# SCIENCE: A BASIC IN THE CHRISTIAN SCHOOL CURRICULUM

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In recent months much dissatisfaction has been expressed with respect to education in America. It is claimed that schools are failing to perform their task. Various factors are cited to support this claim.

One such factor is that of low test scores on a nation-wide basis. Results of various indicators such as the American College Testing Program, the Scholastic Aptitude Test, and the National Assessment Program have shown a definite and persistent decline in mathematics achievement of entering college freshmen. Specific examples will point out the situation more clearly. James J. Gallagher, Director of the Science and Mathematics Teaching Center at Michigan State University, stated in a recent article "On the basis of their performance on placement tests this year, 773 freshmen (11.5%) at Michigan State University were required to enroll in a remedial arithmetic course equivalent to the junior high school level. Also, 2822 freshmen (42.1%) were unable to demonstrate competence in high school algebra."1 In this same article one is informed that each year for the past ten years, the proportion of students who were required to enroll in remedial mathematics programs has increased even though the standards have not increased. One might conclude that these students represent only under-privileged or minority groups. This is not the case. The article states that "students needing remediation come from nearly every high school, public, private, urban, suburban, rural, affluent, and poor."2 A similar problem exists on nearly every college or university campus states Gallagher.

This problem goes beyond the field of mathematics. Gallagher continues "As with mathematics, increasing numbers

of students (11.4% of the entering class) require remedial work in reading and writing before they are able to proceed with their college work."3

The preceding facts clearly indicate that reading, writing, and mathematical skills, beyond question fundamental skills, are not being developed as they should be in the schools of the land.

Another reason for dissatisfaction with education is the excessive cost most of which is borne by the American taxpayer. Voters all too often are asked to approve millage increases with threats of cutbacks and curtailed programs if such proposed increases are not passed. Large expenditures for unproven innovative programs, busing, food programs which in some instances even include breakfast, large swimming pools, and lighted tennis courts have irritated various segments of society. In short, the taxpayer may get large, well-equipped, up-to-date facilities and costly programs, but not necessarily better education for the students.

A third reason for discontent is that the curriculum in American schools encompasses too many frills, too much that is nonessential, and that which is objectionable from a moral standpoint.

Rising out of this dissatisfaction is the call for a return to the basics of education.

What should be included in the basics or fundamentals of education is a question which then arises. This article seeks to answer that question with respect to the inclusion of science in the Christian school curriculum. (The term "science" as used in this article refers to the natural sciences.)

In secular education there are various arguments given to support the idea that science is one of the basics of the curriculum. Let us take a look at some of these arguments.

The first argument stresses that we live in an age in which science exerts profound influence in the world. The present age has been called by such names as the atomic age, the nuclear age, the space age, and also the electronic age. These all point to the fact that we live in what has been called the scientific age. Scientific knowledge has increased at an exponential rate in recent decades. Although presently declining in popularity, science still enjoys a position of great prominence. People continue to look to science to supply the answers to the problems and ills besetting mankind. Scientific and technological

advancements have had an effect on all mankind throughout the world. The development of nuclear weapons with the threat of a nuclear holocaust is just one example of this effect. With science playing such a prominent role in today's world, science education emphasizes the goal of scientific literacy. Scientific literacy may be defined as the acquisition of basic scientific knowledge, development of scientific skills, and cultivation of a positive attitude toward science and the natural world. In light of the above, surely science should be considered as a basic subject in the curriculum.

A second argument for the inclusion of science in the curriculum is that it is intensely practical. Science deals with that which is found in the natural world and it is in that world that we live. Everyday our senses are stimulated by the natural world. That which is all around us, that which we sense in myriad ways should surely be an object of our study in the school.

A third argument deals with the development of inquiry skills. The development of these skills has been emphasized by the Science Education Referent Committee (SERC) of the state of Michigan. This committee has among its purposes the providing of counsel and recommendations to the State Board of Education regarding the status and needs of science education in Michigan and the encouragement of the study and examination of issues in science education by Michigan school and college personnel. In its first major position paper entitled "Science Education--Its Use and Usefulness in the Elementary School Curriculum" SERC concludes, among other things, that "we must provide an appropriate emphasis on inquiry skills along with our present focus on basic communication skills."4 As an important beginning point for the development of inquiry skills, SERC suggested a strong science activity centered curriculum.

A fourth argument used for the right of science to occupy a place in the curriculum is with a view toward career preparation. A strong science background is necessary for many careers and an asset for others. For those high school students who desire to pursue one of those careers, science in the curriculum is either a necessity or of great value. However, many individuals do not decide on a specific career until after graduation from high school. By providing them with a strong science background, the number of career options will be increased for them.

The arguments given in the preceding paragraphs, as was

stated earlier, are those given in the realm of secular education. These arguments are pragmatic in nature, that is, they are based on a practical approach.

Should these arguments constitute the basis for including science in the curriculum of our Christian schools?

It is my position that science should be considered one of the basics of the Christian school curriculum on both the elementary and secondary levels, but not on the basis of the arguments just discussed. We must look at this matter from the perspective of Christian instruction, not from the perspective of pragmatism. Professor Herman Hanko has written "Christian instruction means several things, although it means essentially one thing. This one thing is instruction that is based entirely upon the truth of the Word of God."5 In writing further upon this matter, Professor Hanko states, "Scripture is the foundation, the basic structure, the pulse beat and life blood of all knowledge. Only when this is done is education 'Christian'."6

How can one apply this to science? Scripture throughout declares the truth that God is the sovereign Creator of the heaven and the earth and all that they contain. In the Old Testament in Psalm 33:6 we read "By the word of the Lord were the heavens made; and all the host of them by the breath of his mouth." In the New Testament Hebrews 11:3 states "Through faith we understand that the worlds were framed by the word of God, so that things which are seen were not made of things which do appear."

In the science classes which I teach, I like to look at science as the study of God's created, physical world.

In this creation God has revealed Himself. "The heavens declare the glory of God; and the firmament sheweth his handiwork." (Psalm 19:1)

The matter of how God has revealed himself unto us is dealt with in the Belgic Confession in Article II--"By what means God is made known unto us. We know him by two means: first, by the creation, preservation and government of the universe; which is before our eyes as a most elegant book, wherein all creatures, great and small, are as so many characters leading us to contemplate the invisible things of God, namely, his power and divinity, as the apostle Paul saith, Romans 1:20. ('For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his

eternal power and Godhead; so that they are without excuse.') All which things are sufficient to convince men, and leave them without excuse. Secondly, he makes himself more clearly and fully known to us by his holy and divine Word, that is to say, as far as it is necessary for us to know in this life, to his glory and our salvation."

It is the creation, preservation, and government of the universe which our church fathers have said is "as a most elegant book" and it is the created universe in particular that we study in science. The redeemed child of God studying this universe in its various aspects is led "to contemplate the invisible things of God, namely, his power and divinity..."

This contemplation leads the Christian to see the greatness of His God in creation and to praise Him for it. In the words of the songwriter we sing this praise when we sing from our Psalters the versification of Psalm 19 entitled "Nature's Tribute to God," the first two verses of which are as follows:

> The spacious heav'ns declare
> The glory of our God,
> The firmament displays
> His handiwork abroad;
> Day unto day proclaims His might
> And night His wisdom tells to night.
>
> Aloud they do not speak,
> They utter forth no word,
> Nor into language break,
> Their voice is never heard;
> Yet through the world the truth they bear
> And their Creator's pow'r declare.

Here then we have a basis for including science as a fundamental in the curriculum of our Christian schools. This world is the work of God's hands. He reveals Himself in it and as the believer investigates and studies the handiwork of the sovereign Creator, he marvels at these works and praises His God.

Again, in the words of the songwriter we sing the following words of the Psalter number entitled "The Greatness of God in Nature" which number is based on Psalm 104:

> My soul, bless the Lord! the Lord is most great;
> With glory arrayed, majestic His state;

The light is His garment, the skies are His shade,
And over the waters His courts He has laid.

He rides on the clouds, the wings of the storm,
The lightning and wind His mission perform;
The earth He has founded her station to keep,
And wrapped as a vesture about her the deep.

Having given a basis for including science in the curriculum of our Christian schools, which treatment of the matter in this article is by no means to be considered exhaustive, let us look briefly at some specific items from the field of science. These items reveal the greatness and the power of our Creator and lead one to say with the psalmist, "For thou are great, and doest wondrous things: thou art God alone." (Psalm 86:10)

From the science of astronomy we learn that the universe stretches out in distances so vast that it staggers the imagination. Astronomers measure those distances in light years. A light year is the distance that light travels in one year. Light travels at a speed of 186,000 miles per second. Therefore, in one year light travels a distance of about six trillion miles. The Milky Way galaxy, the disc-shaped galaxy to which the earth belongs, is estimated to be 100,000 light years in diameter and 10,000 light years thick. These distances, however, are relatively small. Astronomers using the Hale Telescope at Mount Palomar Observatory, which is located northeast of San Diego, California, have photographed stars outside our galaxy that are about 1,600 million light-years away. Furthermore, some galaxies are believed to be at least three billion light years away. Just as one stands in awe with respect to the distances in our universe, likewise he stands in awe with respect to the number of heavenly bodies. A galaxy is an astronomical system composed of billions of stars. It is estimated that the Milky Way contains about 100 billion stars. Besides the Milky Way, however, astronomers have found that there are millions of other galaxies which exist. When one begins to calculate the number of stars using the preceding information, he comes up with numbers which are incomprehensibly great.

Another item is the atom, a particle of utmost importance in all branches of natural science. All the natural world is composed of tiny atoms. The atom is the fundamental unit of matter. As the distances and the numbers in the preceding paragraph are

inconceivably great, so the size of the atom is inconceivably small. So small are atoms that it would require a million average sized atoms placed side by side to equal the thickness of the paper on which this page is printed. Yet those tiny particles themselves are composed of electrons, protons, and neutrons. One of these particles, the electron, spins around the core or nucleus of the atom at the incredible speed of 186,000 miles per second. Furthermore, it is from the minute nuclei of atoms that we obtain nuclear energy, enormous in quantity.

The preceding items serve to point out the boundless handiwork of our infinite Creator. He has made the vast universe. He has made the tiny atom. Indeed, day by day we as a covenant people see our Father's handiwork all around us. Should not our covenant youth spend time studying, to the glory of God's name, that which their Heavenly Father has created?

[1]James J. Gallagher, "Science and Math Preparation for Post-Secondary Education," *MSTA News Letter*, XXIII, No. 5, (October, 1977).

[2]*Ibid.*

[3]*Ibid.*

[4]"SERC Position Paper Stresses Importance of Science Education," *MSTA News Letter*, XXII, No. 1 (September, 1975).

[5]Herman Hanko, "*Principles of Education,*" booklet of principles adopted by Hope Protestant Reformed Christian School, 1963.

[6]*Ibid.*

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"Think what deadly injury you are doing if you be negligent and fail to bring up your child to usefulness and piety, and how you bring upon yourself all sin and wrath meriting hell even, in your dealings with your own children, even though you be otherwise ever so pious and holy. And because this is disregarded, God fearfully punishes the world so that there is no discipline, government, or peace, of which we all complain. But do you not see that it is our fault, for as we train them, we have spoiled them and they became disobedient children and subjects." —Martin Luther, *Large Catechism.*