term ‘abiogenesis’ for his protoplasm theory, which he defined as the origin of life from chemicals, and its opposite, ‘biogenesis’, defined as life arising from pre-existing life forms, in his address as the new President of the British Association for the Advancement of Science.45 Darwin agreed that abiogenesis was possible. In a letter to Joseph Hooker in 1871 Darwin wrote that life may have begun with the formation of simple proteins from simple components, catalysed by heat, light and lightning in a ‘warm little pond, with all sorts of ammonia and phosphoric salts, lights, heat, electricity etc. present so that a protein compound was chemically formed ready to undergo still more complex changes.’46

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42 The Argus 2 July 1869, p.6
43 The Argus 24 November 1868, p.7
44 The Argus 23 July 1869, p.7
45 Huxley, Thomas Henry ‘Biogenesis and abiogenesis’ Collected Essays VIII.
46 Francis Darwin, ed. The Life and Letters of Charles Darwin (1887), chapter 3, p.18
Investigating the possibility of life arising from a mix of chemicals, the French scientist Louis Pasteur, collaborating with John Tyndall in the mid-1870s, proved conclusively that there was no spontaneous generation of life from sterile growth medium, even from growth medium containing a rich mixture of organic chemicals. For many this disproved Huxley’s theory of abiogenesis from non-living organic or inorganic chemicals. But in fact it did not exclude the possibility of such evolution in the earth’s primordial conditions, over an immense period of time, as Huxley and Darwin had proposed.

**New theological approaches to the theories of evolution and abiogenesis**

In the closing decades of the century, both in Britain and in Australia, the arguments of creation versus evolution, and abiogenesis versus Vitalism were being addressed by churchmen taking what can be seen as three broad positions. In the first and simplest reaction to the contradictions between science and scripture churchmen of some denominations simply continued to refuse to accept evolution and its extension, abiogenesis; to these churchmen the theories were essentially atheistic, denying the role of God in creation. A second type of reaction involved partial acceptance of the new theories. Churchmen of some denominations accepted the validity of some of the new science, and continued to struggle to find ways to reconcile it with their theology. The third approach was to embrace the new theories, seeking ways of accommodating evolution into traditional natural theology, adding the language of evolution to sermons and exploring new theological territories, such as the implications of evolution for human spirituality and the soul.
Some scientists too rejected the theories as unfounded and unproven, but others were cautiously open to the theory of evolution while waiting for more evidence. Other scientists went further, embracing Huxley’s newly coined term ‘agnosticism’ as a way of accepting, even venerating science, without quite taking the step into atheism by denying the existence of God as Creator of species. Some went further still, wholeheartedly embracing the new science and developing the application of evolution theory into social Darwinism and eugenics as a new philosophy to replace religion.

However, almost all churchmen and scientists rejected the inclusion of humans in the process and even those open to evolution theory were generally unable to accept abiogenesis. One form of accommodation which emerged among both churchmen and scientists was simply to give up the effort to reconcile scripture and science: this resulted in continuation of the call from some churchmen and scientists which had come from Herschel in the 1830s and grown in the 1860s, to separate completely the study and ideas of science and religion.

**Refusal to accept evolution and abiogenesis**

As has been made plain in the discussion of previous decades in the Australian colonies, the main reason for churchmen rejecting the theories of Darwin, Lyell and Huxley was that they saw them as essentially atheistic, denying a role for God in creation or even denying the existence of God. This rejection continued in Australia in these last decades of the nineteenth century. In New South Wales and Victoria the opposition of the Methodists and the Presbyterians to evolution remained clear. In the 1870s and 1880s, according to Badger, most Protestants in Victoria adhered to belief that the
Bible was verbally inspired and free from any error. However this was not true of leading Anglicans and Congregationalists, whose more liberal views are explored below. Presbyterian clergy and laity, however, were quite indifferent to the theological problems arising from Darwin’s theory and Essays and Reviews, rejecting their challenges outright. The New South Wales Presbyterian journal firmly declared that there was no evidence for evolution.

The Wesleyan Church also refused to accept any reinterpretation of scripture in the light of the new science. According to the New South Wales Methodist Weekly Advocate, in 1882, evolution was ‘essentially atheistic’ and ‘a deadly foe to revealed religion’. When one Wesleyan minister, George Martin, presented a liberal view of evolution in his lecture ‘The Story of Creation’ in Maitland in 1877, he drew strong criticism from a fellow Wesleyan for straying from the literal truth of scripture. His critic ‘Delta’, writing to the editor of the newspaper which had reported Martin’s lecture, reminded Martin of the Wesleyan tradition of biblical literalism, believing ‘in the Bible, the whole Bible and nothing but the Bible.’ ‘Delta’ objected to Martin’s description of worlds evolving from nebulous luminiferous gas clouds (which had been proposed in Vestiges), pointing out that in the Mosaic account light itself did not exist until the movement of the Spirit on the waters, and he objected to the statement that stars were still being formed in the same gaseous way. Further objections were raised by ‘Delta’. Martin had stated that one could not determine when life had appeared, or whether the first form was plant or animal, whereas ‘Delta’ pointed out that Moses had allocated the creation of plants and animals each to specific days and man

47 Badger, The Reverend Charles Strong and the Australian Church. pp.209, 211
48 Ibid. pp.209, 211
50 Ibid. p.408
51 The Maitland Mercury and Hunter River General Advertiser 6 November 1877, p.6
52 The Maitland Mercury and Hunter River General Advertiser 15 November 1877, p.2
had appeared in day six. ‘Delta’ concluded that the progressive development of life including humans was what Martin taught as did Darwin and Huxley, but that was not what Moses taught. Several years later, a Victorian Wesleyan cleric, W. H. Fitchett, continued to assert the Wesleyan Church’s position of denying the need to address any of the challenges coming from science that the church had maintained from the 1860s. As his colleagues had done earlier, he distanced his church from the debates by asserting that the clergy realized that their task was to save souls not to satisfy minds.

Under Pope Pius IX the Catholic Church in the 1860s and 1870s objected to the way science was developing without due respect for the authority and interpretations of the Church. The Church dismissed the calls to separate the pursuits of science and religion and for freedom to seek new knowledge unimpeded by religious constraints. Such demands directly contradicted the official views of the Roman Catholic Church, which claimed authority over all matters, including the pursuit of science, as outlined in the encyclical *Quanta Curia* sent to all Catholic bishops by Pope Pius IX in 1864. In Ireland, following the August 1874 address of John Tyndall to the British Association on evolution and abiogenesis, the Catholic Archbishops and Bishops of Ireland issued a pastoral letter in which they repudiated this ‘blasphemy upon this Catholic nation’ that had been delivered by the ‘professors of Materialism…under the name of Science.’ Tyndall’s speech had been supported by the presence of Huxley and Hooker.

The Catholic Archbishop of Sydney, Dr Roger Vaughan, continued to voice his opposition and that of his church to the theory of evolution, in 1879

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53 *The Maitland Mercury and Hunter River General Advertiser* 15 November 1877, p.2
54 Roe, “Challenge and Response: Religious Life in Melbourne, 1876-86.” p.150
55 Ibid. p.150
56 Translation from Fremantle, ed. *The Papal Encyclicals*. p.136
declaring there was no evidence for it.\textsuperscript{58} The Catholic Church continued to
defend the literal truth of the Noachian Deluge into these decades. In
Victoria in 1871, Father Joseph O’Malley S.J., wrote a pamphlet detailing
how the animals fitted into the ark and outlined techniques for cleaning and
victualling its 2,160 stalls.\textsuperscript{59} His pamphlet was commended in the \textit{Church of
England Messenger} reflecting the same support of biblical literalism in the
Church of England in Victoria under Bishop Perry.\textsuperscript{60} Just after its publication,
Melbourne’s Catholic newspaper, the \textit{Advocate}, made clear the opinion of the
Archdiocese of Melbourne about Bishop Colenso and those proposing non-
literal interpretations of scripture. It ran a long article referring to Colenso
and others as infidels, and attacking Protestantism in general. ‘For three
centuries…the rain of Protestantism has been falling on the Catholic Church
in an uninterrupted shower of hatred and calumny.’\textsuperscript{61}

By the 1880s, there was a significant shift in attitude of the Catholic Church
to science. Leo XIII, pope from 1878 to 1903, clearly understood that his
church needed to take a more open view, declaring that there was no
essential conflict between science and religion. When the pope died in 1903,
John Wynne S.J. assessed the way this pope had addressed the contemporary
issues in the Church. ‘Never was science so arrogant as when Leo XIII began
to recommend to Catholics the study of sound philosophy… Scientists
everywhere were proclaiming the victory of science over religion, when Leo
declared that there could be no question of victory where there was no
conflict.’\textsuperscript{62} However, there is no evidence of any change in the attitude to
evolution in the Catholic Church in the colonies by the end of the 1880s.

\textsuperscript{58} Phillips, "Defence of Christian Belief in Australia 1875-1914." p.408
\textsuperscript{59} Noah’s Ark Vindicated and Explained, a Reply to Colenso’s Difficulties was advertised for sale for
sixpence in the \textit{Advocate} published by the Catholic diocese of Melbourne on 8 July 1871, p.1
\textsuperscript{60} \textit{Church of England Messenger} (Melbourne) 11 August 1871.
\textsuperscript{61} \textit{Advocate} 22 July 1871, p.9
\textsuperscript{62} Fremantle, ed. The Papal Encyclicals. p.156
In the 1870s and 1880s, most of the influential scientists in Sydney and Melbourne, for mostly theological reasons, were opposed to Darwin’s theory and its extension to humans and to abiogenesis. This scepticism contrasts with the situation in Britain, where by now the most influential scientists, judged by their domination of scientific societies such as the Royal Society and newspaper reports, were Huxley, Hooker, Tyndall and other supporters of Darwin. Although Lyell and Wallace had some concerns about the inclusion of humans in the evolutionary process, they were strong public supporters of evolution. The old guard of scientist and clerical deniers continued, but arguably their influence was diminishing. In Britain, their eminent spokesman Sir Richard Owen, head of the British Museum until 1881, and perhaps the last of the influential scriptural biologists, became increasingly estranged from the leaders of the ‘New Biology’, Darwin, Lyell and Huxley, following personal attacks on all of them.63 His scriptural approach to creation was alienating him from the new mainstream of science, and ‘he had become increasingly irrelevant to the new biology’.64 He continued his work in palaeontology, classifying fossils from Britain and the colonies, and was instrumental in founding the National History Museum which opened in London in 1881. He was knighted on his retirement in 1884 and died in 1892.65

George Campbell, the Duke of Argyll, like Owen, proposed that several creation events had occurred, and in 1898 published *Organic Evolution Cross–Examined*.66 He proposed that each of the major orders had originated in separate ‘germs’, each possessing its own internal directing force, with provision for all the adaptations necessary for the new species which would

64 Ibid.
65 Ibid.
66 Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900*. p.222
emerge. This would eliminate the factor of chance which, he believed, was so abhorrent to thinking people. Campbell agreed with Owen and Cuvier that *Homo sapiens* should occupy a separate class rather than genus, because the method of human creation was unique; no other higher animal shared the same intellectual and moral properties as humans.

In the last decades of the century, Anglican clergymen were still among the leading writers of books popularizing science with the support of SPCK. Their science came with a natural theological interpretation, and frequently rejected evolution. Thomas W. Webb, the ‘father of amateur astronomy’, wrote about celestial objects in the 1880s and Francis Orpen Morris was the author of popular books on birds and butterflies and vehemently opposed Darwin’s theory in a series of books including *All the Articles of the Darwin Faith* (1875) and *The Demands of Darwinism on Credulity* (1890). Britain’s foremost evangelical opponent of Darwin was Thomas Rawson Birks (1810-1883), Knightsbridge Professor of Moral Philosophy at Cambridge University. In *The Scripture Doctrine of Creation* (1872) and *Modern Physical Fatalism and the Doctrine of Evolution* (1876) Birks maintained that belief in special creation was supported by scripture, and that Darwin had ignored the evidence from scripture and its revelation of prehistory. The Reverend Samuel Kinns, Fellow of the Royal Astronomical Society, in *Moses and Geology, or, the Harmony of the Bible with Science* published in 1882, continued the tradition of scriptural geology, elucidating fifteen points of harmony.

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67 Campbell’s proposal for an internal directing force containing provision for adaptations was remarkably prescient in the era before the elucidation of the role of genes and molecular genetics.

68 Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900*. p.222

69 Ibid. p.231


71 Ibid. pp.41,43

72 Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900*. p.201
between the Mosaic account of creation and the geological record. The book was very popular, going to thirteen editions between 1882 and 1892.73

In America, Charles Hodge (1797-1878) taught Presbyterian Calvinism for over fifty years at Princeton Theological Seminary, influencing several generations of Calvinist clergy. He published a three-volume work, *Systematic Theology* (1872-3), containing his analysis of Darwin’s theory and its theological implications and concluding that it was essentially atheistic.74 Like many, he objected to Darwin’s method of induction, but his main objection to the theory was that its denial of divine design, inevitably bringing it into conflict with Christianity.75 In Ireland, the ‘pernicious dogmas’ of Huxley, Tyndall and Darwin were rejected in an address to the Presbyterian faculty and students at the General Assembly’s College in Belfast, by J.L. Porter, Professor of Biblical Criticism (later President of Queens’ College).76 He spoke of the evil of recent scientific theories which threatened ‘to quench every virtuous thought’. 77 The only Presbyterian voice accepting the legitimacy of evolution, even the inclusion of humans, came from Robert Rainy, the principal of the theological college of the Free Church of Scotland in Edinburgh, who in 1874 declared he was ‘perfectly at ease’ with the theory, and did not find evolutionism an irreligious position.78

The opposition of conservative scientists in Australia, although on ostensibly scientific grounds citing the lack of evidence, often, like Owen’s opposition, had an underlying theological basis. Professor Halford at the University of Melbourne continued his public denunciation of the theory of evolution

74 Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900*. p.204
75 Livingstone, "Science, Region and Religion: The Reception of Darwinism in Princeton, Belfast and Edinburgh."p.10
76 Ibid. pp.9,10
77 Ibid. p.10
78 Ibid. pp.8,9
using anatomical comparisons between apes and humans to support his belief in God’s separate and special creation of humans. Baron von Mueller (Sir Ferdinand Jakob Heinrich von Mueller, 1825-1896) was a Lutheran and another influential scientist in Melbourne who rejected evolution on both scientific and religious grounds. He was the Director of the Victorian Botanic Gardens, and was later Government Botanist, publishing many taxonomic works. He was awarded the Clarke medal by the Royal Society of New South Wales in 1883, and many European honours. As a natural theologian, Mueller continued to extoll science as revealing God’s hand in nature and declared it logical that clergy should study nature to learn more of the Creator:

[that] such men, educated by long years’ studies, with keen mental penetration and thoughts trained to logical precision, should have sought to unfold the marvels of God’s work in Nature...imbuing admiration of the wonders around them, some may wander from the religious sanctuary beyond the threshold of the temple, to seek for the flowery wonders of the field or the structures of grandeur in the forest.

In Sydney, as in Melbourne, the anti-evolution view held sway among the scientific establishment throughout these decades. In 1871 the SMH published in full an extensive review from The Times of Darwin’s latest book, *The Descent of Man, and Selection in Relation to Sex.* The reviewer in The Times article found Darwin’s theory unproven, particularly in its extension to humans: ‘Darwin’s hypothesis is utterly unsupported by observed facts

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79 *The Argus* 14 October 1871, p.2
81 Gilbert, “Plants and Parsons.” p.27
[and] it is still more destitute of such support in its relation to Man.'

There was no reference to religion in The Times review, except to emphasise the poetic gifts unique to humans: ‘the earliest known examples of Man’s most essential characteristics exhibit his faculties in the greatest perfection ever attained. No poetry surpasses Homer; no religious sentiment is more sublime than in the book of Genesis.’

Clarke, still scientific editor of the SMH and open-minded about the theory of evolution and impressed by Darwin’s scientific work, clearly objected to Darwin’s explicit extension of his theory to humans, prefacing the reprinted review by referring to the ‘fascinating fallacies of the remarkable work’.

Clarke’s objection was that inclusion of humans in a process of evolution contradicted observations of the great gulf between the abilities of apes and humans. Interestingly, while convinced of the uniqueness of human consciousness and intelligence among the creatures of earth, Clarke was open to speculation about the possibility of intelligent life elsewhere in the universe. In his address to the Royal Society of New South Wales Clarke referred to his belief that there may be life on other worlds. ‘I trust there is no scientific heresy in expressing my own belief, that other worlds in our system may habitable, and for aught anyone can decide against me, may be parts of the many mansions in our Father’s house above.’ This is a statement questioning the uniqueness of life on earth that might indeed have been seen as a theological heresy, which he countered by the reference to Christ’s own statement from John’s gospel about the many rooms in Jesus’ Father’s house. Those verses however referred to the place of residence after death, so Clarke’s use of it as support was rather a stretch of its meaning.

83 SMH 3 July 1871, p.3
84 SMH 5 July 1871, p.3
85 SMH 3 July 1871, p.3
86 Moyal, The Web of Science. pp.53, 54, and from the SMH 26 May 1870, pp.2, 3 and SMH 27 May 1870, p.4
87 John 14: 1-6
Other members of the conservative scientific establishment in New South Wales were not as open-minded as Clarke. In 1874 they united in an extraordinary way to remove the Director of the Australian Museum, Johann Ludwig Gerard Krefft (1830-1881), for what Krefft claimed was his support of Darwin’s theory and his declared atheism, although ostensibly for a list of a dozen misdemeanours which he contested. Both his stance on evolution and his atheism had brought him into conflict with other leading scientists in Sydney and Melbourne, who objected to his theology as much as to his science. Krefft wrote that his atheism had made him a target for discrimination and exclusion: ‘as true believer in the theory of development I am hunted down in the paradise of Bushrangers.’

Krefft accused one of the museum trustees, Captain Arthur Onslow, of prejudice, saying he was ‘a firm adherent of the ancient doctrine of the creation according to Moses, a man who detests Darwin, Huxley and Haeckel and who abhors me more still because I have tried to make people understand what the meaning of evolution is.’

Acrimony and legal actions followed Krefft’s dismissal, but he continued his taxonomic publications even though separated from his books, papers and specimens which were held at the museum. He engaged in correspondence which brought him into further conflict with the leading conservative scientists in Melbourne and Sydney. In a letter to the SMH Krefft took issue with von Mueller’s statements in a pamphlet about the development and introduction of modern cereal grains into America. The argument moved from science to theological grounds, as the prominent Sydney botanist and clergyman, William Woolls, wrote in reply defending von Mueller. Woolls evoked the authority of William Sharp Macleay who had died in 1865,

88 Frame, *Evolution in the Antipodes: Charles Darwin and Australia.* p.94
89 Ibid. p.94
90 *SMH* 7 January 1876, p.5
91 *SMH* 18 January 1876, p.3
declaring that Macleay had told him that God Almighty had made all species, and that von Mueller had expressed the same opinion. Woolls then called on scripture as the ultimate authority, reminding readers of the Mosaic account that cereals had been created by God as food for Adam, arguing that therefore they could not have evolved from ancient species.  

Krefft wrote again, championing evolution and complaining that Woolls had not laid sufficient stress on the ‘well ascertained fact’ that organisms constantly change and vary when sufficient time is allowed and new species are called into existence daily by such variation, by change of habitat [that is by evolution through environmental selection from the natural variations] or by crossbreeding [humans selecting particular variations and breeding from them]. Dismissing Woolls’ recollection of Macleay’s statement that Almighty God had made species, Krefft claimed that on the contrary Macleay had told him that new species ‘turned up every day’. Krefft was interpreting Macleay’s statement as a reference to evolution of new species; however, given Macleay’s relatively conservative religious views (as expressed to Clarke in 1842) Macleay may simply have meant that new species were to be found every day. Krefft then referred the readers to scripture, an unusual thing for an atheist to do, saying that chapter 1 of Genesis was an account of an evolutionary process, saying it ‘reads like “gradual development” from the first inorganic body of the earth to man as the lord of creation.’

In September 1877, Krefft published the first issue of his journal Krefft’s Nature in Australia, with the provocative slogan, ‘Where Faith begins, Science

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92 SMH 18 January 1876, p.3
93 SMH 21 January 1876, p.7
94 Ibid.
95 W.S. Macleay to W.B. Clarke, 4 July 1842, Clarke papers, uncatalogued MSS 139/11 quoted by Mozley in Mozley, “Evolution and the Climate of Opinion in Australia, 1840-79.” p.417
96 SMH 21 January 1876, p.7
ends'.

After years of litigation following his dismissal, he died in 1881. The concerted opposition and removal of Krefft from his position is an indicator of the strength of the conservative scientific opposition to Darwin’s theory in Sydney and the adherence to traditional interpretation of scripture among New South Wales’ scientists, although some of the opposition may also be attributed to Krefft’s publicly declared atheism, and his argumentative style, as seen in his responses to Mueller and Woolls. Although Clarke also opposed Darwin’s theory, he did not join the attacks on Krefft, accepting and respecting him as a scientific colleague. In 1869 Clarke had publicly applauded Krefft’s announcement of the find of a femur identified as belonging to an extinct bird, *Dinornis.*

Perhaps because of Clarke’s confidence that the scriptures and nature were expressions of the same truth and would, in time, be reconciled, unlike the others he focused on Krefft’s research rather than his beliefs.

The conservative religious beliefs of the prominent scientists in these decades are revealed in some presidential addresses to the new Linnaean Society of New South Wales, formed in 1874. The Society was established to foster scientific research and publish papers on subjects of interest in the colonies, for ‘the cultivation and study of the Science of Natural History in all its branches’. At the time the Royal Society of New South Wales was the only other significant scientific society in New South Wales, as interest in the Entomological Society of New South Wales, founded in 1862 with support from William John Macleay, later Sir William, was waning. Macleay (1820-1891), a cousin of William Sharp Macleay, was the first President of the Linnaean Society and continued his family’s interest and support of natural

97 http://australian_biography.academic.ru/KREFFT_johann_ludwig_Gerard (accessed 30/8/16)
98 SMH 11 June 1869, p.2
99 SMH 2 February, 1876, p.3
sciences in the colony of New South Wales. He was a Freemason and influential in colonial science and politics, and as a trustee of the Australian Museum he was involved in the dismissal of Krefft. He was elected to the Legislative Council in 1855 and to the senate of Sydney University in 1875. He wrote over seventy reports and papers on entomology, ichthyology and other areas of zoology and was among the first colonials to publish most of his work in Australian journals.

In Macleay’s first address as President of the Society in 1876, he gave a favourable assessment of the depth of intellectual and scientific interest in the colony. He spoke of the ‘more than average number of men of good and liberal education’, making enabling the inauguration a society for the cultivation of natural history. He went on to warn members about the now general belief in the ‘fashionable faith’ of Darwin’s theory of evolution, which, although it was ‘admirable’ and superior to Lamarck’s teaching which had gained so few proselytes, its ‘fascinations’ did not necessarily make it true, or ‘worthy of belief’. He conceded that many scientific men now accepted the principle of evolution but they disagreed on its process; he said that the ‘really scientific men…differ in reality a great deal more than they agree’. His own verdict was the theory was ‘not proven’.

Macleay listed works which he judged to be of a speculative nature, which had been published in the past year, including a paper by Darwin on insectivorous plants, and others by Huxley and Haeckel, pointing out that other more worthy works had been published, which were ‘more useful and less pretentious’. Curiously, given a policy on exclusion of non-scientific papers from the Society, Macleay’s invoking of divine intervention in nature

101 Macleay, W.J. *Linnaean Society of New South Wales* (1876) I p.84
102 Macleay, W.J. *Linnaean Society of New South Wales* (1876) I p.95, and reported in the *SMH* 2 February, 1876, p.3
103 Macleay, W.J. *Linnaean Society of New South Wales* (1876) I p.95
104 Macleay, W.J. *Linnaean Society of New South Wales* (1876) I pp. 94,95
appeared quite acceptable to the Society. He concluded his presidential address of 1876 with his view that fossil evidence supported a series of distinct creations with long intervening periods rather than a theory of continuous modification of form [evolution]; ‘the testimony of the rocks’ afforded proof of ‘many successions of distinct creations at long intervening periods’ rather than ‘continuous modification of form’.\textsuperscript{105} He advocated open minds in the study of nature, rather than trying to fit new discoveries into the theories of Darwin and others: ‘if the mystery of creation, is ever to be unveiled by man-if the plan of the universe or in other words the mind of the Almighty is ever to be ascertained by human means, it will be by a thoughtful study of the works of the Creator, and by a genuine searching for truth, unbiased by all previously conceived theories.’\textsuperscript{106} His address showed his belief was that of a natural theologian: the purpose of scientific studies was to learn more about the Creator and his plan through study of creation.

In the following year, at the 1877 annual meeting on 22 January, Macleay again voiced his opposition to those who mistakenly promoted Darwin’s theory as fact, commending the new book by Alfred Russel Wallace,\textsuperscript{107} which although presenting well-reasoned evidence in support of evolution by natural selection treated it only as a plausible hypothesis.\textsuperscript{108} He cited approvingly a presentation by Wallace as President of the Biological Section of the British Association for the Advancement of Science in 1876, in which Wallace argued for divine intervention in the formation of modern humans. Wallace had claimed that the fossil evidence of the apparently recent and rapid development of humans in their present form, together with their

\textsuperscript{105} Macleay, W.J. \textit{Linnaean Society of New South Wales} (1876) 1 p.96
\textsuperscript{106} Macleay, W.J. \textit{Linnaean Society of New South Wales} (1876) 1 p.96 also reported in the \textit{SMH} 2 February 1876, p.3
\textsuperscript{108} \textit{SMH} 24 January 1877, pp.7,8. This meeting was held on 22 January 1877, but the address in the proceedings is headed incorrectly January 1876.
current mental and moral natures and capacities, supported the notion that human development owed much to the direct intervention of God: ‘he [man] is in his mental and moral nature, his capacities and aspirations, so infinitely raised above the brutes, so his origin is due to distinct and higher agencies that such have affected their development.’ Macleay added, ‘This appears to me to be equivalent to a complete renunciation of the doctrine of Evolution’, although Wallace had only queried the inclusion of humans in the process. Macleay disparaged the new Phylogenetic [taxonomic] hypothesis of Haeckel based on evolution, referring to Haeckel’s works as ‘unintelligible and extravagant’. Macleay disagreed with Haeckel’s hypothesis that humans had come from speechless ape men, preceded by ‘hypothesetical men apes without tails like the orang’ following apes with tails and so on back through marsupials, lizards, fish, invertebrates worms, protozoa, specially singling out ‘these protozoa from hypothetical single-cell animals’ and these lastly from ‘hypothesetical \textit{spontaneously generated cytodes}’. This shows that Macleay objected to Haeckel’s inclusion of abiogenesis as ‘single-cell animals …from hypothetical \textit{spontaneously generated cytodes}’ in his Phylogenetic hypothesis. In fact, in Macleay’s view the chief scientific discovery of the year (1877) was the ‘entire disproof’ of abiogenesis by Tyndall who demonstrated that there was no spontaneous generation of life from a sterile chemical mix. Interestingly, Macleay did not cite Pasteur’s parallel study, carried out at the same time while Pasteur was in communication with Tyndall, perhaps preferring an English proof, or simply not reading French scientific reports. Macleay concluded that the

109 Proceedings of the Linnaean Society of New South Wales \textbf{1} 1877, pp.414, 415
110 Ibid, p.415
111 Ibid. p.413
112 Ibid. pp. 410, 411
113 Ibid. p.411 During the 1870s Tyndall corresponded with Pasteur and successfully repeated Pasteur’s experiments showing that in meat broth kept in sterile conditions no microbial growth occurred. James Bryant Conan, "Pasteur's and Tyndall's Study of Spontaneous Generation.," \textit{Harvard Case Histories in Experimental Science} 2(1957).
doctrine of spontaneous generation (abiogenesis) was accepted by some because it fitted in as the first step in the process of evolution of life, saying ‘it completely chimed in with the popular chimera of Evolution.’

Predictably, Macleay approved of the lecture of Thomas Wharton Jones (1808-1891), Professor of Ophthalmology at University College, London, from 1851-1881, delivered at the college, ‘Evolution of the Human Race from Apes-a Doctrine Unsanctioned by Science’ which argued that the apparently general gradation in form and structure of all living forms is no proof of evolution, but rather indicated the mode of action of God in creation: it was ‘the divine idea of an Almighty power.’

Annual presidential addresses in the following years reveal a cautious but increasing openness among these prominent scientists to accommodating Darwin’s theory of evolution, albeit modified to include divine design. In the presidential address of January 1878, the new President of the society, William John Stephens (1820-1890), alluded to the controversies arising from the theories of evolution and Haeckel’s supporting evidence from embryology, deploring the tone of the debate, the ‘violence in argument, and an impatience of opposition not common 20 years before.’ Unlike his predecessor Macleay, he conceded that some form of evolution, which he called ‘continuity of Creation’, was indicated, although to him its mode of operation was ‘inconceivable’. Like Macleay, he firmly dismissed abiogenesis, which, like evolution theory, Haeckel had supported, being ‘even more extreme in his views than Darwin’. Stephens rejected Haeckel’s proposal that the theory of abiogenesis must be accepted because the only alternative was an unscientific one, that the Creator had intervened in the creation of the first living creatures. Stephens commented:

114 Ibid. pp.411,412
115 Conan, “Pasteur’s and Tyndall’s Study of Spontaneous Generation..” p.410
116 Stephens, W.J. Linnaean Society of New South Wales (1878) 2 p.391
only fanatical evolutionists will join Haeckel in asserting that the other supposition of Autogeny as he calls it [abiogenesis] must of necessity be regarded as true, even though it be not proved (nay even if it be confessedly incapable of proof) because if it be not received, we shall be obliged to admit, though indeed, only for a single stage of the process of world formation, the otherwise gratuitous and quite unscientific hypothesis of the intervention of a Creator.117

This was Stephens’ only mention of a Creator; his conservative view of the role of the Creator at least in the beginning of life, if not through its evolution, may be inferred.

In the following year Stephens continued his attack on abiogenesis. Stating that cells were composed of carbon, hydrogen, oxygen and nitrogen, he maintained that they were also endowed with a special soul, presumably meaning a Vitalist force from God. He asserted that it was wrong to presume that this soul was a product or the sum of forces which the chemical atoms possessed: ‘this is neither science or Gospel; it is Mumbojumbo.’118 He continued his attack on ‘fanatical Darwinists’ such as Haeckel, seeing danger in their doctrines. He quoted Haeckel’s assertion that ‘politics, morals and the principles of justice will have to be conformed in accordance with natural laws only.’119 Stephens warned that Haeckel meant that religion as now understood must be eliminated, for Haeckel had said that recent knowledge in biology was irreconcilable with religion, ‘not only with the dogma of creation, but with that of a Providence or (even?) with a vague idealistic Pantheism.’120

117 Stephens, W.J. Linnaean Society of New South Wales (1878) 2 pp.391,392
118 Stephens, W.J. Linnaean Society of New South Wales (1879) 3 p.437
119 Ibid. p.438
120 Ibid. p.438
Stephens also objected to the claim of the ‘fanatical Darwinists’ that humans were part of the evolutionary process, that humans with their superior minds were ‘but a Chemical and Mechanical development of an Ape.’ However, he went on to make it clear that he was not criticising Darwin’s theory, and showed that he was gradually reconciling the theory with the doctrine of design, that is the design and provision of the necessary features and adaptations of each organism by the Creator. Stephens praised Darwin’s theory with some reservations, trying to incorporate the role of a Designer, calling it ‘a most brilliant, attractive and fruitful hypothesis, and [it] is in all probability true under various limitations which remain undetermined, and in combination with that belief in Design, which it is supposed by many to contradict.’ However, in his view the theory did not explain everything: ‘I protest against the presumption that it is a full statement of all the causes producing the amazing and overpowering variety, beauty and utility of organic structures.’ Stephens did not explain how the role of God in the design of living creatures could be reconciled with Darwin’s proposal that the process of evolution resulted from the action of natural selection on random variants in populations, but he was showing that the leadership, at least, of the conservative scientific body was trying to find ways of accommodating Darwin’s theory without denying the role of God in creation. He finished his speech with a warning to his fellow scientists of the possible consequences to society and to science of the atheistic demands of Haeckel and others for obedience to natural laws to the exclusion of all others:

…for all the wild speeches of the evolutionists, like the positivists before them may injure the moral foundation of society-Governments

121 Stephens, W.J. *Linnaean Society of New South Wales* (1879) 3 p.440
122 Stephens, W.J. *Linnaean Society of New South Wales* (1879) 3 p.439
123 Ibid. p.439
will act to prevent promulgation of doctrines with moral and political consequences for society. If so, the just freedom of science will suffer from the vainglorious liberties of the Scientists. If this so-called science threatens society, society will play the mischief with science itself.\textsuperscript{124}

Stephens’ concern about the public and political perception of scientists is very apparent.

It is significant that while the most influential scientists in the colonies, even the open-minded Clarke, opposed the theories, often on underlying theological grounds, those in Britain were developing the theories and embracing them, with their proponents Huxley, Tyndall, Hooker, Lyell and Darwin, as with Baden Powell in the 1860s, appearing to be relatively free from theological restraints. Even more notable is that some of the clerics and church leaders in the colonies, at least in the Anglican and Congregational Churches, were more open to accepting the theories, at least in part and trying to accommodate them into their theology, than were the scientists.

\textit{Accepting the science and seeking to reconcile it with theology}

For the clerics who were open to the theory of evolution there were two significant issues to deal with: first, how to reconcile evolution with their personal theology and that of their churches; and second, how to present this new accommodation to their congregations. In this section some of the ways of incorporating the new science into their theologies will be examined. Some attempted to revitalise natural theology by incorporating evolution as a proof of God’s existence.

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\textsuperscript{124} Stephens, W.J. Linnaean Society of New South Wales (1879) 3 p.440
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In Britain, the Anglican Church still embraced natural theology, although some of its clergy were seeking ways of incorporating evolution theory into it. The influential writer, clergyman and natural theologian Charles Kingsley (1819-1875) believed that evolution was God’s means of creation and confirmed the existence of God as Creator. He lamented the way orthodox thinkers had not continued the work of Paley in developing a scientific natural theology, and blamed this omission for the present divide between science and Christianity. Like Kingsley, the Anglican clergyman and botanist George Henslow (1835-1925), the son of John Stevens Henslow, Darwin’s mentor, also sought to use evolution theory to rehabilitate natural theology and criticised fellow clerics who refused to accept the truth of evolution; however, he agreed with Wallace in rejecting the proposal that humans could have evolved by the same process as animals.

The Anglican Frederick Temple (1821-1902), Bishop of Exeter from 1869, Bishop of London from 1884 and Archbishop of Canterbury from 1896, also believed that Darwinism did not conflict with natural theology and Paley’s design argument. For Temple, the very existence of evolution and of humans as a product of evolution confirmed the existence of God. He believed that natural selection was simply a partial expression of the intrinsic properties, physical, chemical and teleological, of matter which had been impressed on certain particles of matter at some time in history by the Creator, endowing them with life and which resulted in the evolution of the living creatures of the present. His argument could be seen as rejecting Darwin’s proposal that external factors such as environmental changes were the agents of natural selection, while supporting Huxley’s proposal of abiogenesis from

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126 Ibid. pp.90,91
128 Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900*. p.220
the original chemical particles. With respect to human evolution, Temple considered it possible that humans had evolved, not as a branch from the rest of species, but descended from one much earlier original form; in his view this would explain the enormous gap which separated human nature, with its spiritual and intellectual capacities, from all other creatures. 129

A prominent Scottish cleric who accepted the theory of evolution was James Iverach, a Christian Darwinist appointed to the chair of apologetics at the Free Church College in Aberdeen in 1887. Going further than Temple, Iverach interpreted evolution as evidence not only of the existence of God, but of an immanent Creator, present and active in creation. 130 Aubrey Lackington Moore (1843-1890), was another influential Christian Darwinist who embraced evolution as a demonstration of the continuing presence and action, the immanence of God. 131 He was a Fellow and tutor at St John’s College, Oxford, from 1873 and tutor at Magdalene and Keble Colleges until his death. 132 Like Temple he agreed that evolution was the only means that could justifiably be used to rehabilitate the argument from design. However, he took issue with Temple’s implication that after ‘one original impress’ of God’s will on nature things continued to make themselves. For Moore, this was a deistic argument and conflicted with Moore’s belief in an immanent and active Creator. Because it implied the immanence of God in nature and the omnipresence of his creative power, Moore asserted that Darwinian theory was in fact much more Christian than the traditional biblical account of special creation. He pointed out that those who supported a one-off

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129 Ibid. p.232  
130 Ibid. pp.253-259  
131 Ibid. pp.259-264  
132 Ibid. p.259
special creation with occasional interventions by God had failed to notice that this must also imply that God is absent at the other times.\textsuperscript{133}

In the Australian colonies, evolution as guided by God was embraced by a leading Tasmanian churchman, George Clarke, minister of the large Davey Street Congregational church in Hobart and Vice Chancellor of the University of Tasmania. He was unusual in Australia in joining Kingsley, Henslow, Moore and Iverach, in the proposal that evolution itself was proof of an immanent, present and interventionist God, still active in the process of creation. Clarke preached a sermon ‘From Man to Nature and from Man to God’ to the Australasian Society for the Advancement of Science meeting in Hobart in 1892.\textsuperscript{134} He praised the splendid service that science had rendered to religion in the nineteenth century, particularly through its elucidation of the theory of evolution. According to Clarke, science had restored to theology a vital truth which they had nearly lost: they could no longer think of God as an absentee watchmaker, for evolution had shown the immanence as well as the transcendence of God.\textsuperscript{135}

Although some clerics found in evolution confirmation of the immanence and continuing action of God in creation, for some scientists and churchgoers, their new understandings the complexity of life on earth and the immensity of the universe, while enlarging their image and awe of God, meant that such a God was unknowable. One influential British philosopher who believed that God was unknowable was Herbert Spencer (1820-1903), the author of the ten-volume \textit{System of Synthetic Philosophy} written between 1860 and 1896. Although he was a Lamarckian evolutionist, he was a member of the Darwin’s inner circle of friends and regarded by Darwin as

\textsuperscript{133} Ibid. pp.264, 265
\textsuperscript{134} Phillips, "Religious Response to Darwin."p.51, ANZAAS had been founded in 1888.
\textsuperscript{135} Ibid. p.51
the philosopher of evolution.\textsuperscript{136} His theological approach to science revealed in chapter one ‘Religion and Science’ and chapter five ‘The reconciliation’ in the first volume - \textit{First Principles of System of Synthetic Philosophy} (published in 1860) - was that neither the ‘Ultimate Reality’ of religion, nor the ‘Ultimate Reality’ of science was knowable, therefore they must be regarded together, and that by regarding these two things together the existence of a great ‘Unknowable’, ‘that through which all things exist’ was confirmed. This rather illogical argument he presented as a proof derived from both nature and religious tradition of the existence of God, however unknowable.\textsuperscript{137}

Some churchmen and lay people shared the view of Spencer that the new discoveries from science were confirming that God was infinite, but unknowable. Crowds of thousands in Melbourne, Sydney and Adelaide were attracted to lectures in 1890 by the visiting speaker, Henry Drummond, a Scottish preacher and science writer, who was a disciple of Spencer and shared his view that God was unknowable.\textsuperscript{138} Henry Drummond was the author of \textit{Natural Law in the Spiritual World} (1883), which promoted his ideas of evolution incorporated into Christian theology and supported the image of an infinite, awesome and unknowable God.\textsuperscript{139} He rejected biblical literalism, while defending the core beliefs of Christianity, and spoke about how the world of religion and spirituality related to the physical world and its natural laws, including evolution. His writing and lectures were very popular in the 1880s and 1890s among those seeking a broad and rational Christianity.\textsuperscript{140} According to Frame, following these lectures, evolutionary

\begin{itemize}
\item \textsuperscript{136} Moore, \textit{The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900}, p.153
\item \textsuperscript{137} Ibid. pp.166, 168
\item \textsuperscript{138} Ibid. p.224, Henry Drummond, \textit{Natural Law in the Spiritual World} (London: Hodder and Stoughton, 1883).
\item \textsuperscript{139} Moore, \textit{The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900}, p.224; Drummond, \textit{Natural Law in the Spiritual World}.
\item \textsuperscript{140} www.ccel.org/ccel/drummond
\end{itemize}
theory appeared to have established itself as the prevailing belief among religious believers in Australia.\^{141} This was more true of the Anglican and Congregational congregations than the other Protestant and Roman Catholic churchgoers. The Anglican bishops Moorhouse and Short had laid the groundwork of an open, liberal theology and dialogue in their churches in Melbourne and Adelaide, but to the more theologically conservative bishops and churchmen of Sydney Drummond’s presentations would have been challenging.

Hanson, writing in Adelaide in 1872, also believed the nature of the Creator was impenetrable. He commented that while some might infer the existence of a Creator from the evidence of design or force in the world, the nature of the Creator could not be learned from the effects produced. In his view, the Creator was infinite whereas Hanson himself was very finite and therefore unable to guess the intentions or nature of the Infinite.\(^{142}\) In Sydney, the eminent astronomer, R.A. Proctor shared the conclusion that God existed, but was unknowable. At the same time as people were grappling with new understandings of the vast age of the earth and the evolution of its creatures, the use of improved astronomical telescopes was challenging previous understandings of the immensity of the universe.\(^{143}\) Proctor delivered a series of public lectures in Sydney in 1880 on new discoveries in astronomy. In the last lecture of his second series, on 28 August, he remarked that some might question how much these new discoveries conflicted with the scriptural picture of the sky.\(^{144}\) He sidestepped the issue, saying that for him, the question did not exist, for he believed that science sought to learn the truth from the study of God’s works, he [like W.B. Clarke] was content that such

\[\text{References:}\]
\^{141} Frame, *Evolution in the Antipodes: Charles Darwin and Australia*. p.119
\^{142} The *South Australian Register* 10 April 1872, p.5
\^{143} William Lassell (1799-1880) had developed new reflecting telescopes with equatorial mountings, enabling the discovery of the planet Neptune, the moon Titan and many nebulae [www.britanica.com/biography/WilliamLassell](http://www.britanica.com/biography/WilliamLassell) (accessed 15/4/16)
\^{144} *Illawarra Mercury* 3 September 1880, p.4
truth could not conflict with truth learned from any other source. Furthermore, while science was demanding that people accept dramatic new discoveries in astronomy that were hard to understand - what he called the ‘utterly incomprehensible and inconceivable mysteries of infinite space and infinite time’ - scientists could not ask people to reject the ‘equally inconceivable’ idea that in company with endless material evolution there was infinite purpose. Proctor suggested that just as humans were powerless to conceive or comprehend the idea of an infinite universe, they could never comprehend an infinite being, ‘Almighty, All knowing, Omnipresent and Eternal’, with an inscrutable purpose, of which the material universe was the unexplained manifestation. He concluded by saying that science, in answer to the old questions about the nature of God, gave the answer that God was unknowable: ‘the Almighty, we cannot find him out.’

The Congregational minister Jefferis, now living in Sydney, disagreed with Proctor’s naming of God’s ‘infinite purpose’ as an ‘inconceivable idea’ in a sermon he presented on the following day at his Pitt Street church, entitled ‘The highest teachings in astronomy’. Jefferis, along with the Anglican bishops Moorhouse, Barry and Short, remained a leading representative of liberal Christianity in the colonies. Jefferis moved to Sydney in 1877 where he was active in denominational, interdenominational and social and political affairs, and continued his role as commentator on science and theology. In 1879 and 1880 he was chairman of the Congregational Union of New South Wales; in 1883 presiding at the intercolonial conference to mark the jubilee of Congregationalism in Australia and in 1888 he was a

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145 Ibid. p.4
146 Ibid. p.4
147 Ibid. p.4
149 Ibid. pp.133,134
major proponent of the ‘Religious Celebration of the Centenary of Australia’.\textsuperscript{150} Jefferis responded to the great public interest generated by Proctor’s lecture series, although he did not refer specifically to Proctor’s lectures in his next sermon. Rather, he expounded the design argument of natural theology: that it was impossible for a person to think of animal or plant life without thinking that it had been purposefully designed by the Creator.\textsuperscript{151} Yet in a veiled reference to Proctor he said, ‘Even the best astronomer must pass upwards to the Almighty Designer. He pointedly criticised thinkers whom he called the “knownothingists’ who denied the possibility of knowing God and who even questioned whether there was a God.\textsuperscript{152} This was a clear criticism of Proctor’s stance that while not denying the existence of God it was impossible to know God. Jefferis took the opportunity to give a direct reply to Proctor’s statements later in a letter to the editor of the \textit{SMH}, in which Jefferis reiterated the design argument that it was impossible for even an astronomer to study the immensity and contents of the universe without learning more about their Creator.\textsuperscript{153} To leave the Creator out of consideration because his plan and his purpose were not fully understood appeared to Jefferis as utterly unscientific, ‘as unscientific as it would be to refuse to study the unknown force of gravity because it is unknown.’ However, Jefferis was also concerned about the moral and pastoral issue arising from the denial that God was knowable, for he believed that what people wanted in their struggle against the darkness of the world was a God they could know and love, without whom they were left with the fatalism of despair.\textsuperscript{154} Jefferis’ criticism brought a reply from Proctor suggesting that Jefferis had misunderstood him and was attacking ‘a

\textsuperscript{150} Phillips, Walter 2006 James Jefferis in Sydney: his ministry at Pitt Street Congregational Church, 1877-1889 \textit{Church Heritage} 2: 119
\textsuperscript{151} \textit{Illawarra Mercury} 3 September 1880, p.4
\textsuperscript{152} Ibid. p.4
\textsuperscript{153} \textit{SMH} 2 September 1880, p.6
\textsuperscript{154} Ibid. p.6
straw God of his own making’. Proctor asserted that his chief purpose had been to show that the existence and infinite power and wisdom of the Deity, though inconceivable to our finite minds, must as certainly be accepted, just as are infinite space and infinite time. His question was whether people can find out the true nature of this Deity, and to that question his answer was no.

Three years after Proctor’s lectures in Sydney, the subject of the impossibility of knowing or understanding the God of the infinite universe arose again, this time in Melbourne in a controversial lecture 1883 by George Higinbotham. Higinbotham (1826-1892) had been the editor of *The Argus* from 1856-1859 and was regarded as the leading political and religious radical in Victoria. He was elected to the Legislative Assembly of Victoria in 1861, appointed as Attorney General from 1863-1868, to the Supreme Court in 1880 and in 1886 became Chief Justice. Like Proctor, Higinbotham declared that as new discoveries made with astronomical telescopes had enhanced knowledge of space and its contents, so the concept of God had become grander, rendering the church’s anthropomorphic view of God unacceptable. Moorhouse in reply in 1883, like Jefferis, disagreed with this, saying that the enlarged conception of the universe and of God made no difference to his understanding of the infinite nature of God, as infinite was infinite and could not be further enlarged. Moorhouse, however, argued that the only way humans could think about God and God’s actions was through using anthropomorphic terms and concepts such as mind, love and acting.

He rejected the positions of Higinbotham and Huxley and others as an

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155 SMH 3 September 1880, p.5
156 SMH 3 September 1880, p.5
158 Ibid.
159 *The Argus* 2 August, 1883, pp.9,10
160 *The Australasian* 29 September, 1883 pp.11,12
unviable stance, saying that contemplation of the infinite was important because it brought people into the sphere of freedom, wonder and worship, but also to the place where all art, poetry, music and religion were born, and which was essential for human wellbeing: ‘To turn aside from this, because we cannot know it as we know geometry, because the soul’s natural mode of apprehending is belief rather than knowledge, is to commit spiritual suicide.’\textsuperscript{161}

The issue arising from these protagonists - Proctor, Jefferis, Hanson, Higinbotham and Moorhouse - was whether the stance of accepting the existence of God while being unable to know or understand God was tenable. For those who were not clerics - Hanson, Higinbotham and Proctor - it was tenable; and although Walter Phillips labelled Proctor an agnostic, his was more the stance of a deist.\textsuperscript{162} The clerics, Moorhouse and Jefferis, found the infinite nature of God no barrier to knowing God. Jefferis took the position of a natural theologian, finding in the wise and benevolent Governor of the infinite Universe evidence of foresight and thoughtful care as when he looked ‘from the stupendous proofs of design to the Almighty Designer’.\textsuperscript{163} Moorhouse was by nature and training a Broad Churchman,\textsuperscript{164} and his understanding of God was the rather more sophisticated concept of an infinite mind, not just creating, but inspiring humans to imaginative works such as poetry, art and music.

By the 1880s, acceptance of evolution of humans was generating new theological thinking about the nature of God and the human spiritual nature and soul. Some clerics were starting to consider the implications for the spiritual nature of humans that would follow if humans were indeed

\textsuperscript{161} The Australasian 29 September 1883, p.12
\textsuperscript{162} Phillips, "Defence of Christian Belief in Australia 1875-1914."p.406
\textsuperscript{163} SMH 2 September 1880, p.6
\textsuperscript{164} Badger, "Moorhouse, James (1826-1915)."
products of evolution, as directed by God from lower life forms. Could the human soul be a product of evolution? Had the spiritual life evolved along with physical evolution in humans? At what stage in human development did the soul come into existence? Did God intervene in evolution to implant the human soul? In England, Frederick Temple considered that the spiritual life of humans could have been given to man by a direct creative act of God as soon as the human body had been sufficiently developed to receive it, and then presumably inherited by subsequent generations. Alternatively, he conjectured, perhaps the soul lies dormant from the beginning, awakens at conception and then springs into self-expression later.165

In Sydney, Canon Hey Sharp conceded that even if it were proved that man were part of the evolutionary process it would not trouble him, because the image of God in humanity was spiritual, not bodily.166 This was an important idea, for many such as Clarke, John Bromby, Jefferis and Moorhouse at the time were unable to accept that the evolutionary process, made up of random variations acted on by environmental factors, could produce humans with minds and souls. This idea showed the way that humans could be admitted to be product of evolution, yet still, as stated in scripture, be formed in the image of God. How the spiritual nature and the soul evolved, or were implanted in the body to make the complete human, was unknown.

The issue of the spiritual nature and the soul was addressed by Thomas Roseby, who became minister of Marrickville Congregational church in Sydney in 1888. He believed that regardless of how humans had come into being, God’s direct action must have implanted the soul.167 Jefferis too believed that God’s intervention was necessary to account for the spiritual

165 Moore, *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America, 1870-1900*. p.232
166 Phillips, "Religious Response to Darwin." p.46
167 Ibid. p.49
dimension of human life. Even if Darwin’s explanation of the process of evolution of man was correct, Jefferis insisted, it could not account for human spiritual consciousness, ‘the wondrous consciousness which was the noblest heritage of man.’ Using the language of evolution, the Sydney geologist Charles Smith Wilkinson, described conversion to the faith as a spiritual evolution, telling the Sydney Church Congress of 1889 that through spiritual evolution ‘the natural living soul’ was ‘created anew’ to become a spiritual being, ‘a Son of God, and an inheritor of His eternal kingdom’. He did not clarify whether in his concept the ‘natural living soul’ was a product of physical evolution. George Clarke in Hobart, like Wilkinson, also referred to a moral and spiritual evolution as the ‘Divine impulse’ worked though Christ and crude and imperfect notions of God gave way to better and nobler ideas of divine will and human destiny. The idea of the divine impulse working through Christ to increase human knowledge of the divine will and a greater accord between human mind and soul was also prevalent among a group of English intellectuals who were Broad Churchmen, including Thomas Arnold, head of Rugby School and Alfred Lord Tennyson. For example, Tennyson in his poem *In Memoriam*, refers to a blending of knowledge from nature with knowledge which comes from the divine, with reverence, so ‘That mind and soul, according well, may make one music as before.’

Even among the Australian churchmen who were able to accommodate Darwin’s theory into their theology, there were none in the Australian colonies in the 1870s and 1880s who accepted the abiogenesis theory of

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168 *Adelaide Observer* 25 May 1872, p.11
169 Phillips, “Religious Response to Darwin.” p.49
170 Ibid. p.51
172 Alfred Lord Tennyson, 1849 *In Memoriam* “We have but faith: we cannot know, For knowledge is of things we see, And yet we trust it comes from Thee, A beam in Darkness: Let it grow. Let knowledge grow, from more to more, but more of reverence in us dwell; That mind and soul according well, May make one music as before”
Huxley and Tyndall. The reason for this distinction may have been the belief that the change from inanimate object to living organism was much greater than the gradual change of one type of organism to another, which could be explained by the natural laws of evolution, albeit under God’s direction. The change from inanimate to living organisms, like the formation of the human soul, was deemed to be so great that the direct intervention of God in providing the life force was necessary. In 1872, Jefferis declared that although Darwin’s theory would in the future be regarded as ‘a profoundly philosophical attempt to interpret the laws of organic life’, Tyndall’s ‘rash hypothesis’ [abiogenesis] would be ‘consigned to the limbo of forgetfulness.’

Within the ‘intellectually accessible’ Anglican Church, Bishop Short had generally accepted the theory of evolution excluding humans in the 1860s, but he used his pastoral address to the Adelaide diocesan synod in 1875 to criticize Huxley’s proposal for abiogenesis and Tyndall’s support of it, without mentioning their names. Short referred to the theory as ‘biological atomic materialism’. In 1874, Tyndall had used his address in Belfast as the newly elected President of the British Association for the Advancement of Science to review the history of evolutionary theories, strongly supporting Darwin’s theory. He also alluded to the abiogenesis theory, referring to ‘primary atoms, endowed with every power of varied development.’ Tyndall, in a ‘pugnacious performance’, had also advocated that ‘all religious theories…must submit to the control of science and relinquish all thought of controlling it.’ Tyndall’s address had brought

173 Adelaide Observer 25 May 1872, pp.11
174 The South Australian Advertiser 28 April 1875, pp.2,3
175 The South Australian Register 28 April 1875, p.6. A lecture by Tyndall to the British Association, ‘Scientific Uses of Imagination’ which included his proposal and his support of Darwin’s theory was published in the SMH 3 January 1871, p.3
176 Tyndall’s Theology reported in Border Watch 7 April 1875, p.4
angry responses from Belfast clergy both Protestant and Catholic.\(^{178}\) Short too objected to Tyndall’s claim that atoms had the potential for forming life, that is, the suggestion that there was in matter ‘the promise and potency of every form and quality of life.’\(^{179}\) He concluded that Tyndall must be labouring under a hallucination to propose that the same process was involved in the ‘crystallization of salt [the spontaneous growth of salt crystals from saturated, inorganic salt solution] as in the construction of the eye and the composition of the Illiad.’\(^{180}\) In considering the ‘hallucinations’ of Tyndall, Short’s fear was that when natural science was pushed beyond what he called its legitimate sphere this would lead to deterioration of the perception and functions of moral reason. Short exhorted his clergy to obtain a fair insight into the current theories if they wished to influence the intelligent and educated classes, if only to point out to them the difference between experimentally determined facts and what were simply theories. He conceded that Tyndall had allowed that there must be a higher intelligence than his own in the universe, but Short assured his clergy that if the light of revelation were discarded the study of nature would not reveal God, for God would still be the unknown God.\(^{181}\)

The next day a correspondent in \textit{The South Australian Register}, J. Harry Haydon, defended Tyndall’s proposal, stating that Short had misrepresented Tyndall’s words.\(^{182}\) A person of that name was by 1883 a member of the Melbourne Harbour Trust and as treasurer signatory to its accounts for the government.\(^{183}\) Haydon argued that Tyndall had not claimed that the ‘primary atoms’ were self-formed, that rather he, with Darwin, traced all life back to one primordial, presumably living, form. Haydon was disregarding

\(^{178}\) Ibid. pp.14,22
\(^{179}\) The \textit{South Australian Register} 28 April 1875, p.6
\(^{180}\) Ibid. p.6
\(^{181}\) Ibid. p.6
\(^{182}\) The \textit{South Australian Register} 29 April 1875, p. 5
\(^{183}\) \url{www.parliamentvic.gov.au/Publications and Research}
the clear statements of Huxley, Tyndall and Darwin proposing that life arose from chemicals. Furthermore, Haydon continued, Tyndall was not against religion or God, rather he saw evolution as an expression of the power of God, for he had said ‘It is by the operation of an insoluble mystery that life is evolved, species differentiated and the mind unfolded…In fact the whole process of evolution is the manifestation of a Power absolutely inscrutable to the mind of man.’

**Introducing evolution to congregations**

Clerics in Melbourne, Sydney and Adelaide who had managed some reconciliation between evolution and theology were defending the theory and were bringing it before their congregations. The defence of the theory meant that biblical literalism needed to be challenged and a more liberal theology promoted. In Melbourne, John Bromby gave an evening lecture at St Paul’s cathedral in 1883, defending Darwinism and Darwin’s theory against those he called ‘vulgar atheists’, those who sought to use the theory to vilify and abuse religion. He pointed out that in most cases these attacks were against long-held dogmas, rather than core beliefs. Bromby had retired from his school ‘full of honours’ in 1874, but continued his public lectures, often, as before, through the Early Closing Association, on the subject of science and revelation. He explained that science was quite validly removing erroneous dogmas which had been formed by men in the past and conceded that this had shocked some believers. He defended scientists who were Christians against the suspicions and disparaging insinuations of the bigoted and uncharitable, saying that some of the enunciations of scientific

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184 *The South Australian Register* 29 April 1875, p.5
truths had been seized on and quoted out of context to serve mischievous ends. Bromby applauded the stance of Dr Harvey Goodwin, Bishop of Carlisle, who had urged his clergy to speak about the difference and the relationship between divine and human knowledge, and to refrain from rash and ill-informed comments about the new science. Bromby pointed out that Goodwin had conducted Darwin’s funeral at Westminster Abbey the previous year against some opposition, and he quoted Goodwin’s statement that this was the fittest place for the interment of the great observer of nature. Goodwin had used his address at the funeral to reassure the congregation that there was no necessary conflict between knowledge of nature and belief in God. Bromby went on to explain to his Australian audience how Darwin’s observations had led him to develop his theory. Although he conceded that the theory had offended many, it did not deny the action of a great ‘Creative principle’, of an over-ruling design and Providence in nature, and he emphasised that the magnitude of scale of working of natural laws clearly showed them to be manifestations of God’s great power. In spite of his defence of Darwin and evolution, Bromby firmly disagreed with the inclusion of humans in the process, acknowledging the discomfort arising from the representation of the human race as descendants of apes, ‘those hideous caricatures of humanity’. He assured his audience that this could not be true, because there was no evidence of any evolution in the physical characteristics of humans in the present era.\footnote{The Argus 12 November 1883, p.9}

By this time, Bromby’s views reflected the theology of his new bishop. With the arrival in 1877 of James Moorhouse (1826-1911), the opposition of Bishop Perry and Governor Barkly to the new theories, which had been the policy of the Church of England in Victoria in the 1860s, gave way to a more liberal approach to theology and interpretation of scripture and a radical change in
the attitude to the challenges from science.\textsuperscript{187} Described by his biographer C.R. Badger as ‘almost the antithesis of his predecessor Perry’, Moorhouse was an intellectual of distinction and a skilled administrator with the qualities of eloquence and leadership.\textsuperscript{188} He was a liberal thinker of the Broad Church tradition, welcoming biblical scholarship and rejecting verbal infallibility of the scriptures. He also welcomed scientific discovery, advocating the teaching of science even in primary schools and establishment of museums. Refusing to reject scientific ideas seemingly in conflict with biblical teaching, he supported frank discussion of scientific and religious topics and encouraged his clergy to do so.\textsuperscript{189} This liberal approach to scientific contradictions of scripture contrasted with some of his earlier views, as his first lectures published in England in the 1860s were attacks on Baden Powell’s contribution to \textit{Essays and Reviews}.\textsuperscript{190} In Melbourne, Moorhouse contributed a series of public lectures and publications on religious subjects as well as other topical issues such as water conservation, irrigation and federation. He attracted the criticism of the Roman Catholic archdeacon of Melbourne, Patrick Slattery, and other clerics for his refusal to offer special prayers to end the drought; instead, Moorhouse urged people to agitate for water conservation and irrigation.\textsuperscript{191} Irrigation was a major concern of Moorhouse and Presbyterian minister Charles Strong, who saw it as an agent of improvement of God’s kingdom on earth. They have both been designated ‘social Christians’, representative of a movement which blended millennial religiosity with evolution, politics and rational

\textsuperscript{187} Perry had returned to England in 1874, did not return to Australia and resigned in 1876. James Moorhouse was installed as bishop in St James Cathedral in Melbourne in 1877. Barkly had left earlier, in 1863 to become the Governor of Mauritius.

\textsuperscript{188} Badger, "Moorhouse, James (1826-1915).", \textit{The Age} ‘Archbishop Clarke’s tribute’ 12 April, 1915 p.10 and \textit{The Argus} ‘Memorial service and address by Dr Leeper’ 14 April 1915, p.11

\textsuperscript{189} Ibid.

\textsuperscript{190} Ibid.

\textsuperscript{191} Badger, "Moorhouse, James (1826-1915)."
principles. Moorhouse was not alone in rejecting prayers as a means of seeking intervention from God: Tyndall, Huxley and Spencer in Britain in their bid to secularise society were objecting to the Anglican and Presbyterian Churches appointing special days for prayers to combat diverse natural disasters including floods, a cholera outbreak and a disease of cattle. As early as 1854 Kingsley had preached that recent natural disasters, including a disastrous cholera outbreak, were not God’s punishment for sin; rather they were due to unhygienic living conditions. While Kingsley remained convinced of the efficacy of prayer, he declared that there was no use in praying for God to fix problems that had been caused by humans.

Interdenominational quarrels did not interest Moorhouse; his permission for John Bromby to exchange pulpits with Presbyterian Charles Strong in 1883 sparked controversy, as did his refusal to join the ‘bigoted howl’ against Rome. He worked hard with other denominations to support non-dogmatic scripturally-based religious education in state schools, and supported the claim of the Catholic Church for state funding for a separate school system. He agreed with the complaints of Attorney General George Higinbotham and some of the educated laity about the poor qualifications of local clergy, and soon after his arrival founded a new theology faculty and started construction of a new building for Trinity College at the University of Melbourne in 1878.

In spite of the improved openness to scientific issues demonstrated by Moorhouse and Bromby, in 1883 Melbourne witnessed another vehement

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195 *The Australasian* 29 September 1883 pp.11,12
attack from an unorthodox Anglican on the churches for their lack of interest in accommodating the new theories from Darwin, Lyell and Huxley into their theology and presenting them to their congregations; it was reminiscent of the criticisms that emerged in the ‘Science and Sermons’ controversy of the 1860s. The new attack on the churches was launched by George Higinbotham and provoked an immediate response from Moorhouse.

Higinbotham’s controversial ‘Science and religion’ lecture presented at the Scots Presbyterian church in 1883 championed the new findings from science and applauded their stimulation of the minds of educated people in the colony. The content of his lecture was less about science than about using the new intellectual perspective it gave to mount an attack on the clergy, on denominations, on traditional church practices and even church ownership of property. To accommodate the advances in science, Higginbotham proposed that fundamental changes were necessary in the churches. He maintained, as the astronomer R.A. Proctor had recently done in Sydney, that astronomy had recently expanded man’s conceptions of the universe and of God and demonstrated man’s much reduced place and importance in the wider universe. The order of the universe and the laws of nature had given educated laity a new conception of God: an infinite God who was not capricious, vengeful or anthropomorphic. The new concepts of God and the origin of humanity, arising from the theories of evolution and abiogenesis, he believed demanded a response from the churches, which had not been forthcoming. Echoing some of the complaints about the clergy from the ‘Science and Sermons’ correspondence in 1868, he claimed there was a growing division between the minds of the clergy and the educated laity in the Christian churches as well as a seething anxiety, even despair, in the

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196 The Argus 2 August 1883, pp.9,10
197 Ibid.
198 Illawarra Mercury 3 September 1880, p.4
minds of thousands of thinkers, both clergy and laity, about how the new theories from science could be accommodated into traditional understanding of the scriptures.\textsuperscript{199} Higinbotham’s anticlericalism went further. He claimed clergy of all denominations were the enemies of proper religious education of the laity, maintaining that churches and their clergy came between man and his maker, whereas lay people, using rationality and their intellects, could find God in matter, nature and science. From this criticism of clergy he excepted Bishop Moorhouse, whom he commended for his eloquence and understanding of the issues brought by science, and his sympathy with the difficulties of the laity in dealing with their clergy.\textsuperscript{200} For Higinbotham, it was significant that the laity was attending numerous public lectures on such subjects, but were not attending such talks if they were held in churches. This may have been true with respect to church buildings, however, public lectures on subjects related to science by clerics such as Moorhouse, Bromby and the visitor Henry Drummond were attracting large audiences, albeit at venues outside churches.

Higinbotham was even handed; he also criticised scientists for their attitude of reserve and deference to the churches, accusing them of abandoning the intellectual high ground of speculation to the churches. He may have been referring to von Mueller and Halford and their refusal to accept the theories of Darwin and Huxley. Then he accused the churches of not grasping the intellectual leadership that those scientists had ceded to them. He believed that the churches were losing their authority while some scientists were gaining authority by embracing the challenge of the new theories: ‘ecclesiasticism has become less aggressive and violent than it was even a quarter century ago, while science on the other hand, has gained confidence and courage in a proportional degree.’

\textsuperscript{199} The Argus 2 August 1883, pp.9,10
\textsuperscript{200} The Argus 2 August 1883, pp.9,10
Higinbotham called for the abandonment of creeds, pointing out the contradiction between modern science and the central doctrine and creed of the Christian churches that humans had fallen from a higher state of existence through sin, while evolutionary science proclaimed that humans had risen from a lower state to their present advanced state. This contradiction had been the argument of W.B. Clarke and others against evolution including humans in the 1860s. Furthermore, Higinbotham noted that death had appeared on this planet millions of years before man and his sin came into being and not, as stated in the Bible, because of the sin of the first man, Adam. He courted further controversy by declaring that many thoughtful Christians were now doubting the very existence of God:

At the end of the nineteenth century a very large number of the most cultivated, the most thoughtful, the most sober minded and the most upright men in all the civilised and Christian countries of the world are really unable to determine whether good and sufficient reasons can be found for belief in the existence of God and whether there is any basis for morality. 201

Thunderous applause had greeted many of Higinbotham’s statements and at the end of the lecture, the chairman, Charles Strong, said he was gratified to hear Higinbotham’s remarks about the clergy, for they were all true. He also agreed with the remarks about the laity, pointing out that the apathy of the laity hampered the operations of the clergy.

Charles Strong (1844-1942) was the popular minister of the large Scots Presbyterian church in Melbourne. His liberal theology and social reform agenda had already alienated the conservative Presbyterian Church leaders in Melbourne. According to his biographer, Strong was almost alone among

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201 The Argus 2 August 1883 pp.9,10
clergy in Victoria with an educated interest in the biblical criticism and the philosophy, such as that of Hegel, coming from Germany in the middle decades of the century and expressed in Essays and Reviews by Jowett and others.202 While by 1880 many in the Church of England in Britain were accommodating the new knowledge from biblical criticism and science into their theology, according to Badger, most Protestants in Victoria still believed that the Bible was verbally inspired and free from any error.203 This was not true of Moorhouse and some of his clergy, and differs from Higinbotham’s assessment of the local laity, at least the Anglicans, as rather more liberal. Cable mentions in particular the Presbyterian clergy and laity of Victoria, who were quite indifferent to the theological problems arising from Origin and Essays and Reviews which were disturbing Europe at the time.204 Strong’s theology was influenced by the theses implicit in Essays and Reviews, that orthodox Christian views and beliefs were at odds with the views of educated men, so that reconciliation was needed and new truth including truth from science was not to be feared because all truth is of God. Furthermore, Christian faith was not dependent on the historical accuracy of scripture and miracles, prophecies and so on; none of these things were needed as evidence or proof of the truth of Christianity, because such proof lay in the influence of the faith on the hearts of men.205 Strong believed, like Higinbotham and Moorhouse, that unless churches could accommodate new knowledge they would lose their hold on men’s minds.206 For Strong, theology was a continuing process of development which arose from the effort to set the facts of moral life and religious consciousness in relation to what is known from science and history, ‘an attempt to construct a theory of

202 Badger, The Reverend Charles Strong and the Australian Church.
203 Ibid. pp.210, 216.
204 Ibid. p.211
205 Ibid. p.216
206 Ibid. p.212
the universe from the point of view of religion.’207 His liberal views on interpretation of scripture and on Christian doctrine formed the argument of a series of essays in 1878 and 1879 published in the liberal *Presbyterian Review* (edited by the Reverend William Henderson) and in an article on the atonement in the *Victorian Review* in 1889.208 Such liberal views expressed in public clashed with the biblical literalism and strong commitment to doctrine and creed of the Presbyterian Church and so conflict was inevitable. He was threatened with a charge of heresy and with the intervention of the General Assembly of the Presbyterian Church. Declining to appear before the Assembly to affirm his orthodoxy, he was declared in 1883 to be no longer a minister of the Presbyterian Church of Victoria.209 He and some of his supporters and former congregation in 1884 formed the Australian Church, a church without creeds and articles.210

Higinbotham’s call for more freedom to discuss views such as his own provoked a spate of criticism in pamphlets, lectures and sermons.211 Moorhouse refused to join in the criticism. In an address to the Church of England Assembly212 on 22 September 1883, he praised the intellectual strength and idealism of the judge and commented on the attacks on the church in Higinbotham’s lecture, calling that lecture the most urgent question of the day to be answered ‘in these stormy and troublous times’.213 But Moorhouse disagreed with Higinbotham’s view of creeds, asserting that the church needed to defend its creeds and resist any moves to change them in spite of the alleged doctrinal difficulties coming from science, if only as a

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207 Ibid. pp.224, 225
209 Badger, *The Reverend Charles Strong and the Australian Church.*
210 Ibid; Badger, "Strong, Charles (1844-1942)."
211 Badger, "Moorhouse, James (1826-1915)."
212 Church of England Essemblies were later called synods.
213 *The Australasian* 29 September 1883, pp. 11,12
‘defence against the doctrinal innovations of young and ardent clergy.’ Moorhouse had conceded soon after his arrival in 1877 that his younger clergy were poorly qualified; that complaints ‘among the educated Laity are loud and almost universal’ and he set about correcting this failing. But by 1883 he refuted Higinbotham’s charge that Australian clergy may have had the knowledge of science but were not teaching the ideas to the educated laity, by listing some of his own recent lectures on water conservation and irrigation and sermons. The liberal Bishop of Newcastle, Dr Josiah Pearson, joined the condemnation of Higinbotham’s assertion that clergy were out of touch with modern science by quoting references to works by clerics on the relation of science and religion, and suggesting that Higinbotham revise and correct his lecture.

Against the background of the ‘spectacular and public clashes over religion’ in Melbourne, the controversies of evolutionary theory and biblical criticism and their implications for church and society formed part of the content of two new journals, the Melbourne Review and the Victorian Review, which were published from 1876 to 1886 and described by historian Jill Roe as ‘extraordinary’ in their expression of controversial views on politics, religion and social issues. The Melbourne Review was edited by H.G. Turner, a banker and Unitarian, who wrote articles against creeds and conformity in religion on a platform of ‘seeking practical righteousness and the discovery of truth.’ In the first issue of the Victorian Review Marcus Clarke contributed an article, ‘Civilisation without Delusion’. As well as asserting that most intellectuals by this time rejected much of orthodox Christianity, ‘among the best intellects of our time how few there are who freely accept

214 Ibid.
215 Badger, "Moorhouse, James (1826-1915)."
216 The Australasian 29 September 1883, pp. 11,12
217 Phillips, "Defence of Christian Belief in Australia 1875-1914." p.405
218 Roe, "Challenge and Response: Religious Life in Melbourne, 1876-86." pp.151,149
219 Ibid. p.151
the dogmas of the priesthood’, he suggested that the miracles on which traditional Christianity depended should be replaced by the scientific revelations of Darwin, Huxley and Tyndall.220 This drew responses to both Reviews from Moorhouse and other clergy supporting the truth of miracles, including a letter from the Wesleyan cleric W.H. Fitchett. Fitchett continued to assert the Wesleyan Church’s position maintained from the 1860s, of denying the need to address any of the challenges from science to scripture including miracles.221 As his colleagues had done earlier, he distanced his church from the debates by asserting that the clergy realized that their task was to save souls not to satisfy minds. Roe concluded that to many of the readers of the reviews it seemed that many people felt Christianity was not meeting their needs and was based on untruths.222 However, the subscribers to the Reviews represented a minority who were questioning the traditions of the Churches and the prevailing political and social values of Victorian society, so their perception of Christianity was probably not shared by the many who chose not to subscribe to the Reviews.

Some of Higinbotham’s criticism of the churches for contributing to the conflict with science was echoed by the Chairman of the Adelaide Congregational Union, W. Roby Fletcher, in 1878. Fletcher attributed some of the blame for the conflict to the attitude of the churches, conceding that Christianity had not treated science well in the past. He admitted that the churches had arrogantly demanded that they held the sole truths about nature and the universe and had only reluctantly ceded some ground to science. He stated that ‘religion had only retreated unwillingly from territory which she had no right to permanently occupy...we welcome new truths. But we must be permitted to be shy in our treatment of

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221 Ibid. p.150
222 Roe, “Challenge and Response: Religious Life in Melbourne, 1876-86.” p.150
223 Ibid. p.150
hypotheses.’ Jefferis too had some sympathy with this criticism of the churches; he even saw some hope in the skepticism and unbelief expressed by some of their opponents. In response to a lecture at a conference of the Evangelical Alliance in Adelaide which predicted the demise of Darwin’s ‘materialist’ theory, he defended the honest doubt of a seeker of truth, preferring it to certainty for or against the theory, because doubt ‘was the struggle of an earnest heart that was looking at God’s truth and trying to grasp it, while simple belief often amounted to uncritical acceptance.’

In spite of this criticism of the churches, in Adelaide the gradual acceptance of uniformitarianism and Darwin’s theory which had begun in the Anglican Church in the 1860s under the guidance of Bishop Short had continued in the 1870s. The opposition to Hanson of some conservative clerics in Adelaide in the 1860s was not generally supported by influential members of the public; within a few years Hanson’s radical views did not prevent him serving as acting Governor of the colony for a short period in 1872-3 and being elected as the first Chancellor of the University of Adelaide in 1874, two years before his death, serving with Short as Vice Chancellor.

Short had encouraged his clergy to engage with science and had made no complaints in his synod addresses that this was lacking. The leadership of Adelaide’s Congregational church showed a similar openness to accommodating evolution. At a meeting of the Congregational Union and Home Mission in Adelaide in 1886 the chairman, the Reverend Joseph Coles Kirby, spoke of evolution as an act of God. ‘Evolution has shown that God has probably evolved all the varied forms of animal life, and likewise of vegetable life, from a few germs-perhaps from one solitary germ.’ He also accepted the idea of evolution of life from ‘dead’ matter, meaning

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223 The South Australian Register 10 April 1878, p.1
224 Phillips, “Religious Response to Darwin.” pp.42,43
225 Anonymous, "Hanson, Sir Richard Davies (1805-1876)."
abiogenesis, musing that perhaps there was no such thing as dead matter, rather, a life force pervaded all matter in the cosmos, and evolution applied to ‘cosmical’ as well as earth bound matter.\textsuperscript{226} This extension echoes something of pantheism, Vitalism, and the cosmic proposals of \textit{Vestiges}, which had been dismissed by many in the previous decades. The chairman of the Congregational Union of New South Wales, the Reverend J.F. Cullen, shared the view of his Congregational colleague. In 1882, he declared the people could believe ‘that evolution is the great law and method of creation...without violating the indispensable idea of a Creator.’\textsuperscript{227}

Also in New South Wales, Maitland’s Wesleyan minister, George Martin, broke with his church’s dogmas by affirming the uniformitarian theory and contrasting it with catastrophism in geological processes, assuring his listeners that ‘there had been no convulsions or cataclysms, as the older geologists believed, but the sure, slow, steady operation of law producing changes in configurations of continents upheavals of mountains.’\textsuperscript{228} He agreed that the same uniformitarian process in the form of evolution may apply to the living world, as long as the process was attributed to God’s action and it was understood that humans had been created separately. ‘In the process of creation, however, there had been continued progression from the lower form of organization to the higher, till at last man appeared.’\textsuperscript{229} Evolution did not account for the moral nature of man, his speech and reason, ‘his glorious and imperial endowment of improvable and progressive reason’. All of these attributes attested to the direct action of God, he assured his listeners, as man could not have such a nature if simply the product of evolution from dead matter. But Martin rejected the process of abiogenesis, preferring a Vitalist explanation for the beginning of life, which

\begin{thebibliography}{9}
\bibitem{226} \textit{The South Australian Advertiser} 14 April 1886, p.6
\bibitem{227} Phillips, “Religious Response to Darwin.” p.45
\bibitem{228} \textit{The Maitland Mercury and Hunter River General Advertiser} 6 November 1877, p.6
\bibitem{229} Ibid. p.6
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he attributed to a direct manifestation of the living energy of the living
God.\textsuperscript{230} He disagreed with the German scientist Haeckel, whose work,
translated as The History of Creation was published in 1876. Haeckel
supported Darwin’s theory but did not acknowledge God’s directing
hand.\textsuperscript{231} This position Martin dismissed as naked, undisguised atheism, ‘it
most unceremoniously bowed God out of his own universe.’\textsuperscript{232} He finished
by declaring that the Mosaic cosmogony had not been rendered negative and
obsolete by science, but the book of revelation had been corroborated by the
book of nature inscribed on the rocks of the world.

In Sydney, Barker’s successor as Anglican bishop from 1884 to 1889, Alfred
Barry, was more active than his predecessor in restating Christianity
incorporating modern knowledge, but his free interpretation of Christian
tradition caused unease among the conservative evangelicals of Sydney.\textsuperscript{233} In
his relatively short tenure, Barry made little headway against the leaders of
the diocese in matters of accommodating science. His successor as bishop
from 1890 to 1897 and later Archbishop of Sydney from 1897 to 1909 was
William Saumarez Smith (1836-1909), an orthodox Evangelical. According to
his biographer, K.J. Cable, when Smith arrived in Sydney in 1890 he was
dismayed by the disunity of his Church and disarray in local religion, so
much of his time was spend in dealing with fear of Anglo-Catholic practices,
including ritualism, and with the antagonism between his Church and the
Roman Catholic Church led by Cardinal Moran.\textsuperscript{234} Although his personal
interests included astronomy and botany there is no evidence of his

\textsuperscript{230} Ibid. p.6
\textsuperscript{231} Ernst Haeckel, The History of Creation, English Translation, 6th edition ed., 2 vols. (New York:
D. Appleton and Co, 1914).
\textsuperscript{232} The Maitland Mercury and Hunter River General Advertiser 6 November 1877, p.6
\textsuperscript{233} Breward, A History of the Churches in Australasia. Badger, "Moorhouse, James (1826-1915)."
p.76
\textsuperscript{234} K.J. Cable, "Smith, William Saumarez (1836-1909)," Australian Dictionary of Biography,
engagement with the issues of evolution and abiogenesis.\textsuperscript{235} It was left to Sydney’s clergy to take the lead in the debate finding ways of informing their congregations of the new theories from science, as they had under the leadership of Clarke in the previous decades.

The Anglican Canon Hey Sharp, warden of St Paul’s College at the University of Sydney, invoked evolution as God’s method of creation in a lecture to the new Christian Evidence Society in 1885.\textsuperscript{236} Evolution, he asserted, was simply about the method of creation, and so it was not an attack on Christian beliefs and it ‘had no hostile bearing upon the essence of religious belief’.\textsuperscript{237} Furthermore, the theory of evolution could not destroy belief in God as Creator and nature as his creation: it was ‘powerless to deny the existence of a Creator, nor can it undermine the force of argument from design.’\textsuperscript{238}

Congregational minster, Thomas Roseby, also preached evolution, attributing its action to God’s guidance.\textsuperscript{239} Roseby had a doctorate in law as well as being an amateur botanist and astronomer. He gave a series of four lectures at Camden College near Sydney on ‘The genetic unity of nature viewed in a theistic and Christian light’, an exposition and defence of Darwin’s theory of evolution.\textsuperscript{240} He explained that the development of life on earth was the ordered action of a divine intelligence, and like Moore and Iverach in Britain and George Clarke in Tasmania, he regarded this as the work of an immanent and interventionist God.\textsuperscript{241} He assured his listeners

\textsuperscript{235} Ibid.
\textsuperscript{236} Phillips, "Religious Response to Darwin." p.46. The Christian Evidence Society had originally been founded in Britain in 1860 by Evangelicals to help counteract the threats they perceived coming from science and biblical criticism to Christian beliefs (Finnegan, "Science and the Bible."
\textsuperscript{237} Ibid, p.46
\textsuperscript{238} Ibid. p.46
\textsuperscript{240} Ibid.
\textsuperscript{241} Phillips, "Religious Response to Darwin." p.48

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that although God’s action and purpose was behind evolution, for example in the development of the eye, this did not compromise the action of the laws and the order of nature.\textsuperscript{242} His proposal for ‘an ordered action of a Divine intelligence operative in nature’, and a purpose in the process, did not reflect Darwin’s theory of random variations and selection by environmental factors. In spite of Roseby’s claim to be championing evolution, as Phillips has pointed out, Roseby was really restating Paley’s argument from design: the design of the eye, although the product of evolution, confirmed the existence of God as the designer.\textsuperscript{243}

By the 1880s, a consensus was developing among many leading churchmen in Britain and some Australian church leaders such as Congregational clergy Jefferis, Cullen, Kirby and Roseby and the Anglicans Hey Sharp, Moorhouse and Short, that as scientific support for the theory of evolution increased, the process of evolution could be accommodated and introduced to congregations as the manifestation of God’s continuing role in creation in the world. This accommodation required compromises both with scripture and with Darwin’s proposed mechanism of evolution. First, it required the continuing process of creation of species to be freed from the constraints of literal interpretation of the Genesis account of creation completed in six days, a freedom which the Presbyterians, Methodists, Unitarians and Catholics were unable to accept. Secondly, it meant rejecting Darwin’s proposed mechanism of natural selection by environmental factors, instead attributing to God the guidance of the process of evolution. Finally, the logical extension of evolution to include humans, as proposed by Darwin and Huxley, was excluded by most clerics. Even if God could be seen to be acting by providing the variations and the environmental factors, the ruthless struggle of nature with only the fittest surviving and the weak being destroyed,

\textsuperscript{242} Ibid. p.48
\textsuperscript{243} Ibid. p.48
should have shaken this comfortable new accommodation of God’s action guiding evolution. Certainly the benevolent nature of such a God could have been questioned.

According to *The Argus*’ article of 1890 the theory of evolution was still being keenly discussed, and in certain quarters was still opposed just as strongly.\(^ {244}\) However, it claimed, many thinking people, especially young people, ‘all of the youngest students of biology, as well as the more intelligent portion of the public’, had begun to adopt the development theory.\(^ {245}\) Whether the growing acceptance of the theory was due to growing public acceptance of the science or the attribution of the process to God by some church leaders is difficult to determine, but church attendances can be examined for any negative impact. Using data taken from tables compiled by Jefferis,\(^ {246}\) Mol,\(^ {247}\) and Smith,\(^ {248}\) it can be shown that there was no significant rise or fall in attendances of the churches in the 1870s and 1880s when church leaders began declaring their openness to the new science in Victoria and in New South Wales. The proportion of those claiming to be Anglicans who attended their principle services of the day in Victoria from 1871 to 1881 increased slightly from 15.15% to 16.44%, increasing again to 20.16% in 1891, including most of the years of Moorhouse’s bishopric (1877-1886).\(^ {249}\) At the same time, however, among the churches which opposed the new science, the proportion of Presbyterians who attended their worship increased dramatically from 39.5% to 56.33% in the 1881 figures. This increase may have been in part due to the popularity of the liberal views of Strong in the Church up to his dismissal in 1883, because it was followed by a decline to

\(^{244}\) *The Argus* 26 July 1890, p.9  
\(^{245}\) Ibid. p.9  
\(^{246}\) Figures taken From Appendix IVa,’Average Church Attendance in New South Wales at ten yearly intervals, 1850-1900, W.W. Phillips, ”Christianity and Its Defence in New South Wales Circa 1880-1890” (A.N.U., 1969).p.446  
\(^{248}\) Smith, ”Religion and Freethought in Melbourne, 1870 to 1890”. pp.3,4  
\(^{249}\) Mol, *Religion in Australia*. p.10
41.81% in the 1891 figures. No similar spike in attendances appeared in New
South Wales (see below) so the spike cannot be attributed to any more
widespread trend in the Presbyterian Church. A large proportion of
Victorian Wesleyans and other Methodists attended their worship and their
attendances did not change significantly from 89.25% in 1871, to 78.89% in
1881 then increasing to 87.65% in 1891, indicating no change in support for
the teachings in these denominations. The proportion of Roman Catholics
attending mass increased from 23.13% to 34.31% then to 49.6% in 1891,
showing no decrease in the proportion of attendees due to the Church’s
conservative position, and reflects an increasing number of practising
Catholics at a time when both their numbers and their proportion of the
Christian population of Victoria increased.250 Between 1860 and 1874 the
proportionate increase in nominal Christians in Victoria was 5% greater than
the increase in population, and much of this was due to the increase in the
total number of Roman Catholics attending church.251

While in Victoria in 1886 35% of the total population attended churches
regularly, in New South Wales only 24% did. In New South Wales the
proportion of Anglicans who attended their principle services was steady
from 1871 to 1891 at 17%. Presbyterians always had lower attendance rates
than in Victoria, slightly increasing from 22.4% in 1871 to 26.79% in 1891, and
Roman Catholic attendances were steady from 35.7% to 38.12%.252

These results show that there was no move of Anglicans away from
attending Anglican churches in New South Wales or Victoria attributable to
the liberal views of the leadership in Moorhouse and Barry. Nor was there
any discernible deflection to other denominations. In New South Wales
Anglican attendees made up 31.42% of all church attendees on 1860, 28.35%

250 Smith, "Religion and Freethought in Melbourne, 1870 to 1890". pp.3,4
251 Ibid. p.4
252 Mol, Religion in Australia..p.11
in 1870, 33.20% in 1880 and 26.84% in 1890. At the same time there was a slight decline in the proportion of Presbyterians in the churchgoing population from 12.52% in 1860 to 10.79% in 1890, and among Wesleyan and other Methodists from 26.37% in 1860 to 18.36% in 1890. There was a small increase in the proportion of worshipping Roman Catholics from 23.23% in 1860 to 31.94% in 1890 and the proportion attending the Congregational churches was steady at 4% between 1860 and 1890, with no significant change during the years of Jefferis’ ministry (1877-1889). Baptists, Salvation Army and others, including Jewish synagogue attendances were relatively small but all increased by 1890. Comparing overall church attendance figures for all denominations in New South Wales before and after the theories of Darwin, Lyell and Huxley became public knowledge in the early 1860s, there was a discernible increase between 1860 and 1870 which may have reflected public interest in the role of the churches in the controversies and thereafter attendances declined gradually. The total church attendance in New South Wales in 1860 was 25.65% of the population, rising to 34.56% in 1870, then slightly declining to 29.76%, 26.82% and 28.4% in 1880, 1890 and 1900 respectively.

In summary, the data available on church attendances show little or no sustained impact from their positions on science and theology, or from any other major controversies of the times.

253 Figures taken From Appendix IVA, ’Average Church Attendance in New South Wales at ten yearly intervals, 1850-1900, Phillips, ”Christianity and Its Defence in New South Wales Circa 1880-1890”.
254 Ibid. p.446
255 Ibid. Appendix IVa p.446
Separating science from religious beliefs to avoid conflict

The theological challenges of accommodating evolution were too great for some churchgoers, who were only able to accept the new discoveries and theories of science while keeping their religious beliefs by insisting that they be held separately, rather than trying to reconcile the two. Such a separation was the opposite of the mutually supportive relationship of science and religion which characterised natural theology, and had significant consequences for the future of science and for the churches. In Britain and America in the 1870s and 1880s, some believed that there was a very real conflict between the new theories from science and Christian religion, and that the only way to avoid damage to both was to separate completely the study and discussion of science and religion, and furthermore, this separation was urgent. According to the historian Frank Turner, Huxley, Tyndall, Bishop Samuel Wilberforce and Francis Galton thought so, and Lord Tennyson, Temple and Spencer agreed that there was conflict, but hoped reconciliation was possible.256 Books published in America with provocative titles such as John Draper’s History of the Conflict between Religion and Science, published in 1874, and Andrew White’s The Warfare of Science, published in 1896 with a preface by John Tyndall, certainly suggested serious conflict.257 However, the motivation of Huxley, Tyndall and others was the need for separation of science from religious constraints rather than inflaming conflict or using science to attack religion. As an outspoken advocate of the theory of evolution, Tyndall argued that religious sentiment should not intrude on knowledge of science ‘over which it has no command’.258

258 Tyndall’s Theology reported in Border Watch 7 April 1875, p.4
Phillips has pointed out that in Australia by the 1880s the statement that there was no conflict between religion and science was repeated with ‘monotonous frequency’ and was shared by Roman Catholic as well as conservative and liberal Protestants, although the Catholic Church, the Presbyterians and Methodists remained firm in their rejection of evolution.259 No conflict had been the position of Clarke, Jefferis, Short and even Perry since the 1860s. Hanson continued his earlier calls for separation of science and religious issues, while denying that there was any major conflict. Jefferis and Clarke regarded science as a worthy but separate manifestation of truth which always complemented revelation, and therefore the two could never be in conflict. The separation of science and religion that its proponents advocated was growing in Australia and around the world, and was exemplified by the rules for content of papers in the new Linnaean Society of New South Wales.260 Its first President, William John Macleay, criticized the philosophical musings of some of the overseas scientists ‘English and foreign, who confounded physics and metaphysics, and substituted transcendentalism for a plain statement of facts.’261 He pointed out that this was the only exclusively natural history society in New South Wales, contrasting it rather disparagingly with the Royal Society of Sydney which mingled some excellent scientific papers with others ‘not of a scientific character’, presumably referring to some of its papers which included theological and philosophical content.262 Indeed, the strictly scientific nature of the purpose and papers pronounced acceptable by Macleay contrasts with Clarke’s definition of the purpose of the Royal Society of New South Wales. In his address as Vice-President in 1866, he proclaimed the natural theology underlying the scientific work of the Society, saying that its members would

259 Phillips, "Defence of Christian Belief in Australia 1875-1914." p.405
260 Macleay, W.J. Linnaean Society of New South Wales (1878) 1 p.85 , reported in the SMH 2 February, 1876, p.3
261 Macleay, W.J. Linnaean Society of New South Wales (1878) 1 p85, SMH 2 February, 1876, p.3
262 Ibid.
be ‘contented if we are but able to add but one grain to that enduring pyramid which is now in the course of erection as the testimony of Nature to the Truth of Revelation.’

The separation of science from theology and philosophy which Macleay and others called for had the perhaps unintended effect of reducing the contributions of clergy scientists to the scientific world. These decades saw the virtual disappearance of clergymen naturalists as authors of scientific papers in the Australian colonies, as in Britain. In his 1925 presidential address reflecting on the first fifty years of the Linnaean Society of New South Wales, R.H. Cambage noted that the chief contributor of papers in geology in the first ten years (1874-84) was the Roman Catholic priest Julian Tenison Woods, and that of the first fifty botanical papers by ten authors, no less than thirty four were written by clergymen, including Tenison Woods and William Woolls. In contrast, from 1890, only one clergymen, T. Blackburn, was listed in his notes as an author in any category.

There were few scientists among the clergy who took the place of Clarke, Woolls and Woods in the colonial churches. This may in part reflect the change in the training of clergy, now concentrating on developing their skills as professional ministers, with less of the general education previously received at Oxford and Cambridge. None of the universities in Australia, Sydney (founded 1850), Melbourne (1853) and Adelaide (1874) offered theology studies as part of a broader education, so all training of local ministers was undertaken by the denominations in their own theological colleges. The Anglican Moore College operated from 1856, and trained clergymen from as far away as Melbourne, reinforcing an evangelical ethos

263 Proceedings of the Royal Society of New South Wales 1 1866 p.27
in both colonies until Trinity College was founded in Melbourne in 1872. The training at Moore College, for example, was highly focused, consisting of ‘bible based … in depth theological training’, supported by a major theological library. Anglicans had opened Christ College in Hobart in 1846 and Roman Catholic, Lutheran and Presbyterian colleges were opened in the 1840s. Nonetheless it was not until the later decades of the century that locally trained candidates became ministers in any of the churches.

The parallel professionalization of science was also a major contributor to the demise of the clergyman naturalist and, arguably, of natural theology as the motivator for research. W.B. Clarke’s biographer, Ann Moyal, has pointed out that Clarke was disadvantaged in gaining scientific recognition and honours due to his lack of professional scientist status: as a clergyman, he was regarded as an independent amateur researcher. Scientists with fewer publications, but with prominent professional institutional appointments, such as Julius Haast, Provincial Geologist of Canterbury, New Zealand, and twenty-two years Clarke’s junior, and James Hector, Director of the New Zealand Geological Survey and thirty-six years Clarke’s junior were elected fellows of the Royal Society of London, ten years before Clarke.

The disappearance of the clergyman naturalist from the 1880s onwards, at least as measured by memberships and publications in the Australian scientific societies, reflected a worldwide phenomenon. In his book The English Parson-Naturalist, Patrick Armstrong traced the highly significant contribution of Anglican clergy to scientific and local naturalist societies in Britain from the eighteenth century onwards. He noted that clergy

265 Breward, A History of the Churches in Australasia. pp.56,57
266 www.moore.edu.au/history (accessed 29/8/16)
267 Breward, A History of the Churches in Australasia. pp.56,57
268 Turner, “The Victorian Conflict between Science and Religion: A Professional Dimension.”
269 Moyal, The Web of Science. pp.48,49
270 Turner, “The Victorian Conflict between Science and Religion: A Professional Dimension.”
membership and influence in natural history societies declined as total memberships grew, starting in the late decades of the nineteenth century and continuing into the twentieth century.\textsuperscript{271} The Geological Society of London, the world’s pre-eminent geological society, had eight clergymen among its fifty-five founding members in 1807, and four of the first twenty Presidents were in holy orders, from 1824 to 1841, but after that there was a gap until Thomas George Bonney became President in 1884.\textsuperscript{272} After 1884 no clerics have been President.\textsuperscript{273} In Australia, the Royal Society of New South Wales had only one clergyman as Vice-President - W.B. Clarke from 1861 (in its predecessor the Philosophical Society of New South Wales) to 1878. As the Philosophical Society of New South Wales it had 309 members from 1856 to 1867, of whom 18 were clergymen.\textsuperscript{274} The astronomer William Scott, warden of St Paul’s college, was a long-term member, from 1865 until his death in 1917, having served as honorary secretary from 1867 to 1874 and honorary treasurer from 1874 until 1878;\textsuperscript{275} however, there were no clerics serving as Presidents from 1878.\textsuperscript{276} The Royal Society of Tasmania listed eminent clergy as office bearers, members and contributors in the 1870s and 1880s but not after 1890. Bishop Bromby chaired meetings in 1878, and read a paper on ‘water supply in relation to disease’ in that year. Bromby and Archdeacon V.P. Davies are listed as Vice-Presidents of the Society in 1878 and members in that year included Daniel Murphy, Catholic Bishop of Hobart Town and amateur astronomer, and the Reverend George B. Richards, President of Horton College in Ross. Bromby and Davies retired as Vice Presidents in 1879, but were re-elected as members. Bromby was again on the council in

\begin{itemize}
\item \textsuperscript{271} Armstrong, \textit{The English Parson-Naturalist a Companionship between Science and Religion}. p.146
\item \textsuperscript{272} Ibid. pp.110,111
\item \textsuperscript{273} \url{www.geolsoc.org.uk/About/History/Past-Presidents} (accessed 20/9/16)
\item \textsuperscript{274} Tyler, P.J. (2010) \textit{Science for Gentlemen, the Royal Society of New South Wales in the Nineteenth Century} Journal and Proceedings of the Royal Society of New South Wales 143 29-43
\item \textsuperscript{275} A.P. Elkin, “The Challenge to Science, 1866; the Challenge of Science 1966,” in \textit{A Century of Scientific Progress, the Centenary Volume of the Royal Society of New South Wales} (Sydney: The Royal Society of New South Wales, 1966). p.21
\item \textsuperscript{276} \url{www.royalsoc.org.au/society/presidents} (accessed 22/3/17)
\end{itemize}
1881, but neither Bromby nor Davies were on the list of members from 1882. Bromby left for England in 1882.277 Tenison Woods and Mueller contributed papers to the Proceedings from 1874 to 1880 (on fossils, shells) and 1868 to 1880 (botany) respectively, but not after that.278 Tenison Woods died in 1889 and Mueller in 1896. The Australian and New Zealand Society for the Advancement of Science (ANZAAS) was founded in 1888, and its first annual meeting was held in Sydney that year. Mueller was President of its second conference held in Melbourne in 1889; however, no clergy appeared in the leadership lists after that date.279 The Royal Society of South Australia was formed in 1880, building on its predecessor the Philosophical Society of South Australia (founded in 1853).280 None of its Presidents were clergymen.281

The extremely busy lives of parish clergy in the fast growing Australian colonies may have been another reason for the change. In addition, it is likely that the vehement anti-evolution stance taken by clerics such as Tenison Woods and Perry in the 1860s, together with public criticism of lack of engagement with scientific issues from correspondents to The Argus, for example, may have contributed to a perception in the public as well as scientific journal editors, and even accepted by some clergymen, that science and religion did not mix. The anti-clericism expressed by Higinbotham and in newspaper correspondence particularly in Melbourne, and the sometimes unhelpful responses from clergy denying the need for engagement with science and attacking scientists as atheists, may have also contributed to reduced respect for clergy and any amateur contributions they might make to scientific societies. Amateur interest of clerics in studies of nature may

278 Ibid
280 www rssa.org.au (accessed 20/9/16)
281 Ibid.
have continued in these decades and later, but this was not reflected in publications in the scientific journals.

The public agnosticism of the respected scientists Huxley and Tyndall may also have made agnosticism, which sometimes appeared to be a transfer of worship from God to science, more acceptable and even fashionable to those seeking an alternative to religion; but agnosticism was not apparent within the scientific leadership in the colonies in these decades. Mueller, Clarke, Woods and the Macleays were conservative, orthodox churchgoers. However, according to Smith, among the public of the artisan and shopkeeper class, the challenge to the literal truth of the scriptures and rejection of the image of an Old Testament God perceived as angry, unjust and evil contributed to an increase in those rejecting church teachings and turning to atheism, agnosticism, Freethinking and secularism sometimes combined with radicalism, and spiritualism.282 The Liberal-Radical tradition was stronger in Victoria than in New South Wales or Queensland.283 The weekly radical and Freethought journal, The Liberator, in Victoria, published articles and letters from 1884 to 1904 attacking scripture and advocating atheism, secularism and Freethinking, and Melbourne’s Harbinger of Light (1870-1956) advocated spiritualism.284 In Sydney, Freethought was a new journal published from 1888, containing ‘modern thought, psychology, metaphysics, spiritualism etc’.285

282 Smith, "Religion and Freethought in Melbourne, 1870 to 1890", pp.192-208
283 Ibid. p.208
284 J. D. and van Arsdel Vann, R.T., ed. Periodicals of Queen Victoria’s Empire (Toronto: University of Toronto Press, 1996). p.52
285 Ibid. p.52
Embracing evolution

While some scientists and churchmen struggled to find ways of accepting evolution, in the 1870s and 1880s evolution theory was enthusiastically embraced by other scientists and developed further, incorporating the study of human heredity and forming the new science of eugenics and the related ideology of Social Darwinism. Social Darwinism derived from the philosophical writings of Herbert Spencer and was based on his extrapolation of the concept of survival of the fittest from the biological sphere to that of society and the state. 286 Interestingly, Spencer followed Lamarck’s theory of evolution rather than Darwin’s, so some have queried the use of Darwin’s name, yet it is known that Spencer and Darwin were linked through correspondence and shared assumptions about God, nature, society and history. 287

Francis Galton, a cousin of Charles Darwin, was the main proponent of eugenics, starting when he investigated the inheritance of human abilities including genius and disabilities. He had been impressed by Darwin’s writing on the breeding of domesticated animals and sought to apply similar principles to improving the human race. 288 He published ‘Hereditary Genius’ in 1869, then developed his concept further, naming it eugenics and in 1883 published Inquiries into Human Faculty and its Development. 289 In it, he proposed selective breeding for the human population, to improve the intellectual and physical abilities of the races he deemed the most worthy, and also proposed that those deemed ‘unfit’ should be discouraged from breeding. Charles Darwin had discussed sterilisation of unfit individuals and inferior races in Descent of Man but acknowledged moral issues, concluding

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286 www.victorianweb.org/philosophy/spencer/spencer.html (accessed 15/9/16)
288 Darwin, The Variation of Animals and Plants under Domestication.
289 Galton, Hereditary Genius. Galton, Inquiries into Human Faculty and Its Development.
that the superior races must bear with and support the products of the breeding of inferiors.\textsuperscript{290} Galton took his ideology further, suggesting that the science of eugenics should function as a religion, a way forward for the human race; this idea was supported by some intellectuals and atheists including George Bernard Shaw and Bertrand Russell.\textsuperscript{291} To ensure the continuation of the research and the ideology, in 1904 Galton endowed a research chair in eugenics at University College at London University. Galton also founded the Eugenics Society, and his successor as its leader was Major Leonard Darwin, a son of Charles Darwin.\textsuperscript{292}

Eugenics challenged some ideas of sin and what it meant to be human. Some of the mainstream churches approved of the concept of eugenics; for example, when the eugenics movement came to America both high ranking clerics and small town ministers of the Episcopalian, Methodist, Presbyterian and Baptist Churches embraced it, declaring that Christianity and eugenics were compatible, because both sought to strengthen and uplift humanity by seeking to remove human weaknesses.\textsuperscript{293} These churchmen saw eugenics as an answer to many social problems, for it was believed that heredity accounted for a wide range of social problems, from crime to laziness, drinking and more.\textsuperscript{294}

In the 1880s eugenics and Social Darwinism became new topics for discussion in the Australian colonies. According to Diana Wyndham, Social Darwinism was used to denote any policy justifying struggle and competition and was just as influential in Australia as it was in America and

\textsuperscript{290} Darwin, \textit{The Descent of Man, and Selection in Relation to Sex}. 2\textsuperscript{nd} edition, pp.133-140
\textsuperscript{291} Bertrand Russell, \textit{Icarus or the Future of Science} (London: Spokesman Books (2005), 1924).
\textsuperscript{294} Ibid. p.15 and Ward, Harry F. “Is Christian morality harmful, over charitable to the unfit?” \textit{Eugenics} 1 (December 1928): 20
The political leaders of the Australian colonies were ambivalent on the subject of eugenics; although it was much discussed and many powerful citizens in Australia supported eugenics, legislation was patchy and none was enacted before 1900. This contrasted with the situation in America, where legislation aimed at improving the genetic makeup of the population began with changes to immigration laws, in 1882 excluding ‘undesirables’ such as ‘idiots, lunatics and convicts, and Chinese labourers’ and in 1891 adding paupers, polygamists and felons. In Australia, politicians were concerned that eugenics encouraged the use of birth control, which was blamed for reducing population growth at a time when there were fears of the ‘yellow peril’, an invasion of Australia’s underpopulated north by Asians. Powerful institutions also opposed eugenics for different reasons. Medical doctors were concerned about the difficulty of obtaining informed consent for sterilisations, and about the increase in promiscuity and venereal diseases that could follow sterilisations. Scientific opinion was also divided on assumptions of racial purity, and civil libertarians were against arbitrary imprisonment of those being examined for sterilisation. There was strong Roman Catholic opposition to sterilisation by both the leadership and also the laity, not just because of the Church’s teaching against sterilisation. Many Catholics in the colonies were poor and according to Garton, many were supporters of the Communist and Labor parties which were opposed to what they termed the elitist definitions of unfit.

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295 Wyndham, "Striving for National Fitness: Eugenics in Australia 1910s to 1930s".
297 Ibid. p.244
298 Wyndham, "Striving for National Fitness: Eugenics in Australia 1910s to 1930s". p.12
300 Ibid. p.247
In the 1880s Galton’s ideas on eugenics were appearing in the newspapers in Australia. In Melbourne in 1884 *The Argus* reported from the British magazine *Macmillan* the concerns of Mr P. Mahaffey, a winner of a prize offered by Galton. Mahaffey considered eugenics an answer to the ills of society, for he believed civilisation was in decay. He blamed the education system for stifling the minds of students, saying that since intellectual ability was due to stimulation of the mind through learning as well as good nutrition of the brain, poor mental abilities due to lack of stimulation were being inherited by future generations. Consequently, the education system was losing the power to produce individual genius. In a similar vein, the *West Australian* in 1886 published a report from the British *Daily Telegraph* attributing the diversity of mental capacities of the population to their different nutritional status which was probably true, but proposing that the results of such nutrition, both positive and negative, were inherited through many generations from parents to children. In both cases the concept of eugenics - selection and breeding of the most able students - had incorporated the Lamarckian concept of inheritance of acquired characteristics, which Herbert Spencer had adopted and which Darwin’s theory excluded. *The Argus* reviewed Galton’s later book *Natural Inheritance* in 1889, finding its patient and detailed spirit of research joined to a ‘somewhat rash tendency to universal conclusions’. The reviewer, quite reasonably, distrusted some of the methodology Galton used, which included asking family members to classify the emotional tendencies of other members as a way of establishing inheritance of characteristics. The *Launceston Examiner* in 1884 and 1887 carried articles reporting Galton’s

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301 Wyndham, "Striving for National Fitness: Eugenics in Australia 1910s to 1930s". p.20  
302 *The Argus* 25 October 1884, p.13  
303 *The West Australian* 20 February 1886, p.5  
304 Francis Galton, *Natural Inheritance* (London: Macmillan and Co, 1889); *The Argus* 5 October, 1889, p.4  
305 *The Argus* 5 October, 1889, p.4
studies on inheritance of criminal tendencies and inheritance of good and bad temper. In Sydney, the study of inheritance of good and bad temper was also reported in an article in the Balmain Observer and Western Suburbs Advertiser entitled ‘The Laws of Heredity’.

Racism was evident in the Australian dialogue about eugenics. In Australia, the loose definition of unfit often referred to Aboriginals. Although an article in the Australasian in 1872 noted with alarm the physical degeneration of Aboriginal people exposed to the vices of the white population and declared that the degeneration was being inherited by successive generations, the deliberate extermination of the ‘inferior’ Aboriginal and Maori races was proposed by Henry Keylock Rusden. In an article entitled ‘Labour and Capital’ published in the Melbourne Review in 1876, he invoked the law of natural selection and survival of the fittest to justify this extermination. He conceded that this move would oppose ‘our favourite theories of right and justice’, but its overall benefit to mankind proved those theories right and justice false. This was an instance of the development of Social Darwinism’s ethical position of the greater good of the population being more important than the lives of individuals deemed unfit. The Age carried a leading article in 1880 justifying Aboriginal deaths from ‘European vices’ as an inevitable law of nature, saying that as an inferior race they were doomed to disappear. It agreed that this outworking of the law of survival of the fittest clashed with sentiments of human benevolence; however, it maintained that the result was clearly beneficial to mankind.

306 Launceston Examiner 15 July 1884, p.2 and 1 October 1887, p.2
307 Balmain Observer and Western Suburbs Advertiser 31 December 1887, p.3
308 Australasian 28 September 1872, p.8
309 Melbourne Review 1876 1 p.82
310 Ibid. p.82
311 The Age 11 January 1888 , p.4
A significant article appeared in Melbourne’s *Australasian* in 1883, ‘The practical side of evolution’, by ‘An Eclectic’.312 The writer was a keen supporter of Galton’s description of the chief result of his work in *Inquiries into Human Faculty and its Development*, which was to ‘to elicit the religious significance of the doctrine of evolution’, suggesting it imposed a new moral duty, ‘a greater sense of moral freedom, responsibility and opportunity’.313 ‘An Eclectic’ urged action on the ideas. He declared that those who had opposed Darwin’s theory were rapidly vanishing and found it incredible that only twenty-five years before, people held the view that all of the animal and vegetable life on earth was the result of special creation. Now that the science of evolution was accepted, it could form the basis of a new political, moral, social and religious system: ‘it is philosophy, it is religion, and they will soon ask themselves whether it is not also morality and polity.’ One of the actions in which he echoed Galton’s call was to implement a breeding programme for the human race, ‘to discover and expedite the changes that are necessary to adapt circumstance to race and race to circumstance…[and] to effect them mercifully’. Galton and ‘An Eclectic’ both criticised the indiscriminate breeding of the criminal class, which they claimed was perpetuating a ‘criminal caste’, and urged action; if such action were taken, it would extinguish, or at least greatly diminish crime. They blamed the indiscriminate breeding of ‘the criminal and the worthless’ on the traditions of Christian morality, the ‘old arrangements’ of society, ‘ruled as they have largely been by theological ideas.’

Another action advocated by Galton and ‘An Eclectic’ in developing the new science of eugenics was to remove the uncertainly of the present generation as to the efficacy of prayer as evidenced by their ‘hesitating opinion on the subject of theocratic interposition to suspend or to alter the course of

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312 *Australasian* 4 August 1883, p.3
313 Ibid. p.3
physical causation.’ An Eclectic’ pointed out that Galton had amassed an immense body of evidence against the efficacy of prayer, proving that it had no influence on weather, recovery from illness or disaster, safety at sea and more. ‘An Eclectic’ claimed that no church leaders, ‘neither the Pope of Rome nor the Archbishop of Canterbury, nor any intelligent Moderator of Presbyterianism or any one of their followers’, who had been educated in the law of cause and effect ever professed to believe that any result follows from prayer which can be statistically validated.314

In the face of such provocation against the outdated ‘theological values’ of society and against the efficacy of prayer, even the statement that leaders of the major churches did not believe in the efficacy of prayer, some significant public response to Galton and to ‘An Eclectic’ from churchmen would have been expected. However, searches of the major newspapers in Victoria, New South Wales, Tasmania and South Australia from 1870 to 1890 revealed very little.315 Although not an apparent response to the challenge to efficacy of prayer, in Melbourne in 1887 Bishop Moorhouse had voiced an opinion similar to that of ‘An Eclectic’, when commenting on his refusal to offer a prayer for the relief of drought, saying that God did not intervene in nature at the behest of humans. ‘Nature is a sphere of invariable law and this prayer, which is private intercession with God, has no office there.’316 For this opinion he was strongly condemned by the churches in Victoria, the Wesleyan Church317, the Presbyterian Church318, the Roman Catholic Church319 and even in the Anglican Messenger,320 indicating that, in spite of ‘An Eclectic’s’ claim, the mainstream churches in Australia generally

314 Australasian 4 August 1883, p.3
316 Southern Cross 2 December 1887
317 Wesleyan Spectator 17 March 1882
318 Presbyterian Messenger 15 April 1882
319 Roman Catholic Advocate 11 March 1882
320 The Church of England Messenger 22 April 1882.
supported the efficacy of prayer for God’s intervention in the processes of nature.

The Reverend Joseph Coles Kirby (1837-1924), chairman of the Congregational Union and Home Mission in Adelaide, in 1886 demonstrated why some Christians embraced the theological and moral implications of the new science of human heredity [eugenics], commending it as a way of understanding and excusing some human sin. In Kirby’s view, the proposal that both good and bad characteristics were inherited from forebears revealed ‘the bright side of heredity’, for no longer was the personal responsibility for sin so onerous, when the contribution of heredity, for example, the inheritance of a propensity to drink or lust, was taken into account.321 Consequently, he argued, it was encouraging to know that if a person with such heredity should fall into sin, he was not as guilty as one who inherited a lesser degree of such propensities. Salvation, in spite of sin, might still be possible. ‘The knowledge of the just limit of moral responsibility is to many the deliverance from a horrid nightmare.’322 His view of the heritability of sinful propensities, and the subsequent contribution of a person’s heredity to their sins was one which became widely held as the field of eugenics developed. There was an influential study in America by Richard Dugdale in 1887 of a family with the pseudonym Jukes which was widely read and often cited as demonstrating the heritability of vice, criminality and pauperism. Within the generations of the extended Jukes family were found to be numerous criminals, prostitutes and ‘feeble minded individuals.’323 Although the study actually focussed on poverty as the critical factor, the study was widely publicised by the eugenics movement as a ‘genetic cautionary tale’, influencing clergy,

321 _The South Australian Advertiser_ 14 April 1886, p.6
322 Ibid. p.6
323 www.eugenicsarchive.ca/discovery51509ab5a4209be5230000006, (accessed 12/9/16)
scientists, doctors, judges and lawyers in America and beyond to believe in
the heritability of criminal behaviour and vice.324

Roman Catholics resisted eugenics longer than the Protestant
denominations. The American *Catholic World* magazine published articles
condemning eugenics as far back as 1870. One 1870 article reviewed Galton’s
book, *Hereditary Genius*, concluding that it was defective in logic, insufficient
in methods, and ignored the central Catholic teaching that ‘all men are born
with equal natural rights.’325 The call for birth control by sterilisation of
the ‘unfit’ also contradicted Catholic Church teaching.326 Aside from the
criticism of eugenics from the Catholic Church, it appears that none of the
churches were concerned about the morality of the application of eugenics in
justifying elimination of individuals and races deemed unfit.

The lack of commentary from the churches in the 1870s and 1880s on the
claims of Galton and the Social Darwinists that they were aiming to replace
traditional Christian morality, even prayers, with a new system based on
mechanistic natural laws is surprising, but may be explained by several
factors. First, the leaders of the Wesleyan, Methodist, Presbyterian and
Roman Catholic Churches all opposed the theory of evolution including its
extension to humans, so its application to eugenics and Social Darwinism,
the findings of Dugdale and the statement of Kirby that heredity diminished
responsibility for sin and made it easier for a sinner to achieve salvation,
would have had no scientific or scriptural basis for them, nor relevance to
their mission of saving souls. Even those in the more open churches, the
Anglican and Congregational churches who accepted the theory of
evolution, generally did not believe it included humans, hence the
application of evolution to human heredity would also have seemed illogical

324 Ibid.
326 Ibid.
and irrelevant to them. Second, many of churchmen who had been active in the debate about evolution and may have commented on its extension to eugenics had left the Australian scene in the 1870s and 1880s. Bishop Moorhouse left Victoria to become Bishop of Manchester in 1887. There were no newspaper reports of any comments from John Bromby on eugenics, although The Argus reported the comprehensive defence of Darwinism and evolution in his 1883 Sunday evening lecture at St Paul’s cathedral.327 ‘Opifer’, the correspondent active in the Science and Sermons correspondence, had continued his pro-evolution correspondence to The Argus, commenting in 1876 that Halford’s ‘attempted refutation of the evolution hypothesis’ contained persistent and deliberate mistakes ‘committed in over anxiety to uphold what is absurdly considered scientific orthodoxy’.328 However, surprisingly, he made no comments on Social Darwinism or eugenics and as the decades wore on his scientific contributions dwindled: by 1888 he was writing to The Argus complaining about the delays in the suburban telegraph lines.329 There were no newspaper reports of comments from Bishop Charles Bromby in Tasmania, who returned to Britain 1881 or from Bishop Short in Adelaide who resigned his see in 1881 due to failing health and returned to Britain where he died in 1883.330

Newspaper searches also reveal no comments on eugenics or Social Darwinism from Jefferis, Clarke or Woods. Jefferis continued his teaching of liberal theology, with interests in social issues as well as science, but there were no newspaper reports of any comments on eugenics. Clarke had died

327 The Argus 12 November 1883, p.9
328 The Argus 11 November 1876, p.4
329 The Argus 8 May 1888, p.5
in 1878, having resigned as parish priest at St Thomas’ North Sydney in 1870.\textsuperscript{331} No public comments came from Tenison Woods, who left South Australia in 1872 never to return, continuing his geology in New South Wales, Queensland and overseas while involved in missions.\textsuperscript{332} Nor was there any comment from Hanson who sailed from Adelaide in 1869 for Britain, finishing and publishing his book of biblical scholarship, \textit{The Jesus of History}.\textsuperscript{333} He returned to Adelaide in 1870, but his interest was focused on current biblical scholarship and criticism rather than science, and his book \textit{The Apostle Paul and the Preaching of Christianity in the Primitive Church} was published in 1875.

By 1890 in Australia, Phillips contends that Protestant ministers in the major churches in the colonies had accepted the theory of evolution and adjusted their theology accordingly.\textsuperscript{334} This assertion is certainly supported by responses shown here from the Congregational and Anglican Churches, but not from the Protestants of the Presbyterian, Methodist, and Wesleyan Churches, or from the Unitarian and Roman Catholic Churches. In most cases those who were open to the theory of evolution, such as the Anglicans Moorhouse, John Bromby, Short, Roseby and Hey Sharp, and Congregationalists Jefferis, Cullen, Kirby and Roseby, had reconciled it with the scriptural account by accepting it as the mechanism by which God created all things and through which God worked out his purpose for creation and for humanity. Natural theology, which had been unchanged since the early decades of the century, had been revived by some clerics and was strengthened by the claim that natural law of evolution provided not only proof of the existence of an awesome God, but affirmed that God was

\textsuperscript{331} Phillips, "Religious Response to Darwin." p.50
\textsuperscript{332} Player, "Julian Tenison Woods 1832-1889: The Interaction of Science and Religion". p.231
\textsuperscript{333} anon, "Hanson, Sir Richard Davies (1805-1876)," adb.anu.edu.au/biography.hanson-sir-richard-davies-3710/text5821.

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immanent and active in his creation. On the other hand, for some such as
Spencer, Drummond and the colonial astronomer Proctor new scientific
knowledge about the immensity of the universe and the complexity of life
had led to the conclusion that God was infinite, unknowable and uninvolved
in the operation of the world and the lives of its people, yet for others,
including the clerics Moorhouse and Jefferis the infinite nature of God did
not render God unknowable, and raised concerns that such a belief would
take away the comfort and moral guidance that came from knowledge of the
nature and presence of God.

In comparison to Philips, Mozley claimed that it was not until around 1900
or even later that most in scientific and theological circles in Australia
accepted evolutionary thought. This was certainly true of the leaders of the
conservative scientific circles in Sydney and Melbourne well into the 1890s,
but, we we have seen, not among some leaders of the Anglican and
Congregational Churches in all of the colonies, who were open to
everoluntary thinking in the 1870s and 1880s and were introducing it to their
congregations. Nor was it true of many in the broader intellectual circles of
Sydney, Melbourne, Adelaide and Tasmania. On the occasion of Darwin’s
death in 1882 there had been articles in the *Victorian Review* and the *Sydney
University Review* whose authors accepted Darwin’s theory without
qualification. According to *The Argus* in 1890 and a correspondent who
supported eugenics in 1883, the theory of evolution was widely accepted by
the general public of the Australian colonies in the 1880s.

The many conflicts between science and the Genesis creation accounts had
resulted in proposals that the purpose of the writers of Genesis was to reveal
God and God’s actions to his people, not to write a scientific textbook. By

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335 Mozley, "Evolution and the Climate of Opinion in Australia, 1840-79." p.430
1890 many in the Anglican and Congregational Churches acknowledged that the Bible was not an infallible guide to science, but rather should be regarded as a source of spiritual and religious revelation. This acceptance gave theologians and scientists the liberty to apply new discoveries to augment and even correct details in the biblical account of creation. Clarke was one who was comfortable with the apparent conflict between geological discoveries and scripture, saying that the Divine mind and the dilemmas arising from Genesis were beyond human comprehension so man should not concern himself with the ‘incomprehensible Beginning’, but should freely interpret the subsequent history of species revealed by geologists in ‘sermons in stones’. Among the Nonconformists, Jefferis and Hanson shared the view that the Bible was not an infallible guide to science, but that it was a spiritual and religious revelation. The writings of leading Anglicans Clarke, Moorhouse and Short, support Phillips’ statement that by the end of the century most Anglican clergy had given up trying to reconcile the details of Genesis with modern and changing scientific findings. However, they represent only the leadership, not the parish clergy who had been criticized by Higinbotham for their ignorance and intransigence.

The decades of the 1870s and 1880s brought new challenges and competition to the churches. Agnosticism was advocated by British scientists such as Huxley and Tyndall, although it was not evident among the prominent scientists of Australia who were generally conservative orthodox Christians. Spiritualism and Freethought were gaining adherents, particularly in Victoria, and the science of eugenics was becoming a religion for some. Even so, and in spite of the debates and anti-church articles appearing in Australian journals and newspapers, and the churches’ loss of influence over laws regarding the Sabbath, marriages and education, approximately one in

337 Grainger, *The Remarkable Reverend Clarke*. p.64
three Victorians still attended the principal church service of the day in the 1880s.\textsuperscript{339}

The differences between the colonies in their interest and engagement with new scientific findings and theories which had been so obvious in the 1860s were disappearing by 1890. Although the evangelical bishops of Sydney, Barker and Smith, took little interest in scientific matters, the replacement of Perry by Moorhouse in Melbourne, had brought a new openness to science which matched the Anglican leadership in Adelaide and Tasmania. By the end of the 1880s the relationship between church and science, which had been one of mutual affection and support in the earlier decades, had been damaged by the new discoveries and theories from science, although the declarations of war by some such as Higinbotham, Draper and White were extreme over-reactions. Openness to accommodating scientific discoveries and theories where they did not trespass on basic church doctrine and theology was the path chosen by most Anglican and Congregational churchmen as the safest course through this disturbing new world. The Roman Catholic, Presbyterian, Methodist, Wesleyan and Unitarian churchmen chose the different path of adherence to the literal interpretation of scripture and rejection of any scientific discoveries or theories which conflicted with scripture. The time when the discoveries of science were interpreted and explained to respectful laymen by able natural theologian clerics was drawing to a close.

\textsuperscript{339} Roe, "Challenge and Response: Religious Life in Melbourne, 1876-86."p.166
8. Conclusions

During the period 1830-1890 when the new discoveries and theories from science were shaking the worlds of science and religion, life in the Australian colonies was undergoing as many social, political and economic changes as in Britain. New colonies were established in Victoria, South Australia, Western Australia and Queensland, each developing a characteristic social and intellectual culture; and by the end of the century the growing spirit of nationalism was moving the colonies towards federation and nationhood. Some clerics educated in Britain, but for whom preferred traditional British parishes were not available, sought opportunities in the new land. While some of them, such as Bishop Broughton, regarded the new land as a wilderness, a testing place reminiscent of the wilderness trials of the Old Testament Israelites; natural theologians such as Charles Wilton, and William Branwhite Clarke embraced the opportunity to study the land’s novel examples of God’s creation.

Since clergy from diverse backgrounds were serving in relatively isolated metropolitan areas in Australia which had been established for different purposes and which were developing their own characteristic cultures, some diversity in their theological thinking about the scientific discoveries in their new land and about the challenges to theology and science coming from Britain might be expected. Yet, although the Australian colonies were physically removed and socially and ecclesiastically somewhat separated from Britain and each other, the most conservative aspects of British theology and science dominated the churches and the scientific establishment of the colonies for much of the historical period covered by this thesis, with a few significant individual exceptions. The influence of
conservative clerical scientists teaching at British universities lasted longer in the colonies than in Britain, through the colonial clergymen they had taught and mentored. This thesis has examined the impact of new scientific discoveries and theories on the theology of these colonial clerics and their congregations, starting in the 1830s as the new geological theory of Charles Lyell arrived, and continuing through the theories of evolution including humans, abiogenesis and the new philosophies of social Darwinism and eugenics up to 1890. In this conclusion, the damage to the prevailing theologies and to the churches caused by the new scientific evidence and theories is first to be considered.

The demise of natural theology
The main casualties of the challenges from science in this period, both in Britain and in the Australian colonies, were in natural theology, scriptural geology and catastrophism; their reliance on biblical literalism; and the traditional image of an anthropomorphic and interventionist Father God. Also, for many churchgoers and the public in the Australian colonies, confidence in their churches’ ability and willingness to interpret scripture and science for their members was shaken, contributing to some loss of respect for the authority of the churches. The loss of authority of the churches was reflected in public criticism of the churches, their clergy and their creeds in Melbourne, and Hanson’s challenge to the biblical literalism and the traditional beliefs of his clerical audience and the Bible Society in Adelaide. The disharmony in the interpretation of scripture between the denominations, which was exacerbated by the attempts of the Anglicans and Congregationalists to accommodate the new science, also contributed to the diminution of the authority of churches in the colonies in the second half of the century and consequently their influence in matters of politics, law-
making, education, and social and moral issues. Confidence in the efficacy of prayer diminished as new discoveries pointed to a remote, non-interventionist Creator acting only through natural laws, if at all. After the 1860s respect and encouragement for the scientific contributions of amateur naturalists, many of whom were Anglican clergymen, diminished as both science and ministry became increasingly professionalised and natural theology dwindled in scientific respect.

The comfortable natural theology of their Church in the earlier decades of the century was challenged by the new theories of Anglican clergymen and scientists such as William Buckland, Adam Sedgwick, Charles Lyell and Charles Darwin, from the Anglican institutions of Oxford and Cambridge Universities. However, natural theology continued to dominate theological thinking about science in the Australian colonies, as in Britain, in the 1830s and through to the 1860s. Articles about new discoveries in astronomy and geology in the SMH alluded to these discoveries as manifestations of the Creator. The cleric and botanist Richard Taylor who arrived in Sydney in 1836 wrote that the fossil plants and epiphytic ferns he discovered in a Newcastle coal mine revealed ‘the wonderful contrivances of an all wise Providence’. The Presbyterian minister, John Lillie in Tasmania, like Anglican clergyman Clarke in Sydney, asserted that knowledge of nature improved spiritual health and helped prepare people for eternal life. Charles Wilton also encouraged the study of nature, believing that knowledge about the order in creation demonstrated God’s providential order in church, society and state as well as further enabling the use of the earth’s resources for prosperity, commerce and national expansion. The study of science gained support from political as well as church leaders as an antidote to the unbridled pursuit of wealth. In the 1840s the New South Wales government
established the botanic gardens and the Australian museum with prominent Anglican clergy and laymen making up much of their governing committees.

But the work of Charles Lyell in the 1830s had seen the application of what the historian Tess Cosslett termed ‘irreligious science’, which was continued by the evolutionists in later decades. The Baconian scientific method widely applied since the Enlightenment had led to the meticulous study of nature for its own sake, rather than to learn more about and glorify the Creator. Lyell’s discoveries of gradual and continuing geological processes supported his new uniformitarian theory of the formation of the earth, and together with his conclusions about the immense age of the earth, differed from the accounts of creation in Genesis and the chronology of the earth calculated from the Old Testament and accepted by the churches. Lyell did not try to reconcile his discoveries and his theories to scripture, unlike his influential contemporary, the scriptural geologist Buckland. At the time Buckland was attempting to reconcile geological evidence with the creation story of Genesis chapter 1, either by assuming that the six days of creation were not literal days, or that there had been a long period after God’s creation of the earth and the heavens, possibly ‘millions of years’, before the features of the dry land, waters and the rest of creation appeared, including the creation of Adam. Lyell’s interpretation of the fossil record showing the sequence and antiquity of extinct life forms and of the human race, further contradicted the biblical accounts of creation and of the Deluge, and provoked the opposition of the scriptural geologists and biblical literalists in Britain and the Australian colonies. British reconcilers sought to explain the sequence of creation suggested by the fossil record in different ways, including William Cockburn’s proposal of a series of divine creations and Owen’s successive and continuous creations.
As in Britain, Anglican clerics in Australia led the debates about the challenges from science to scripture and theology. In New South Wales Wilton presented his reconciler theology through his lectures and papers in Sydney and Newcastle from 1827. Arriving in the colonies in the 1840s and 1850s, Clarke, William Sharp Macleay, William Woolls and the Roman Catholic Julian Tenison Woods continued the traditions of natural theology and the reconcilers in the colonies into the 1870s, with varying approaches to uniformitarianism and to reconciling their science with scripture. Notwithstanding their work, the theological implications of the conflict between science and the literal interpretation Genesis were evident to many in the colonies in the 1840s. In New South Wales, its leading zoologist, William Sharpe Macleay, struggled with aspects of sequence of creation in Genesis which contradicted his scientific understandings; for example, he could not believe that vegetation was created before the sun. The Anglican clerics Clarke and Robert Allwood were reconcilers, but as Lyell’s uniformitarian theory became more widely accepted in the early 1840s Clarke moved from his previous catastrophism to commending Lyell’s first volume. As public interest in science grew from the 1840s the conservative natural theology of the Church of England Book Society lectures in Sydney was challenged by lectures on controversial subjects including science in the Mechanics’ Institutes.

As uneasiness about the conflict between science and revealed religion increased in the colonies in the 1840s, Anglican Bishop Broughton declared that the Church was not hostile to science, but he made it clear that science alone could not lead to understanding of truth, for that required the word of God. Clarke’s approach was to echo the calls from British academics John Herschel and Adam Sedgwick to keep separate the studies of science and religion to avoid the conflict that was becoming evident. Charles Nicholson
as Vice-President of the new Sydney Mechanics’ School of Arts in May 1840 also emphasized the separation he believed must lie between science and moral and religious issues, because their objects and phenomena were essentially distinct, and that it was as ‘unphilosophic’ as it was injudicious to apply the reasoning and results derivable from one to enquiries belonging to the other.

The British natural theologian William Kirby in the seventh volume of the Bridgewater Treatises, *The History, Habits and Instincts of Animals*, published in 1835, had declared his belief that just as nature could reveal religious truths, so scripture could reveal scientific truths. However, in New South Wales Wilton was concerned about those who would use scripture as the only source of learning about nature. Rather, like Herschel, he believed ‘the Bible was designed not to teach Geology but Religion - not the structure of the earth, but the way to heaven’. In the 1840s, Clarke declared that nature and scripture were separate books which contained complementary revelations about the Creator and he added a third source of revelation, the book of human nature. Government astronomer and cleric William Scott went further than Clarke and Wilton, insisting that the book of Nature was the only way to study nature, ruling out any valid contribution from scripture. Clarke responded by pointing out that although science could explain how nature worked it could not explain why, for that was the realm of theology.

Scientists like Lyell were proposing the study of nature for its own sake, without reference to its Creator, thereby rejecting the guiding principle and purpose of natural theology. During the 1840s, it went too far for Clarke and Allwood, who denounced it as the ‘infidel spirit of the age’; the thirst for intellectual display and idolatry of science, in which the scientist glorified himself and his achievement rather than the Creator. James Backhouse, the
Quaker and botanist who visited most Australian colonies in six years in the 1830s had noticed a similar trend, and deplored what he identified as the idolatry of sciences, rather than giving God the glory. There was a backlash from religious conservatives against this ‘infidel spirit’, bringing accusations that scientists were atheists and were making atheists because their findings contradicted scripture, and Clarke was forced to defend his fellow geologists and their motives. Clarke’s own theology was not threatened; he found the evidence for Lyell’s uniformitarian theory compelling, but admitted that it contradicted scriptural accounts as well as the generally accepted theory of catastrophism that the scriptural geologists had derived from scripture. He was content to look to the future for the resolution of the apparent contradictions, confident that God would provide more information and answers to the problem.

The biblical literalism which had always underpinned natural theology was dealt further blows by the publication of *Vestiges* in 1844, which extended the geological concept of uniformitarianism to the formation of the universe and to life on earth. Like Lyell’s uniformitarian theory, it contradicted the scriptural account of creation. *Vestiges* also confined the role of God to defining the natural laws which created and maintained the universe; essentially this was a remote, non-interventionist role for God. The sales of its many editions in Britain and New South Wales in the 1840s showed the interest of the public in both places in speculative science and its theological interpretation. *Vestiges* divided the natural theologians. On one hand there were the conservative catastrophists, adhering to biblical literalism and believing that nature revealed an interventionist Creator and operator God; and on the other hand, there were those who could accept that God was continuing to create and operate the universe by acting through natural laws. Some took that idea further, finding in the very existence of the natural
laws of evolution evidence of the Creator. The difficulty with this idea was fitting the observation of the ruthless and often destructive operation of natural laws with the traditional image of a benevolent Father God. The author of *Vestiges* had acknowledged this difficulty and admitted that he had no solution, saying that the present system must in fact be part of a larger whole, simply a stage in a ‘Great Progress’ as yet not understood by man.

*Vestiges*’ suggestion that humans shared a new taxonomic order with the apes and lemurs because they all used hands was widely rejected as unscriptural and offensive in the Australian colonies as it was in Britain, although it returned with more convincing scientific evidence in the work of Baden Powell in the 1850s and Darwin and Huxley in the 1860s. When *Vestiges* was published, the scriptural position that was generally accepted was that humans were distinct from the animals and specially created in the image of God. In an attempt to fit humans into a taxonomic system, George Campbell and his mentor Richard Owen, and Georges Cuvier assigned humans to a whole separate taxonomic class, not merely a genus, due to the unique method of their special creation. New South Wales zoologist William Sharp Macleay sought a greater separation, and in his Quinary system placed humans in a category between the angels and apes.

Clarke joined most British scientists in criticising the theology and the science behind *Vestiges*, but otherwise it was little mentioned in the colonial press until 1858, when reviews appeared of the book published by the eminent British Anglican cleric Baden Powell, *On the Study of the Evidences of Christianity*. In the work, Powell included his defence of the concept of evolution from *Vestiges*, including humans, and even suggested the development of life from inanimate chemicals. Powell acknowledged the conflict with scripture and sought to explain how humans could be formed in the image of God through an evolutionary process from a lesser creature,
proposing a primitive form of ape-like human which on receiving God’s gift of a moral and spiritual nature became a human formed in God’s image. The idea of an earlier race of lesser human ancestors that would explain the discovery of the remains of tool-using ancient humans together with the remains of now extinct animals was also supported by Sydney geologist John Smith and Melbourne cleric John Bromby in the 1860s, but criticised by Clarke because it contradicted the doctrine of the special, once-off creation of humans in the image of God.

Until the 1860s natural theology still continued to provide the framework and motivation for scientific study as a means of learning more of the Creator, but from the 1860s it was being denounced as false science by eminent British scientists, including Sir John Lubbock and Thomas Henry Huxley. At the same time, the biblical literalism it espoused was being undermined by Anglican clerics John Colenso and the authors of *Essays and Reviews*, who were introducing the English speaking world to German biblical criticism and its discoveries of factual errors and inconsistencies in some scriptural texts. Even so, other Anglican clerics in Britain continued to produce books on popular science espousing natural theology and published by SPCK until the end of the century.

A greater challenge to natural theology was to come from the detailed research in the 1850s and 1860s of Charles Darwin and Alfred Wallace which led them to propose natural selection as a plausible mechanism for evolution. Later in the 1860s the suggestions from Powell and Darwin were formally extended to include humans in evolution by Huxley and Lyell, and to include the original formation of life from non-living matter by Huxley and Tyndall. Whereas the speculations of *Vestiges* and their theological implications could be dismissed on the basis of poor science, the quality of the science produced by Darwin, Lyell and Huxley meant their science could
only be attacked for poor use of inductive logic. However, their work was attacked on theological grounds by many clerics and scientists both in Britain and the Australian colonies for undermining scriptural accounts of creation and the role of God, and for deliberately promoting atheism.

In the midst of the controversies in the 1860s Clarke was joined by Jefferis and Hanson in pleading for freedom for people to discuss the new issues raised by science and biblical interpretation in a calm and respectful way without being labelled infidels. In spite of their efforts, the reports from Britain of the aggressive support of Huxley, Joseph Hooker and Tyndall for Darwin’s theory, and the books of John Draper in 1874 and Andrew White in 1896 from America referring to ‘conflict’ and ‘warfare’, continued to foster the idea of an unavoidable conflict between proponents of science and religion. To avoid damaging disputes based on personal religious beliefs among members at scientific meetings, decisions were made to exclude scientific papers which included philosophy and reference to God and scripture from the new Linnaean Society formed in New South Wales in 1874, following the lead of the British Association for the Advancement of Science. The exclusion of philosophical and theological interpretations from reporting of scientific discoveries increased during the 1860s. The separation of science and religion was becoming formalised, with consequences to natural theology unforeseen by Clarke, Sedgwick and others who had advocated it. The professionalization of science which also grew from the 1860s, with appointments of scientists to government positions and universities in Britain and in the colonies contributed to the separation, and the amateur studies of clergy-naturalists were no longer encouraged by the scientific establishment. As a consequence, in Australia and Britain after the 1880s, public expression of natural theology, both by scientists and clergy, virtually disappeared.
The different reactions from the Australian churches

Despite the contribution of Anglicanism to the development of Baconian science in the eighteenth and nineteenth centuries and the Anglican affiliations of Darwin, Lyell and Huxley, Anglican leaders in Britain and Australia led the initial outcry against *Origin* and the new works of Lyell and Huxley. Accusations by Sedgwick and others of *Origin’s* implicit atheism, because it omitted any mention of a role for God in the process, led to Darwin’s insertion of an acknowledgment of the Creator in the second edition, but this gesture did not appease his opponents. In Australia in the 1860s there was a great contrast between the theological positions of the Anglican bishops, clergy and congregations of Melbourne, Adelaide, Sydney and Hobart with respect to the new science from Darwin, Lyell and Huxley. Bishop Charles Perry in Melbourne gave public lectures denouncing evolution as atheistic. Although he did not agree with much of *Vestiges*, he admitted its author had at least attributed the creation of the laws of nature to God, whereas Darwin had not. Perry sought to use scientific arguments to attack Darwin’s theory, as had his mentor William Whewell and teacher Sedgwick in Britain, although they all shared the main objections to evolution, which were its challenge to the verbal inspiration of scripture and its omission of a role for God as Creator and maintainer of the world. In spite of new scientific evidence from the publications of Darwin, Huxley and Lyell in the intervening years, the message of complete rejection in Perry’s public lectures between 1860 and 1869 remained the same.

In contrast, Anglican Bishop Augustus Short in Adelaide came to accept the evidence for Darwin’s theory. During the 1860s he moved from initial rejection of the theory of evolution to thoughtful acceptance, and he urged his clergy to learn more about it and accept some of its principles. Short was leaning towards the accommodation expressed by British clerics Kingsley,
Henslow and Temple, that evolution could be accepted as the process by which God created life on earth, through God’s law of natural selection of variations within populations.

Sydney’s Evangelical Bishop Frederic Barker acted differently from both of his Australian episcopal counterparts, displaying no interest in science and taking no part in the controversies. It was the Anglican clergyman Clarke who took the lead for his church in New South Wales, presenting the new discoveries and theories to the public, generally in an even handed way, yet with his own natural theological interpretation, through his articles in the *SMH*, public lectures and the formation of the Church of England Book Society. However, like his scientific colleagues and his British mentor Sedgwick, he publicly rejected *Vestiges* on both scientific and theological grounds: he stated that the transmutation of one species to another had not been proved, and the theory proved the Bible false. By 1849 Clarke was frustrated at the seeming public approval of *Vestiges*, which had reached its seventh edition. He called it ‘trash’ and wished it ‘buried in oblivion’. In giving public lectures he pointed out that Lyell’s proposal of the great antiquity of the human race subverted biblical chronology and like *Origin* was difficult to reconcile with natural theology. Furthermore, Clarke warned, their subversion of the scriptures could undermine the churches’ teaching and consequently the moral fabric of colonial society. Clarke felt obliged to defend the important contribution scripture had made to the moral advances of humanity. In his view, the progress of humanity consisted of a positive alternation between moral advance mediated by the scriptures and intellectual development. Clarke’s rejection of *Origin*, shared by his scientific colleagues in New South Wales, was partly because it lacked testable scientific evidence, but largely because Darwin had not attributed the natural laws governing the process to God. In particular, Clarke and his
fellow Australian scientists rejected any suggestion that humans had evolved from lower animals, even from a lower form of human, because of the central and scriptural dogma of the Christian churches that humans had been created once and perfect and had fallen through sin. Lyell’s argument that the earth was much older than the 4004 BCE supported the long periods of time demanded by Darwin’s theory of evolution, but was unacceptable to Sydney scientists Clarke, Professor John Smith and Governor Sir John Young, as it was to Woods in Adelaide, and McCoy in Melbourne because it appeared to contradict the chronology of the Old Testament used in Bishop Ussher’s seventeenth-century calculations.

Sydney’s scientific establishment was generally scientifically and theologically conservative. William John Macleay, in his presidential address to the newly formed Linnaean Society of New South Wales in 1874, rejected Darwin’s theory as providing little evidence to warrant its serious challenge to the scriptural accounts of creation and he completely rejected abiogenesis. Although in 1878 the next President, William John Stephens, conceded there may be some form of evolution, the rejection of abiogenesis by Sydney’s prominent scientists remained constant. This conservative scientific establishment ostracised Gerard Krefft, Curator of the Australian museum when he declared his support of Darwin’s theory and decried the ignorance of well-educated people in Melbourne and Sydney for their refusal to accept Darwin’s theory. Krefft blamed his support of Darwin and his publicly declared atheism for his dismissal in 1874.

Tasmania’s Charles Bromby, Anglican bishop from 1864, took an interest in science and promoted its study, but took no public part in the controversies. With the coming of the more liberal theology of Anglican Bishop Moorhouse to Melbourne in 1877, the difference in the theological positions of the
leaders of Anglican diocese with respect to evolution diminished, although Sydney’s Evangelical theology continued to differ from the more liberal theologies of the other colonies. However, by 1885 in a public lecture in Sydney Canon Hey Sharpe followed the lead of influential British Anglican clerics Temple, Kingsley and Henslow, and told his audience that evolution was theologically acceptable as God’s method of creation. Hey Sharpe could even countenance the inclusion of humans in the process, declaring that it was the spiritual nature of humans that was made in the image of God, not the physical body.

The Roman Catholic Church in Australia, as in the rest of the world, was bound by the papal encyclical of 1864 rejecting the ‘humanist and materialist’ pursuit of any science which was not authorised and controlled by the laws of the church. No separation of science and religion was acceptable. Irish bishops in 1874 repudiated the ‘blasphemies’ of the ‘professors of materialism’ Tyndall, Huxley and Hooker. Sydney’s Catholic Archbishop Roger Vaughan in 1879 declared there was no evidence for evolution, and the literal truth of the Deluge was reaffirmed in a brochure by Joseph O’Malley published in Melbourne. Julian Tenison Woods, priest and respected geologist, was obliged to overlook the simplest explanations for some geological discoveries to conform to his Church’s accepted interpretation of scripture. By the 1880s the new Pope Leo XIII took a more liberal view, declaring there was no essential conflict between science and religion; but there is no evidence of liberal views in Australia up to 1890, perhaps due to the predominance of conservative Irish Catholic clergy.

In Australia the representatives of the Presbyterian, Methodist and Unitarian churches whose views were reported followed the lead of their originating British churches in rejecting new ideas about the age of the earth, the creation and Deluge because they contradicted the scriptural accounts and
were regarded as atheistic. In the 1870s influential Presbyterians in Ireland and America had denounced Darwin’s work as essentially atheistic, and the work of Darwin, Huxley and Tyndall as pernicious dogmas. The Presbyterians were bound by their Westminster Confession so the preaching of a more liberal theology, which included openness to science, by their popular minister Charles Strong at the large Scots Church in Melbourne led to the threat of his trial for heresy and his expulsion from the Church. Strong subsequently founded the Australian Church, free of creeds and biblical literalism, the first new expression of Christian church in the Australian colonies. It reflected Strong’s theology, expressed as a continuing process of setting the facts of the moral life and religious consciousness in relation to science and history.

Like the Anglican Church, the Congregational Church in Australia was relatively open to new ideas from science, although in the 1860s influential ministers and individuals expressed widely differing views on the implications for theology and the verbal inspiration of scripture, in keeping with the variety engendered by their congregational polity. The Congregational Church was more prominent in Adelaide than in other parts of Australia, and its spokesmen on the issues of science were its clerics James Jefferis and geologist Francis Cox. In Adelaide, public interest in controversial issues of science and religion had been aroused by a positive and comprehensive review of *Vestiges* published in November 1845 in the *South Australian Register*, summarising its proposal for the gradual development of life forms under God’s law, including humans. More reviews reprinted from Britain followed during 1846, but little appeared after that.

Jefferis’ public comments on behalf of the Congregational Church were that scripture provided a spiritual and religious revelation, but with regard to
other matters scientific method must follow the light of reason and be
guided by the established laws of proof and rules of evidence. Just before
1860 Richard Hanson, a dissenter and Bible Society chairman, had presented
the first public lectures about the challenges to biblical literalism from
uniformitarian theory and Lyell’s extension of the age of the earth to
hundreds of thousands of years. Hanson felt it necessary to affirm his own
Christian faith while pointing out that Lyell’s work contradicted the
scriptural accounts of creation and Ussher’s traditionally accepted
calculation placing the creation of the world at 4004BCE. Like Jefferis,
Hanson declared the purpose of scripture was to provide spiritual and
religious revelation not scientific evidence. They both warned of the danger
to the churches if they ignored the new findings from science, and Jefferis
went further, naming blind adherence to literal interpretations of scripture as
a form of infidelity, an abnegation of God-given intellect and discernment.
Biblical literalism remained strong among some other clerics in Adelaide;
conservative Anglican and Presbyterian clerics and the Roman Catholic
Woods rejected Hanson’s questioning of the literal truth of scripture and
forced Hanson to resign as President of the Bible Society.

While Jefferis in Adelaide was more open and lectured and preached widely
on science and its theological implications, Melbourne’s influential
Congregational minister Anketell Matthew Henderson remained
conservative, demanding rejection of the new ideas from science. The more
liberal views eventually won and by the 1880s, prominent Sydney
Congregational ministers J.F. Cullen and Thomas Roseby, and Adelaide’s
Joseph Kirby, acknowledged evolution as the means by which God created.
Kirby also accepted a form of abiogenesis to explain the beginning of life.
Melbourne pre-eminent in the debate about science and religion.

Melbourne stood out as the place in which, from the 1850s, the public enthusiastically entered into the debate, aided by public lectures, articles and correspondence in *The Argus*. While in the 1840s the main Melbourne newspapers had published no articles about *Vestiges* or related issues, in 1855 a controversy involving public lectures and considerable newspaper correspondence broke out in response to a review published in *The Argus* of Powell’s book *Essays on the Spirit of Inductive Philosophy, the Unity of Worlds and the Philosophy of Creation* and its support of *Vestiges* and evolution. The same book, reviewed in Sydney in the *SMH*, stimulated no published comment at all. In one series of lectures at a Melbourne Mechanics’ Institute, medical doctor John Murray declared evolution, its inclusion of humans and abiogenesis, all absurd. He also conceded that he believed the scriptures were not necessarily literally true, rather they were poetic and symbolic. He was strongly upbraided on both counts by correspondents writing to *The Argus*. The compromise position, that God created by guiding evolution, was put forward by one correspondent, and although it was not true to Darwin’s theory of random variations acted upon by natural selection it gained further ground in the next three decades.

Public expression of passionate sentiments for and against the new science continued into the 1860s in Melbourne. Newspapers reported lectures presented at the Mechanics’ Institutes which attacked and ‘exploded’ *Vestiges*, while others venerated Darwin as a ‘great apostle of truth’. Darwin’s theory was denounced as atheistic to a gathering of young Presbyterians and in lectures to students at the University of Melbourne by Frederick McCoy. Huxley’s proposal of the close relationship between humans and apes was publicly and emotively criticised by anatomist George Halford as ‘written by a devil’. In a conservative alliance, in the 1860s
Anglican Bishop Charles Perry’s aggressively anti-evolution position was echoed by Governor Henry Barkly and Melbourne’s scientific community, compared with more measured responses from Anglican clerics in Adelaide, Sydney and Hobart. After a period of unsettled government, Perry and Barkly feared the social and moral disruption which might follow from undermining the authority of the church and of scripture. It is likely that Barkly and Perry also feared the eloquence and knowledge displayed in the press by those dissatisfied with conservative religious and scientific beliefs.

The natural theology of the time assumed that the order and purpose established by God in creation and recorded in the scriptures was reflected in a similar ordered hierarchy in human society and the Church. Consequently, any challenge from science to the scriptural account of creation was regarded not only as atheistic, but posed a threat to the order of society, its classes and the status of the Anglican Church. One of the correspondents in Melbourne’s Science and Sermons debate in 1868 went further, warning of the serious political and social danger posed by the theories of Darwin, Lyell and Huxley because they could contribute to an atheist-led revolution in the colony, more terrible than that which shook the old world to its centre at the end of the eighteenth century. This ‘tidal wave of revolution’, he feared, was sweeping around the world. Fears of political danger were shared by Sydney scientist, William John Stephens, who, as President of the Linnaean Society in 1879, warned that evolutionists posed a threat to the moral and political fabric of society, and if that threat continued, the government would act to curtail scientific freedom.

The considerable public interest surrounding controversial views in science, politics, religion and social issues which characterised the intellectual culture of Melbourne continued into the 1870s and 1880s and had no parallels in Adelaide or Sydney. This may be attributed in part to significant
demographic differences at this time. Sydney’s residents were on average older, and Adelaide’s population was much smaller, whereas the Victorian gold rushes of the 1850s had attracted many free settlers who had left Britain during the optimistic and intellectual climate which followed the Great Exhibition of 1851. The stimulating intellectual climate of Melbourne, however, did not influence the entrenched conservatism of the clergy, with very few exceptions. As pointed out by correspondents in *The Argus* and by Attorney General George Higinbotham, many members of the Melbourne public were better educated and more aware of current scientific and theological issues than were the clergy. In such a culture, the refusal of most clergy to take seriously and engage with the challenges to scripture coming from science, and Perry’s unchanged insistence on defending the literal truth of the creation accounts of scripture, had the unintended result of antagonising some in their congregations and disrupting the relatively comfortable relationship of churches, government and the public. The public storm of criticism of the churches for their lack of response to the challenges to the truth of the biblical creation accounts and the role or even the existence of God which started with the Science and Sermons correspondence of 1868, extended from the Anglican Church to include all denominations, their traditions, creeds and interpretations of scripture and had no parallel in any other part of Australia. The correspondence revealed a Melbourne public more prepared to engage with the new science and seeking to accommodate it into their theological thinking than their church leaders and the clergy; and it also revealed many clerics who saw no need to engage in the debates because it was not part of their mission to save souls. The antagonism to clerics and their churches revealed in the correspondence was not apparent in other colonies, except for a letter in the *SMH* in 1854 in which the writer blamed the poor performance of the Church of England and the want of zeal
in its clergy for the rise in infidelity and the growth of vice in New South Wales.

In Melbourne, although some of the anti-church sentiment was influenced by local clerical scandals, it was mostly driven by the perception that the churches had shirked their responsibility to interpret current ideas in the light of scripture for their congregations. In an editorial, *The Argus* joined in the criticism of the churches and clergy, warning that their influence with their members and the public would be lost if their lack of engagement continued. At the end of the decade, John Bromby, an influential and respected Anglican clergyman, stood out by contradicting Perry and presenting a more liberal interpretation of scripture. Bromby explained the discrepancies between scientific knowledge and scripture as the results of cultural intrusions and mistranslations of the texts, and suggested ways of reconciling the great antiquity of the earth and evolution with scripture. Although Perry was replaced by a more liberal and scientifically informed theologian in Bishop James Moorhouse, the damage to the credibility of clergy on the issues from science was done, and the attack on the Melbourne clergy and churches for lack of engagement with science was renewed with vigour by Supreme Court Justice George Higinbotham in 1883. Controversial articles appeared in the *Melbourne Review* and the *Victorian Review*, both founded in the late 1870s, some denying, but others defending the truth of miracles. The efficacy of prayer was questioned by Moorhouse and by supporters of eugenics. Dissatisfaction with the mainstream churches had seen the popularity of spiritualism, secularism and radicalism rise in the 1870s and 1880s, more so in Melbourne than in the other colonies, although attendances at the mainstream churches in Melbourne and in Sydney during this period remained steady.
The scientific leaders of Melbourne were as theologically conservative as Perry and the Governor, and as their Sydney counterparts. Melbourne University’s George Halford and Frederick McCoy, and the Government Botanist Ferdinand von Mueller publicly rejected evolution and particularly the inclusion of humans in the process. Their reasons were theological rather than scientific. When Halford rejected Huxley’s evidence of the anatomical similarities of humans and apes, which suggested that they were related and had evolved from a common ancestor, he argued scripture stated that humans were created in the image of God and humans had mental and moral attributes with a spiritual nature and a soul distinct from animals. Because of Halford’s influence, in Melbourne, in contrast to the other colonies, the main objection expressed to evolution was due to Huxley’s inclusion of humans in the process, rather than to the implied atheism and attack on the creation accounts of Darwin’s theory. Huxley’s Protoplasm theory, proposing abiogenesis, drew strong public opposition Melbourne in 1869 when it was first published, but nowhere else in the colonies until the mid-1870s in Sydney.

**Theological certainties which remained**

Alongside these major developments and debates there were some theological certainties which remained in the Australian colonies during this period up to 1890. These included belief in the special creation of humans and the direct implantation of the soul and spiritual nature by God, adherence to Vitalist theory, with its rejection of abiogenesis, and for the Roman Catholic, Presbyterian and Methodist Churches in Australia, the continued rejection of the theories of uniformitarianism, evolution and abiogenesis.
Belief in God’s special creation of humans which separated them taxonomically, physically, mentally and spiritually from animals remained prominent in the colonies throughout the nineteenth century. Those who rejected the inclusion of humans in an evolutionary process of continual improvements from lower life forms, including Halford, Clarke, Jefferis and McCoy, did so because they found it irreconcilable with scripture.

What also continued was belief in Vitalist theory, the concept that the spark of life that distinguished living and non-living matter was implanted by God. The early challenge to Vitalism in *Vestiges*, and later in the theory of abiogenesis by Huxley and Tyndall, was firmly rejected as atheistic by scientists and churchmen in the colonies, although in Britain the Anglicans Powell and Temple were more open to it.

In Britain the influence of the reconciler science of scriptural geologists Buckland and Whewell, and of Sedgwick who opposed evolution, diminished with their deaths by 1873, but their influence lived on in the Australian colonies in the theology of those they had mentored and taught. Although colonial scientists had access to the written works of the many eminent British scientists, absence from British and European scientific meetings, debates and lectures necessarily limited their exposure to new ideas and restricted their range of new colleagues to new arrivals and occasional visiting scientists. Clarke and McCoy continued the opposition to evolution of their mentor Sedgwick, and Perry maintained the position of Whewell, his Master at Trinity College. From the 1860s the influence of Owen, the last of the great reconcilers, continued through some of those he mentored, including Campbell in Britain and Halford in Melbourne. The most extreme of the reconcilers’ attempts to fit science to scripture were being rejected Clarke, Hanson and Jefferis, yet they were joined by colonial scientists William Sharp Macleay, Halford, McCoy, Woolls, Woods and von
Mueller in their own attempts to reconcile discoveries with the scriptural accounts of creation. The problem of explaining the apparent cohabitation of ancient humans with animals long extinct led to some very convoluted attempts at accommodations with scripture, such as Owen’s series of successive creations, and the suggestions from John Smith and John Bromby that earlier races of lesser humans had cohabited with now extinct animals. All contradicted the Genesis account of the special creation of humans in the image of God on day six and as Clarke pointed out, the central Christian doctrine of the fall of mankind from that perfection through sin rather than the gradual evolution from lesser forms of human to the higher form of the present day.

**New theological understandings 1830 and 1890**

By the 1860s many Anglicans in Britain and the Australian colonies, along with some Congregationalists, had accepted uniformitarianism as the process by which the earth was being formed, with God acting through natural laws rather than by the direct intervention favoured by the catastrophists, despite its contradiction of the Genesis creation accounts.

One of the corrections to the scriptural account that many churchmen conceded was that the days referred to in Genesis chapter one represented geological eras of unknown lengths. By the 1860s Clarke, Smith, Woods and others were also prepared to concede that Ussher’s calculation from Old Testament chronologies that creation dated from 4004BCE was wrong, and that the earth could be up to 9000 years old, but no more. However, this minor concession was insignificant compared with the hundreds of thousands, even millions of years, demanded by Lyell’s process of uniformitarianism and Darwin’s theory of evolution. Neither did their
concession explain the findings of remains of ancient humans with those of
long extinct animals, and in rock strata dating from periods much earlier
than 9000 BCE.

The compromise position recommended by Herschel in the 1830s, that there
could be no essential conflict between that nature and scripture, but that they
should be treated as separate studies, continued to gain support in the
Australian colonies in the following decades. The view that God would
eventually provide proofs that the truths of scripture and science were
complementary was shared by Clarke, Jefferis, Short, Woods, Moorhouse
and many in their congregations, including some of the Science and Sermons
 correspondents. Short declared that true theology should not repudiate the
evidence and conclusions of the intellect or the senses; the core truth of
scripture was its moral and spiritual message, but its peripherals were
subject to scientific correction.

After the initial shock of *Origin*, some influential Christian Darwinists in
Britain - Temple, James Iverach and Aubrey Lackington Moore in the 1870s,
and in Australia - Anglican Hey Sharpe and Congregational leaders Kirby
and Cullen in the 1880s - all advocated accepting evolution as God’s means
of creation using the natural laws God had created and applied. British
clerics Temple, Charles Kingsley and George Henslow in the 1870s and 1880s
also sought to incorporate evolution as a means of rehabilitating natural
theology, stating that the very existence of evolution confirmed the existence
and the greatness of the intelligence of the Creator. This extended the
teleological argument of the early natural theologians who had argued that
the existence of creation proved the existence of a Creator. Some in the
colonies agreed with this view. Moorhouse accepted that evolution revealed
the existence of a God who, by formulating such natural laws, was not
needed in the operation of nature or of human affairs, therefore a God who
was awesome, infinite, transcendent but unknowable. New discoveries of the size and complexity of the universe by the 1880s led many others to the same conclusion, that the God of the infinite universe was infinite and therefore unknowable, a contrast to the anthropomorphic image from the second chapter of Genesis and the Father image of church tradition. Hanson, Higinbotham and the astronomer Proctor shared this view, and there followed a debate about whether it was theologically tenable to believe in an infinite and unknowable God. For Moorhouse the infinite nature of God was not a barrier to belief. Such a God he reasoned, however, could not be expected to respond to prayers for intervention.

In contrast, George Clarke, minister of a large Congregational church in Hobart and Vice Chancellor of the University of Tasmania, agreed with British Anglican Aubrey Lackington Moore and Scottish Free Churchman James Iverach who regarded evolution as mediated by God as proof of an immanent God, continually present and intervening in creation through the operation of his natural laws; prayer to such a God could be heard and answered. Moore had gone further: because evolution implied the immanence of God in nature and the omnipresence of his creative power, Darwinian theory was much more Christian than the traditional biblical account of the original creation, because those who supported a one-off special creation with occasional interventions by God had failed to notice that this must also imply that God was absent at the other times.

George Clarke praised the splendid service that science had rendered to religion in the nineteenth century, particularly through its elucidation of the theory of evolution. He believed that science had restored to theology a vital truth which the churches had nearly lost: they could no longer think of God in eighteenth-century terms as an absentee watchmaker, for evolution had shown the immanence as well as the transcendence of God. Both images, of
an immanent and interventionist God acting through natural laws, and an
infinite and unknowable Creator also acting through natural laws, rejected
the catastrophism of the scriptural geologists, which called for occasional
catastrophic and direct interventions by God.

Once theologians began to accept that humans were a product of evolution, a
new line of theological thinking was opened up as they began considering
the implications for human identity, spirituality and the human soul. By the
1880s in New South Wales Congregational minister, Thomas Roseby, told an
audience that God’s direct action implanted the soul into the physical body
which had been produced by evolution, and Jefferis agreed that God’s
intervention was necessary to account for the spiritual dimension of human
life. Both agreed with Temple, who believed that the spiritual life could have
been given to humans by a direct creative act as soon as the human body had
been sufficiently developed to receive it.

George Clarke and Sydney geologist Charles Smith Wilkinson believed there
was a moral and spiritual evolution within Christians, as the ‘Divine
impulse’ worked though Christ, and crude and imperfect notions of God
gave way to better and nobler ideas of divine will and human destiny. They
were incorporating the language of evolution into the earlier idea of the
divine impulse working through Christ to bring greater accord between
human mind and soul which was prevalent among English Broad
Churchmen, including Thomas Arnold, the headmaster of Rugby School,
and Alfred Lord Tennyson from the 1850s.

While Temple, Moorhouse and others accepted that the infinite and
unknowable God could not be expected to intervene in the world and in
human affairs as a result of prayer, for others too prayers became irrelevant,
because the natural laws of science had taken the place of God and become
their religion. Huxley, Hooker, Tyndall and Spencer had moved from a
tenuous belief in an unknowable God, into agnosticism; Krefft, like the
eugenicist Galton and his followers embraced science and atheism. For the
eugenicists, the science and philosophy of eugenics and social Darwinism
took the place of religion and of God as the new guiding moral and social
force for the future of humanity. The emergence of eugenics and Social
Darwinism as science-based philosophies, even religions, had its roots in the
idolatry of science, the infidel spirit of the age which had been denounced as
early as 1860 by Sedgwick, Clarke and Allwood.

When an Australian eugenicist pointed out that since God was absent,
prayers were irrelevant and should be removed from public life, surprisingly
this challenge and similar statements drew little or no comment from
churches in Australia when they appeared in newspaper articles and
correspondence in the 1870s and 1880s. The support of eugenics and Social
Darwinism, of the right to survival of the fittest in humanity at the expense
of those judged weaker and inferior, drew no moral objection from any of
the churches except the Catholic Church. Rather, eugenics, said the leader of
the Congregational Union in Adelaide, offered the comforting idea that an
inherited predisposition for sin could reduce personal responsibility and
therefore divine judgement for that sin. Newspaper correspondence relating
to eugenics and Social Darwinism in Sydney and Melbourne up to 1890
revealed entrenched beliefs of the inferiority of Aboriginal people, with some
correspondents justifying forced sterilisation and accepting the deaths of
some deemed unfit. Their reasoning was that both Christianity and eugenics
sought the improvement of mankind, and that the greater good of humanity
was served by eliminating those deemed inferior. The lack of commentary
from some denominations was probably because for them the concepts of
eugenics and Social Darwinism were irrelevant, even a nonsense, since both
depended on the evolutionary concepts of natural selection and survival of
the fittest of humans which they did not accept. Yet the Catholic Church,
while still rejecting evolution, denounced eugenics as an offence against the
Christian theological position that every person was equally valued and
created in the image of God. The lack of commentary from others such as
Hey Sharp and Roseby who accepted the concept of human evolution is
remarkable, and suggests a loss of moral authority and confidence in
Christian values among these colonial clerics.

The momentous scientific discoveries of the nineteenth century had
presented a great opportunity to the churches which they did not seize. The
importance of the growing evidence supporting the theories of
uniformitarianism and evolution and the implications of abiogenesis was not
recognised, except by a handful of Australian clerics in the Anglican and
Congregational Churches. New understandings of what it meant to be
human as the most complex outcome of the evolutionary process, sharing
instincts and physical structures with animal ancestors and sharing a soul
and spiritual nature with God, could have been developed within the
framework of natural theology and influenced social structures, the rapidly
developing sciences of medicine and psychology and more. If they had
agreed to accept evolution including humans, the churches would have been
in a better position to critique the dubious application of evolution theory to
eugenics and Social Darwinism and join the Roman Catholic Church in
warning of their moral and social dangers.

However, with the exception of a few imaginative individuals in the
Anglican and Congregational churches in the Australian colonies, as in
Britain, church leaders were unable to see past the barrier of biblical
literalism, which constrained their acceptance of geological evidence for the
age of the earth, the record of evolution and extinctions of plants and
animals displayed in the fossil record, and the anatomical evidence for the similarities between humans and apes. Church traditions, their creeds, their conservative constituencies, their hierarchical structures and their claim of divine authority over all matters including science and the laws of society inhibited their freedom to engage with the challenges from science. Internal matters and the primacy of the mission to save souls in the new colonies added to their distraction from current theological issues. To be fair, most scientists in the colonies shared the theological conservatism of the clerics and the churches; the creative genius of Darwin, Lyell and Huxley which was prepared to defy scientific convention and church teachings was all but absent in the colonies.

The few imaginative church leaders in the new land were products of their church traditions, yet the new environments in which they had settled nurtured their theological thinking, in both affirmative and negative ways, that arguably would not have been possible if they had remained in Britain. The scientific novelties and resources of the new land stimulated the polymath Clarke to great feats of geological exploration. He regarded the resources he discovered, including coal and gold, as evidence of divine providence for the British, and believed his role was to bring that providence to the attention and to the benefit of the people of the colony. His belief in God’s providence was shared by William Woolls who, surrounded by the vast but unknown flora of his new home, declared that every plant had a special purpose, and only through ignorance had such purpose not yet been discovered. It was the role of science to reveal God’s plan and providence for his people. The resources of the new land informed Clarke’s natural theology, ever affirming the existence, providence and greatness of the Creator. His regular and extensive contributions to New South Wales’ main newspaper allowed him to interpret and popularise new scientific
discoveries and theories for the public, an opportunity that would hardly have been available to a parish clergyman in Britain. Increasingly, however, his conservative bishop discouraged his scientific work as a distraction from the mission of the church, which was confined to saving souls. The natural wonders of the land also stimulated the scientific work of William Sharp Macleay and Gerard Krefft, but had little impact in the conservative reconciler theology of Macleay and the atheism of Krefft.

Melbourne produced some individuals prepared to challenge conventional ideas of science and theology. Many correspondents, mostly anonymous, took advantage of their access to the public through the pages of *The Argus* to criticise their church leaders and to express their views on science and theology. John Bromby challenged the conservative approach to scripture and to Darwin’s theory of his bishop Perry by giving public lectures presenting his own theological thinking about the creation accounts. Moorhouse was another imaginative theologian with intellectual abilities which matched many in his constituency. Not only open to the new scientific theories coming from Britain, he understood the possibilities of using science to improve the lives of Victorians.

Charles Strong’s liberal theology encouraged him to challenge the biblical literalism of his conservative Presbyterian Church and its refusal to engage with scientific controversies. Although his views were shared by many of his congregation and by the iconoclast George Higinbotham, they made no difference to the conservative theology of the Presbyterian Church. They did however form the basis of the theology of a new church for a new land, the Australian Church which Strong subsequently founded.

The culture of freedom of religion and tolerance of new ideas in his new home in Adelaide encouraged Hanson to present radical new ideas about
geology, evolution and biblical literalism in public lectures, and he did so without jeopardising his senior government appointments. Jefferis and Short also found in the new colony of South Australia forums with appreciative audiences in which they could freely discuss the theological issues arising from science. Although there was a backlash from some conservative clerics against Hanson’s questioning of biblical literalism, his views and those of Jefferis and Short continued to be published in the newspapers. Woods, like Clarke, was stimulated by the novel geology of southern Australia and embarked on research with enthusiasm, although, unlike Clarke some of his interpretations of his findings were influenced by the conservative theology of his Church. There is no evidence of the Catholic Church discouraging Woods’ scientific work unlike the attitude of Clarke’s bishop.

As the nineteenth century drew to a close the theological landscape in Britain and the Australian colonies, at least for Anglicans and Congregationalists, had changed permanently from the early decades. The comfortable symbiosis of theology and science in natural theology, with reconcilers conforming new scientific discoveries to fit with the prevailing literal interpretation of scripture had been shattered. As in Britain, many Anglican and Congregational churchmen in the Australian colonies, including Jefferis, Short, Clarke, Moorhouse and Hey Sharpe, accepted nature as a source of God’s truth as valid as scripture, but realised there were unresolved contradictions between the accounts of scripture and nature and were prepared to live with those contradictions. They had been confronted by the need to examine their interpretation of scripture, and extend their theology to embrace new concepts of the role of God in creation, of the nature of God, and of the nature of the spiritual life and soul of humans as products of evolution. In contrast, most of the scientists in the colonies were constrained by their conservative understandings of scripture and the role of God in
creation and this contributed to their rejection of the new theories. Insofar as any were theologians, most could be described as natural theologians who, while criticising some of the work of Britain’s scriptural geologists, yet often related and even reconciled their own findings to scripture and the work of the Creator. The difference between the reactions of these clerics and the scientists may reflect the greater depth of theological training and reflection of the clerics; churchgoing scientists had not been equipped by their church leaders to deal with the new theological issues arising from science. Others, such as Krefft, Huxley, Tyndall, Hooker, Galton and some of the Science and Sermons correspondents, who were unable or unwilling to reconcile the new science with their understandings of scripture, took the opposite path of abandoning scripture and the church and publicly embracing agnosticism and atheism. Such a decision, like the new science which inspired it, was almost unthinkable in the early decades of the century.

The natural theology which arose from the symbiosis of Protestant theology with Baconian science and which produced and nurtured the scientific creativity of Lyell, Darwin, Powell, and the earnest interpretative efforts of a small number of influential churchmen in the colonies including Jefferis, Short, Moorhouse and Clarke all but disappeared from public and religious consciousness by the end of the nineteenth century.
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