
WHAT DO SEVENTH-DAY ADVENTIST STUDENTS NEED TO KNOW ABOUT SCIENCE?

BY ARIEL A. ROTH

Modern science has apparently rejected the very concepts that provided for its primary development. The noted philosopher Alfred North Whitehead has pointed out that modern science developed in the Western world because its Judeo-Christian heritage of monotheism promoted ideas of consistent cause and effect that are so basic to science. He reasons that science did not develop in the stable Eastern cultures such as China and India because polytheism and the capriciousness of their gods inhibited the development of concepts of consistency.¹

Such a concept is interesting to Seventh-day Adventists, since they so highly respect both the Bible and "God's second book"—nature. A review of God's activities in the Bible reveals that He is not capricious, and this fits well with the laws of science. The close association that can be made between God and science is particularly significant in the context of the serious controversy being waged between modern science and the Bible. Adventist science education finds itself in the midst of this conflict and has the responsibility to guide its students into an understanding of the issues involved.

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The controversy between science and the Bible should not surprise Adventists. About two millennia ago, the Apostle Peter made the remarkable prediction that in the last days scoffers would be willingly ignorant of Creation and the destruction of the world by a flood.² His prediction is precisely ful-

filled in the current conflict between science and the Bible. In the minds of many, evolutionary concepts have replaced Creation. The theory that gradual change occurred over millions of years has replaced the concept of a worldwide flood. Peter could have predicted numerous other areas of con-

flict, so it is remarkable that he picked discord between science and the Bible as of special significance.

Influence of Science

Science has become a powerful philosophical influence in modern thought, especially when combined with the dramatic successes of technology. Terms such as *satellite*, *genetic code*, and *scientifically sound* evoke considerable respect. Success, however, has its pitfalls and can encourage unwarranted self-sufficiency. This can lead to dismissing as irrelevant or less important any information gained from outside the scientific system. R. E. Gibson, formerly director of the Johns Hopkins University of Applied Physics Laboratory, warns:

[T]he present tendency is for the scientific community, now grown powerful, to behave much as the church did in Galileo's time—that is, it permits religious beliefs and the findings of scholarship to be treated as hypotheses but does not attempt to assimilate them with its own theories.³

No doubt the eminent success of modern science has encouraged rejection of non-naturalistic explanations for happenings that seem beyond the laws of cause and effect, such as the miracles described in Scripture. This

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attitude has contributed to the secularization of science, which in its early stages often referred to God as Creator. A number of pioneers of modern science, including Newton, Linnaeus, and Agassiz, believed that the investigations of science would lead them to discover the cause-and-effect laws that God had created. In modern times, however, science has adopted an independent, secular stance.

Importance of SDA Science Education

Adventist educational institutions should provide the finest education, including the most recent developments in science, using laboratories with the best equipment available. This

goal, while widely accepted, is not always realized.

However, beyond producing competent and well-educated graduates, Adventist science education has a unique purpose in counteracting the secularism that currently dominates scientific interpretations. These classes must consciously seek to restore God to His rightful place as Creator and Sustainer of the universe.

Many scientists now perceive a basic conflict between the Bible and science, a schism emphasized by recent debates in the controversy between Creation and evolution. Creation is sometimes described as "unscientific." What this actually means is that we cannot analyze it using scientific techniques. Because Creation does not lend itself to such examination, science pursues its own course providing naturalistic interpretations, which, paradoxically, it may be unqualified to give.

Many people fail to recognize that science is unable to analyze Creation because of its own limitations, not because Creation is a fallacy. Others cannot reconcile an indiscernible God who is capable of manipulating nature with the consistency they see in the laws of nature. They do not recognize that a God of law and order created the

laws of nature that make science possible.

Perhaps the most serious problem in this area is that science, using its own system of thought, has failed to provide adequate naturalistic explanations for the origin of many realities in the world about us. These include the simplest form of independent life, complex integrated biological systems such as the brain, or the phenomenon of free will, which is not based on cause and effect.

Simpler arguments that were leveled against Charles Darwin's idea of general evolution still go unanswered. Apparently these troubled Darwin, for he wrote to his friend and supporter, the American botanist Asa Gray:

I remember well the time when the thought of the eye made me cold all over, but I have got over this stage of the complaint, and now small trifling particulars of structure often make me very uncomfortable. The sight of a feather in a peacock's tail, whenever I gaze at it, makes me sick!¹⁴

The concept of intelligent design offers a better explanation to such problems than do contemporary scientific theories.

A Threat to Academic Freedom?

Seventh-day Adventist science education has a special challenge to counteract the present naturalistic secular philosophy of science by emphasizing the many evidences for a Creator that are found in the natural world around us. However, this assertion immediately raises questions about academic freedom, which is important to scientific research.

Some scientists believe that accepting the concept of Creation denies the openness of science, which should be free to pursue truth wherever it may lead. However, the only way to be equally open to all positions is to make no decisions, except not to decide—an unsatisfying if not paralyzing conundrum. Both science and the Seventh-day Adventist Church have the right to draw conclusions, decide what they believe to be true, and act upon those decisions.

This does not imply that the church does not need to constantly reexamine its tenets. It does. However, there is a

danger that any process of reexamination may be dominated by skepticism. This will paralyze any activity that bases its conclusions on established truth.

While every individual and every social group needs to evaluate its beliefs, the *primary* purpose of Seventh-day Adventist education—including its science education—is not to debate the pros and cons of every issue ad infinitum, enjoyable as that may be. Adventist educational institutions should not be debate societies that produce agnostics; they have the higher purpose of preparing youth to serve the needs of a troubled world.

Science instruction in Adventist institutions can help significantly by emancipating science from its traditional secular mode, and through a holistic approach to investigation, emphasize the information that points to a Creator. This type of curriculum will help train graduates with a proper appreciation for the moral values of the Bible—men

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and women of conviction and action.

The Challenge to Adventist Science

Is "Adventist science" really a contradiction in terms? After all, Adventism implies belief in a God, while modern science excludes God from its list of acceptable explanations for the universe. Science can be considered an open search for truth. As such it is a methodology rather than a naturalistic philosophy.

The challenge to Adventist scientists goes far beyond recognizing God as Creator, although this is primary. Adventists base their beliefs on the Bible, which they consider to be inspired. They therefore expect it to be reliable and in harmony with discoveries in history, archaeology, and science. In other words, they expect truth to be consistent.

Many modern writers have tried to harmonize scientific interpretations and the Bible. Most of their work suggests allegorizing the biblical account of Creation. This is done in order to accommodate the usual interpretations of scientists regarding the millions of years required for geological and biological changes.

Adventism, on the other hand, has stood by the authenticity of the Bible account as a whole. The Genesis account of beginnings, especially the six-day Creation period, is particularly significant to the church, since one of its most distinctive doctrines, the Sabbath, is based on this concept.

Furthermore, the accounts of Creation and the Flood (Genesis 1-11) cannot be isolated from the rest of the Bible without compromising the integrity of leading biblical personalities such as Isaiah, Peter, and Paul, who refer to this account of beginnings as fact. Christ Himself validates the Creation and Flood account by referring to them as factual.

In the only words God wrote with His own hand for human beings, He validated the six-day Creation account. The fourth commandment states that He

created everything in six days. Would God give false information about beginnings and later allow Charles Darwin to discover the correct concepts of gradual development? To argue that the Bible is not reliable in this area is to question whether God speaks to us or whether He even exists. Rejection of these concepts also belies the rather compelling scientific data that favors intelligent design.

Contrary to some claims, belief in the Bible is more than mere blind faith. God's book has been authenticated by geographical, historical, and archeological data. It has remarkable internal consistency between writers of varied education and background who lived over a period of more than a thousand years. The authors of the Bible were individuals of integrity willing to sacrifice even their lives for what they believed. This is not the kind of person who would give false information, especially of such a basic nature as the account of beginnings.

There *are* good reasons for believing that the Bible is the Word of God. Such rational thinking is not foreign to science. Furthermore, in asking the broad question of origins, it is highly appropriate to use the broader base of both the Bible and science rather than the more traditional single disciplinary approach.

Historic Challenges

Earlier in this century, Adventist science education successfully met the challenge of organic evolution. Today's challenge questions the authority of the biblical account of beginnings, especially as it relates to time.

In general, science provides an encouraging endorsement of the Creation concept. From a biological viewpoint, advances in molecular biology over the past decades have revealed a complexity that makes the undirected organization of complex life structures all the more implausible.

The serious debates among evolutionary biologists about different concepts suggest that the case for any one model of evolution is not compelling. Geology has had a major "philosophical breakthrough"⁵ from uniformitarianism (slow changes) to catastrophism (rapid changes). Geologists have not abandoned the concept of long ages, but they are reporting an

abundance of catastrophic activity "throughout the geological record"⁶ of the past, which is exactly what creationists would expect to see based on the Flood described in Genesis.

Discrepancies in some dating methods also raise questions regarding the validity of the standard geologic time scale. We can be encouraged by these general trends, which the Adventist science teacher can use to affirm students' belief in God's Word. Seventh-day Adventist students need to be kept abreast of the latest developments and their implications.

Not all problems are solved, of course, and teachers should forthrightly and honestly admit this. However, the recent advances of science have not provided a cogent bulwark against the Bible. Quite the contrary. Modern developments in biology and geology, while difficult to quantify, probably give us more reason to believe in the Bible than ever before.

Incursions of Secularism

A further challenge to Adventism is the slow process of secularization that is occurring in both our churches and educational institutions. Naturalistic scientific explanations have contributed significantly to this process. I know of no single idea in Western thought that has done more harm to the Bible than the theory of evolution. Most major churches have accommodated to various concepts that imply gradual evolutionary development over vast periods of time. Seventh-day Adventism, with its unique emphasis on the Sabbath as a memorial of Creation week, would have more difficulty adjusting to such ideas.

Furthermore, a large number of colleges that began as church institutions have become secular institutions. This probably reflects the primarily secular nature of modern educational emphasis.

Seventh-day Adventist schools must make special efforts to maintain their unique reason for existence. No church of our intellectual sophistication has so far been able to resist the trend toward evolution. For the church to survive, Adventist beliefs must be reaffirmed in the classroom. Therefore, church science teachers bear a special responsibility for the future of their denomination.

Importance of Science Courses

We live in an age dominated by science and its discoveries. Adventist education must recognize the implications of this fact and adjust its emphases accordingly.

In the past Adventist education has had a fairly strong science component. This is no doubt due to the emphasis Ellen White placed on both nature education and the healing professions. This emphasis seems to be waning. As a result our graduates are unprepared to meet the challenges that science has brought to society.

Almost a hundred years ago Ellen White wrote:

I have been warned that henceforth we shall have a constant contest. Science, so-called, and religion will be placed in opposition to each other, because finite men do not comprehend the power and greatness of God.⁷

Are we preparing our graduates for this "constant contest"? One of the greatest contributions our schools can make is to astutely meet this challenge.

Evolutionary concepts, which originated in science, have permeated most major academic disciplines. The challenge of secular scientific interpretation concerns not only the science major but also students in almost every area of specialization.

In Conclusion

Any good college or university can produce technically well-trained graduates. However, the Adventist college must achieve a more lofty challenge: producing technically proficient graduates who are also capable of evaluating the basis of their religious beliefs. Adventist faculties need to reassess their core curriculum in order to address this problem. A stronger scholastic emphasis on the relationship between science and religion is essential if Adventism is to successfully fulfill its mission to society. □

FOOTNOTES

¹ Alfred North Whitehead, *Science and the Modern World* (London: Macmillan and Company, 1956), pp. 18, 19.

² 2 Peter 3:3-6.

³ R. E. Gibson, "Our Heritage From Galileo Galilei," *Science*, vol. 145 (1964), pp. 1271-1276.

⁴ Francis Darwin, ed., *The Life and Letters of Charles Darwin* (London: John Murray, 1887-1888), vol. II, p. 296.

⁵ Eric Kauffman, in Roger Lewin, "Extinctions and the History of Life," *Science*, vol. 221 (1983), pp. 935-937.

⁶ Dag Nummedal, "Clastics," *Geotimes*, 27:2 (1982), p. 23.

⁷ Manuscript 16, 1890.

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cepts, build enthusiasm, and make science come alive, in contrast to simply reading about science in a book.

Of course the proof of any curriculum is found in classrooms. Beginning with the 1985-1986 school year, "salting the oats" was put to the test in schools across North America. Let's visit some classrooms to see the curriculum in action.

Entering the first classroom, you might find third and fourth graders working at an experiment station. Experiment cards hang on a clothesline over the table. Jugs of different types of soil, packets of seeds, an array of milk cartons, and sprouting plants at various stages of development absorb the students' interest. As you open a closet to hang up your coat you discover a tray of seeds being kept in the dark for comparison with another tray on a sunny shelf, demonstrating the effect of light upon germination and growth.

Step into another room and you see a "Kitchen Corner" where young nutritionists test various food items for starch or sugar. The aroma of baking bread or oatmeal crackers might tempt you to stay for lunch and experience a "walking salad" activity (similar to a salad bar).

First and second grade pupils might be working in pairs at a tabletop game-board. Pushing toy cars and paper figures along streets and sidewalks helps to clarify their concepts about traffic safety.

In another unit, children work outdoors measuring shadows or recording sunlight and shadow temperature differences. Some children help the teacher demonstrate the reflection of light while another group performs experiments with liquids and solids, evaporation and condensation.

For these pupils, hands-on activity equals scientific learning.

The Teacher's Guide— A Broader View

The teacher's guides for the third and fourth grades include one model

unit for each series. Getting down to the basics of teaching, the model provides:

- strategies for class structure
- ideas for bulletin boards and room arrangement
- illustrations of learning stations
- ideas for displaying teaching materials
- samples of record keeping for pupils and teacher.

Teacher commentary parallels the pupil text and includes:

- teacher-led activities for each unit
- worship ideas
- background information
- experiment supply lists
- strategies for conducting experiments
- supplemental material titles and addresses
- plan-ahead lists.

Emphasis on pupils' taking responsibility for their own learning is developed in teacher's-guide suggestions for problem solving, making choices, self-management, using time wisely, and handling materials.

Christian educators are concerned with more than teaching science and health concepts. Through activities in this curriculum, students learn to master themselves. Self-control, self-direction, self-understanding, problem-solving—these are objectives not only for the classroom or for everyday living. These are a preparation for the life to come and an integral aspect of Christian education.

The Life Series Science/Health curriculum is unmistakably Adventist. SDA beliefs, mission, life-style, and culture are clearly stated—without apology. And why not? One can find excellent science and health textbooks used in public education, but not one of them reflects the concept of God as the Creator of the universe and the human body. Not one of them directs a pupil's thoughts to the care he or she should give to the environment because it is God's creation or to the care one should give his or her body because it is God's temple. Surely textbooks intended for our young people should educate them in the beliefs that our church cherishes.

The ultimate goal of the science/health curriculum is to lead children and youth to the Water of Life. But how can they be motivated to drink? Try salting their oats! □