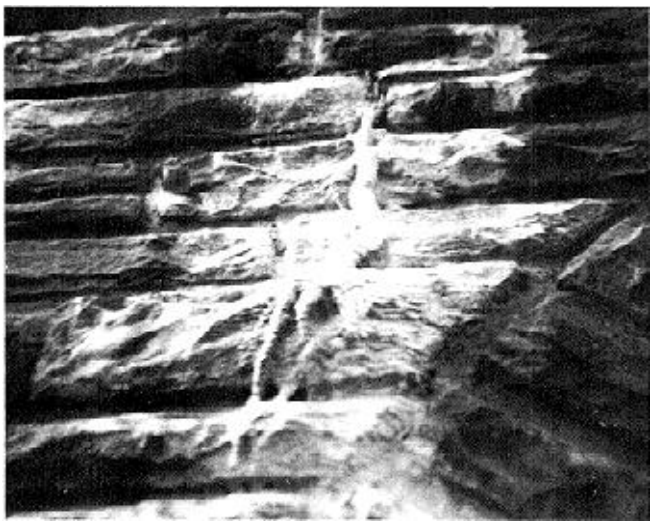

Figure 4. "Stalactite-like" formation, 24 inches in length, above arch in dam.

presents no problem for the creationist viewpoint of a recent Flood. If limestone precipitated and hardened in the Flood waters similarly to the hardening of mortar or Portland cement (Williams, House and Herdklotz, 1981, pp. 207-8), would it contain considerable amounts of $Ca(OH)_2$ and be easily dissolved as the Flood receded? Thus stalactite and stalagmite formation would have been more rapid in newly-formed limestone caves. This has been a fruitful area of creationist research and still offers possibilities for further effort. Prior creationist work can be used as a starting point for future work.

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ENLIGHTENMENT OR ENDARKENMENT

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Abstract

This article provides thoughts on the Enlightenment by seventeenth and eighteenth century writers and the belief by a modern writer that the world is headed toward a dark period in history. The Age of Enlightenment has been described by scholars as a period of great intellectual awareness with emphasis on the experimental method in science. What has not been emphasized is that some leaders of the Enlightenment were creationists. Another fact brought out in the article is that a surprising number of modern day scientists are turning toward God, reversing a trend toward endarkenment.

Introduction

Few would quarrel with the statement that Sir Isaac Newton was one of the greatest figures in the history of science and that his *Principia* was the single most important book of the scientific revolution in the seventeenth century. Although there may be some question of whether or not Newton was a Christian ("Newton . . . sought evidence to bolster his own principles of faith, which were anti-Trinitarian." (Cohen and Glazebrook, 1973) there is no doubt that he was a creationist. Newton's declarations about induction from empirical observations and John Locke's general theory of knowledge, as expressed in his *Essay Concerning Human Understanding,* were the start of what some have called the Age of Enlightenment. According to R. F. Baum, writing in *The Intercollegiate Review:*

> Objections may be raised to the statement that the epistemological revolution promoted by Locke and his successors has been driving us toward an endarkenment in which no light whatever, let alone certainty, will illuminate the world we live in. Yet such an unexpected outcome is written large on the characteristic thought of our time. (1986, p. 39)

The age of Enlightenment has been described as a period of great intellectual awareness and activity with emphasis on the experimental method in science. Some scholars believe that The Age of Enlightenment started with the skepticism of Voltaire in France, but there can be no doubt that its principles were inherent in Newton's writings at least half a century earlier. Some might even claim that "the ancestral ideas of the Enlightenment reach deep into ancient Greece." (Haggerston, 1973)

Isaac Newton published his *Philosophiae Naturalis Principia Mathematics* in three editions from 1687 to 1726. In the first edition, he concluded that God had placed the planets at different distances from the sun so that they would receive heat from the sun according

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to the proportion of their densities. According to I. Bernard Cohen, writing in *Introduction to Newton's 'Principia':*

> . . . this reference to God is indeed present in E1, but . . . it has disappeared in E2 . . . It seems likely that Newton had not originally intended to make quite so pronounced a statement about God in the midst of the propositions of Book III . . . (1971, p. 155)

In the second edition of *Principia,* there was a reference to God in a different location (in the concluding Scholium Generale) according to Cohen: And so much concerning God: to discourse of whom from phenomena surely belongs to experimental philosophy. (1971, p. 244). A similar statement was included in the third edition, except that the wording was changed. Cohen says:

> . . . Newton thus states that phenomenologically based discussions of God do have a place in *natural* philosophy, while hypotheses have no place in experimental philosophy. (1971, p. 245)

An insight toward Newton's views on God and gravity is provided by a contemporary, David Gregory. Cohen tells us:

> Gregory also recorded certain views of Newton's concerning God's role in the operation of the system of the world. Thus . . . '[Newton says] that a continual miracle is needed to prevent the Sun and the fixed stars from rushing together through gravity: that the great eccentricity in Comets in directions both different from and contrary to the planets indicates a divine hand . . .' (1971, p. 192)

Admitting then that Newton did believe wholeheartedly in God, was he a Christian? Frank E. Manuel, in his book, *The Religion of Isaac Newton,* says:

> John Conduitt, who married Newton's niece, was somewhat dismayed that Newton on his deathbed had failed to ask for the final rites, but he consoled himself with the reflection that Newton's whole life had been a preparation for another state. (1974, p. 6)

Manuel (1974, p. 7) gives several instances in which Newton is apparently as much a Christian as anyone of his day. ". . . during Newton's lifetime nobody cast aspersions on his Anglican orthodoxy." Manuel includes, as an appendix to his book, a treatise written by Newton in which he quotes from the Old Testament prophets and the Revelation of John. Newton says:

> In the next place I would observe out of the Prophets that in the end of this present world when Christ shall come to judge the quick and dead, the quick to be then judged are the people of this kingdom, both Jews and Gentiles. (1974, p. 130)

Based upon his writings, it must be concluded that Newton believed in Christ, even though he may not have met the expectations of the clergy of his day. How then could Newton have been the one credited with leading people away from God as the prime mover of the Age of Enlightenment? This surely was not his intention. In contrast, he was quoted as a leading authority by theologians to bring people to God. Manuel says:

> In the eighteenth and nineteenth centuries Newton was occasionally cited by English apologists to illustrate the compatibility of science and faith. If the greatest of all scientists was a believer, ran the argument, how could any ordinary mortal have the impudence to doubt? German theologians of the Enlightenment leaned heavily upon Newton's confession of belief in a personal God in the General Scholium to the *Principia,* and Albrecht von Haller, the paragon of science in the Germanic world of his day, reverently quoted Newton as authority to support his own reconciliation of science and religion. (1974, p. 4)

But scientists ignored his religious beliefs when quoting him. Manuel continues:

> But it must be admitted from the outset that an interest in Newton's religion can hardly be justified by its power as an instrument for the propagation of faith. His scientific discoveries and what Newtonians made of them, not his own religious utterances, helped to transform the religious outlook of the West—and in a way that would have mortified him. (1974, p. 4)

Locke's Contributions

Before Newton published his *Principia,* his friend John Locke, a religious dissenter, wanted to use the prestige of Newton to further his own ideals. According to Baum:

> Locke wanted finally to free men's minds from the metaphysical-theological convictions, usually deduced from revelation, that had fueled Europe's religious wars. With the publication of *Principia* in 1687, and the vaulting prestige of a science that Newton declared induced from empirical observations, Locke's ambition found its opportunity. In 1690 Locke's *Essay Concerning Human Understanding* developed what Locke took to be Newton's induction of his cosmology from empirical observations into a general theory of knowledge . . . (1986 p. 39)

The Enlightenment movement was based upon the concept that right reasoning came from true knowledge. In his biography titled *John Locke,* D. J. O'Connor says:

> It is with knowledge in this last sense [i.e., knowledge that calls for observation, inference, testimony and, in general, evidence of various kinds] that John Locke was concerned in his *Essay Concerning Human Understanding.* (1967, p. 24)

As further explanation O'Connor tells us:

> Ways of knowing which do not satisfy these very stringent conditions Locke refuses to call 'knowledge': he uses instead the words 'belief,' 'faith,' 'judgment' or 'opinion' to refer to them . . .
>
> By thus raising the nature of knowing as a problem, Locke was introducing a new point of view into European philosophy. And this point of view, for good or ill, has dominated philosophy since his time . . . Locke was the first important philosopher to develop a suggestion implicit in the work of Descartes: that philosophy should begin with epistemology [i.e., the study of the nature and origin of knowledge]. (1967, pp. 26, 27)

Baum reiterates Locke's concept, saying that, according to Locke's *Essay:*

> . . . it was not in metaphysics or theology, not in any constructions of man's speculating mind, but in the testimony of the senses and reflection on it that 'Certainty, real Certainty could be found.' (1986, p. 39)

Voltaire's Opinions

The ideas of Locke were carried to France by Voltaire says Baum, "and there simplified by Condillac, Helvetius, Holbach, and others . . ." Baum further says that:

> . . . an empiricism derived from Locke and acclaiming sense experience as the source of knowledge became the epistemological buttress of the eighteenth-century Enlightenment. The naturalistic bent of that Enlightenment soon became overtly atheistic in France. (1986, p. 39)

As a disciple of Locke, Condillac believed that all thought is derived from sensations and experience, and not from innate qualities. According to *The Oxford Companion to French Literature,,* Etienne de Condillac:

> took little part in the violent controversies of his time . . . he went beyond him [Locke] in tracing the development of the various human faculties—memory, imagination, reflection, etc.—to their origin in sensations, and held that it was possible to apply logical reasoning in metaphysics and morals with the same precision as in geometry . . . (1969, p. 159)

Another biographer, A. Owen Aldridge, in his book, *Voltaire and the Century of Light,* made this statement about Helvetius:

> In complimenting Helvetius on an English translation of the latter's De l'esprit, he [Voltaire] predicted that 'enlightenment will spread in France as in England, in Prussia, in Holland, in Switzerland, even in Italy . . .' (1975, p. 289)

and further:

> In a superb letter to Helvetius, he traced the gradual history of reason in France from the time of Fontenelle to the year in which he was writing. From England the French people had adopted not only the scientific truths, principles of economics, and mechanical advances, but also 'their noble liberty of thought.' (1975, p. 303)

Aldridge says that Voltaire was alarmed at the publication:

> of the *Systeme de la nature* by the Baron d'Holbath, a materialist work that did incalculable harm to the cause of the philosophes by associating rationalism and religious toleration with unequivocal atheism. (1975, p. 362)

Aldridge contrasted that to one of Voltaire's poems in this manner: "In Voltaire's poem the emphasis is more on the existence of God than on doubts concerning such a belief." (1975, p. 362) Expressed another way, Voltaire wrote about God but did not himself seem to doubt God's existence and Voltaire viewed as wrong the belief that rationalism should be equated with atheism.

In some of Voltaire's writings it might be inferred that Voltaire was an atheist. In his biography of Voltaire, Haydn Mason gave us a rare early instance of Biblical criticism by Voltaire. Mason says that, in Voltaire's publication *Le Mondain,* he presented this portrait of Adam and Eve:

> . . . their nails long and dirty, their hair unkempt, dining on millit and acorns and sleeping on the hard ground, . . . two brutes without the slightest sense of civility, let alone the polish of elegant Paris society. (1981, p. 33)

However, this paints a false impression of Voltaire's true beliefs. Mason goes on to say:

> The appearance of *Le Mondain* . . . was embarrassing. There is every reason to believe that Voltaire intended it, as he said, to be a *badinage* for the eyes of select friends. (1981, p. 33)

Mason later tells us that Voltaire said:

> I have discovered one of the secrets of the Creator. [Newton] is the greatest man who ever lived . . . the guiding light who has demonstrated that the universe has an ordered plan, centred on the unchangeable force of gravitation. (1981, p. 38)

Locke's doctrines were written into America's Declaration of Independence in 1776. When the French Declaration of the Rights of Man was written in 1789 the French also borrowed from Locke's philosophy and the work of the French writers.

If we can now accept the origins of the Enlightenment as suggested by Baum, we are in a position to consider his views on the endarkenment.

Logical Positivism and Popper

Baum described the "Logical Positivists" as a group that "hailed as an adequate guide for living the allegedly verified theories, the accepted laws of 'inductive science'." (1986, p. 40). He says that these Logical Positivists:

> dominated and even domineered in many Anglo-Saxon universities—until Karl Popper's *Logic of Scientific Discovery* demolished both the induction notion and the idea of verified theories or laws. Popper correctly perceived that from particular observations one could neither induce nor verify universal laws. (1986, p. 40)

Berkson and Wettersten tell us some of Popper's ideas in their book, *Learning from Error — Karl Popper's Psychology of Learning.* They say:

> He argued that the theory of meaning could not reasonably be upheld since, according to its own standard, it was meaningless . . .
>
> In attempting to provide an alternative to positivism, Popper at times fell into accepting positivist aims, such as minimizing the influence of metaphysics on scientific method. (1984, p. 44)

Writing further, Baum states that:

> Popper's conception of scientific method and knowledge has corrected a centuries-old misunderstanding. Scientific knowledge grows or progresses not, as even Newton thought, by induction from accumulated observations but by a process of trial and error, by bold *a priori* hypotheses and retention of those that survive factual and logical tests. (1986, p. 41)

There is an opposite opinion. Jonathan Lieberson, in his article "The 'Truth' of Karl Popper," says:

> Though he has been much honored, his reputation has always been uncertain. Some—and not only philosophers, but scientists, politicians, artists—have professed to find unsurpassable wisdom in his works, while others, no less acute, regard the work as too blunt, oversimplified, audacious . . . (1982, p. 67)

In reviewing Popper's book *The Logic of Scientific Discovery,* Lieberson says:

> This entire view of science, according to Popper, is misconceived. To him it suggests that scientists are engaged in an impossible "quest for certainty." . . . Popper believes that in our quest for knowledge there are simply no "secure" starting points that do not have presuppositions: such starting points can be found neither in *a priori* dogma nor in sense experience: we are, he says, never in a situation prior to all theorizing. (1982, p. 67)

To illustrate Popper's reasoning when he says that "induction is mythical," Lieberson introduces the white polar bear concept. He says, in quoting Popper:

> No one has encountered or inspected all possible polar bears, but judging from the sample we have come across, can't we rationally claim that most polar bears are white? . . . Popper argues that induction (in this latter sense) is not a logically reputable inference: a hundred or a million observed white polar bears provide no decisive reasons for thinking that all polar bears are white . . . (1982, p. 67)

Lieberson then provides Popper's best line of reasoning in saying:

> Popper thinks he has a more rational and coherent answer than "inductivism." We cannot justify a claim that a hypothesis is true, but we can retain both rationality and the empiricist's demand that our knowledge be supported by observation. For while no number of white polar bears could establish or verify the claims that all are white, nevertheless, a single polar bear that is not white can falsify the hypothesis. (1982, p. 68)

According to Lieberson, Popper provides an all encompassmg statement of philosophy:

> No scientific theory, he claims, not even the greatest of them, Newton's universal mechanics, has ever been "established" or "verified": after all, if Newton's theory was certain or "inductively proved," how could it have been overthrown and superseded by Einstein's theory of relativity? (1982, p. 68)

Some philosophers may not agree either with Popper's philosophy. One such writer is Lee Dembart, who reviewed the book, *The Nemesis Affair: A Story of the Death of Dinosaurs and the Ways of Science,* by David M. Raup. He states:

> When scientists decide what the truth is at any given moment, there is more going on than experiments and appeals to reason. The models of science developed by Karl Popper and Thomas Kuhn may not take sufficient account of the role of non-reason in the development and assessment of scientific theories. (1986, part V, p. 1)

To this point, my discussion has centered on reason, but if some scientists want to use non-reason as the basis for their conclusions, they should at least be allowed to express their viewpoint. Raup's book claims that the dinosaurs died out about 65 million years ago during a periodic mass extinction caused by the Earth's colliding with a comet. Dembart notes that:

> Raup's contribution to this hypothesis is the discovery, with Jack Sepkoski, that the fossil record indicates that extinctions of species were not randomly spaced but were bunched every 26 million years for the last 250 million years. (1986, part V, p. 1)

Where then does the non-reason come in? Dembart continues:

> Raup's book is an insider's look at the sociology of a scientific hypothesis, how an idea starts, develops, is tested, gains adherents and sparks new work . . . Raup even-handedly assesses the evidence . . . In short, there is not a shred of evidence to support the idea that a periodic comet shower has caused periodic mass extinctions throughout geological time. In fact, there isn't even any evidence that the Oort Cloud of comets exists. (1986, part V, p. 1)

An opinion of what happens when scientists start using non-reason has been correctly stated by Baum:

> Contrary to naturalistic opinion, modern knowledge, whether physical or historical, factual or theoretical, has been rooted in theistic faith. When that connection is severed, knowledge of every kind loses grounding in external reality and hence its authority in men's judgment. (1986, p. 46)

This concept has been further demonstrated in several books on evolution which have been published recently, foremost among them being Michael Denton's *Evolution: A Theory in Crisis.* In his book, Denton rejects outright the possibility of creation of plants and animals and humans by God, while recognizing the utter impossibility of life forming by itself and of its continuation through macroevolution. In discussing Darwin's general theory about all evolution being due to the gradual accumulation of small genetic changes, Denton says that it:

> remains as unsubstantiated as it was one hundred and twenty years ago. The very success of the Darwinian model at a microevolutionary level . . . only serves to highlight its failure at a macroevolutionary level. (1986, pp. 344, 845)

Here then is another example of non-reason in action.

Conclusion

The enlightenment begun by Newton, a creationist, that led men to reason, has been replaced by an endarkenment, leading men to non-reason, with nonbelievers in God in the forefront. But, are all scientists and philosophers heading down the same path? John Gliedman, in his article in *Science Digest* titled "Scientists in Search of the Soul," paints a slightly modified picture. For example, in writing of Sir John Eccles, Gliedman says:

> Winner of the 1963 Nobel Prize in Physiology or Medicine for his pioneering research on the synapse . . . Eccles strongly defends the ancient religious belief that human beings consist of a mysterious compound of physical matter and intangible spirit . . . The Australian born Eccles was a young Rhodes scholar at Oxford when he became a close friend of the famed physiologist Sir Charles Sherrington, who believed that a nonmaterial self controlled each person's brain. Eccles's own belief in the immortal soul originates in solid scientific statistics . . . (1982, p. 77)

Gliedman also says that:

> Eccles has a powerful ally in Sir Karl Popper, who agrees with Eccles in every crucial respect except the soul's immortality. Popper is the most famous philosopher of science of our age . . . "What experiments can you do to test Popper's theory of scientific theories?" asks Eccles. "Can you put Popper's theory on the mat and try to falsify it the way he says that a scientist should try to falsify an empirical scientific theory? The answer is 'no' because Popper's theory of scientific method is not science; it is metaphysics. (1982, pp. 77, 78)

Lest creationists rejoice that Popper and Eccles are believers in Christ, remember that Popper does not believe in the immortality of the soul. Further, Eccles's belief is that:

> Each of us embodies a nonmaterial thinking and perceiving self that "entered" our physical brain sometime during embryological development or very early childhood . . . (1982, p. 77)

Therefore, neither of these men professes Christian beliefs. Gliedman mentions a few others:

> [l] Brian Josephson, who received the 1973 Nobel Prize in Physics for his pioneering research in superconductivity, studied under Sir Charles Sherrington.
>
> [2] Wilder Graves Penfield, neurophysiologist, who felt that humans were not just material beings, also studied under Sherrington.
>
> [3] John von Neumann, who brought the rigorous principles of mathematics to the fledgling science of quantum mechanics, believes man may have a nonmaterial consciousness.
>
> [4] Roger Sperry, neurobiologist, recently awarded the Nobel Prize in Medicine for delineating the functions of the brain's two hemispheres, maintains that the self is a new property of matter. (1982, pp. 78, 79)

There are thousands of other scientists who share the belief in a soul that exists apart from the brain, as attested by the membership in the Creation Research Society. Maybe, just maybe, more and more scientists are turning from the concept of a Godless universe and are recognizing that the world and its life forms were indeed created by God and the endarkenment trend is being reversed.

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BOOK REVIEWS

In the Beginning: A Scientist Shows Why Creationists Are Wrong. by C. McGowan 1984. Prometheus Books. Buffalo, New York. 208p. $12.95.

Reviewed by A. W. Mehlert*

PART I

Introduction

McGowan's detailed defense of evolutionism is the most comprehensive I have yet seen, but it is a great pity that he has based his whole case on only two creationist sources—Henry Morris's *Scientific Creationism* (1974) and Duane Gish's *Evolution: The Fossils Say No* (1973). Apparently he is ignorant of the existence of many other creationist works of later date and high technical quality.

The Origin of Matter and the Universe

McGowan decided not to discuss the origin of the universe (page xii). The Professor is indeed wise to leave sleeping dogs lie but this subject is so important. A glance at some of the more recent writings by astronomers and physicists on the mysteries of the universe will show that they appear to be up against insurmountable problems and are no nearer to solving them than they were 100 years ago.

Since the mid 1960's when theories of an eternal universe were largely abandoned, the other model, the 'big-bang,' has also suffered many setbacks. John Gribbin (1986) says ". . . many cosmologists now feel that the shortcomings of the standard (big-bang) theory outweigh its usefulness . . ." He goes on to say that ". . . new models are based on the *concept* that particles (of matter) can be created out of nothing at all . . . under certain conditions" and that ". . . matter might suddenly appear in large quantities . . ." Does this not sound remarkably like Genesis 1:1 — Creation *ex nihilo?* After some technical discussion Gribbin concludes that "Perhaps cosmologists have been charging

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