

## Part I. 50 Nobel Laureates Who Believe in GOD: Nobel Scientists (1)

Tihomir Dimitrov\*

### ABSTRACT

This article covers well-documented quotations from the following fourteen (14) Nobel scientists: Albert Einstein, Max Planck, Erwin Schrodinger, Werner Heisenberg, Robert A. Millikan, Charles H. Townes, Arthur Schawlow, William D. Phillips, William H. Bragg, Guglielmo Marconi, Arthur H. Compton, Arno Penzias, Sir Nevill Mott, and Isidor I. Rabi.

**Key Words:** GOD, Nobel laureates, Nobel Scientists, belief, science, religion.

### (1) ALBERT EINSTEIN – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Albert Einstein (1879–1955) was awarded the 1921 Nobel Prize in Physics for his contributions to Quantum Theory and for his discovery of the law of the photoelectric effect. Einstein is one of the founders of modern physics; he is the author of the Theory of Relativity. According to the world media (*Reuters*, December 2000) Einstein is “the personality of the second millennium.”

**Nationality:** German; later Swiss and American citizen

**Education:** Ph.D. in physics, University of Zurich, Switzerland, 1905

**Occupation:** Patent Examiner in the Swiss Patent Office, Bern, 1902-1908; Professor of Physics at the Universities of Zurich, Prague, Bern, and Princeton, NJ.

1. “I want to know how God created this world. I am not interested in this or that phenomenon, in the spectrum of this or that element. I want to know His thoughts, the rest are details.” (Einstein, as cited in Ronald Clark, *Einstein: The Life and Times*, London, Hodder and Stoughton Ltd., 1973, 33).

2. “We are in the position of a little child entering a huge library filled with books in many different languages. The child knows someone must have written those books. It does not know how. It does not understand the languages in which they are written. The child dimly suspects a mysterious order in the arrangement of the books, but doesn’t know what it is. That, it seems to me, is the attitude of even the most intelligent human being toward God. We see a Universe marvellously arranged and obeying certain laws, but only dimly understand these laws. Our limited minds cannot grasp the mysterious force that moves the constellations.” (Einstein, as cited in Denis Brian, *Einstein: A Life*, New York, John Wiley and Sons, 1996, 186).

3. “If one purges the Judaism of the Prophets and Christianity as Jesus Christ taught it of all subsequent additions, especially those of the priests, one is left with a teaching which is capable of curing all the social ills of humanity. It is the duty of every man of good will to strive steadfastly in his own little world to make this teaching of pure humanity a living force, so far as he can.” (Albert Einstein, *Ideas and Opinions*, New York, Bonanza Books, 1954, 184-185).

---

\* Correspondence: Tihomir Dimitrov, M.Sc. in Psychology & M.A. in Philosophy. Website: <http://nobelists.net>.  
E-Mail: [tih777dim@yahoo.com](mailto:tih777dim@yahoo.com) Note: This work is copyrighted 1995-2008 by the author.

4. "After all, haven't the differences between Jew and Christian been overexaggerated by fanatics on both sides? We both are living under God's approval, and nurture almost identical spiritual capacities. Jew or Gentile, bond or free, all are God's own." (Einstein, as cited in H.G. Garbedian, *Albert Einstein: Maker of Universes*, New York, Funk and Wagnalls Co., 1939, 267).

5. "Every one who is seriously involved in the pursuit of science becomes convinced that a Spirit is manifest in the laws of the universe – a Spirit vastly superior to that of man, and one in the face of which we with our modest powers must feel humble. In this way the pursuit of science leads to a religious feeling of a special sort, which is indeed quite different from the religiosity of someone more naive." (Einstein 1936, as cited in Dukas and Hoffmann, *Albert Einstein: The Human Side*, Princeton University Press, 1979, 33).

6. "The deeper one penetrates into nature's secrets, the greater becomes one's respect for God." (Einstein, as cited in Brian 1996, 119).

7. "The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer stand rapt in awe, is as good as dead. That deeply emotional conviction of the presence of a superior Reasoning Power, which is revealed in the incomprehensible Universe, forms my idea of God." (Einstein, as cited in Libby Anfinson 1995).

8. "My religiosity consists in a humble admiration of the infinitely superior Spirit that reveals itself in the little that we, with our weak and transitory understanding, can comprehend of reality." (Einstein 1936, as cited in Dukas and Hoffmann 1979, 66).

9. "The more I study science the more I believe in God." (Einstein, as cited in Holt 1997).

10. Max Jammer (Professor Emeritus of Physics and author of the biographical book *Einstein and Religion*, 2002) claims that Einstein's well-known dictum, "**Science without religion is lame, religion without science is blind**" can serve as an epitome and quintessence of Einstein's religious philosophy. (Jammer 2002; Einstein 1967, 30).

11. "The highest principles for our aspirations and judgments are given to us in the Jewish-Christian religious tradition. It is a very high goal which, with our weak powers, we can reach only very inadequately, but which gives a sure foundation to our aspirations and valuations." (Albert Einstein, *Out of My Later Years*, New Jersey, Littlefield, Adams and Co., 1967, 27).

12. "In view of such harmony in the cosmos which I, with my limited human mind, am able to recognize, there are yet people who say there is no God. But what really makes me angry is that they quote me for the support of such views." (Einstein, as cited in Clark 1973, 400; and Jammer 2002, 97).

13. Concerning the fanatical atheists Einstein pointed out: "Then there are the fanatical atheists whose intolerance is of the same kind as the intolerance of the religious fanatics and comes from the same source. They are like slaves who are still feeling the weight of their chains which they have thrown off after hard struggle. They are creatures who – in their grudge against the traditional 'opium for the people' – cannot bear the music of the spheres. The Wonder of nature does not become smaller because one cannot measure it by the standards of human moral and human aims." (Einstein, as cited in Max Jammer, *Einstein and Religion: Physics and Theology*, Princeton University Press, 2002, 97).

14. "True religion is real living – living with all one's soul, with all one's goodness and righteousness" (Einstein, as cited in Garbedian 1939, 267).

15. "Certain it is that a conviction, akin to religious feeling, of the rationality or intelligibility of the world lies behind all scientific work of a higher order.... This firm belief, a belief bound up with deep feeling, in a superior Mind that reveals itself in the world of experience, represents my conception of God." (Einstein 1973, 255).

16. "Strenuous intellectual work and the study of God's Nature are the angels that will lead me through all the troubles of this life with consolation, strength, and uncompromising rigor." (Einstein, as cited in Calaprice 2000, ch. 1).

17. Einstein's attitude towards Jesus Christ was expressed in an interview, which the great scientist gave to the American magazine *The Saturday Evening Post* (26 October 1929):

"Q: *To what extent are you influenced by Christianity?* A: As a child I received instruction both in the Bible and in the Talmud. I am a Jew, but I am enthralled by the luminous figure of the Nazarene.

Q: *Have you read Emil Ludwig's book on Jesus?* A: Emil Ludwig's Jesus is shallow. Jesus is too colossal for the pen of phrasemongers, however artful. No man can dispose of Christianity with a bon mot.

Q: *You accept the historical Jesus?* A: Unquestionably! No one can read the Gospels without feeling the actual presence of Jesus. His personality pulsates in every word. No myth is filled with such life." (Einstein, as cited in Viereck 1929; see also Einstein, as cited in the German magazine *Geisteskampf der Gegenwart*, Guetersloh, 1930, S. 235).

## (2) MAX PLANCK – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Max Planck (1858–1947) won the 1918 Nobel Prize in Physics "for his work on the establishment and development of the theory of elementary quanta." Max Planck is universally recognized as the father of modern physics; he formulated one of the most important physical theories of the 20th century – Quantum Theory. He also contributed to the progress of the Theory of Relativity and the study of electromagnetic radiation. Planck is a founder of quantum mechanics.

**Nationality:** German

**Education:** Ph.D. in physics, University of Munich, Germany, 1879 (at the age of 21)

**Occupation:** Professor of Physics at the Universities of Munich, Kiel, and Berlin

1. In his famous lecture *Religion and Science* (May 1937) Planck wrote: "Both religion and science need for their activities the belief in God, and moreover God stands for the former in the beginning, and for the latter at the end of the whole thinking. For the former, God represents the basis, for the latter – the crown of any reasoning concerning the world-view." (Max Planck, *Religion und Naturwissenschaft*, Leipzig: Johann Ambrosius Barth Verlag, 1958, 27).

2. "Religion represents a bond of man to God. It consists in reverent awe before a supernatural Might [Macht], to which human life is subordinated and which has in its power our welfare and misery. To remain in permanent contact with this Might and keep it all the time inclined to oneself, is the unending effort and the highest goal of the believing man. Because only in such a way can one feel himself safe before expected and unexpected dangers, which threaten one in his life, and can take part in the highest happiness – inner psychological peace – which can be attained only by means of strong bond to God and unconditional trust to His omnipotence and willingness to help." (Max Planck 1958, 9).

3. Planck concluded his lecture *Religion and Science* (May 1937) with the words: "It is the steady, ongoing, never-slackening fight against scepticism and dogmatism, against unbelief and superstition, which religion and science wage together. The directing watchword in this struggle runs from the remotest past to the distant future: 'On to God!' " (Planck, as cited in Heilbron 1986, 185; see also Planck 1958, 30).

4. "Under these conditions it is no wonder, that the movement of atheists, which declares religion to be just a deliberate illusion, invented by power-seeking priests, and which has for the pious belief in a higher Power nothing but words of mockery, eagerly makes use of progressive scientific knowledge and in a presumed unity with it, expands in an ever faster pace its disintegrating action on all nations of the earth and on all social levels. I do not need to explain in any more detail that after its victory not only all the most precious treasures of our culture would vanish, but – which is even worse – also any prospects at a better future." (Planck 1958, 7).

5. "But the value of religion exceeds the individual. Not only every man has his own religion but the religion requires its validity for larger community, for nation, race, and the whole mankind. Since God reigns equally over all countries of the world, the whole world with all its treasures and horrors is subdued to Him." (Planck 1958, 9).

6. Unfortunately, during World War II, in February 1945, Planck's son Erwin was executed by the Nazis for participation in an unsuccessful attempt to assassinate Adolf Hitler. On 14 March 1945 Planck wrote in a letter to his friend Anton Kippenberg: "If there is consolation anywhere it is in the Eternal, and I consider it a grace of Heaven that belief in the Eternal has been rooted deeply in me since childhood. God protect and strengthen you for everything that still may come before this insanity in which we are forced to live reaches its end." (Planck, as cited in Heilbron 1986, 195-196).

7. "That God existed before there were human beings on Earth, that He holds the entire world, believers and non-believers, in His omnipotent hand for eternity, and that He will remain enthroned on a level inaccessible to human comprehension long after the Earth and everything that is on it has gone to ruins; those who profess this faith and who, inspired by it, in veneration and complete confidence, feel secure from the dangers of life under protection of the Almighty, only those may number themselves among the truly religious." (Planck, as cited in Staguhn 1992, 152).

8. In his major book *Where Is Science Going?* (1932) Planck pointed out: "There can never be any real opposition between religion and science; for the one is the complement of the other. Every serious and reflective person realizes, I think, that the religious element in his nature must be recognized and cultivated if all the powers of the human soul are to act together in perfect balance and harmony. And indeed it was not by accident that the greatest thinkers of all ages were deeply religious souls." (Planck 1977, 168).

9. "As a physicist, that is, a man who had devoted his whole life to a wholly prosaic science, the exploration of matter, no one would surely suspect me of being a fantast. And so, having studied the atom, I am telling you that there is no matter as such! All matter arises and persists only due to a force that causes the atomic particles to vibrate, holding them together in the tiniest of solar systems, the atom. Yet in the whole of the universe there is no force that is either intelligent or eternal, and we must therefore assume that behind this force there is a conscious, intelligent Mind or Spirit. This is the very origin of all matter." (Planck, as cited in Eggenstein 1984, Part I; see "Materialistic Science on the Wrong Track").

10. To the question of *The Observer*, "Do you think that consciousness can be explained in terms of matter?" Max Planck replied: "No, I regard consciousness as fundamental. I regard matter as

derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness." (Planck, as cited in de Purucker 1940, ch. 13).

11. Planck believed in life after death, he believed in the existence of "another world, exalted above ours, where we can and will take refuge at any time." (Planck, as cited in Heilbron 1986, 197). "Farsighted theologians are now working to mine the eternal metal from the teachings of Jesus and to forge it for all time." (Planck, as cited in Heilbron 1986, 67).

12. Writing on the complementary relations between science and religion, Max Planck observed: "The one does not exclude the other; rather they are complementary and mutually interacting. Man needs science as a tool of perception; he needs religion as a guide to action." (Planck, as cited in Schaefer 1983, 84).

### (3) ERWIN SCHROEDINGER – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Erwin Schroedinger (1887–1961) was granted the 1933 Nobel Prize in Physics "for the discovery of new productive forms of atomic theory." Schroedinger also contributed to the wave theory of matter and to other fundamentals of quantum mechanics. He is the founder of wave mechanics.

**Nationality:** Austrian

**Education:** Ph.D. in physics, University of Vienna, Austria, 1910

**Occupation:** Professor of Physics at the Universities of Stuttgart, Jena, Berlin, Zurich, Oxford, and Venna

1. Schroedinger claims that science is a creative game with rules, which are designed by God himself: "Science is a game – but a game with reality, a game with sharpened knives. If a man cuts a picture carefully into 1000 pieces, you solve the puzzle when you reassemble the pieces into a picture; in the success or failure, both your intelligences compete." "In the presentation of a scientific problem, the other player is the good Lord. He has not only set the problem but also has devised the rules of the game – but they are not completely known, half of them are left for you to discover or to deduce." "The uncertainty is how many of the rules God himself has permanently ordained, and how many apparently are caused by your own mental inertia, while the solution generally becomes possible only through freedom from its limitations. This is perhaps the most exciting thing in the game." (Schroedinger, as cited in Moore 1990, 348).

2. "I am very astonished that the scientific picture of the real world around me is very deficient. It gives a lot of factual information, puts all our experience in a magnificently consistent order, but it is ghastly silent about all and sundry that is really near to our heart, that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain and physical delight; it knows nothing of beautiful and ugly, good or bad, God and eternity." "Science sometimes pretends to answer questions in these domains, but the answers are very often so silly that we are not inclined to take them seriously." (Schroedinger 1954, 93).

3. Schroedinger emphatically denies the claim of some theists that the essence of science is atheistic: "I shall quite briefly mention here the notorious atheism of science. The theists reproach it for this again and again. Unjustly. A personal God can not be encountered in a world picture that becomes accessible only at the price that everything personal is excluded from it." "We know that whenever God is experienced, it is an experience exactly as real as a direct sense impression, as real as one's own personality. As such He must be missing from the space-time picture. 'I do not meet with God in

space and time', so says the honest scientific thinker, and for that reason he is reproached by those in whose catechism it is nevertheless stated: 'God is Spirit'." (Schroedinger, as cited in Moore 1990, 379; see also Schroedinger's *Mind and Matter*, Cambridge University Press, 1958, p. 68).

4. Schroedinger maintains that the human technical inventions have caused a deterioration in Nature: "The grave error in a technically directed cultural drive is that it sees its highest goal in the possibility of achieving an alteration of Nature. It hopes to set itself in the place of God, so that it may force upon the divine will some petty conventions of its dust-born mind." (Schroedinger, as cited in Moore 1990, 349).

5. In his book *Nature and the Greeks* Schroedinger states: "Whence came I, whither go I? Science cannot tell us a word about why music delights us, of why and how an old song can move us to tears." "Science is reticent too when it is a question of the great Unity – the One of Parmenides – of which we all somehow form part, to which we belong. The most popular name for it in our time is God – with a capital 'G'". "Whence come I and whither go I? That is the great unfathomable question, the same for every one of us. Science has no answer to it." (Schroedinger 1954, 95-96).

6. Walter Moore (Professor Emeritus of Physical Chemistry at the University of Sydney, Australia) writes that Schroedinger's best loved quotation from the Vedas is this:

Who sees the Lord dwelling alike in all beings  
Perishing not as they perish  
He sees indeed. For, when he sees the Lord  
Dwelling in everything, he harms not self by self.  
This is the highest way.

(Walter Moore, *Schroedinger: Life and Thought*, Cambridge University Press, 1990, 349). Regarding this verse Schroedinger says: "These beautiful words need no commentary. Here mercy and goodness towards all living things (not merely fellow human beings) are glorified as the highest attainable goal – almost in the sense of Albert Schweitzer's reverence for life." (Schroedinger, as cited in Moore 1990, 349 and 477).

7. Schroedinger denies Materialism (i.e. the theory that matter is the only reality). Schroedinger affirms that human consciousness is absolutely different from the material bodily processes: "Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else." (Schroedinger 1984, 334).

8. "Now I shall not keep free of metaphysics, nor even of mysticism; they play a role in all that follows. "We living beings all belong to one another, we are all actually members or aspects of a single Being, which we may in western terminology call God, while in the Upanishads it is called Brahman." (Schroedinger, as cited in Moore 1990, 477). In his book *Mind and Matter* Schroedinger writes: "One thing can be claimed in favour of the mystical teaching of the 'identity' of all minds with each other and with the Supreme Mind – as against the fearful monadology of Leibniz. The doctrine of identity can claim that it is clinched by the empirical fact that consciousness is never experienced in the plural, only in the singular. Not only has none of us experienced more than one consciousness, but there is also no trace of circumstantial evidence of this ever happening anywhere in the world. If I say that there cannot be more than one consciousness in the same mind, this seems to be blunt tautology – we are quite unable to imagine the contrary." (Schroedinger 1958).

9. The science writer Ken Wilber states: "My book *Quantum Questions* centered on the remarkable fact that virtually every one of the great pioneers of modern physics - men like Einstein, Schroedinger

and Heisenberg - were spiritual *mystics* of one sort or another, an altogether extraordinary situation. The hardest of the sciences, physics, had run smack into the tenderest of religions, mysticism. Why? And what exactly was mysticism, anyway?" "So I collected the writings of Einstein, Heisenberg, Schroedinger, Louis de Broglie, Max Planck, Niels Bohr, Wolfgang Pauli, Sir Arthur Eddington, and Sir James Jeans. The scientific genius of these men is beyond dispute (all but two were Nobel laureates); what is so amazing, as I said, is that they all shared a profoundly spiritual or mystical worldview, which is perhaps the last thing one would expect from pioneering scientists." (Wilber 1998, 16).

Also see Schroedinger's books:

- *My View of the World*. Cambridge University Press, 1964.
- *Mind and Matter*. Cambridge University Press, 1958.
- *What Is Life?* New York: Doubleday, 1956.

#### (4) WERNER HEISENBERG – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Werner Heisenberg (1901–1976) was awarded the 1932 Nobel Prize in Physics "for the creation of quantum mechanics, the application of which has, inter alia, led to the discovery of the allotropic forms of hydrogen." In 1927 Heisenberg published the famous *principle of uncertainty (indeterminacy)* that bears his name.

**Nationality:** German

**Education:** Ph.D. in physics, University of Munich, Germany, 1923; Dr. Phil. Habil., University of Goettingen, Germany, 1924

**Occupation:** Professor of Physics at the Universities of Copenhagen (Denmark), Leipzig, Berlin, Goettingen, and Munich

1. "The first gulp from the glass of natural sciences will turn you into an atheist, but at the bottom of the glass God is waiting for you." ["Der erste Trunk aus dem Becher der Naturwissenschaft macht atheistisch, aber auf dem Grund des Bechers wartet Gott."] (Heisenberg, as cited in Hildebrand 1988, 10).

2. In his autobiographical article in the journal *Truth*, Henry Margenau (Professor Emeritus of Physics and Natural Philosophy at Yale University) pointed out: "I have said nothing about the years between 1936 and 1950. There were, however, a few experiences I cannot forget. One was my first meeting with Heisenberg, who came to America soon after the end of the Second World War. Our conversation was intimate and he impressed me by his deep religious conviction. He was a true Christian in every sense of that word." (Margenau 1985, Vol. 1).

3. In his article *Scientific and Religious Truth* (1973) Heisenberg affirmed: "In the history of science, ever since the famous trial of Galileo, it has repeatedly been claimed that scientific truth cannot be reconciled with the religious interpretation of the world. Although I am now convinced that scientific truth is unassailable in its own field, I have never found it possible to dismiss the content of religious thinking as simply part of an outmoded phase in the consciousness of mankind, a part we shall have to give up from now on. Thus in the course of my life I have repeatedly been compelled to ponder on the relationship of these two regions of thought, for I have never been able to doubt the reality of that to which they point." (Heisenberg 1974, 213).

4. "Where no guiding ideals are left to point the way, the scale of values disappears and with it the meaning of our deeds and sufferings, and at the end can lie only negation and despair. Religion is therefore the foundation of ethics, and ethics the presupposition of life." (Heisenberg 1974, 219).

5. Einstein believed in strict causality till the end of his life. In his last surviving letter to Einstein, Heisenberg writes that while in the new quantum mechanics Einstein's beloved causality principle is baseless, "We can console ourselves that the good Lord God would know the position of the particles, and thus He could let the causality principle continue to have validity." (Heisenberg, as cited in Holton 2000, vol. 53).

See also Heisenberg's articles:

- Heisenberg, Werner. 1970. "Erste Gespraechе ueber das Verhaeltnis von Naturwissenschaft und Religion (1927)." Werner Trutwin, ed. *Religion-Wissenschaft-Weltbild*. Duesseldorf: Patmos-Verlag, pp. 23-31. (Theologisches Forum. Texte fuer den Religionsunterricht 4.)
- Heisenberg, Werner. 1973. "Naturwissenschaftliche und religioese Wahrheit." *Frankfurter Allgemeine Zeitung*, 24 Maerz, pp. 7-8. (Speech before the Catholic Academy of Bavaria, on acceptance of the Guardini Prize, 23 March 1973).
- Heisenberg, Werner. 1968. "Religion und Naturwissenschaft." Bayer, Leverkusen. *Sofort-Kongress-Dienst* 24, 1-2.
- Heisenberg, Werner. 1969. "Kein Chaos, aus dem nicht wieder Ordnung wuerde. Drei Atomphysiker diskutieren ueber Positivismus, Metaphysik und Religion." *Die Zeit* 24, No. 34, 29-30.

## (5) ROBERT MILLIKAN – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Robert Andrews Millikan (1868–1953) won the 1923 Nobel Prize in Physics "for his work on the elementary charge of electricity and on the photoelectric effect." Millikan determined the charge of the electron and verified *Einstein's photoelectric equation*.

**Nationality:** American

**Education:** Ph.D. in physics, Columbia University, NY, 1895

**Occupation:** Professor of Physics at the University of Chicago and California Institute of Technology

1. In his *Autobiography* (Chapter 21 "The Two Supreme Elements in Human Progress") Robert Millikan wrote: "Human well-being and all human progress rest at bottom upon two pillars, the collapse of either one of which will bring down the whole structure. These two pillars are the cultivation and the dissemination throughout mankind of 1) the spirit of religion, and 2) the spirit of science (or knowledge)." (Millikan 1950, 279).

2. "The practical preaching of modern science - and it is the most insistent and effective preacher in the world today - is extraordinarily like the preaching of Jesus. Its keynote is service, the subordination of the individual to the good of the whole. Jesus preached it as a duty - for the sake of world-salvation. Science preaches it as a duty - for the sake of world-progress." "Jesus also preached the joy and the satisfaction of service. 'He that findeth his life shall lose it, and he that loseth his life for my sake shall find it.'" (Millikan, as cited in Kargon 1982, 147).

3. In an interview, entitled "A Scientist's God" (*Collier's*; October 24, 1925) Millikan stated: "This much I can say with definiteness - namely, that there is no scientific basis for the denial of religion - nor is there in my judgment any excuse for a conflict between science and religion, for their fields are entirely different. Men who know very little of science and men who know very little of religion do indeed get to quarreling, and the onlookers imagine that there is a conflict between science and religion, whereas the conflict is only between two different species of ignorance". "The first important quarrel of this sort arose over the advancing by Copernicus of his theory that the earth, instead of being a flat plane and the center of the universe, was actually only one of a number of little planets, rotating once a day upon its axis and circling once a year about the sun. Copernicus was a priest - the canon of a cathedral - and he was primarily a religious rather than a scientific man. He



knew that the foundations of real religion are not laid where scientific discoveries of any kind can disturb them. He was persecuted, not because he went against the teachings of religion but because under his theory man was not the center of the universe and this was most displeasing news to a number of egoists." (Millikan 1925).

4. "To me it is unthinkable that a real atheist could be a scientist." (Millikan, as cited in Grounds 1945, 22). "I have never known a thinking man who did not believe in God." (Millikan 1925).

5. In his *Autobiography* Millikan wrote: "But I wish to go a step farther, for someone asks, 'Where does the idea of God come in? Isn't it a part of religion?'. Yes, I think it is, and I should like to reply in three different ways to the question here raised. My first answer is taken directly from Holy Writ and reads: 'No man hath seen God at any time. If a man says I love God and hateth his brother he is a liar: for he that loveth not his brother whom he hath seen, how can he love God whom he hath not seen?' In other words, one's attitude toward God is revealed by and reflected in his attitude toward his brother men. My second answer is taken from Dean Shailer Mathews, head of the Baptist Divinity School of the University of Chicago. To the inquiry, 'Do you believe in God?' he replied, '**That, my friend, is a question which requires an education rather than an answer.**' My third form of reply is my own and reads: Thousands of years ago Job saw the futility of finite man's attempting to *define* God when he cried, 'Can man with searching find out God?'. Similarly, wise men ever since have always looked in amazement at the wonderful orderliness of nature and then recognized their own ignorance and finiteness and have been content to stand in silence and in reverence before the Being who is *immanent in Nature*, repeating with the psalmist, 'The fool hath said in his heart, there is no God.'" (Millikan 1950, 286-287).

6. "Religion and science, then, in my analysis are the two great sister forces which have pulled, and are still pulling, mankind onward and upward" (Millikan 1950, 286).

7. "The impossibility of real science and real religion ever conflicting becomes evident when one examines the purpose of science and the purpose of religion. The purpose of science is to develop – without prejudice or preconception of any kind – a knowledge of the facts, the laws and the processes of nature. The even more important task of religion, on the other hand, is to develop the consciences, the ideals and the aspirations of mankind." (Millikan 1925).

8. "It is a sublime conception of God which is furnished by science, and one wholly consonant with the highest ideals of religion, when it represents Him as revealing Himself through countless ages in the development of the earth as an abode for man and in the age-long inbreathing of life into its constituent matter, culminating in man with his spiritual nature and all his God-like powers." (Millikan, as cited in Kargon 1982, 146).

9. "Just how we fit into the plans of the Great Architect and how much he has assigned us to do we do not know. Fit in we certainly do somehow, *else we would not have a sense of our own responsibility*. A purely materialistic philosophy is to me the height of unintelligence. *It is our sense of responsibility for playing our part to the best of our ability that makes us Godlike.*" (Millikan 1950, 277-278).

10. "Our scientific knowledge compared with what we knew a hundred years ago is very great, but compared with what there is to be known it is trivial. The map of the earth used to have on it many great, blank spaces marked 'unexplored.' Now there are very few of them." "The map of science is still a great blank sheet with only here and there a dot to show what has been charted; and the more we investigate the more we see how far we are from any real comprehension of it all, and the clearer we see that in the very admission of our ignorance and finiteness, we recognize the existence of a

Something, a Power, a Being in whom and because of whom we live and move and have our being – a Creator by whatever name we may call Him.” (Millikan 1925).

11. “Many of our great scientists have actually been men of profound religious convictions and life: Sir Isaac Newton, Michael Faraday, James Clerk Maxwell, Louis Pasteur. All these men were not only religious men, but they were also faithful members of their communions. For the most important thing in the world is a belief in moral and spiritual values – a belief that there is a significance and a meaning to existence – a belief that we are going somewhere! These men could scarcely have been so great had they been lacking in this belief.” (Millikan 1925).

12. “I have, in effect, fingerprinted God in the heavens. I found a Creator continually on the Job. I bear witness that the teachings of science are extraordinarily like the preaching of Jesus in that nature is at bottom benevolent and good.” (Millikan, as cited in Neff 1952, 20).

13. In *Science and Religion* (Yale University Press, 1930) Millikan stated: “Science began to show us a universe of orderliness and of the beauty that goes with order, a universe that knows no caprice, a universe that behaves in a knowable and predictable way, a universe that can be counted upon; in a word, a God who works through law.” (Millikan 1930a, 79).

14. Millikan claims that the essence of the Christian religion can be found “in the life and the teachings of Jesus – in the attitude of *altruistic idealism* (the psychologist may want to call it extrovertness, the common man simply *unselfishness*) which was the sum and substance of His message. He states it in the Golden Rule, ‘Whatsoever ye would that men should do to you, do ye even so to them.’ ” (Millikan 1950, 280).

15. “Science dominated by the spirit of religion is the key to progress and the hope of mankind.” (Millikan, as cited in Kargon 1982, 147).

## (6) CHARLES TOWNES – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** The inventor of the laser, Charles Hard Townes (born 1915) received the 1964 Nobel Prize in Physics “for his fundamental work in the field of quantum electronics, which has led to the construction of oscillators and amplifiers based on the maser-laser principle.” Charles Townes is the founder of laser science.

**Nationality:** American

**Education:** Ph.D. in physics, California Institute of Technology, 1939

**Occupation:** Researcher at Bell Telephone Laboratories, NJ; Professor of Physics at Columbia University, MIT, and University of California

1. To the inquiry, “What do you think about the existence of God?” Charles Townes gave the following answer: “I strongly believe in the existence of God, based on intuition, observations, logic, and also scientific knowledge.” (Townes 2002a).

2. “Science, with its experiments and logic, tries to understand the order or structure of the universe. Religion, with its theological inspiration and reflection, tries to understand the purpose or meaning of the universe. These two are cross-related. Purpose implies structure, and structure ought somehow to be interpretable in terms of purpose. At least this is the way I see it. I am a physicist. I also consider myself a Christian. As I try to understand the nature of our universe in these two modes of thinking, I see many commonalties and crossovers between science and religion. It seems logical that in the long run the two will even converge.” (Townes 2001, 296).

3. In his autobiographical book *Making Waves* (New York: American Institute of Physics Press, 1995) Charles Townes wrote: "You may well ask: Just where does God come into this? Perhaps my account may give you some answers, but to me it is almost a pointless question. If you believe in God at all, there is no particular 'where', He is always there, everywhere, He is in all of these things. To me, God is personal yet omnipresent. A great source of strength, He has made an enormous difference to me." (Townes 1995).

4. "There is a tremendous emotional experience in scientific discovery which I think is similar to what some people would normally describe as religious experience, a revelation. In fact, it seems to me, a revelation can be viewed as a sudden discovery of understanding of man and man's relation to his universe, to God, and his relation to other men." (Townes 1963, p. 37).

5. "I think all of science, in a sense, comes from belief in order in the universe. That's part of scientific faith, that there is order and reliability, and so on, and that's part of the Judeo-Christian tradition, that there is one God." (Townes, as cited in Palmer 1997, vol. 17).

6. Concerning the problem of the origin of life, Prof. Townes pointed out: "Life may be very improbable, but it did happen and it happened in accordance with physical laws, and physical laws are laws that God made." (Townes, as cited in Palmer 1997, vol. 17).

7. In his lecture *The Convergence of Science and Religion*, delivered at the conference "Science and the Spiritual Quest" (19 April 2002, Paris), Charles Townes said: "Science and Religion are often viewed as separate aspects of our beliefs and understanding. But religion is an attempt to understand the purpose of our universe and science – an attempt to understand its nature and characteristics, so the two are necessarily related". "I will try to discuss the parallelism and increasingly strong interaction of science and religion which I visualize, along with the possibility of their ultimately merging into a more unified understanding of both the purpose and the nature of our universe." (Townes 2002b).

8. With regard to the question of the origin of life, Charles Townes says: "In my view, the question of origin seems to be left unanswered if we explore from a scientific view alone. Thus, I believe there is a need for some religious or metaphysical explanation. I believe in the concept of God and in His existence." (Townes 1995).

9. In her famous cover article "Science finds God" (*Newsweek*, 27 July 1998) Sharon Begley cited the words of Charles Townes: "As a religious person, I strongly sense the presence and actions of a creative Being far beyond myself and yet always personal and close by." (Townes, as quoted in Begley 1998, 47). Begley wrote, "Townes believes that recent discoveries in cosmology reveal 'a universe that fits religious views' – specifically, that 'somehow intelligence must have been involved in the laws of the universe'." (Begley 1998, 47).

10. "Religion, with its theological reflection, builds on faith. Science too builds on faith. How? For successful science of the type we know, we must have faith that the universe is governed by reliable laws and, further, that these laws can be discovered by human inquiry. The logic of human inquiry is trustworthy only if nature is itself logical. Science operates with the faith that human logic can in the long run understand nature's laws and that they are dependable. This is the faith of reason." "We scientists work on the basis of a fundamental assumption regarding reason in nature and reason in the human mind, an assumption that is held as a cardinal principle of faith. Yet this faith is so automatically and generally accepted that we hardly recognize it as an essential basis for science." (Townes 2001, 300).

11. "Science wants to know the mechanism of the universe, religion – the meaning. The two cannot be separated." (Townes, as cited in Easterbrook 1997, 891).

### **(7) ARTHUR SCHAWLOW – NOBEL LAUREATE IN PHYSICS**

**Nobel Prize:** Arthur Schawlow (1921–1999) co-inventor of the laser, won the 1981 Nobel Prize in Physics for his contribution to the development of laser spectroscopy and for his revolutionary work in the spectroscopic analysis of the interaction of electromagnetic radiation with matter. Schawlow and Charles Townes hold the original patent for the laser; they are the founders of laser science.

**Nationality:** American

**Education:** Ph.D. in physics, University of Toronto, Canada, 1949

**Occupation:** Researcher at Columbia University and Bell Telephone Laboratories, NJ; Professor of Physics at Stanford University

1. Arthur Schawlow described the relationship between religion and science in the following way: "Religion is founded on faith. It seems to me that when confronted with the marvels of life and the universe, one must ask why and not just how. The only possible answers are religious. For me that means Protestant Christianity, to which I was introduced as a child and which has withstood the tests of a lifetime". "But the context of religion is a great background for doing science. In the words of Psalm 19, 'The heavens declare the glory of God and the firmament showeth his handiwork'. Thus scientific research is a worshipful act, in that it reveals more of the wonders of God's creation." (Schawlow, as cited in Margenau and Varghese, 1997, 105-106; and in Templeton 1994).

2. "We are fortunate to have the Bible, and especially the New Testament, which tells us so much about God in widely accessible human terms." (Schawlow, as cited in Margenau and Varghese, 1997, 107). "I find a need for God in the universe and in my own life." (Schawlow, as cited in Margenau and Varghese, 1997, 107).

3. "There are enormously different cults and religious sects, and I think it's not unreasonable, because I think God – if He's as wonderful as we believe – is also very complex, and that different people have to see Him differently. You can't expect a peasant and a philosopher to have the same picture of God. I think God is big enough to cover them all, even for science writers – they can have their picture of God." (Schawlow 1998, Chapter I, Part 5).

4. "The imitation of Jesus is the way to save your life, I think. Beyond that I don't know." (Schawlow, as cited in Brian 1995, 242).

5. "The world is just so wonderful that I can't imagine it was just having come by pure chance." (Schawlow 1998, Chapter I, Part 5).

### **(8) WILLIAM PHILLIPS – NOBEL LAUREATE IN PHYSICS**

**Nobel Prize:** William D. Phillips (born 1948) was granted the 1997 Nobel Prize in Physics "for development of methods to cool and trap atoms with laser light" and the 1998 Arthur Schawlow Prize in Laser Science.

**Nationality:** American

**Education:** Ph.D. in physics, MIT, 1976

**Occupation:** Group Leader of the Laser Cooling and Trapping Group in the Physics Laboratory of the National Institute of Standards and Technology (1998-present); Distinguished Professor of Physics at the University of Maryland (2001-present)

1. "I believe in God. In fact, I believe in a personal God who acts in and interacts with the creation. I believe that the observations about the orderliness of the physical universe, and the apparently exceptional fine-tuning of the conditions of the universe for the development of life suggest that an intelligent Creator is responsible. I believe in God because of a personal faith, a faith that is consistent with what I know about science." (Phillips 2002b).

2. In his lecture *Ordinary Faith, Ordinary Science*, delivered at the conference "Science and the Spiritual Quest" (20 April 2002, Paris), Dr. Phillips said: "Many scientists are also people with quite conventional religious faith. I, a physicist, am one example. I believe in God as both creator and friend. That is, I believe that God is personal and interacts with us." (Phillips 2002a).

3. To the question, "What do you think should be the relationship between science and religion? Why do you think so?" Prof. Phillips replied: "This is a complex question about which others, more wise than I, have written entire books. For the most part, I believe that science and religion deal with different kinds of questions using different (but not completely different) methods. Science addresses questions about how things work, the history of development of the universe, and the like. Religion addresses questions about ultimate meaning, about what ought to be the relationship among people, and between people and God. I do not mean to say that there is no relationship between science and religion. There are areas where religious/moral decisions need to be informed by scientific facts. I also believe that God is revealed in part through the observations we make on the creation." (Phillips 2002b).

4. On March 6, 1998, William Phillips and Stephen Hawking took part in the Millennium Lecture Series in the White House. To the question, "Dr. Phillips, why does the universe obey any laws at all?" William Phillips replied: "Well, that's a really good question. It's the kind of question that has intrigued and vexed scientists and, I suppose, philosophers and theologians for a long time. It's really quite remarkable. All of the wonderful things Professor Hawking talked about can actually be described in a very small number of relatively simple equations and then a lot of complicated mathematics. Why is it that the universe is so simple? Why is it that it follows mathematical laws? Well, people have speculated about this, and one possible answer is that if the universe had been any different from what it is, we wouldn't be here. That is, if the laws of the universe hadn't been what they are or if there were no laws at all, it would have been impossible for life to have evolved. It would have been impossible for us to have evolved to the point that we could ask that question. So that's sometimes called the 'anthropic principle.' Not perhaps to put too much emphasis on people, but it probably applies to amoebas as well, that they wouldn't have been able to evolve either. On the other hand, there is another answer, which isn't actually that far from that answer, and if you're a person with religious faith, as I am, you could answer that the reason we have a universe that follows laws is because God decided to make the universe in that way, because God wanted us to develop the way we have and to evolve in the way that we have; and that this is, of course, a philosophical and theological answer and it has more to do with one's faith than one's scientific conclusions, but it's an answer that I like very much and that I don't find very different from the first one." (Phillips 1998a).

5. "I'm strongly of the conviction that God is personal, and this is the foundation of my faith." (Phillips, as cited in Witham 2001). "Being an ordinary scientist and an ordinary Christian seems perfectly natural to me. It is also perfectly natural for the many scientists I know who are also people of deep religious faith." (Phillips, as cited in Christie 2002).

6. "Religion tells us how to relate to each other and science shows us how God constructed the universe." (Phillips 1999). "Some things about science give you the impossibility of ruling out divine intervention." (Phillips, as cited in Witham 2001). William Phillips delivered two lectures at the American Scientific Affiliation 54th Annual Meeting (August 1999, John Brown University, Arkansas): *Testifying to God's Goodness through Science and Technology* and *Almost Absolute Zero: The Story of Laser Cooling and Trapping* (Phillips 1999).

7. "There are probably more Nobel Laureates who are people of faith than is generally believed. Most people in most professions don't make a special point to make their religious views known, since these are very personal." (Phillips 2002c).

8. Dr. Phillips thinks that science can only show our way to God but cannot explicate God's essence, the way the latter is explicated in the Bible: "It's difficult to see how science will point to a Creator who wants a personal relationship with us, who loves us, who wants us to love each other, who has expectations for us that come to us by the wisdom of Scriptures." (Phillips, as cited in Witham 2001).

### (9) SIR WILLIAM H. BRAGG – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** William Henry Bragg (1862–1942) was awarded the 1915 Nobel Prize in Physics for his contribution to the analysis of crystal structures by means of X-rays.

**Nationality:** British

**Education:** M.A., Cambridge University, 1884

**Occupation:** Professor of Physics at the Universities of Adelaide, Leeds, and London; President of the Royal Society of London (1935-1940)

1. "Christ's rule and example showed God as our Father and us as His children, a society in which love governs all. Then if we seek a rule of conduct we should think of what we should like children to be like and what we should wish them to do. We like them to be hardworking, eager, cheerful, sympathetic. We like them to enjoy themselves thoroughly. We must be sad and in pain sometimes, but let us be happy as much and whenever we can, and whilst we are well and happy let us help all who are not. The more we strive to enjoy ourselves the more happiness we shall be able to communicate to others. For we trust that this life is a preparation: not a final probation." (Bragg, as cited in Caroe 1979, 164).

2. "From religion comes a man's purpose; from science, his power to achieve it. Sometimes people ask if religion and science are not opposed to one another. They are: in the sense that the thumb and fingers of my hand are opposed to one another. It is an opposition by means of which anything can be grasped." (Bragg, as cited in Caroe 1979, 161).

3. In his lecture *Science and Faith* (1941) Bragg said: "Science is experimental, moving forward step-by-step, making trial and learning through success and failure. Is not this also the way of religion, and especially of the Christian religion? The writings of those who preach the religion have from the very beginning insisted that it is to be proved by experience. If a man is drawn towards honour and courage and endurance, justice, mercy, and charity, let him follow the way of Christ and find out for himself. No findings in science hinder him in that way." (Bragg, as cited in Lindberg and Numbers 1986, 437).

4. "Conviction of the truth of any faith, so far as a man can measure the truth, is to be gained by practice, and it is here that the scientist finds an illustration in his own work. Every man, in the circle in which he finds himself, it may be a small circle, his means may be small also, can try the Christian

way, and discover for himself and acquire his own convictions. He tests his faith. As to the actual mode of the experiment, I will say nothing. We all know it well already: it has been enshrined in a thousand testimonies; it has been displayed in countless lives; it is all included in the lovely words of St. Paul, simple though they are: 'And the greatest of these is charity.'" (Bragg, as cited in Caroe 1979, 170).

5. Bragg's daughter Gwendolen Mary Caroe wrote about her father's faith: "Religious faith to W. H. Bragg was the willingness to stake his all on the hypothesis that Christ was right, and test it by a lifetime's experiment in charity." (Caroe 1979, 161-163).

6. In 1940 Bragg identified 'two sad mistakes' current in science-religion debates: "The one is to suppose that science, that is to say, the study of Nature, leads to materialism. The other that the worship of God can be carried on without the equipment which science provides." (Bragg, as cited in Lindberg and Numbers 1986, 436).

### (10) GUGLIELMO MARCONI – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Guglielmo Marconi (1874–1937) received the 1909 Nobel Prize in Physics for his invention of the first successful system of wireless telegraphy. Marconi is the inventor of the radio; his revolutionary work made possible the electronic communications of the modern world.

**Nationality:** Italian

**Education:** Privately educated physicist at Bologna, Florence, and Leghorn (Italy)

**Occupation:** Inventor and entrepreneur, Italy

1. "The more I work with the powers of Nature, the more I feel God's benevolence to man; the closer I am to the great truth that everything is dependent on the Eternal Creator and Sustainer; the more I feel that the so-called science, I am occupied with, is nothing but an expression of the Supreme Will, which aims at bringing people closer to each other in order to help them better understand and improve themselves." (Marconi, as cited in Maria Cristina Marconi 1995, 244).

2. In his letter to his wife Maria Cristina (London, 17 March 1927) Marconi wrote: "I know how much you love and cherish the beautiful Nature – the expression of God's Will – where one can find the ideal eternal values: the Truth, the Beauty and the Good (and you possess the three of them)". "The harmonious unity of causes and laws forms the Truth; the harmonious unity of lines, colors, sounds, and ideas forms the Beauty; while the harmony of emotions and the will forms the Good, which in being the ultimate expression of the Eternal and Supreme Creator brings man to completion and drives us to seek absolute perfection." (Marconi, as cited in Maria Cristina Marconi 1995, 260).

3. "Every step, science makes, brings us ever new surprises and achievements. And yet science is like a faint light of a lantern flickering in a deep and thick forest, through which humanity struggles to find its way to God. It is only faith that can lead it to light and serve as a bridge between man and the Absolute." "I am proud to be a Christian. I believe not only as a Christian, but as a scientist as well. A wireless device can deliver a message through the wilderness. In prayer the human spirit can send invisible waves to eternity, waves that achieve their goal in front of God." (Marconi, as cited in Popov 1992, 298).

4. In a letter to his wife Maria Cristina (Paris, 1 April 1927) Marconi said: "Do not think that I am ungrateful to God for His goodness and benevolence, to which I owe so much, everything. But God

has given me this eternal and almighty love and I feel that He has done it for my own good and, I dare believe, for yours too.” (Marconi, as cited in Maria Cristina Marconi 1995, 248).

5. “I believe it would be a great tragedy if men were to lose their faith in prayer. Without the help of prayer I might perhaps have failed where I have succeeded. In allowing me to attain what I have done, God has made of me merely an instrument of His own will, for the revelation of His own Divine power.” (Marconi 1942, 20-21).

6. Concerning the problem of the origin of life and the failure of science to solve it, Marconi said: “The mystery of life is certainly the most persistent problem ever placed before the mind of man. There is no doubt that from the time humanity began to think, it has occupied itself with the problem of its origin and its future – which is undoubtedly the problem of life. The inability of science to solve it is absolute. This would be truly frightening, if it were not for faith.” (Marconi 1934). “Science alone is unable to explain many things, and most of all, the greatest of mysteries – the mystery of our existence. I believe, not only as a Catholic, but also as a scientist.” (Marconi, as cited in Morrow 1949, 14a).

### (11) ARTHUR COMPTON – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Arthur Holly Compton (1892–1962) was granted the 1927 Nobel Prize in Physics for his discovery of *the Compton effect*, i.e. the change in the wavelength of X-rays when they collide with electrons. This effect is caused by the transfer of energy from the photon to the electron. Its discovery in 1922 confirmed the dual nature of electromagnetic radiation as both a wave and a particle.

**Nationality:** American

**Education:** Ph.D. in physics, Princeton University, NJ, 1916

**Occupation:** Professor of Physics at the Universities of Minnesota, Washington, and Chicago; researcher at Cambridge University

1. In his article “Science and the Supernatural” (1946) Compton said: “From earliest childhood I have learned to see in Jesus the supreme example of one who loves his neighbors and expresses that love in actions that count, who knows that people can find their souls by losing themselves in something of great value, who will die rather than deny the truth in favor of the popular view held by his most respected contemporaries. That Jesus’ spirit lives so vitally in men today makes me hope that by following in his footsteps in my small way I also may live forever.” (Compton, as cited in Johnston 1967, 372).

2. “The Christian’s God is the God of love. ‘God is love; and he who ever continues in love keeps in union with God, and God with him.’ Perhaps one should explain that by Christian love is meant not a physical passion nor a sentiment of adoration and admiration, but a friendliness that expresses itself in doing good to one’s neighbors. Prayer to the God of love means a thoughtful consideration of how such good can best be done. The action resulting from such a prayer is the highest worship of the God of love.” (Compton, as cited in Johnston 1967, 373). “When we pray to our fatherly God it is common experience that we receive courage and strength to do deeds of friendliness toward his children.” (Compton, as cited in Johnston 1967, 370).

3. Commenting on the first verse of the Bible in *Chicago Daily News* (12 April 1936), Arthur Compton stated his religious views: “For myself, faith begins with the realization that a supreme intelligence brought the universe into being and created man. It is not difficult for me to have this faith, for it is incontrovertible that where there is a plan there is intelligence. An orderly, unfolding universe



testifies to the truth of the most majestic statement ever uttered: 'In the beginning God...' [Genesis 1, 1]." (Compton 1936).

4. "If religion is to be acceptable to science it is important to examine the hypothesis of an Intelligence working in nature. The discussion of the evidences for an intelligent God is as old as philosophy itself. The argument on the basis of design, though trite, has never been adequately refuted. On the contrary, as we learn more about our world, the probability of its having resulted by chance processes becomes more and more remote, so that few indeed are the scientific men of today who will defend an atheistic attitude." (Compton 1935, 73).

5. "To me God appears in three aspects, all of which are closely related. The **first aspect** of God is universally recognized. It is simply the best one knows, to which he devotes his life. This best includes the love of one's fellow men, particularly those for whom one has some special responsibility. It includes truth of whatever kind may serve as a guide to life." "The **second aspect** of God that I recognize is the basis of existence and of life and of motivation, which I think of as a conscious Power. This Power appears to me as having a special concern for its conscious creatures who share the responsibility for shaping their part of the world. More particularly, I follow Jesus' teaching that this Power that is the basis of existence holds toward me and all other persons the attitude of a wise and loving father. This recognition of a kind of kinship with the Creator-God is for me a matter of vital importance. As God's children, all men are endowed by their Creator with certain inalienable rights. This Christian basis for the dignity of man is shared by all who recognize the fatherhood of God, whether or not they are called by the name of 'Christian.' It is a basis for a brotherhood that includes all men, since all are objects of God's concern". "The **third aspect** of God that I recognize is that which shows itself in the lives of noble men. It is in their lives that I see exemplified the virtues to which I would commit my own life. For me the outstanding example of these noble men is Jesus. His teaching and the example of his life form the most reliable guide that I have found for shaping my own actions. It is because I accept his leadership that I call myself a Christian. **I see him as the Everest among the world's many high mountains.** As I know Jesus he shows in his life those qualities that seem to me of highest value: love of neighbor as expressed in helpful service, hope for the future that inspires his followers, faith in God and fellowmen. Born of this love and hope and faith is his noble self-sacrifice that others may live." (Compton 1956, 344-347).

6. "What nobler ambition can one have than to cooperate with his Maker in bringing about a better world in which we live? When we view men's actions in the light of science we are thus presented with a new hope. Loyalty to our Maker, who has given us the ability, opportunity, and responsibility to mold our lives and our world according to a more perfect pattern cannot but inspire us to work with him heart and soul toward this great end." (Compton 1935, 119).

7. "In their essence there can be no conflict between science and religion. Science is a reliable method of finding truth. Religion is the search for a satisfying basis for life." (Compton, as cited in Johnston 1967, 374).

8. "There is an immense difference between a good religion and a bad religion in the satisfactions and disappointments to which they lead. The main difference is the nature of the values or the kind of spirit that the religion inspires. The true God is the spirit that is found to be of lasting value, so that when the test comes one can feel that whatever may happen he has spent his life for the best that he knows." (Compton, as cited in Johnston 1967, 374).

9. "Science has created a world in which Christianity is a necessity." (Compton, as cited in Fosdick 1961, ch. 16). "I believe that in its insistence on the inherent value of individual men and women Christianity has the key to survival and the good life in the modern world." (Compton 1956, 344).

See also Compton's articles:

- "The Need for God in an Age of Science," in Morris, Audrey Stone, *One Thousand Inspirational Hings*, (Chicago: 1948), pp. 146-147.
- "The Religion of a Scientist," *Sermons in Brief*, 1: 1, (January 1940), pp. 88-98.
- "Why I Believe in Immortality," *This Week*, (Sunday supplement to the New Orleans' *The Sunday tem-Tribune*; April 12, 1936), 5 ff. Reprinted in *Christian Science Sentinel*, 62: 32, (August 6, 1960), 1411.
- *Science and Christian Education*, Board of Christian Education of the Presbyterian Church in the nited States of America, 1938. Publication of an address delivered before the 150th General ssembly of the Presbyterian Church, May 30, 1938.
- Compton, A. H. et al., 1949. *Man's Destiny in Eternity*. A Book from a Symposium (The Garvin ectures). Boston: Beacon Press.
- "Life After Death: from the Point of View of a Scientist," *The Presbyterian Banner*, 117-39, (March 6, 1931), 10 ff.
- "The Need for Building a Christian World Community," *Hyde Park Baptist News*, 2: 24, (February 25, 1938), p. 1.

## (12) ARNO PENZIAS – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Arno Penzias (born 1933) won the 1978 Nobel Prize in Physics for the discovery of *cosmic microwave background radiation*, which supported the Big Bang theory of the creation of the Universe.

**Nationality:** German; later American citizen

**Education:** Ph.D. in physics, Columbia University, 1962

**Occupation:** Researcher and Administrator at Bell Laboratories, NJ

1. "If there are a bunch of fruit trees, one can say that whoever created these fruit trees wanted some apples. In other words, by looking at the order in the world, we can infer purpose and from purpose we begin to get some knowledge of the Creator, the Planner of all this. This is, then, how I look at God. I look at God through the works of God's hands and from those works imply intentions. From these intentions, I receive an impression of the Almighty." (Penzias, as cited in *'The God I Believe in'*, Joshua O. Haberman - editor, New York, Maxwell Macmillan International, 1994, 184).

2. In an interview published in the anthology *'The God I Believe in'* (1994), Penzias talks about his religious views and the Mount Sinai, where God gave the Ten Commandments to the entire Jewish nation – 3 million people: **Q:** *You referred before to Sinai. This brings up one of the most complex problems – revelation. Do you think that God revealed Himself at Sinai?* **PENZIAS:** Or, maybe God always reveals Himself? Again I think as Psalm 19, 'the heavens proclaim the glory of God,' that is, God reveals Himself in all there is. All reality, to a greater or lesser extent, reveals the purpose of God. There is some connection to the purpose and order of the world in all aspects of human experience. **Q:** *When you read or hear the Torah, is it to you the word of Moses or the word of God?* **PENZIAS:** Well, to me it is the word of Moses and the word of God through Moses. **Q:** *Then why did Sinai happen?* **PENZIAS:** I don't have a good answer, except that Sinai was important for Judaism and important for the future of the world. It was a place where God chose the Jews, but the Jews also chose God. It was a historical moment in which a spiritual connection was made. **Q:** *Jewish speculations about the hereafter involve the Messiah. Do you believe in such a redeemer or final redemption from all evil here on earth?* **PENZIAS:** Yes. I believe the world has a purpose, hopefully a good purpose. So I think that a Messiah is necessary to help achieve a purposeful world." (Penzias, as cited in *'The God I Believe in'*, Joshua O. Haberman - editor, New York, Maxwell Macmillan International, 1994, 188-190).

3. In connection with the Big Bang theory and the issue of the origin of our highly ordered universe, on March 12, 1978, Dr. Penzias stated to the *New York Times*: “The best data we have are exactly what I would have predicted, had I had nothing to go on but the five books of Moses, the Psalms, the Bible as a whole.” (Penzias, as cited in Bergman 1994, 183; see also Brian 1995, 163). Arno Penzias’ research into astrophysics has caused him to see “evidence of a plan of divine creation” (Penzias, as cited in Bergman 1994, 183).

4. In an interview published in the scientific anthology *The Voice of Genius* (1995), Dr. Penzias says: “**Penzias:** The Bible talks of purposeful creation. What we have, however, is an amazing amount of order; and when we see order, in our experience it normally reflects purpose. **Brian:** *And this order is reflected in the Bible?* **Penzias:** Well, if we read the Bible as a whole we would expect order in the world. Purpose would imply order, and what we actually find is order. **Brian:** *So we can assume there might be purpose?* **Penzias:** Exactly. ...This world is most consistent with purposeful creation.” (Penzias, as cited in Brian 1995, 163-165).

5. In Gordy Slack’s article “*When Science and Religion Collide or Why Einstein Wasn’t an Atheist: Scientists Talk about Why They Believe in God*” (1997), Dr. Penzias stated: “If God created the universe, he would have done it elegantly. The absence of any imprint of intervention upon creation is what we would expect from a truly all-powerful Creator. You don’t need somebody diddling around like Frank Morgan in *The Wizard of Oz* to keep the universe going. Instead, what you have is half a page of mathematics that describes everything. In some sense, the power of the creation lies in its underlying simplicity.” (Penzias, as cited in Slack 1997).

6. Concerning the Big Bang theory and the observational evidence that the universe was created, Penzias pointed out: “How could the everyday person take sides in this dispute between giants? One held that the universe was created out of nothing, while the other proclaimed the evident eternity of matter. The ‘dogma’ of creation was thwarted by the ‘fact’ of the eternal nature of matter. Well, today’s dogma holds that matter is eternal. The dogma comes from the intuitive belief of people (including the majority of physicists) who don’t want to accept the observational evidence that the universe was created – despite the fact that the creation of the universe is supported by all the observable data astronomy has produced so far. As a result, the people who reject the data can arguably be described as having a ‘religious’ belief that matter must be eternal. These people regard themselves as objective scientists.” (Penzias, 1983, 3; see also Bergman 1994, 183).

### (13) NEVILL MOTT – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Sir Nevill Mott (1905-1996) received the 1977 Nobel Prize in Physics for his research on the magnetic and electrical properties of noncrystalline semiconductors.

**Nationality:** British

**Education:** Master’s degree in physics, University of Cambridge, 1930

**Occupation:** Professor of Physics at the University of Bristol (1933-1954) and the University of Cambridge (1954-1971); President of the International Union of Physics (1951-1957)

1. “I believe in God, who can respond to prayers, to whom we can give trust and without whom life on this earth would be without meaning (a tale told by an idiot). I believe that God has revealed Himself to us in many ways and through many men and women, and that for us here in the West the clearest revelation is through Jesus and those that have followed him.” (Mott, as cited in *Nevill Mott: Reminiscences and Appreciations*, E.A. Davis – editor, London, Taylor & Francis Ltd, 1998, 329).

2. "The miracles of human history are those in which God has spoken to men. The supreme miracle for Christians is the Resurrection. Something happened to those few men who know Jesus, which led them to believe that Jesus yet lived, with such intensity and conviction that this belief remains the basis of the Christian Church two thousand years later." (Mott, as cited in Margenau and Varghese, 1997, 68).

3. "God can speak to us and show us how we have to live.... We can and must ask God which way we ought to go, what we ought to do, how we ought to behave." (Mott, as cited in Margenau and Varghese, 1997, 66 & 68; and in Templeton 1994).

4. "Science can have a purifying effect on religion, freeing it from beliefs from a pre-scientific age and helping us to a truer conception of God. At the same time, I am far from believing that science will ever give us the answers to all our questions." (Mott, as cited in Margenau and Varghese, 1997, 65).

5. "In my understanding of God I start with certain firm beliefs. One is that the laws of nature are not broken. God works, I believe, within natural laws, and, according to natural laws." (Mott, as cited in Margenau and Varghese, 1997, 66).

6. In 1991 Nevill Mott edited a volume of articles by famous scientists on the significance of religious belief and religion-science interface, entitled *Can Scientists Believe?* (London, James & James). In his article in this scientific anthology Professor Mott writes that God is absolutely necessary to explain the origin and the essence of human consciousness. Mott claims that the mystery of consciousness can never be explained by science. "I believe, too, that neither physical science nor psychology can ever 'explain' human consciousness. To me, then, human consciousness lies outside science, and it is here that I seek the relationship between God and man." (Nevill Mott, *Can Scientists Believe?*, London, James & James Science Publishers Ltd, 1991, 8).

#### (14) ISIDOR ISAAC RABI – NOBEL LAUREATE IN PHYSICS

**Nobel Prize:** Isidor I. Rabi (1898-1988) won the 1944 Nobel Prize in Physics for his work on the magnetic properties of atomic nuclei.

**Nationality:** Austrian; later American citizen

**Education:** Ph.D. in physics, Columbia University, 1927

**Occupation:** Professor of Physics at Columbia University (1937-1988)

1. "Physics filled me with awe, put me in touch with a sense of original causes. Physics brought me closer to God. That feeling stayed with me throughout my years in science. Whenever one of my students came to me with a scientific project, I asked only one question, 'Will it bring you nearer to God?' " (I. I. Rabi 1999, *Physics Today*).

2. "The first verses of Genesis were very moving to me as a kid. The whole idea of the Creation - the mystery and the philosophy of it. It sank in on me, and it's something I still feel. There's no question that basically, somewhere way down, I'm an Orthodox Jew. My early upbringing, so struck by God, the Maker of the world, this has stayed with me." (Rabi, as cited in John S. Rigden, *Rabi: Scientist and Citizen*, Harvard University Press, 2000, 21).

3. "Rabi's Orthodox upbringing had given him a feeling for the mystery of physics, a taste for generalization, and a belief in the profundity and underlying unity of nature. 'When you're doing physics, you're wrestling with a champ,' he liked to say. 'You're trying to find out how God made the world, just like Jacob wrestling with the angel.' Physics brought Rabi nearer to God because the

world was His creation. And like God, physics was infinite and certainly not trivial.” (Brian VanDeMark, *Pandora’s Keepers: Nine Men and the Atomic Bomb*, Little Brown & Co., 2003, ch. 1).

4. In his article “Isidor Isaac Rabi” (*Physics World*, November 1999) John Rigden wrote: “To Rabi, physics, like religion, springs from human aspirations, from the depths of the soul, from deep thinking and deep feeling. For Rabi, doing great physics was walking the path of God.” (Rigden 1999, 31).