## CONTENTS

## Foreword

1	Why read this book?	1
2	What is science and what is the theory of evolution?	17
3	Where did science come from?	37
4	Can life arise through natural processes?	55
5	What is Darwin's theory of evolution?	73
6	Have scientists observed evolution in action?	87
7	Are we related to animals?	113
8	Are 'vestigial organs' evidence for evolution?	133
9	Does the fossil record support Darwin's theory?	145
10	Did we evolve from apes?	181
11	Is there evidence for a Designer?	205
12	Conclusion	229
Image credits		237

# 1

## Why read this book?

We now live in a scientific age, and the up-and-coming generation who wish to play a part in it cannot afford to be scientifically illiterate, whatever their preferred discipline. Claims and counter-claims based on 'scientific arguments' bombard us daily, and the responsible citizen must be equipped to evaluate them. We need to know who is telling the truth and who is not. Genetic engineering promises better crops; but is it safe? Medical science races ahead, providing sexchange operations, new treatments for infertile couples and 'miracle cures' based on stem cell research; but are they moral? Some claim that drastic measures must be taken to curb man-made global warming lest we destroy ourselves, while others dismiss the problem as insignificant. Who is right? Without a basic understanding of science, the politicians, journalists and academics of the future—not to mention the general public—will be unable to engage meaningfully with these issues.

Some believe that nowhere is the need for science education more urgent than with respect to the origins debate—the different views of how the universe and life came into existence. Scientists seem locked in combat, with some insisting that science unquestionably points to humans having evolved from lower animals, and others arguing that this has no scientific basis at all. In the West, the media present Darwin's theory of evolution as if it were fact, delighting to interview well-known scientists who will emphatically endorse this view. Yet at the same time, others—some of them leading professors—make clear that they do not consider Darwin's theory to be supported by science at all.<sup>1,2,3</sup> Some of these, while rejecting Darwinism, would still describe themselves as evolutionists and are searching for alternative theories of evolution. Others argue that the living world could not have arisen without a designer—either one who guided an evolutionary process or one who brought everything into being through an act of supernatural creation. Who is right?

The creation/evolution debate is not about whether plants and animals can change in minor ways so as to be able to adapt to different environments—no informed person doubts this (fig. 1-1). It is about the nature of people—whether we are simply the product of natural processes and therefore no more than bags of chemicals, or the work of a Creator who has endowed each of us with a soul and associated moral responsibility. According to Luke's Gospel, the first man,



**Fig. 1-1.** Finches on the Galápagos islands have different beak shapes and these will change over time according to the kind of food available. Finches with long, pointed beaks will be better adapted to islands where food is obtained by probing flowers or picking seeds out of cactus fruits. Those with stubby, stronger beaks will be better adapted where food is obtained by crushing hard seeds. But does this kind of change demonstrate that people could evolve from lower animals?

Adam, was "the son of God", meaning that he was a special creation, made in God's likeness, to enjoy an intimate relationship with Him (Luke 3:38, Genesis 1:27). According to the theory of evolution we are descended from ape-like creatures which, in turn, evolved from reptile-like creatures, which evolved from amphibians, which evolved from fish, which evolved from worms, all the way back to slime. If so, then we are just an accident of nature, no more special than any other living creature—and we carry the image of an ape, not the image of God.

#### **Evolution and ethics**

According to leading atheist and evolutionist Professor Richard Dawkins, Darwin's theory of evolution makes clear that we are no more than robots—we just do what chemical reactions in our bodies prompt us to do. All our thoughts, feelings and choices, he says, are not driven by a mind or soul, but simply by chemistry going on inside us. He wrote:

"We are survival machines—robot vehicles blindly programmed to preserve the selfish molecules known as genes."<sup>4</sup>

In the thinking of Dawkins, it is our genes that primarily determine our behaviour. If so, murderers murder because their genes made them do it! Professor Anthony Cashmore of the University of Pennsylvania would agree with him. According to Cashmore, Darwin's theory shows that "not only do we have no more free will than a fly or a bacterium, in actuality we have no more free will than a bowl of sugar."<sup>5</sup> If the likes of Dawkins and Cashmore are correct, people are not responsible for their actions. Some wonder what kind of society will emerge if this becomes generally believed. How will people come to behave if they really embrace this kind of thinking?

Jeffrey Dahmer was a mass murderer who committed unspeakable crimes against men and boys. In an interview he explained how accepting the theory of evolution had influenced the course of his life. He said:

"If a person doesn't think there is a God to be accountable to, then—then what's the point of trying to modify your behaviour to keep it within acceptable ranges? That's how I thought anyway. I always believed the theory of evolution as truth, that we all just came from the slime. When we, when we died, you know, that was it, there is nothing ..."<sup>6</sup>

According to an article in the BBC's *Focus* magazine, the tendency to sin was hardwired into our brains through the evolutionary process.<sup>7</sup> Lust, they said, arose from the need to pass on our genes to future generations; gluttony was an evolutionary response to scarcity of food; sloth arose due to the need to conserve calories; and envy evolved to help us improve our own performance. If all this is true, it would seem that to behave badly is to act naturally.

If people are simply the product of evolution—unguided natural processes then they are nothing more than flesh and blood. As argued by prominent atheist Yuval Noah Harari, "If you really understand the theory of evolution, you understand that there is no soul."<sup>8</sup> What basis, then, is there for retaining a moral framework?

Some warn that the belief that natural processes alone gave rise to our existence—and thus there is no creator—leads to the view that life has no meaning and no purpose. This was acknowledged by atheist Professor Susan Blackmore who wrote, "In the end nothing matters ... If you really think about evolution and why we human beings are here, you have to come to the conclusion that we are here for absolutely no reason at all."<sup>9</sup> With young people being fed these ideas, some ask whether it is really surprising that there is an epidemic of suicide among teenagers in the West.

## **Evolution and racism**

In many ways Charles Darwin was a Victorian gentleman. He abhorred slavery and gave financially to Christian missionary work. However, his evolutionary beliefs led to him having a dark side, and he was explicitly racist. Darwin believed that the different 'human races' as he saw them—blacks and whites and so on—had evolved separately, and that some had evolved more than others. The evolutionary process, he said, had resulted in some groups becoming mentally and physically superior to others. Based on his theory, he predicted that the more

evolved white races (as he saw them) would replace the inferior, less evolved black races (as he saw them). He wrote:

"... the civilised races of man will almost certainly exterminate and replace the savage races throughout the world."<sup>10</sup>

Darwin's theory had an enormous impact on the Western world and particularly on attitudes towards people in the developing nations. According to evolutionist Professor Stephen J. Gould,

"Biological arguments for racism may have been common before 1850, but they increased by orders of magnitude following the acceptance of evolutionary theory."<sup>11</sup>

In the nineteenth century, many of the German intellectual elite embraced this kind of thinking. Ernst Haeckel was Professor of Zoology at the University of Jena, and one of Darwin's greatest supporters in Europe. A leading scientist of the day, he wrote:

"If one must draw a sharp boundary between them [the higher mammals], it has to be drawn between the most highly developed and civilized man on the one hand, and the rudest savages on the other, and the latter have to be classed with the animals. ... Thus, for example, a great English traveller, who lived for a considerable time on the west coast of Africa, says: 'I consider the Negro to be a lower species of man, and cannot make up my mind to look upon him as "a man and a brother," for the gorilla would then also have to be admitted into the family."<sup>12</sup>

Friedrich Ratzel, another prominent German Darwinist, developed the theory of *lebensraum* which is German for 'living space'. Just as more successful animals drive out less successful animals, he taught, it was natural, in the 'struggle for space' and the 'struggle for life', for stronger human races to drive out weaker human races. Both Haeckel and Ratzel were very influential in the promotion of *social Darwinism*—the idea that 'survival of the fittest' applies to humans and nations just as it does to animals in the jungle.

Even the German Emperor Kaiser Wilhelm II had been persuaded of this view. Seeing the white people of Europe and the yellow people of Asia as different races, he declared:

"I foresee in the future a fight for life and death between the 'White' and the 'Yellow' for their sheer existence."<sup>13</sup>

## Why read this book?

This doctrine of 'living space' was sometimes applied very rigorously in the German colonies and perhaps nowhere more than in German West Africa. In the early part of the twentieth century, German soldiers systematically slaughtered the indigenous African peoples, even driving whole groups into the desert where they would die from heat and thirst.<sup>14</sup>

In 1904, Ota Benga, a pygmy from the African Congo, was purchased from slave traders and taken to the USA. There he was put on display with monkeys at the New York City Bronx Zoo. He was regarded as an example of a partly evolved human and clear proof of Darwin's theory of evolution. Ota's distress was considerable, arising from "the trauma of being caged, heckled, and attacked ... by those determined to prove he belonged to an inferior species."<sup>15</sup>



Fig. 1-2. Ota Benga at the Bronx Zoo.

### **Evolution and war**

Part way through the First World War, American pacifist Vernon Kellogg engaged in long conversations with members of the German High Command, including a professor of zoology turned soldier. He was horrified by what he heard and wrote:

"Professor von Flussen is Neo-Darwinian [i.e. a modern Darwinist], as are most German biologists and natural philosophers. The creed of ... natural selection based on violent and fatal competitive struggle is the gospel of the German intellectuals; all else is illusion and anathema."<sup>16</sup>

For these German soldiers, the war was justified because they believed that "as with the different ant species, struggle—bitter, ruthless struggle—is the rule among the different human groups."<sup>17</sup> Kellogg continued:

"The danger from Germany is, I have said, that the Germans believe what they say. And they act on this belief. Professor von Flussen says that this war is necessary as a test of the German position and claim. If Germany is beaten, it will prove that she has moved along the wrong evolutionary line, and should be beaten. If she wins, it will prove that she is on the right way, and that the rest of the world, at least that part which we and the Allies represent, is on the wrong

way and should, for the sake of the right evolution of the human race, be stopped and put on the right way—or else be destroyed as unfit."<sup>18</sup>

Kellogg was so shocked by these discussions that, despite his pacifist leanings, he sought to use his influence to persuade his fellow Americans to enter the war. Such a worldview was also embraced by Adolf Hitler who argued that Darwinism was the only basis for a successful Germany. Surgeon and anthropologist Professor Arthur Keith commented:

"The German Führer [Hitler], as I have consistently maintained, is an evolutionist; he has consciously sought to make the practice of Germany conform to the theory of evolution."<sup>19</sup>

Many scholars see this sort of 'racial science' as having provided the chief ideological underpinning for Nazi Germany, and its justification of the genocide of six million Jews in the Holocaust.<sup>20–22</sup> Is all this just a part of history? Clearly not. According to a recent statement by renowned scientist and Nobel Prizewinner James Watson, all 'human races' may not be equally intelligent. He wrote:

"There is no firm reason to anticipate that the intellectual capacities of peoples geographically separated in their evolution should prove to have evolved identically."<sup>23</sup>



**Fig. 1-3.** The 'two-tone twins' with their parents. Biblical creationists believe that all the different people groups living today are descended from one man and one woman. Hence, they say, there aren't different human races, but just one human family.<sup>24</sup>

Biblical creationists argue that racist ideology follows logically from the theory of evolution and is in stark contrast to the Bible's understanding of humanity. According to the book of Genesis, all people on Earth today are descended from one man and woman—Adam and Eve. If so, there is only one human race and there can be no place for racism.

## **Evolution and science**

Given this historical context, some have questioned the wisdom of giving evolution such a protected place in science education, as is the case in many Western nations. The usual justification is that acceptance of Darwin's theory is necessary for scientific progress. Others, however, would disagree. Distinguished chemist Professor Philip Skell commented:

"I recently asked more than 70 eminent researchers if they would have done their work differently if they had thought Darwin's theory was wrong. The responses were all the same: No. I also examined the outstanding biodiscoveries of the past century ... research on medications and drug reactions; improvements in food production and sanitation; the development of new surgeries; and others. I even queried biologists working in areas where one would expect the Darwinian paradigm to have most benefited research, such as the emergence of resistance to antibiotics and pesticides. Here, as elsewhere, I found that Darwin's theory had provided no discernible guidance, but was brought in, after the breakthroughs, as an interesting narrative gloss."<sup>25</sup>

Similarly, Professor Marc Kirschner, of Harvard Medical School, remarked:

"In fact, over the last 100 years, almost all of biology has proceeded independent of evolution, except evolutionary biology itself. Molecular biology, biochemistry, physiology, have not taken evolution into account at all."<sup>26</sup>

Some have argued that acceptance of Darwin's theory has *delayed* the progress of science.<sup>27</sup> A good example is the belief in 'junk DNA'. DNA<sup>28</sup> is software. It controls what goes on in the cells of our bodies, and enables different cells to perform different roles—as a brain cell, a muscle cell or blood cell, for example. It also stores instructions needed to direct and control the growth of a baby from a tiny egg, and on into an adult—including how to produce bones, muscles, eyes etc. Darwin's theory led people to conclude that most of this DNA was junk and that only a small part of it (around 3%) had a function. Supposedly, the

evolutionary process had corrupted most of it through millions of years of mutations. This 'junk' was called 'non-coding DNA' because it was thought not to specify or 'code' for anything. Indeed, Darwinian theory *predicted* that the human body would be filled with large amounts of this 'junk DNA'.

However, through ongoing work in molecular biology (particularly the study of DNA) more and more functions of this so-called 'junk DNA' have been discovered, making clear that it is not junk after all. According to Dr John Greally of the Albert Einstein College of Medicine, New York, "It would now take a very brave person to call non-coding DNA junk."<sup>29</sup>

Professor John Mattick remarked, "the failure to recognise the implications of the non-coding DNA will go down as the biggest mistake in the history of molecular biology."<sup>30</sup> The reason this was such a serious mistake is that understanding the functions of the so-called 'junk DNA' is providing many clues as to how to treat diseases arising from genetic disorders—illnesses arising from DNA not working properly. Having been told that all this 'non-coding DNA' was junk, scientists didn't spend time studying it, and this delayed the progress of medical science by many years.

Some argue that this mistake would never have been made had the researchers believed in creation and that DNA was the work of an intelligent designer. No being, they say, capable of creating the universe and the living world would have filled the human body with junk.

Similarly, Darwin's theory led scientists to believe that there were organs in the human body that were 'vestigial'—non-functional remnants of formerly functional organs used by our evolutionary ancestors. Perhaps the best-known example is the human appendix. Charles Darwin argued that this was a useless remnant of something that our distant ancestors once used, way back in our evolutionary history, when we were monkey-like and ate leaves.<sup>31</sup> We now know better. According to Professor Gabrielle Belz, rather than the appendix being a useless vestige, it seems likely that it is, in fact, "an integral part of the immune system."<sup>32</sup> (See ch. 8, section: Human appendix.) Similarly, people were told that the tonsils are another unnecessary 'leftover' from evolution. A recent study, however, showed that people who had had their tonsils removed in childhood were at significantly greater risk of contracting various diseases.<sup>33</sup>

Nineteenth century anatomist Dr Robert Wiedersheim compiled a list of over a hundred organs that he understood to be vestigial but since then, most—if not all—have been found to be functional. Professor Steve Scadding commented:

"As our knowledge has increased the list of vestigial structures has decreased. Wiedersheim could list about one hundred in humans; recent authors usually list four or five. Even the current short list of vestigial structures in humans is questionable. ... I conclude that 'vestigial organs' provide no special evidence for the theory of evolution."<sup>34</sup>

Some argue that, just as with 'junk DNA', belief in 'vestigial organs' simply obstructed progress in medical science, delaying our understanding of the functions of many organs in the human body.

## **Evolution and the Christian faith**

For many, the most pressing reason to exercise great wisdom in teaching about the theory of evolution is its implications for the Christian faith.<sup>35</sup> If the evolutionary account of human history is true, then the biblical account of creation is not true. If so, it is reasonable to ask whether the Bible can be trusted in anything else it teaches. Dr Martyn Lloyd-Jones was one of the most respected Bible teachers of the twentieth century. Commenting on Charles Darwin's book, *On the Origin of Species*, in which he sought to convince the world of evolution, Lloyd-Jones wrote,

*"The Origin of Species ...* I suppose, has been more responsible for undermining people's faith and belief in the Scriptures, and in God's way of salvation, than any other single book."<sup>36</sup>

Evolutionist Professor Niles Eldredge would agree. He wrote:

"Darwin did more to secularize [and de-Christianize] the Western world than any other single thinker."<sup>37</sup>

In the same vein, atheist philosopher Professor Daniel Dennett described Darwin's theory as a "universal acid" which, he said, "eats through just about every traditional concept, and leaves in its wake a revolutionised world-view".<sup>38</sup> Professor William Provine described evolution as "the greatest engine of atheism ever invented."<sup>39</sup> In the West, many young adults are leaving the church and, according to a recent study, one of the primary reasons is "Learning about evolution when I went away to college".<sup>40</sup>

The creation/evolution debate also has implications for the Christian doctrine of salvation. According to the Bible, Adam, who was the father of the whole human race, was created morally perfect. When he sinned, all of his descendants sinned with him because they were one with him, being 'in him' and represented by

him. This is the doctrine of Original Sin. In Christian theology, God's plan of salvation entailed His people being made 'one with Christ', just as they had been 'one with Adam'. In this way, Christians partake of Christ's perfect life, death and resurrection (Romans 5:12–19). If the evolutionary account of human history is true, then the biblical account of Adam is not true and the gospel message would appear to be based on nonsense.

Biblical creationists argue that many important Christian doctrines are based on events recorded in Genesis, such as those concerning God as Creator (Genesis 1:1), Lawgiver (Genesis 2:17), Judge (Genesis 3) and Saviour (Genesis 3:15)—not to mention the institution of marriage (Genesis 2:24–25). They point out that if people come to see Genesis as just myth, they will inevitably question the doctrines it underpins. Christianity, they say, then begins to implode.

Research by the Barna Group (conducted in 2002) indicated that, in the USA, around 66% of children raised in Christian homes will reject the faith as adults.<sup>41</sup> A more recent study (conducted in 2017) suggested that the figure is little different today.<sup>42</sup> While there is no one reason for this, there can be no doubt that a major factor is a perceived conflict between Christianity and science.

According to Barna, nearly a third of young adults with a Christian background feel that "churches are out of step with the scientific world we live in" and a quarter embrace the perception that "Christianity is anti-science".<sup>43</sup> The National Study of Youth—the most extensive sociological project on youth and religion ever undertaken—found that seventy percent of young Americans believe that "the teachings of science and religion often ultimately conflict with each other."<sup>44</sup>

According to the apostle Paul, the primary evidence for God's existence is found in the world around us. He wrote:

"For since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that people are without excuse" (Romans 1:20).

However, if natural processes (evolution) can produce a universe, the earth, the living world and people, then their existence does not point to a supernatural creator. If so, the evidence for God and the Christian faith is undermined at its heart. For these reasons many see the theory of evolution as a serious threat to the Christian faith.

Atheists often argue that science and the Christian faith are incompatible. They say that Darwin's theory of evolution has disproved the Genesis account of creation and established, beyond all reasonable doubt, that the Bible is no more than a book of myths. Moreover, they say, human progress, and science in particular, have been held back by Christian beliefs and the failure to teach evolution as fact in schools.

Others see things very differently. Some historians of science argue that the Bible and its account of creation provided the intellectual basis for the scientific revolution that took place in the sixteenth and seventeenth centuries. They say that, rather than frustrating science, the belief that the world had been designed,

According to religious studies scholar Professor Huston Smith, "Martin Lings is probably right in saying that 'more cases of loss of religion are to be traced to the theory of evolution ... than to anything else."

Smith, H., Evolution and evolutionism, *Christian Century*, p. 755, July 7-14, 1982.

and was the work of just one God, provided the necessary framework for developing the scientific method (see chapter 3). Creationists also deny that science supports the belief that people evolved from lower animals, and maintain that the theory of evolution is ideologically driven rather than scientifically driven. That is, they

argue that the doctrine of evolution arises from the desire of some to exclude God from their thinking, rather than from real scientific enquiry. Moreover, creationists maintain that it takes far more faith to believe in evolution than creation.



There can be no doubt that the outcome of the creation/evolution debate has profound implications for the future of mankind, and this book has been written for those who wish to grasp the true nature of the controversy.

#### **Chapter references and notes**

- 1. Mazur, S., *The Altenberg 16: An exposé of the evolution industry*, North Atlantic Books, California, USA, 2010.
- 2. Shapiro, J.A., *Evolution: A view from the 21st century*, FT Press Science, USA, 2011.
- 3. Morris, S.C., *Life's Solution: Inevitable humans in a lonely universe*, Cambridge University Press, UK, 2005.
- 4. Dawkins, R.C., *The Selfish Gene*, Oxford University Press, Oxford, UK, p. vii, 1989; first published 1976.
- 5. Cashmore, A., The Lucretian swerve, *PNAS* **107**(10):4499–4504, 2010.
- 6. Dahmer, J., Interview with Stone Phillips, *Dateline NBC*, 29 November, 1994.
- 7. Ridgway, A., The human brain: hardwired to sin, *Focus*, 25 February 2010.
- 8. Harari, Y.N., *Homo Deus: A brief history of tomorrow*, Vintage (Penguin Random House), UK, pp. 120–121, 2017.
- 9. Blackmore, S., The Independent, 21 January 2004.
- 10. Darwin, C.R., *The Descent of Man and Selection in Relation to Sex*, John Murray, London, vol. 1, p. 201, 1871.
- 11. Gould, S.J., Ontogeny and Phylogeny, Belknap-Harvard Press, pp. 127-128, 1977.
- 12. Haeckel, E., *The History of Creation: Or the development of the earth and its inhabitants by the action of natural causes*, vol. II, translated by Lancaster, E.R., Henry S. King & Co., London, UK, p. 365, 1876; archive.org.
- 13. Hobson, J.M., *The Eurocentric Conception of World Politics: Western international theory 1760–2010*, Cambridge University Press, UK, footnote, p. 108, 2012.
- 14. Olusoga, D. and Erichsen, C.W., *The Kaiser's Holocaust*, Faber and Faber, London, 2010.
- 15. Newkirk, P., *Spectacle: The astonishing life of Ota Benga*, Amistad, New York, pp. 189 and 198, 2015.
- 16. Kellogg, V., *Headquarters Nights: A record of conversations and experiences at the headquarters of the German army in France and Belgium*, Atlantic Monthly Press, Boston, USA, p. 27, 1917; archive.org.
- 17. Ref. 16, p. 28.
- 18. Ref. 16, p. 30.
- 19. Keith, A., *Evolution and Ethics*, G. P. Putnam's Sons, New York, p. 230, 1947; arthurkeith.wordpress.com.
- 20. Bergman, J., *Hitler and the Nazi Darwinian Worldview*, Joshua Press, Canada, 2012.
- 21. Victims of the Nazi era: Nazi racial ideology, United States Holocaust Memorial Museum, encyclopedia.ushmm.org.
- 22. Tenenbaum, J., Race and Reich, Twayne Pub., New York, pp. vii, 211, 1956.
- 23. Milmo, C., Fury at DNA pioneer's theory: Africans are less intelligent than Westerners, *The Independent*, 17 October 2007.
- 24. The two-tone twins, *Creation* **29**(2):28–29, March 2007; creation.com/two-tone-twins.
- 25. Skell, P.S., Why do we invoke Darwin? Evolutionary theory contributes little to experimental biology, *The Scientist* **19**(16):10, 29 August 2005.
- 26. Cited by Dizikes, P., Missing Links, Boston Globe, 23 October 2005; boston.com.

- 27. Sanford, J., How Evolution Hurts Science, DVD, Creation Ministries International.
- 28. DNA is an abbreviation for deoxyribonucleic acid.
- 29. Cited by Coghlan, A., 'Junk' DNA makes compulsive reading, *New Scientist*, 13 June 2007; newscientist.com.
- 30. From a transcript of the (Australian public broadcaster) *ABC TV* science program Catalyst, episode titled 'Genius of Junk (DNA)', broadcast 10 July 2003, 19 July 2006.
- 31. Darwin, C.R., *The Descent of Man and Selection in Relation to Sex*, vol. 1, John Murray, London, p. 27, 1871.
- 32. Rosenfeld, J., Immunology study suggests the appendix has a use after all, 12 January 2016; mentalfloss.com.
- 33. Byars, S.G. *et al.*, Association of long-term risk of respiratory, allergic, and infectious diseases with removal of adenoids and tonsils in childhood, *JAMA Otolaryngology—Head & Neck Surgery* 144(7):594–603, 2018; doi:10.1001/ jamaoto.2018.0614.
- 34. Scadding, S., Do 'vestigial organs' provide evidence for evolution? *Evolutionary Theory* **5**:173–176, 1981.
- 35. Bell, P., Evolution and the Christian Faith: Theistic evolution in the light of *Scripture*, Day One Publications, UK, 2018.
- 36. Lloyd-Jones, D.M., *Romans: Exposition of chapter 1*, Banner of Truth Trust, p 316, Edinburgh, published 1985.
- 37. Eldredge, N., Darwin: Discovering the tree of life, W.W. Norton, USA, 2006.
- 38. Dennett, D., *Darwin's Dangerous Idea: Evolution and the meanings of life*, Simon and Schuster, p. 63, 1996.
- 39. Chang, R.H., *Theologizing in the Radical Middle*, Wipf & Stock, USA, ch. 4, 2018.
- 40. Wallace, J.W., Young Christians are leaving the church—Here's why, *Fox News*, 9 September 2018; foxnews.com.
- 41. Barna, G., *State of the Church*, Issachar Resources, Ventura, California, USA, p. 109, 2002.
- 42. In a survey of young adults who attended a Protestant church regularly as teenagers, only 33% were regularly attending in their twenties. Church Dropouts: Reasons young adults stay or go between ages 18–22, Lifeway Research, 2017; lifewayresearch.com.
- 43. Barna Group, Six reasons young Christians leave church, 27 September 2011; barna.com.
- 44. Smith, C., How American Youth (Mis)Understand Science and Religion, Lecture given at the University of Notre Dame, February 2014; youtube.com/ watch?v=OaS1SV7xwWQ, time code 11:53–15:12.