

# Science and You

## How the Space Program Has Affected Our Daily Lives

BY HAROLD MILLIKEN

When your students say, "Why do we have to study science anyway?"

What does it have to do with our lives?" you can direct their attention to space. Because of the development of satellites and related technology, science touches the lives of each one of us *every day*.

The world was shocked and stunned that historic day in 1957 when the Soviet Union launched the first man-made Satellite, Sputnik, into an Earth orbit. I can still remember watching it cross the evening sky as it

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made its way around and around the Earth.

Immediately, the United States sprang into action. By October 1, 1958, the National Aeronautics and Space Administration was created to pull together America's own early space endeavors and to seriously compete in the space race. Not long after, President John F. Kennedy startled the

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world with his bold announcement that the United States would put a man on the moon in 10 years. This promise became a reality when Apollo astronauts Neil Armstrong and Edwin Aldrin successfully landed on the moon in July 1969.

What have been the consequences of these achievements? Sputnik really ushered in the "High Tech Age," which had to be developed before the "Space Age" as we know it could become a reality. From that day on, nearly every aspect of our lives has been touched, either directly or indirectly, by these dramatic events.

### **Satellites**

Circling through space are hundreds of artificial satellites, each with a mission of its own, and all serving in some way to support our way of life. The familiar satellite pictures on the television weather reports have greatly increased the accuracy of both long- and short-term weather forecasting. This allows us to predict the approach of violent storms, thus saving both life and property. We have learned to depend on these forecasts to plan outdoor activities and travel.

It is impossible to exaggerate the impact of communication satellites on our modern world. Because of these satellites nearly any part of the world—no matter how remote—is only seconds away by either television or telephone. Most people are unaware that more than two-thirds of all transoceanic communications are transmitted by satellite, with only one-third going over underwater cable. Through satellite television transmission more than half of Earth's people were able to watch the 1984 Olympics held in Los Angeles, California. Today, private satellite dishes are fast becoming as common as television antennas.

Circling the Earth in a north-south polar orbit are Landsat satellites, designed to inexpensively survey global conditions and natural re-

sources. Although not well known, their service to us is tremendous. Here are just a few of the scores of ways that they have helped our world. Landsat satellites provide the pictures that enable world food authorities to predict accurately a given year's wheat or corn production. Bolivia has used Landsat pictures to choose the best and least expensive route to lay a gas pipeline and avoid crossing a dangerous faultline. A large paper company used satellite pictures to count the number and kinds of trees in a two-million-plus-acre stand of southern timberland. The U.N. Food and Agriculture Organiza-

tion recently used satellites to track and report swarms of locusts and grasshoppers in 13 countries of East and West Africa. These reports aided aircraft in determining where to drop pesticides. This prevented destruction, in the Sahel alone, of nearly 220,000 tons of grain, enough to feed 1.2 million people for a year.

### **Indirect Benefits**

While we receive many direct benefits from the space program, perhaps its indirect benefits have had the greatest impact on our way of life. The invention of the famous silicon chip and the development of myriads of new and better materials have revolutionized our world. They have brought to our homes and schools products—from calculators to security systems to cookware—that until a few years ago were unimaginable. A hundred of today's dollars will buy more computing power than a thousand dollars in the 1960s. Computers are rapidly becoming more powerful, smaller, and less expensive, and the end is not yet in sight.

The space program would not have existed were it not for scientists developing new materials to meet the rigorous demands imposed by the hostile environment of outer space. The development of new materials has reached such a high degree of sophistication that scientists can now build a new material atom by atom, so to speak, to fulfill a specific need. An example of such a material, thermoplastic polymers, will be seen on the consumer market in the form of plastic automobile engines. Many parts including the block, cylinder heads, and connecting rods will be made of this new material. Some of the advantages cited are less weight, lower production costs, and faster acceleration.

The medical field, too, has benefited from the gigantic surge in modern technology. This can be well illustrated by the newly completed \$12.5 million Schuman Pavilion at the Loma Linda University Medical Center. It was built to house, among other things, sophisticated equipment for Magnetic Resonance Imaging and Lithotripsy. MRI is a noninvasive technique for viewing soft tissues of the human body such as heart, brain, and spinal cord. Lithotripsy is a sophisticated procedure for

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# QUESTIONS ABOUT THE AGE OF THE EARTH

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bulwark to guard against the dangers of Darwinian evolution. While there are literally dozens of such statements in SDA literature, I have selected two typical statements, the first by D. T. Bourdeau in 1867, the second by J. O. Corliss in 1880:

And in our judgment there can be no greater and more dangerous abuse of Geology, than the idea which makes this science teach that our world is more than six thousand years old; that there was a pre-Adamic age consisting of immense periods of time, represented by the six days of creation.<sup>11</sup>

But we are told that there is inscribed on nature's tablets the record that our globe in its present state is the result of evolution, and that instead of being only about six thousand years old, as related in the Bible, it has existed through myriads and millions of ages.<sup>12</sup>

In Adventism a belief in the 6,000-year concept has come to mean a belief in the teaching of Creationism. A rejection of this concept presumes the acceptance of some form of evolution. However, such is a false dichotomy, especially when one considers that the 6,000-year concept was originally incorporated into Adventism as a tool to determine not so much the date of Creation as the date of the world's demise.

## Scientific Aspects

Finally, we must look at the issue of the age of the Earth from its *scientific aspect*. This does not mean that science has the last word. Unfortunately, this is an area where more heat than light is generated within Adventist circles. Nearly all the commonly used dating methods, such as uranium/lead, potassium/argon, rubidium/strontium, fission track, radiocarbon, and paleomagnetic, yield ages for the Earth, its minerals, and its organic matter much greater than the Biblical time period of a few thousand years.

Here again it is tempting to set up a false dichotomy: either the Bible is right and science is wrong, or the Bible is wrong and science is right. Could it be that the One who is the Author of both science and the Bible has planted

enough truth on both sides of the issue that one should not fall into the trap of setting up a false dichotomy? In other words, science could be both right and wrong on the question of the age of the Earth, and our interpretations of biblical chronology could have elements that are both correct and incorrect.

I believe the Bible record is right in displaying a continuous genealogical chain between Adam and Noah and then between Noah and us, illustrating the truth that we are "all of one blood." In the light of the cross there is no superior race, no inferior nationality. The biblical record is right in not inserting any subhuman being, anthropoid ape, or hominid into that genealogical chain. It is also correct in rejecting the idea that there are a seemingly endless number of generations between Adam and us. In other words, the interjection of millions of years or even hundreds of thousands of years into this genealogical chain would negate its meaningfulness.

In conclusion, every question in the area of science and religion should be viewed as a challenge, but not to a verbal duel or intellectual debate. We should put each issue into its proper perspective before attempting to give a strictly scientific answer.

## A Plea for Understanding

This article then is a plea for understanding—for us to truly respect the convictions of our students, many of whom firmly believe in the 6,000 years and who clearly equate a rejection of this concept with the acceptance of evolution. Second, it is a plea to students to realize that we do not have all the answers or the last word. They must see that we too are sincerely attempting to find harmony between God's Word and His works. □

### FOOTNOTES

<sup>1</sup> Edmund Schulman, "Bristlecone Pine, Oldest Known Living Thing," *National Geographic* (March 1958), pp. 354-372.

<sup>2</sup> Josephus, *Antiquities of the Jews*, X.viii.5 (Loeb Classical Library).

<sup>3</sup> *Midnight Cry*, 1:5 (November 22, 1842).

<sup>4</sup> William Miller, *Views of the Prophecies and Prophetic Chronology*, Joshua V. Himes, ed. (Boston: Joshua V. Himes, 1842).

<sup>5</sup> *Review and Herald* (Oct. 21, 1851), p. 45; (March 23, 1852), pp. 105-108; (Dec. 3, 1861), pp. 1, 2.

<sup>6</sup> *Ibid.* (March 1851).

<sup>7</sup> *Ibid.* (July 1 through August 21, 1883).

<sup>8</sup> *Signs of the Times* (September 20, 1899), p. 610.

<sup>9</sup> *Review and Herald* (August 13, 1901), p. 523.

<sup>10</sup> *The Youth's Instructor* (Sept. 19, 1901), p. 290.

<sup>11</sup> *Review and Herald* (Feb. 5, 1867), pp. 98, 99.

<sup>12</sup> *Ibid.* (Feb. 19, 1880), pp. 116, 117.

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pulverizing kidney stones so that surgery is not required.

Other advances in science that affect human lives include laser surgery, genetic research, organ transplants, prosthetics, and cryosurgery.

The Space Age has also impacted upon the field of education. Because of its extremely complex structure, the human brain has consistently resisted inquiry by the neuroscientist. To say the least, progress in understanding how the brain functions and how learning and memory take place has been disappointing. However, this is beginning to change. After a tremendous expenditure of time, money, and effort some progress has been made. Through the work of men like Nobel Laureate Roger W. Sperry of the California Institute of Technology we are beginning to understand how the brain functions. His experiments involved people who had the two hemispheres of the brain surgically separated due to severe injury or disease. All the literature involving right and left brain function has its roots in these experiments. Though our knowledge is still scanty, its significance is enormous.

Using the latest experimental data, teachers now know more about how the brain processes information than at any time in the past. We are now able to adapt our teaching methods to facilitate learning for individual students. In addition, we have at our disposal powerful tools in all areas of teaching that enable us to reach a degree of sophistication that until a few years ago was impossible. The computer, video camera and playback equipment, and the photocopy machine are a few of the instruments that can make it easier for us to do better work with less effort, enabling teachers to spend more time doing what they do best—teaching.

Technology helps us open the marvels of science to students. As we do so, we can help inspire them to find new and better uses for high-tech discoveries—perhaps a vaccine for AIDS, better yields for food crops, or a manned rocket to explore Earth's solar system. □