

Part IV. Founders of Modern Science Who Believe in GOD

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ABSTRACT

This article covers well-documented quotations from the following twenty-one (21) Scientists (17th - 21st Century): Sir Issac Newton, Galileo Galilei, Nicolaus Copernicus, Sir Francis Bacon, Rene DesCartes, Blaise Pascal, Sir Michael Faraday, James C Maxwell, Lord Kelvin (Sir William Thomson), Sir Robert Boyle, Sir William Harvey, John Ray, Gottfried W. Leibniz, Charles Darwin, Ernst Haeckel, Thomas H. Huxley, Sir Joseph J. Thomson, Louis Pasteur, Werner von Braun, and Francis Collins. Founders of Modern Science include the following Nobel Scientists covered in Part I in this issue: Max Planck, Werner Heisenberg, Erwin Schroedinger, Charles Townes, Arthur Schawlow, Richard Smalley, John Eccles, Alexis Carrel, and Joseph Murry. This article also contains a table showing scientific disciplines established by Bible-believing scientists. It further includes a table showing notable inventions, discoveries and developments by Bible-believg scientists.

Key Words: GOD, Founders, Modern Science, Nobel laureates, Bible, belief, discovery, invention, science, religion.

(1) SIR ISAAC NEWTON (1642-1727), founder of Classical Physics and Infinitesimal Calculus

1. At the end of his *Philosophiae Naturalis Principia Mathematica* (London, 1687) Newton wrote: "This most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being. This Being governs all things, not as the soul of the world, but as Lord over all; and on account of His dominion He is wont to be called Lord God." (Newton 1687, *Principia*).

2. "From His true dominion it follows that the true God is a living, intelligent and powerful Being; and from His other perfections, that He is supreme, or most perfect. He is eternal and infinite, omnipotent and omniscient; that is, His duration reaches from eternity to eternity; His presence from infinity to infinity; He governs all things, and knows all things that are or can be done." (Newton 1687, *Principia*; see also Caputo 2000, 88).

3. "God made and governs the world invisibly, and has commanded us to love and worship him, and no other God; to honor our parents and masters, and love our neighbours as ourselves; and to be temperate, just, and peaceable, and to be merciful even to brute beasts. And by the same power by which he gave life at first to every species of animals, he is able to revive the dead, and has revived Jesus Christ our Redeemer, who has gone into the heavens to receive a kingdom, and prepare a place for us, and is next in dignity to God, and may be worshipped as the Lamb of God, and has sent the Holy Ghost to comfort us in his absence, and will at length return and reign over us." (Newton, as cited in *Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton* by Sir David Brewster, Edinburgh, Thomas Constable and Co., 1855, Vol. II, 354).

4. "Opposite to godliness is atheism in profession, and idolatry in practice. Atheism is so senseless and odious to mankind, that it never had many professors. Can it be by accident that all birds, beasts,

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and men have their right side and left side alike shaped, (except in their bowels); and just two eyes, and no more, on either side of the face; and just two ears on either side of the head; and a nose with two holes; and either two forelegs, or two wings, or two arms on the shoulders, and two legs on the hips, and no more? Whence arises this uniformity in all their outward shapes but from the counsel and contrivance of an Author?" "Whence is it that the eyes of all sorts of living creatures are transparent to the very bottom, and the only transparent members in the body, having on the outside a hard transparent skin, and within transparent humours, with a crystalline lens in the middle, and a pupil before the lens, all of them so finely shaped and fitted for vision, that no artist can mend them? Did blind chance know that there was light, and what was its refraction, and fit the eyes of all creatures, after the most curious manner, to make use of it? These, and suchlike considerations, always have, and ever will prevail with mankind, to believe that there is a Being who made all things, and has all things in his power, and who is therefore to be feared." "We are, therefore, to acknowledge one God, infinite, eternal, omnipresent, omniscient, omnipotent, the Creator of all things, most wise, most just, most good, most holy. We must love him, fear him, honour him, trust in him, pray to him, give him thanks, praise him, hallow his name, obey his commandments." (Newton, as cited in *Memoirs of the Life, Writings, and Discoveries of Sir Isaac Newton* by Sir David Brewster, Edinburgh, Thomas Constable and Co., 1855, Vol. II, 347-348).

5. "And when you are convinced, be not ashamed to profess the truth. For otherwise you may become a stumbling block to others, and inherit the lot of those Rulers of the Jews who believed in Christ, but yet were afraid to confess him lest they should be put out of the Synagogue. Wherefore, when you are convinced, be not ashamed of the truth, but profess it openly and endeavor to convince your Brother also that you may inherit at the resurrection the promise made in *Daniel 12:3*, that 'they who turn many to righteousness shall shine as the stars for ever and ever.' And rejoice if you are counted worthy to suffer in your reputation or any other way for the sake of the Gospel, for then, 'great is thy reward!'" (Newton, as cited in *The Religion of Sir Isaac Newton*, Frank E. Manuel – editor, London, Oxford University Press, 1974, 112).

6. "The supreme God exists necessarily, and by the same necessity He exists always and everywhere." (Newton 1687, *Principia*; see also Caputo 2000, 88).

7. "Atheism is so senseless. When I look at the solar system, I see the earth at the right distance from the sun to receive the proper amounts of heat and light. This did not happen by chance." (Newton, as cited in Tiner 1975).

8. "I have a fundamental belief in the Bible as the Word of God, written by men who were inspired. I study the Bible daily." (Newton, as cited in Tiner 1975).

9. "I find more sure marks of authenticity in the Bible than in any profane history whatsoever." (Newton, as cited in Morris 1982, 26).

(2) GALILEO GALILEI (1564-1642), founder of Experimental Physics

1. "To the Lord, whom I worship and thank, That governs the heavens with His eyelid, To Him I return tired, but full of living." (Galileo, as cited in Caputo 2000, 85).

2. "When I reflect on so many profoundly marvellous things that persons have grasped, sought, and done, I recognize even more clearly that human intelligence is a work of God, and one of the most excellent." (Galileo, as cited in Caputo 2000, 85).

3. "The Holy Scripture cannot err and the decrees therein contained are absolutely true and inviolable. But its expounders and interpreters are liable to err in many ways." (Galileo, as cited in Ross 1991, 20).

4. "The Holy Bible can never speak untruth -- whenever its true meaning is understood." (Galileo, as cited in Drake 1957, 181).

(3) NICOLAUS COPERNICUS (1473-1543), founder of Heliocentric Cosmology

1. "To know the mighty works of God, to comprehend His wisdom and majesty and power, to appreciate, in degree, the wonderful working of His laws, surely all this must be a pleasing and acceptable mode of worship to the Most High, to whom ignorance cannot be more gratifying than knowledge." (Copernicus, as cited in Neff 1952, 191-192; and in Hubbard 1905, v).

2. "Not the Grace received by Paul do I desire, Nor the good will with which Thou forgavest Peter, Only that which Thou didst grant the thief on the cross, That mercy I ask of Thee." (Copernicus, as cited in Trepatschko 1994, Vol. 44).

3. In his revolutionary work *De revolutionibus orbium caelestium* (On the Revolutions of the Celestial Spheres, 1543), Copernicus wrote: "For who, after applying himself to things which he sees established in the best order and directed by Divine ruling, would not through diligent contemplation of them and through a certain habituation be awakened to that which is best and would not admire the Artificer of all things, in Whom is all happiness and every good? For the divine Psalmist surely did not say gratuitously that he took pleasure in the workings of God and rejoiced in the works of His hands, unless by means of these things as by some sort of vehicle we are transported to the contemplation of the highest good." (Copernicus, 1873, 10-11).

(4) JOHANNES KEPLER (1571-1630), founder of Physical Astronomy and Modern Optics

1. "O Thou, who through the light of nature increasest in us the longing for the light of Thy Grace that through it we may come to the light of Thy majesty, I give Thee thanks, Creator and God, that Thou hast given me this joy in Thy creation, and I rejoice in the works of Thy hands." (Kepler, as cited in Beer and Beer 1975, 526).

2. "The World of Nature, the World of Man, the World of God - all three fit together. We see how God, like a human architect approached the founding of the world according to order and rule, and measured everything in such a manner." (Kepler, as cited in Tiner 1977, 172).

3. "Since we astronomers are priests of the highest God in regard to the book of nature, it befits us to be thoughtful, not of the glory of our minds, but rather, above all else, of the glory of God." (Kepler, as cited in Morris 1982, 11; see also Graves 1996, 51).

(5) SIR FRANCIS BACON (1561-1626), founder of the scientific inductive method

1. "There are two books laid before us to study, to prevent our falling into error; the first, the volume of the Scriptures, which reveal the will of God; then the volume of the creatures, which express His power." (Bacon, as cited in Morris 1982, 13-14).

2. "It is true, that a little philosophy inclineth man's mind to atheism; but depth in philosophy bringeth men's minds about to religion. For while the mind of man looketh upon second causes scattered, it may sometimes rest in them, and go no further; but when it beholdeth the chain of them, confederate and linked together, it must needs fly to Providence and Deity." (Bacon 1875, 64).

3. In the first chapter "Of Truth" of his *Essays* (1601), Lord Bacon wrote: "The first creature of God, in the works of the days, was the light of the sense; the last, was the light of reason; and his sabbath work ever since, is the illumination of his Spirit. First he breathed light, upon the face of the matter or chaos; then he breathed light, into the face of man; and still he breatheth and inspireth light, into the face of his chosen." (Bacon 1875).

6. RENE DESCARTES (1596-1650), founder of Analytical Geometry and Modern Philosophy

1. In the beginning of his *Meditations* (1641) Descartes wrote: "I have always been of the opinion that the two questions respecting God and the Soul were the chief of those that ought to be determined by help of Philosophy rather than of Theology; for although to us, the faithful, it be sufficient to hold as matters of faith, that the human soul does not perish with the body, and that God exists, it yet assuredly seems impossible ever to persuade infidels of the reality of any religion, or almost even any moral virtue, unless, first of all, those two things be proved to them by natural reason. And since in this life there are frequently greater rewards held out to vice than to virtue, few would prefer the right to the useful, if they were restrained neither by the fear of God nor the expectation of another life." (Descartes 1901).

2. "It is absolutely true that we must believe in God, because it is also taught by the Holy Scriptures. On the other hand, we must believe in the Sacred Scriptures because they come from God." (Descartes 1950, Letter of Dedication).

3. "And thus I very clearly see that the certitude and truth of all science depends on the knowledge alone of the true God, insomuch that, before I knew him, I could have no perfect knowledge of any other thing. And now that I know him, I possess the means of acquiring a perfect knowledge respecting innumerable matters, as well relative to God himself and other intellectual objects as to corporeal nature." (Descartes 1901, Meditation V).

7. BLAISE PASCAL (1623-1662), founder of Hydrostatics, Hydrodynamics, and the Theory of Probabilities

1. In his book *Pensees (Thoughts)*, 1660, Blaise Pascal wrote: "Jesus Christ is a God whom we approach without pride and before whom we humble ourselves without despair." (Pascal 1910, No. 528).

2. "Jesus Christ did nothing but teach men that they loved themselves, that they were slaves, blind, sick, wretched, and sinners; that He must deliver them, enlighten, bless, and heal them; that this would be effected by hating self, and by following Him through suffering and the death on the cross. Without Jesus Christ man must be in vice and misery; with Jesus Christ man is free from vice and misery; in Him is all our virtue and all our happiness. Apart from Him there is but vice, misery, darkness, death, despair." (Pascal 1910, No. 545-546).

3. "Christianity is strange. It bids man recognise that he is vile, even abominable, and bids him desire to be like God. Without such a counterpoise, this dignity would make him horribly vain, or this humiliation would make him terribly abject." (Pascal 1910, No. 537).

4. "The knowledge of God without that of man's misery causes pride. The knowledge of man's misery without that of God causes despair. The knowledge of Jesus Christ constitutes the middle course, because in Him we find both God and our misery." (Pascal 1910, No. 527).

5. "We know God only by Jesus Christ. Without this mediator, all communion with God is taken away; through Jesus Christ we know God. All those who have claimed to know God, and to prove Him without Jesus Christ, have had only weak proofs. But in proof of Jesus Christ we have the prophecies, which are solid and palpable proofs. And these prophecies, being accomplished and proved true by the event, mark the certainty of these truths and, therefore, the divinity of Christ. In Him, then, and through Him, we know God." (Pascal 1910, No. 547).

6. "Not only do we know God by Jesus Christ alone, but we know ourselves only by Jesus Christ. We know life and death only through Jesus Christ. Apart from Jesus Christ, we do not know what is our life, nor our death, nor God, nor ourselves. Thus without the Scripture, which has Jesus Christ alone for its object, we know nothing, and see only darkness and confusion in the nature of God and in our own nature." (Pascal 1910, No. 548).

7. "There are two ways of proving the truths of our religion; one by the power of reason, the other by the authority of him who speaks. We do not make use of the latter, but of the former. We do not say, 'This must be believed, for Scripture, which says it, is divine.' But we say that it must be believed for such and such a reason, which are feeble arguments, as reason may be bent to everything." (Pascal 1910, No. 561).

(8) SIR MICHAEL FARADAY (1791-1867), founder of Electronics and Electro-magnetics

1. "I bow before Him who is Lord of all, and hope to be kept waiting patiently for His time and mode of releasing me according to His Divine Word and the great and precious promises whereby His people are made partakers of the Divine nature." (Faraday, as cited in Jones 1870, Vol. II, 471).

2. "The book of nature which we have to read is written by the finger of God." (Faraday, as cited in Seeger 1983, 101).

3. In one of his sermons (London, 7 July 1861), Faraday stated: "And therefore, brethren, we ought to value the privilege of knowing God's truth far beyond anything we can have in this world. The more we see the perfection of God's law fulfilled in Christ, the more we ought to thank God for His unspeakable gift." (Faraday, as cited in Eichman 1993, 93-94).

4. Concerning the nature of the contemporary Church in one of his sermons (7 June 1863), Faraday said: "Think for a moment, brethren, of the Church of Christ, what it means and what it ought to be. Where the Word of God has sounded, there His people are drawn together; in small companies (and we may consider there are many such scattered over the world of whom we know nothing), gathered out of the world, to the obedience of all things that Christ has commanded." (Faraday, as cited in Eichman 1993, 94-95).

5. "And though the thought of death brings the thought of judgement, which is far above all the trouble that arises from the breaking of mere earthly ties, it also brings to the Christian the thought

of Him who died, was judged and who rose again for the justification of those who believe in Him.” (Faraday, as cited in Jones 1870, Vol. II, 424).

(9) SIR JAMES CLERK MAXWELL (1831-1879), founder of Statistical Thermodynamics

According to the Encyclopaedia Britannica (1997): “James Clerk Maxwell is regarded by most modern physicists as the scientist of the 19th century who had the greatest influence on 20th-century physics; he is ranked with Sir Isaac Newton and Albert Einstein for the fundamental nature of his contributions.”

1. “Almighty God, who hast created man in Thine own image, and made him a living soul that he might seek after Thee and have dominion over Thy creatures, teach us to study the works of Thy hands that we may subdue the earth to our use, and strengthen our reason for Thy service; and so to receive Thy blessed Word, that we may believe on Him whom Thou hast sent to give us the knowledge of salvation and the remission of our sins. All which we ask in the name of the same Jesus Christ our Lord.” (Maxwell, as cited in Bowden 1998, 288; and in Williams and Mulfinger 1974, 487).

2. “I think the more we enter together into Christ’s work He will have the more room to work His work in us. For He always desires us to be one that He may be one with us. Our worship is social, and Christ will be wherever two or three are gathered together in His name.” (Maxwell, as cited in Campbell and Garnett 1882, 312).

3. “I think men of science as well as other men need to learn from Christ, and I think Christians whose minds are scientific are bound to study science that their view of the glory of God may be as extensive as their being is capable of.” (Maxwell, as cited in Campbell and Garnett 1882, 404-405).

4. In a letter to his wife (December 1873), Maxwell wrote: “I am always with you in spirit, but there is One who is nearer to you and to me than we ever can be to each other, and it is only through Him and in Him that we can ever really get to know each other. Let us try to realise the great mystery in *Ephesians V.*, and then we shall be in our right position with respect to the world outside, the men and women whom Christ came to save from their sins.” (Maxwell, as cited in Campbell and Garnett 1882, 387).

5. In a letter to his wife (June 23, 1864), Maxwell wrote: “Think what God has determined to do to all those who submit themselves to His righteousness and are willing to receive His gift. They are to be conformed to the image of His Son, and when that is fulfilled, and God sees that they are conformed to the image of Christ, there can be no more condemnation, for this is the praise which God Himself gives, whose judgment is just.” (Maxwell, as cited in Campbell and Garnett 1882, 338-339).

(10) LORD KELVIN (1824-1907), founder of Thermodynamics and Energetics

1. Lord Kelvin (Sir William Thomson) closed his presidential address to the British Association for the Advancement of Science (Edinburgh, August 1871) thus: “Overpoweringly strong proofs of intelligent and benevolent design lie all around us; and if ever perplexities, whether metaphysical or scientific, turn us away from them for a time, they come back upon us with irresistible force, showing to us through Nature the influence of a free will, and teaching us that all living things depend on one ever-acting Creator and Ruler.” (Kelvin 1871; see also Seeger 1985a, 100-101).

2. In his first lecture in the “Introductory Course of Natural Philosophy,” Sir William Thomson stated: “We feel that the power of investigating the laws established by the Creator for maintaining the harmony and permanence of His works is the noblest privilege which He has granted to our intellectual state. As the depth of our insight into the wonderful works of God increases, the stronger are our feelings of awe and veneration in contemplating them and in endeavoring to approach their Author.” (Kelvin, as cited Seeger 1985a, 99-100).

3. In a speech to University College (1903), Kelvin said: “Do not be afraid to be free thinkers. If you think strongly enough, you will be forced by science to the belief in God.” (Kelvin, as cited in Yahya 2002).

4. “The atheistic idea is so nonsensical that I cannot put it into words.” (Lord Kelvin, *Vict. Inst.*, 124, p. 267, as cited in Bowden 1982, 218).

5. In his address at the annual meeting of the Christian Evidence Society (May 23, 1889), Kelvin said: “I have long felt that there was a general impression in the non-scientific world, that the scientific world believes Science has discovered ways of explaining all the facts of Nature without adopting any definite belief in a Creator. I have never doubted that that impression was utterly groundless.” (Kelvin 1889).

6. “Science can do little positively towards the objects of this society. But it can do something, and that something is vital and fundamental. It is to show that what we see in the world of dead matter and of life around us is not a result of the fortuitous concourse of atoms.” (Kelvin 1889).

(11) SIR ROBERT BOYLE (1627-1691), founder of Modern Chemistry

Boyle’s most significant religious works are *Some Considerations Touching the Style of the Holy Scriptures* (1661), *The Excellency of Theology, Compared with Natural Philosophy* (1674), and *The Christian Virtuoso* (1690). In his will Robert Boyle left funds for eight annual lectures (the famous *Boyle Lectures*, which still continue) “for proving the Christian Religion against notorious Infidels.”

1. “When with bold telescopes I survey the old and newly discovered stars and planets, when with excellent microscopes I discern the unimitable subtlety of nature’s curious workmanship; and when, in a word, by the help of anatomical knives, and the light of chemical furnaces, I study the book of nature, I find myself oftentimes reduced to exclaim with the Psalmist, ‘How manifold are Thy works, O Lord! In wisdom hast Thou made them all!’ ” (Boyle, as cited in Woodall 1997, 32).

2. In *The Excellency of Theology* (1674), Boyle stated: “The vastness, beauty, orderliness of heavenly bodies, the excellent structure of animals and plants, and other phenomena of nature justly induce an intelligent, unprejudiced observer to conclude a supreme, powerful, just, and good Author.” (Boyle, as cited in Seeger 1985, 183-184).

3. Boyle never saw any conflict between the Christian religion and Philosophy. (By the term “Philosophy” seventeenth-century writers mean what we understand by the concept “Science” today; see Woodall 1997). Boyle wrote: “If we lay aside all the irrational opinions, that are unreasonably fathered on the Christian religion, and all erroneous conceits repugnant to Christianity, which have been groundlessly fathered upon Philosophy, the seeming contradictions betwixt Divinity and true Philosophy, will be but few, and the real ones none at all.” (Boyle, as cited in Woodall 1997, 32).

(12) SIR WILLIAM HARVEY (1578-1657), founder of Modern Medicine

William Harvey founded modern physiology and embryology, and elucidated the complex nature of the heart's functions and the circulation of the blood.

1. In his book *Anatomical Exercises on the Generation of Animals* (1651), William Harvey wrote: "We acknowledge God, the Supreme and Omnipotent Creator, to be present in the production of all animals, and to point, as it were, with a finger to His existence in His works. All things are indeed contrived and ordered with singular providence, divine wisdom, and most admirable and incomprehensible skill. And to none can these attributes be referred save to the Almighty." (Harvey, 1989, 443).

2. "The examination of the bodies of animals has always been my delight, and I have thought that we might thence not only obtain an insight into the lighter mysteries of nature, but there perceive a kind of image or reflection of the omnipotent Creator Himself." (Harvey, as cited in Keynes 1966, 330).

(13) JOHN RAY (1627-1705), founder of Modern Biology and Natural History

1. In his book *The Wisdom of God Manifested in the Works of the Creation* (1691), John Ray wrote: "There is no greater, at least no more palpable and convincing Argument of the Existence of a Deity, than the admirable Art and Wisdom that discovers itself in the Make and Constitution, the Order and Disposition, the Ends and Uses of all the Parts and Members of this stately Fabrick of Heaven and Earth." (Ray 1717, Part I).

2. "There is for a free man no occupation more worth and delightful than to contemplate the beauteous works of nature and honor the infinite wisdom and goodness of God." (Ray, as cited in Graves 1996, 66; see also Yahya 2002).

3. "We feed our Bodies; our Souls are also to be fed: The Food of the Soul is Knowledge, especially Knowledge in the Things of God, and the Things that concern its Eternal Peace and Happiness - the Doctrine of Christianity, the Word of God read and preached, 1 Pet. ii. 2. 'As newborn Babes, desire the sincere Milk of the Word, that ye may grow thereby'." (Ray 1717, 399).

4. "The Life of a Christian is a continual Warfare, and we have potent and vigilant Enemies to encounter withal: the Devil, the World, and this corrupt Flesh we carry about with us." (Ray 1717, 401).

5. "He that with his Christian Armour manfully fights against and repels the Temptations and Assaults of his Spiritual Enemies, he that keeps his Garments pure, and his Conscience void of Offence towards God and towards Man, shall enjoy perfect Peace here, and Assurance for ever." (Ray 1717, 402).

Ray's major theological works are *A Persuasive to a Holy Life* (1700) and the three *Physico-Theological Discourses* (1692).

(14) GOTTFRIED WILHELM LEIBNIZ (1646-1716), German mathematician and philosopher, founder of Infinitesimal Calculus

Leibniz invented the Differential and Integral Calculus (simultaneously with Newton).

1. In his central philosophical work *The Monadology* (1714), Leibniz wrote: "In God there is Power, which is the source of all, also Knowledge, whose content is the variety of the ideas, and finally Will, which makes changes or products according to the principle of the best." (Leibniz 1898, No. 48).
2. "God is absolutely perfect, for perfection is nothing but amount of positive reality, in the strict sense, leaving out of account the limits or bounds in things which are limited. And where there are no bounds, that is to say in God, perfection is absolutely infinite. It follows also that created beings derive their perfections from the influence of God, but that their imperfections come from their own nature, which is incapable of being without limits. For it is in this that they differ from God." (Leibniz 1898, No. 41-42).
3. "God alone is the primary unity or original simple substance, of which all created or derivative Monads are products and have their birth, so to speak, through continual fulgurations of the Divinity from moment to moment, limited by the receptivity of the created being, of whose essence it is to have limits." (Leibniz 1898, No. 47).

(15) CHARLES DARWIN (1809-1882), founder of the Theory of Evolution

1. Charles Darwin ended his most fundamental scientific work *The Origin of Species* (1872, 6th edition) with the words: "There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved." (Darwin 1928, 463).
2. "Another source of conviction in the existence of God, connected with the reason and not with the feelings, impresses me as having much more weight. This follows from the extreme difficulty or rather impossibility of conceiving this immense and wonderful universe, including man with his capacity of looking far backwards and far into futurity, as the result of blind chance or necessity. When thus reflecting, I feel compelled to look to a First Cause having an intelligent mind in some degree analogous to that of man; and I deserve to be called a Theist." (Darwin 1995, 60).
3. "To my mind it accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining the birth and death of the individual." (Darwin 1928, 462; *The Origin of Species*).
4. "With respect to the theological view of the question; this is always painful to me. I am bewildered. I had no intention to write atheistically. I cannot anyhow be contented to view this wonderful universe and especially the nature of man, and to conclude that everything is the result of brute force. I am inclined to look at everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance." (Darwin 1993, 224).
5. In 1879, three years before the end of his life, Darwin wrote that he had "never been an Atheist in the sense of denying the existence of a God." (Darwin, as cited in Bowden 1998, 273).
6. In 1873 Darwin stated: "The impossibility of conceiving that this grand and wondrous universe, with our conscious selves, arose through chance, seems to me the chief argument for the existence of God." (Darwin, as cited in Bowden 1998, 273).

(16) ERNST HAECKEL (1834-1919), German biologist, the most influential evolutionist in continental Europe

1. In his major philosophical work *Monism as Connecting Religion and Science: The Confession of Faith of a Man of Science* (1892) the pantheistic monist Ernst Haeckel wrote:
“The monistic idea of God, which alone is compatible with our present knowledge of nature, recognises the Divine spirit in all things. God is everywhere. As Giordano Bruno has it: ‘There is one Spirit in all things, and no body is so small that it does not contain a part of the Divine substance whereby it is animated’.” (Haeckel 1895, 78).
2. “Of the various systems of pantheism which for long have given expression more or less clearly to the monistic conception of God, the most perfect is certainly that of Spinoza.” (Haeckel 1895, 79).
3. “Ever more clearly are we compelled by reflection to recognise that God is not to be placed over against the material world as an external being, but must be placed as a ‘Divine power’ or ‘moving Spirit’ within the cosmos itself.” (Haeckel 1895, 15).
4. “The charge of atheism which still continues to be levelled against our pantheism, and against the monism which lies at its root, no longer finds a response among the really educated classes of the present day.” (Haeckel 1895, 80-81).
5. “I conclude my monistic Confession of Faith with the words: ‘May God, the Spirit of the Good, the Beautiful, and the True, be with us’.” (Haeckel 1895, 89).

(17) THOMAS H. HUXLEY (1825-1895), English biologist and evolutionist, famous as “Darwin’s bulldog”

1. In his article *Science and Morals* (1886), Huxley stated: “The student of nature, who starts from the axiom of the universality of the law of causation, cannot refuse to admit an eternal existence; if he admits the conservation of energy, he cannot deny the possibility of an eternal energy; if he admits the existence of immaterial phenomena in the form of consciousness, he must admit the possibility, at any rate, of an eternal series of such phenomena; and, if his studies have not been barren of the best fruit of the investigation of nature, he will have enough sense to see that when Spinoza says, ‘Per Deum intelligo ens absolute infinitum, hoc est substantiam constantem infinitis attributis,’ the God so conceived is one that only a very great fool would deny, even in his heart. Physical science is as little Atheistic as it is Materialistic.” (Huxley 1893-94, *Collected Essays*, Vol. IX, p. 140).
2. “The more I know intimately of the lives of other men (to say nothing of my own), the more obvious it is to me that the wicked does *not* flourish nor is the righteous punished. But for this to be clear we must bear in mind what almost all forget, that the rewards of life are contingent upon obedience to the *whole* law – physical as well as moral – and that moral obedience will not atone for physical sin, or *vice versa*. The ledger of the Almighty is strictly kept, and every one of us has the balance of his operations paid over to him at the end of every minute of his existence.” (Huxley 1903, Vol. I, Ch. 1.16). Once, in a letter to Kingsley, Huxley said that he believed in ‘the Divine Government’ of the universe.” (Goudge 1967, Vol. IV, p. 103).
3. In “On Providence” (*An Apologetic Irenicon*, 1892), Huxley wrote: “If the doctrine of a Providence is to be taken as the expression, in a way ‘to be understood of the people,’ of the total exclusion of chance from a place even in the most insignificant corner of Nature; if it means the strong conviction that the cosmic process is rational; and the faith that, throughout all duration, unbroken order has

reigned in the universe – I not only accept it, but I am disposed to think it the most important of all truths. As it is of more consequence for a citizen to know the law than to be personally acquainted with the features of those who will surely carry it into effect, so this very positive doctrine of Providence, in the sense defined, seems to me far more important than all the theorems of speculative theology.” (Huxley 1903, Vol. III, Ch. 3.9; see also Coley & Hall 1980, 33).

(18) SIR JOSEPH J. THOMSON (1856-1940), Nobel Laureate in Physics, discoverer of the electron, founder of atomic physics

1. J.J. Thomson’s inaugural presidential address to the British Association is published in the prominent scientific journal *Nature* (26 August 1909). Sir Joseph concludes his address with the words: “As we conquer peak after peak we see in front of us regions full of interest and beauty, but we do not see our goal, we do not see the horizon; in the distance tower still higher peaks, which will yield to those who ascend them still wider prospects, and deepen the feeling, the truth of which is emphasized by every advance in science, that ‘Great are the Works of the Lord’.” (Thomson 1909, *Nature*, vol. 81, p. 257).

2. Sir Owen Richardson (Nobel in Physics, 1928) described his teacher and friend J.J. Thomson thus: “He was sincerely religious, a churchman with a dislike for Anglo-Catholicism, a regular communicant, who every day knelt in private prayer, a habit known only to Lady Thomson until near the end of his life.” (Richardson 1970, “Sir Joseph J. Thomson”, in *The Dictionary of National Biography*, Oxford University Press, p. 862).

3. In his biographical article “J.J. Thomson, Anglican,” in the journal *Perspectives on Science and Christian Faith*, Raymond Seeger (NSF) points out: “As a Professor, J.J. Thomson did attend the Sunday evening college chapel service, and as Master, the morning service. He was a regular communicant in the Anglican Church. In addition, he showed an active interest in the Trinity Mission at Camberwell. With respect to his private devotional life, J.J. Thomson would invariably practice kneeling for daily prayer, and read his Bible before retiring each night. He truly was a practicing Christian!” (Seeger 1986, 132).

(19) LOUIS PASTEUR (1822-1895), founder of Microbiology and Immunology

The French biologist Louis Pasteur proved the germ theory of disease and the Biogenesis Law. According to the Biogenesis Law, “All living organisms arise from pre-existing living organisms.” This law overthrew the materialistic theory of *spontaneous generation* (i.e. the theory that life can arise from non-life). Louis Pasteur performed pioneering researches in stereochemistry; he also invented “pasteurization” (partial sterilization) and the vaccines against anthrax, chicken cholera and rabies.

1. “The more I study nature, the more I stand amazed at the work of the Creator. Science brings men nearer to God.” (Pasteur, as cited in Lamont 1995; see also Tiner 1990, 75).

2. “In good philosophy, the word cause ought to be reserved to the single Divine impulse that has formed the universe.” (Pasteur, as cited in Geison, 1995, 141-142).

3. “Little science takes you away from God but more of it takes you to Him.” (Pasteur, as cited in Guitton 1991, 5; see also Yahya 2002).

(20) WERNHER VON BRAUN (1912-1977), rocket engineer, founder of Astronautics

1. "The two most powerful forces shaping our civilization today are science and religion. Through science man strives to learn more of the mysteries of creation. Through religion he seeks to know the creator. Neither operates independently. It is as difficult for me to understand a scientist who does not acknowledge the presence of a superior rationality behind the existence of the universe as it is to comprehend a theologian who would deny the advances of science. Far from being independent or opposing forces, science and religion are sisters. Both seek a better world. While science seeks control over the forces of nature around us, religion controls the forces of nature within us." (von Braun 1963, 2).

2. "For me the idea of a creation is inconceivable without God. One cannot be exposed to the law and order of the universe without concluding that there must be a divine intent behind it all. Some evolutionists believe that the creation is the result of a random arrangement of atoms and molecules over billions of years. But when they consider the development of the human brain by random processes within a time span of less than a million years, they have to admit that this span is just not long enough. Or take the evolution of the eye in the animal world. What random process could possibly explain the simultaneous evolution of the eye's optical system, the conductors of the optical signals from the eye to the brain, and the optical nerve center in the brain itself where the incoming light impulses are converted to an image the conscious mind can comprehend?" (von Braun, as cited in Hill 1976, xi).

3. In the foreword to the book *From Goo to You by Way of the Zoo* (1976), Wernher von Braun wrote about Jesus Christ: "We should not be dismayed by the relative insignificance of our own planet in the vast universe as modern science now sees it. In fact God deliberately reduced Himself to the stature of humanity in order to visit the earth in person, because the cumulative effect over the centuries of millions of individuals choosing to please themselves rather than God had infected the whole planet. When God became a man Himself, the experience proved to be nothing short of pure agony. In man's time-honored fashion, they would unleash the whole arsenal of weapons against Him: misrepresentation, slander, and accusation of treason. The stage was set for a situation without parallel in the history of the earth. God would visit creatures and they would nail Him to the cross!" (von Braun, as cited in Hill 1976, xi).

4. "Finite man cannot comprehend an omnipresent, omniscient, omnipotent, and infinite God. Any effort to visualize God, to reduce him to our comprehension, to describe him in our language, beggars his greatness. I find it best through faith to accept God as an intelligent will, perfect in goodness, revealing himself in the world of experience more fully down through the ages, as man's capacity for understanding grows." "For spiritual comfort I find assurance in the concept of the fatherhood of God. For ethical guidance I rely on the corollary concept of the brotherhood of man." "Scientists now believe that in nature, matter is never destroyed. Not even the tiniest particle can disappear without a trace. Nature does not know extinction – only transformation. Would God have less regard for his masterpiece of creation, the human soul?" (von Braun 1963, 2).

5. "Certainly there are those who argue that the universe evolved out of a random process, but what random process could produce the brain of a man or the system of the human eye?" (von Braun 1972).

(21) FRANCIS COLLINS (born 1950), Director of the National Human Genome Research Institute

1. In the introduction of his book *The Language of God* (2006) Francis Collins wrote: "For me the experience of sequencing the human genome, and uncovering this most remarkable of all texts, was

both a stunning scientific achievement and an occasion of worship. Many will be puzzled by these sentiments, assuming that a rigorous scientist could not also be a serious believer in a transcendent God. This book aims to dispel that notion, by arguing that belief in God can be an entirely rational choice, and that the principles of faith are, in fact, complementary with the principles of science.” (Francis S. Collins, *The Language of God: A Scientist Presents Evidence for Belief*, New York, Free Press, 2006).

2. “Science’s domain is to explore nature. God’s domain is in the spiritual world, a realm not possible to explore with the tools and language of science. It must be examined with the heart, the mind, and the soul – and the mind must find a way to embrace both realms.” (Collins 2006).

3. “I have no reason to see a discordance between what I know as a scientist who spends all day studying the genome of humans and what I believe as somebody who pays a lot of attention to what the Bible has taught me about God and about Jesus Christ. Those are entirely compatible views. Science is the way – a powerful way, indeed – to study the natural world. Science is not particularly effective – in fact, it’s rather ineffective – in making commentary about the supernatural world. Both worlds, for me, are quite real and quite important. They are investigated in different ways. They coexist. They illuminate each other.” (Collins 2000).

4. To the question, “Are you a mainline Protestant? An Evangelical Protestant? What are you?” Dr. Collins replied: “I guess I’d call myself a serious Christian. That is someone who believes in the reality of Christ’s death and resurrection, and who tries to integrate that into daily life and not just relegate it to something you talk about on Sunday morning.” (Collins 2000).

5. “Science is the only reliable way to understand the natural world, and its tools when properly utilized can generate profound insights into material existence. But science is powerless to answer questions such as ‘Why did the universe come into being?’, ‘What is the meaning of human existence?’, ‘What happens after we die?’. One of the strongest motivations of humankind is to seek answers to profound questions, and we need to bring all the power of both the scientific and spiritual perspectives to bear on understanding what is both seen and unseen.” (Collins 2006).

(22) FOUNDERS OF MODERN SCIENCE INCLUDED IN PART I

1. Max PLANCK – founder of quantum mechanics
2. Werner HEISENBERG – co-founder of quantum mechanics
3. Erwin SCHROEDINGER – founder of wave mechanics
4. Charles TOWNES – founder of laser science
5. Arthur SCHAWLOW – co-founder of laser science
6. Richard SMALLEY – founder of nanotechnology
7. John ECCLES – founder of electrophysiology
8. Alexis CARREL – founder of transplantology
9. Joseph MURRAY – co-founder of transplantology

See other articles in this issue and the Tables below. These great scientists are the founding fathers of modern science. All of them are Bible-believing Christians. (See *Encyclopaedia Britannica* and the book *Men of Science, Men of God* by Dr. Henry M. Morris, Master Books, 1982).

Table I. Scientific Disciplines Established by Bible-Believing Scientists:

	SCIENTIFIC DISCIPLINES	BIBLE-BELIEVING SCIENTISTS
1.	ANALYTICAL GEOMETRY	RENE DESCARTES (1596-1650)
2.	ANESTHESIOLOGY	JAMES SIMPSON (1811-1870)
3.	ANTISEPTIC SURGERY	JOSEPH LISTER (1827-1912)
4.	ASTRONAUTICS	HERMANN OBERTH (1894-1989) WERNHER VON BRAUN (1912-1977)
5.	ATOMIC PHYSICS	JOSEPH J. THOMSON (1856-1940)
6.	BACTERIOLOGY	LOUIS PASTEUR (1822-1895)
7.	BIOLOGY	JOHN RAY (1627-1705)
8.	CALCULUS	ISAAC NEWTON (1642-1727) GOTTFRIED LEIBNIZ (1646-1716)
9.	CARDIOLOGY	WILLIAM HARVEY (1578-1657)
10.	CELESTIAL MECHANICS	JOHANNES KEPLER (1571-1630)
11.	CHEMISTRY	ROBERT BOYLE (1627-1691)
12.	COMPARATIVE ANATOMY	GEORGES CUVIER (1769-1832)
13.	COMPUTER SCIENCE	CHARLES BABBAGE (1791-1871)
14.	CRYOLOGY	LORD KELVIN (1824-1907)
15.	DIFFERENTIAL GEOMETRY	CARL FRIEDRICH GAUSS (1777-1855)
16.	DIMENSIONAL ANALYSIS	LORD RAYLEIGH (1842-1919)
17.	DYNAMICS	ISAAC NEWTON (1642-1727)
18.	ELECTRODYNAMICS	JAMES CLERK MAXWELL (1831-1879) ANDRE-MARIE AMPERE (1775-1836)
19.	ELECTRO-MAGNETICS	MICHAEL FARADAY (1791-1867)
20.	ELECTRONICS	JOHN AMBROSE FLEMING (1849-1945) MICHAEL FARADAY (1791-1867)
21.	ELECTROPHYSIOLOGY	JOHN ECCLES (1903-1997)

22.	EMBRIOLOGY	WILLIAM HARVEY (1578-1657)
23.	ENERGETICS	LORD KELVIN (1824-1907)
24.	ENTOMOLOGY OF LIVING INSECTS	HENRI FABRE (1823-1915)
25.	EXPERIMENTAL PHYSICS	GALILEO GALILEI (1564-1642)
26.	FIELD THEORY	MICHAEL FARADAY (1791-1867)
27.	FLUID MECHANICS	GEORGE STOKES (1819-1903)
28.	GALACTIC ASTRONOMY	WILLIAM HERSCHEL (1738-1822)
29.	GAS DYNAMICS	ROBERT BOYLE (1627-1691)
30.	GENETICS	GREGOR MENDEL (1822-1884)
31.	GEOLOGY	NICOLAUS STENO (1638-1686)
32.	GLACIAL GEOLOGY	LOUIS AGASSIZ (1807-1873)
33.	GYNECOLOGY	JAMES SIMPSON (1811-1870)
34.	HELIOCENTRIC COSMOLOGY	NICOLAUS COPERNICUS (1473-1543)
35.	HYDRAULICS	LEONARDO DA VINCI (1452-1519)
36.	HYDRODYNAMICS	BLAISE PASCAL (1623-1662)
37.	HYDROGRAPHY	MATTHEW MAURY (1806-1873)
38.	HYDROSTATICS	BLAISE PASCAL (1623-1662)
39.	ICHTHYOLOGY	LOUIS AGASSIZ (1807-1873)
40.	IMMUNOLOGY	LOUIS PASTEUR (1822-1895)
41.	ISOTOPIC CHEMISTRY	WILLIAM RAMSAY (1852-1916)
42.	LASER SCIENCE	CHARLES TOWNES (born 1915) ARTHUR SCHAWLOW (1921-1999)
43.	MATHEMATICAL ANALYSIS	LEONHARD EULER (1707-1783)
44.	MICROBIOLOGY	LOUIS PASTEUR (1822-1895)
45.	MINERALOGY	GEORGIUS AGRICOLA (1494-1555)

46.	MODEL ANALYSIS	LORD RAYLEIGH (1842-1919)
47.	MODERN MEDICINE	WILLIAM HARVEY (1578-1657)
48.	NANOTECHNOLOGY	RICHARD SMALLEY (1943-2005)
49.	NATURAL HISTORY	JOHN RAY (1627-1705)
50.	NON-EUCLIDEAN GEOMETRY	BERNHARD RIEMANN (1826-1866)
51.	NUMBER THEORY	CARL FRIEDRICH GAUSS (1777-1855)
52.	OCEANOGRAPHY	MATTHEW MAURY (1806-1873)
53.	OPTICAL MINERALOGY	DAVID BREWSTER (1781-1868)
54.	OPTICS	JOHANNES KEPLER (1571-1630)
55.	PALEONTOLOGY	JOHN WOODWARD (1665-1728) GEORGES CUVIER (1769-1832)
56.	PATHOLOGY	RUDOLPH VIRCHOW (1821-1902)
57.	PHYSICAL ASTRONOMY	JOHANNES KEPLER (1571-1630)
58.	PHYSICAL CHEMISTRY	MIKHAIL LOMONOSOV (1711-1765)
59.	PHYSIOLOGY	WILLIAM HARVEY (1578-1657)
60.	QUANTUM MECHANICS	MAX PLANCK (1858-1947) WERNER HEISENBERG (1901-1976)
61.	REVERSIBLE THERMODYNAMICS	JAMES JOULE (1818-1889)
62.	STATISTICAL THERMODYNAMICS	JAMES CLERK MAXWELL (1831-1879)
63.	STRATIGRAPHY	NICOLAUS STENO (1638-1686)
64.	SYSTEMATIC BIOLOGY	CAROLUS LINNAEUS (1707-1778)
65.	TAXONOMY	JOHN RAY (1627-1705)
66.	THERMODYNAMICS	LORD KELVIN (1824-1907)
67.	THERMOKINETICS	HUMPHRY DAVY (1778-1829)
68.	TRANSPLANTOLOGY	ALEXIS CARREL (1873-1944) JOSEPH E. MURRAY (born 1919)
69.	VERTEBRATE PALEONTOLOGY	GEORGES CUVIER (1769-1832)

70.	WAVE MECHANICS	ERWIN SCHROEDINGER (1887-1961)
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Table II. Notable Inventions, Discoveries or Development by Bible-Believing Scientists:

INVENTIONS, DISCOVERIES	BIBLE-BELIEVING SCIENTISTS
ABSOLUTE TEMPERATURE SCALE	LORD KELVIN (1824-1907)
ACTUARIAL TABLES	CHARLES BABBAGE (1791-1871)
BAROMETER	BLAISE PASCAL (1623-1662)
BINARY PULSARS	JOSEPH H. TAYLOR, JR. (born 1941)
BIOGENESIS LAW	LOUIS PASTEUR (1822-1895)
BRAGG'S LAW	WILLIAM H. BRAGG (1862-1942) WILLIAM L. BRAGG (1890-1971)
CALCULATING MACHINE	CHARLES BABBAGE (1791-1871)
CARTESIAN COORDINATE SYSTEM	RENE DESCARTES (1596-1650)
CHARGE OF THE ELECTRON	ROBERT MILLIKAN (1868-1953)
CHLOROFORM	JAMES SIMPSON (1811-1870)
CLASSIFICATION SYSTEM	CAROLUS LINNAEUS (1707-1778)
COMPTON EFFECT	ARTHUR COMPTON (1892-1962)
CONFORMATIONAL ANALYSIS	DEREK BARTON (1918-1998)
DOUBLE STARS	WILLIAM HERSCHEL (1738-1822)
ELECTRIC GENERATOR	MICHAEL FARADAY (1791-1867)
ELECTRIC MOTOR	JOSEPH HENRY (1797-1878)
ELECTRON	JOSEPH J. THOMSON (1856-1940)
EPHEMERIS TABLES	JOHANNES KEPLER (1571-1630)
EPIDEMIOLOGY OF MALARIA	RONALD ROSS (1857-1932)
FERMENTATION CONTROL	LOUIS PASTEUR (1822-1895)

FULLERENE	RICHARD SMALLEY (1943-2005)
GALVANOMETER	JOSEPH HENRY (1797-1878)
GLOBAL STAR CATALOG	JOHN HERSCHEL (1792-1871)
HUMAN GENOME PROJECT	FRANCIS COLLINS (born 1950)
INERT GASES	WILLIAM RAMSAY (1852-1916)
KALEIDOSCOPE	DAVID BREWSTER (1781-1868)
KIDNEY TRANSPLANT	JOSEPH E. MURRAY (born 1919)
LASER	CHARLES TOWNES (born 1915) ARTHUR SCHAWLOW (1921–1999)
LASER COOLING	WILLIAM D. PHILLIPS (born 1948) ARTHUR SCHAWLOW (1921–1999)
LAW OF GRAVITY	ISAAC NEWTON (1642-1727)
MASER	CHARLES TOWNES (born 1915) ARTHUR SCHAWLOW (1921–1999)
MINE SAFETY LAMP	HUMPHRY DAVY (1778-1829)
MOTT TRANSITION	NEVILL MOTT (1905-1996)
ORGAN TRANSPLANT	ALEXIS CARREL (1873–1944)
PASTEURIZATION	LOUIS PASTEUR (1822-1895)
PRINCIPLE OF UNCERTAINTY	WERNER HEISENBERG (1901-1976)
PULSARS	ANTONY HEWISH (born 1924) JOCELYN BELL BURNELL (born 1943)
RADIO	GUGLIELMO MARCONI (1874–1937)
REFLECTING TELESCOPE	ISAAC NEWTON (1642-1727)
SCIENTIFIC INDUCTIVE METHOD	FRANCIS BACON (1561-1626)
SELF-INDUCTION	JOSEPH HENRY (1797-1878)
TELEGRAPH & THE MORSE CODE	SAMUEL F.B. MORSE (1791-1872)
THERMIONIC VALVE	JOHN AMBROSE FLEMING (1849-1945)

TRANS-ATLANTIC CABLE	LORD KELVIN (1824-1907)
VACCINATION & IMMUNIZATION	LOUIS PASTEUR (1822-1895)