

SPECTRUM

a quarterly journal of the association of adventist forums

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winter 1969

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SELECTIONS FROM THE FIRST ISSUE

SPECTRUM is dedicated, from a Christian viewpoint, to probing the questions that trouble the minds of modern man and to examining the illnesses that sicken our society. . . . Our discussion of the important issues of our time ought to be frank, sincere, tolerant, and charitable. As much as we are able, we hope to look without prejudice at all sides of a subject, to evaluate the merits of diverse views, to be critical only if we can do so constructively, and to stimulate discursive interchange among readers. In all this, our purpose is to promote growth and development. *CHALLENGE*, Molleurus Couperus; Editor.

Because the transformation of war under the impact of democracy and industrialization makes complete conscientious objection impossible, and because the confusion of modern diplomacy makes discovery of the justness of a war equally impossible, the Adventist position is a compromise that works. *THE CHRISTIAN AND WAR*, Donald E. McAdams.

In the minds of some, the humanitarianism of medicine and public health has taken on predominant importance. In a world where each life saved through medical means must soon be balanced by one lost through starvation, the morality of this sort of "humanitarianism" may be due for a reexamination. Perhaps the day is at hand when those trained in agriculture will have at least as much to contribute as those trained in public health or medicine. *A MATTER OF FERTILITY*, Bruce E. Trumbo.

If we assume that man could duplicate a living thing, or "create life" as it is often called (I use the term duplicate rather than create, because man would be merely duplicating something God had already created), what would be the implication? *HAS MAN CREATED LIFE?*, Duane T. Gish.

Education, all of it, is in the computer age. . . . In every phase of the acquisition of learning, the computer will soon be a major factor, even in the high schools. That inescapable fact means the expenditure of huge amounts of money to computerize Adventist education in the next decade or two. *SHOULD ADVENTISTS TAKE FEDERAL AID FOR THEIR SCHOOLS?*, Alonzo L. Baker.

The church has important things to say. We must rediscover what they are and develop the language to communicate them effectively. . . . It is time for the advent movement to reaffirm its historic commission to proclaim present truth and to engage with vigor and imagination whatever inhibiting forces it may face. *INTRODUCTION*, Alvin L. Kwiram; President, Association of Adventist Forums.

TO APPEAR IN FUTURE ISSUES. M. JERRY DAVIS, The Puritans and the Sabbath; RICHARD HAMMILL, Educational Aspects of Church-State Relations in the United States; RAY HEFFERLIN, Review of *Completeness in Science* by Richard Schlegel; RONALD L. NUMBERS, Review of *God and Man in History* by G. E. Shankel; JACK W. PROVONSHA, Toward an Ethic Responsibility; RICHARD M. RITLAND, The Nature of the Fossil Record; RICHARD W. SCHWARZ, Dr. John Harvey Kellogg — Adventism's Social Gospel Advocate; J. PAUL STAUFFER, Review of *Christian Reflections* by C. S. Lewis; BETTY R. STIRLING, Student Attitudes Toward Missions.

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INTRODUCTION

ALVIN L. KWIRAM

The birth of the advent movement initiated a period of tremendous activity. It was a time when ancient articles of faith were being rediscovered and reformulated in terms of “present truth.” It was a time when policies were being developed and new structures were being created, when men sensed that they were engaged in shaping destiny. Those inspired pioneers established a sound base on which succeeding generations built a church with worldwide commitments.

4

The Adventist Church will *continue* to grow. But it is imperative that we, its members, recognize our almost imperceptible emergence into a new era. The exponential increase in factual information, the explosive proliferation of issues and ideas, the impersonal dominance of technology, the sophistication of today’s communication techniques, the shrinking of the world and the changing of its features — these factors, with their complex and subtle interactions, characterize this new era. The advent movement is confronted by an array of new challenges and questions unparalleled even by those of the formative years.

How will we respond to these challenges? The ideal situation would call for the active participation of every person in the church. It would evoke dialogue and exploration on an unprecedented scale. It would demand the maximum utilization of all resources — spiritual, intellectual, and material. The degree to which the church will fulfill its mission of bringing hope and meaning to the world will depend on the degree to which that ideal is achieved.

Unfortunately the situation is far from ideal. The man of today is largely a secular man who increasingly regards the role of the church in society as irrelevant. There are even those who, though nurtured by the church, are convinced that their individual participation within the framework of the church is an ineffectual means of dealing with the larger issues of the twentieth century. Such disillusionment has caused many to turn their backs on the programs of the church in order to lend their energies and talents to the efforts of secular agencies.

Fortunately, there are many others who, though equally concerned, are more optimistic. In recent years some of these have met in small groups in this country and abroad, with the primary aim of trying to understand how the secularizing and divisive trends can be reversed. Very often such groups have formed around a nucleus of graduate students and/or academic and professional people who must deal directly with issues in interaction with peers. The rapid growth of these groups made it clear that a coordinated effort is needed to extend the dialogue to a wider community of interested persons.

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To further this spontaneous search for meaningful participation, the General Conference of Seventh-day Adventists invited representatives from several of the groups to meet with them in October of 1967. The purpose was to discuss possible methods of establishing a cohesive program to provide for dialogue between the church leadership and this segment of the laity and to involve the latter more significantly in the activities and concerns of the formal church. The outgrowth of that meeting was an action by the officers of the General Conference (taken at the 1967 Fall Council) to approve the establishment of an organization known as The Association of Adventist Forums.

The overall purpose briefly stated in the constitution is "to provide a Forum in which thoughtful persons of Seventh-day Adventist orientation will be encouraged to examine and discuss freely issues and ideas relevant to the church in all its aspects and to its members as Christians in society." Local Forum chapters, Adventist Student Ministries on university campuses, regional retreats, and the publication of SPECTRUM will continue in different ways to achieve that purpose.

The church has important things to say. We must rediscover what they are and develop the language to communicate them effectively. Analysis and criticism are essential ingredients in this process, but they must always be viewed as precursors to the discovery and implementation of feasible proposals. In this context we invite the participation of all who feel that there is an urgent need to engage every segment of the church community in the discussion. It is time for the advent movement to reaffirm its historic commission to proclaim *present* truth and to engage with vigor and imagination whatever inhibiting forces it may face.

INTO THE STONE MOUNTAIN

Ben Jacques

6

I have thought of the old Moses
Going up into the stone mountain,
His hands in crags pulling his tired body;

Always it was there the Voice spoke
To him and to the children in the tents
Below, giving them water and words

To live by in the desert. And I know
The mountain is the holy sacrament of God
Into whose body on the last day

He went up seeking pure similes.
Somehow it's not right we should follow,
Yet I climb up, crying out, "Moses!

From which stone did you peer into His form
So long He turned and showed His face?"

The Christian Scholar and the Church

GODFREY T. ANDERSON

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A university worthy of the name is a community of scholars. Because of its size and complexity, a university involves many others as well — indispensable auxiliary workers in various areas and departments. Professional and even vocational studies are best served in the context of a university, because at the heart of such an institution is a community of scholars representing a variety of disciplines. Scholars are the *sine qua non* of a genuine university.

What does it mean to be a scholar? It means, first, to be diligent rather than indolent. The scholar knows the meaning of arduous, endless effort. It means to possess strict integrity. The scholar is the enemy of all tricks, all humbug, all sham, all pretense, all phoniness. To be a scholar means to be unbiased and fair in dealing with the scholarship of others and modest in the evaluation and heralding of his own accomplishments. Above all, the scholar must stand by the truth as he sees it. The Christian believes in God's imperative to know the truth, which alone makes men free.

Scholarship is a way of handling relevant materials with care and honesty. It requires that one possess the requisite skills and aptitudes for the inquiry he proposes to make and an understanding of the nature of the data he must deal with. It requires that he have the ability to correlate and organize these data in a meaningful way, and he must believe in the value and significance of his investigations. A scholar cannot devote his efforts to proving a pet viewpoint — no matter how enamored of it he has become — while ignoring or discarding all evidence that does not fit his theories and accepting all those things that prove his point. Rather, as objectively as he can, as a finite human being, he must evaluate all the material that his search un-

earths. If a long-treasured theory fades under the glaring light of truth, this is a hazard and a sadness of the search for truth.

This is the kind of scholarship which makes a university respectable. Its strength lies in the opportunity for teachers and students to become part of an investigating, questing community. A university is weakened if it becomes merely a congeries of enterprises working at cross-purposes with each other. It is weakened also if it holds to a rigid and crystallized and, perhaps, an unexamined viewpoint that allows of little probing and discovery. From the earliest days of universities, the strong and influential ones have been those that encouraged full and honest investigation, experimentation, and untrammelled study of the ways of nature, of man, and of God.

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A seeker for truth in any area need not consider himself as being engaged in merely secular activities. The Apostle Paul includes all Christian believers among those whom God has made priests unto Himself. To be a priest is, in a large sense, to be one who represents man to God, and God to man. The priest stands always in a special relationship that lays upon him the responsibility of doing God's work among men. The "priesthood of a scholar" makes him responsible for searching out and disseminating the truth — all truth. And all truth is God's truth.

One who recognizes the validity of this priesthood concept will consider his work as a scholar and a teacher to be the carrying forward of God's mandate to him. Being a Christian will not necessarily make a man superior in his field, although a Christian will do his best in any work he undertakes. The natural laws of aptitude and ability will influence what a man does and the degree of excellence he may be able to achieve. But a sincere and dedicated Christian will see in his knowledge a better acquaintance with God, and in God's work a means of revealing Him. A Christian will fulfill his priesthood in a consistent and sincere manner.

Does the church need the university? Without reservation, the answer is affirmative. "Religion without learning, or learning without religion, must ultimately prove the undoing of the Church." Both history and the Scriptures make amply plain God's efforts to lead His people from superstition, prejudice, and ignorance to the enlightened vantage point He wants them to reach. The record of their tendencies and habits shows how far they have come and how far they have yet to go in their quest.

We recall how much of an intellectual affair the Reformation actually was. The Renaissance produced scholars who were able to examine the calcified systems of the medieval schoolmen and to reveal their arthritic nature. The Renaissance also awakened men's minds to the cultural heritage

of the past and the wonders of the world around them. They had begun to study nature, the stars above, and the problems of man and his world below. In the growing atmosphere of independent thought thus opened up, Luther found the courage to challenge long-held dogmas of the church. The impetus for the Ninety-five Theses came from his scholarly work in preparing lectures for presentation at the University of Wittenberg. Luther was not primarily a scholar, as were Erasmus and Calvin and some others, but he was a man of erudition, and his contribution to the Reformation came from an intellectual as well as a spiritual struggle.

In France and Switzerland, John Calvin moved forward the work of the Reformation. He was a man whose tastes and choice were for a life of scholarship. Only the exigencies of the situation that developed around him forced him into the activity of church administration and reform. Erasmus was a man temperamentally unsuited to the conflict and dangers of an active reformer's life, but his deep and careful scholarship put translations of the Bible in the hands of those who were able to use them. Scholarship served the church well, and we will be forever in the debt of those who used their intellects in the service of God, without regard to calumny or danger.

In our own nation the church-related college and university have made a unique contribution to American life as well as to the church. Established by dedicated churchmen in the earliest years of our nation, as they were, for the development of an educated and intelligent clergy, Harvard and its successors in higher education exerted a strong influence on the intellectual as well as the ecclesiastical life of early America.

The aim of Methodism's first college, Cokesbury, makes clear the broad intent of that communion for its college:

And although our principal object is to instruct the students in the doctrine, spirit and practice of Christianity; yet we trust our college will in time send forth men that will be blessings to their country in every laudable office and employment of life, thereby uniting the two greatest ornaments of intelligent beings, which all too often are separated — deep learning and genuine piety.¹

In the early years, when most of America's institutions of higher learning were under church control, the American concept of academic freedom was born and nurtured. The product of such schools gave leadership to the nation and contributed to the clear thinking and precise phrasing that we find revealed in many early documents of our nation.

In spite of the magnificent work done for the church by its scholars, there has always existed a spirit of distrust and of anti-intellectualism on the part of those who feared that education would distort the work of the Holy Spirit

on men's minds. This distrust, which goes back at least to a contemporary of Martin Luther's, continues to the present. In the dominant church of Luther's period, the record shows the burning of some who differed on theological points and the suppression of the discoveries of others by the Inquisition. On the American frontier, where education was hard to come by on the western edge of our expansion, there was a strong distrust of erudition and intellectualism. Also, in the building of an industrial culture, there was scant patience for abstract thought that appeared to have no pragmatic value.

The most insidious form of anti-intellectualism is that which masks itself as intellectualism. It attempts to deal with intellectual material, but without the background and disciplines of the requisite exposure and competence. "Anti-intellectualism in the church is anti-theology, anti-ivory-towerism, anti-bigwordism, anti-difficult-thoughtism."² When it enters the field of theological study, pseudo-intellectualism is particularly inept. Its stated objective is to present the gospel to the common man in language and concepts he can understand. Its actual achievement is to confuse the issues and to oversimplify theology, which, of necessity, must be concerned with the deep things of God. Theology, like matrimony, must not be taken up lightly, but reverently, carefully, and in the fear of God. It must engage the most profound and penetrating powers of the mind and be under the guidance of the Holy Spirit. and in no case can it be considered as a sort of hobby (such as electric trains or antique automobiles) incidental to another chosen profession.

The estrangement of faith and learning, for a variety of reasons, became marked during the last part of the nineteenth century. More recently, however, there has been evidence of a rapprochement between the church and the educational community. The church has benefited by the contributions of the scholar, and it evinces more respect for the disciplined and thoughtful approach to problems of common interest. This attitude, indeed, is vital to the development of the church, for without a knowledge of contemporary scholarship that contributes to our knowledge of God's Word, the ministry would tend to be cliché- and slogan-riddled rather than powerful in proclaiming valid and timely concepts of religion and its rightful place in human life. Anti-intellectualism also tends to make us provincial, limited in our vision of a world in need, and concerned too much with our own circle of friends, our own community, and our own country, to the exclusion of others less privileged.

The greatest contribution, perhaps, that the Christian scholar can give to

his church is his disciplined, discerning, and critical mind. The ability for self-criticism and self-evaluation is vital in the life of both the individual and the church. It is exceedingly easy for a man, an institution, or a church, to assume that whatever is done with sincere intent for the glory of God is truly His will. Good intentions, then, take the place of reasoned consideration.

The church has always been at its worst in terms of its effectiveness, and has fallen farthest short of the quality of Christian love when it has lost the capacity for constructive self-criticism. The training and the work of the scholar fits him perhaps better than any other type of person for keeping this capacity alive and vigorous within the church. The trained mind, further, has always been the most dependable and effective (though not infallible) safeguard against both spiritual provincialism and . . . exclusivism.³

II

There have been times when the church has departed far from God's plan while at the same time it has been most enthusiastic in its witness, and most devoid of Christian love. The ability to see these things lucidly, and to help the church avoid the tragic large mistakes while it works vigorously to stamp out the small besetments, is a contribution the thoughtful scholar and trained Christian intellectual can make to the church.

Another contribution which the scholar can make to the church is an investigation of the history and significance of the traditions of the faith. It is necessary occasionally to engage in both retrospection and introspection to compare current practices and teachings with the clearcut pattern left by Christ, and to note any distortions and unwarranted amplifications which may have been added through the years. This is a task that is particularly appropriate for the Christian scholar's talents.

The Christian scholar can contribute also to the church a new means of making Christian traditions relevant to an alienated generation of the contemporary scene. The basic tenets of Christianity were given in a form that would permit their being adapted into different cultures and different eras of time. We have observed the schisms that result when too-rigid patterns of tradition within a church refuse to adapt themselves to different times and ways of thinking. By mediating between the pious intentions of each group, the scholar may help the church to find a path of accommodation that will include all who sincerely desire to keep the changeless landmarks and to reach the goal, yet maintain their integrity as reasoning and reasonable members of their communion.

The work of the community of scholars may be relevant to the church, too, in keeping it active and interested in a rapidly changing society. The body of knowledge has vastly increased in recent times. Attitudes change

with the passing of the years, and the problems that the church must attack have to be solved in ways that are different from those that were effective a generation ago. In the search for all of God's truth, and in its comprehension and acceptance, the Christian scholar must fill an active role.

There are symptoms on every hand which suggest essential irrelevance of the church when seen in terms of its mission to be a reconciling community of love to its age. Its formal observances may not be speaking to the deep-lying needs of contemporary man. Its carefully wrought answers to human questions may be slanted toward the questions of earlier generations but not at all related to the questions contemporary man is asking. The scholar is not the only one whose services must be enlisted if the church is to be truly relevant to our time, but here again what the scholar has to give is one of the essential elements.⁴

12

The vital responsibility of the church is communication of the gospel to the world. This is done through the spoken word, obviously. But art, music, writing, and other media of mass communication can today give seven-league boots to the spoken word. The art of a half century or more ago does not speak to youth today. The music our grandparents loved may be impatiently scorned by the younger generation. Writing today has left the stately, balanced, and elegant style of previous eras to become sharp, explosive, direct, and unpolished. Because of this, the traditional approach of the church seems out-of-date and old-fashioned to the younger segment of the church, and to the world as well. Because we are more concerned with getting our ideas out through the world than with studying the means for effective communication, we have become, at times, quaint and limited in our appeal. We have failed to mature in the use of the arts of communication to their full potential. The scholar in this field can help the church to bridge this gap and make its methods and approach more appropriate to the times.

Both the church and the university are devoted to the search for truth and its application to the life of man. Each needs the other, and there must be a continuing dialogue (this is still a respectable and useful word) until intelligent faith and intellectual study understand and relate to each other with insight. For any such cooperative venture between scholar and church, however, it is necessary that each be sincere, that there be mutual respect, and that each be competent to contribute to such a significant dialogue.

The search for truth is not an option that either the church or the scholar can take or leave according to whim. It is a mandate from God. But even the search for truth may become idolatrous. Thus, truth deified, and sought for its own sake, may become a false god.

Atomic energy can be used to heal the sick and feed the poor; or it can be used to secure power so that a man may feel himself strong enough to challenge God.

Indeed, medicine can be used to defy death — either as evidence of Christ's promise, or of man's ability to do without God. In short, men can in their vocations and their lives . . . witness for Christ, or for the State, or for men. . . . This means that men can in their lives show the efficacy of Grace or the devastation of sin and their consequent alienation from God.⁵

In *Ape and Essence*,⁶ Aldous Huxley underscores this fact in a striking way. It is a story of events following a war of total destruction through the use of nuclear devices. The story proceeds with a series of flashbacks after the fashion of a screen story. Several of these flashbacks record events that occurred before the war and that help us to understand how the final destruction came about.

13 In one of these flashbacks, all of the world is drawn up in two vast, utterly powerful opposing armies. The armies differ only in the shades of their uniforms. There seems to be no essential difference in their size or power. There are no principles at stake. Each side has simply felt that it must prepare for total destruction as a means of protection against the other side, its potential enemy. As one looks more closely, one sees that each general staff is a group of baboons in uniform. Each general staff has its own Einstein, or scientific genius, squatting with a leash around his neck. At some imperceptible signal, each general staff forces its Einstein to pull the levers and turn the wheels that release nuclear destruction upon all the earth. There is a brief period of explosion and fire and screaming. Then all is still. The sky is lighted with a salmon-colored, eerie light, and pillars of smoke ascend. Standing erect here and there are parts of trees, nothing more. All the cities built through the ages of human history are desolate.

The baboons are all dead. Horribly disfigured by burns, the two Einsteins lie side by side under what remains of a flowering apple tree.

FIRST EINSTEIN: It's unjust, it isn't right.

SECOND EINSTEIN: We who never did any harm to anybody.

FIRST EINSTEIN: We who lived only for Truth.

NARRATOR: And that precisely is why you are dying in the murderous service of baboons. Pascal explained it all more than three hundred years ago. "We make an idol of truth; for truth without charity is not God, but His image and idol, which we must neither love nor worship. You lived for the worship of an idol. But, in the last analysis, the name of every idol is Moloch. So here you are, my friends, here you are!"

The church needs the scholar, and the scholar needs the church. What a tragedy it would be if for lack of communication or understanding or appreciation, or if for any other reason, the Christian scholar and the church

do not marshal their total resources to accomplish God's benign purpose for mankind in his deep and desperate need.

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- 1 Quoted in JOHN O. GROSS, The Church and the College: A Partnership, *The Christian Scholar* 36, 48 (1953).
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- 3 R. N. BENDER, The Scholar and the Life of the Church, *Religious Education* 45, 324 (1951).
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- 5 L. O. KATTSOFF, The Priesthood of the Scholar, *The Christian Scholar* 39, 171 (1956).
- 6 ALDOUS HUXLEY, *Ape and Essence* (New York: Harper and Brothers, 1948).



DAVID POST: *Forms in Nature, 1, 2*



Has Man Created Life?

DUANE T. GISH

16

At an elaborate press conference staged on the Stanford University campus December 15, 1967, Dr. Arthur Kornberg, Nobel laureate of Stanford, Dr. Mehran Gculian, now at the University of Chicago, and Dr. Robert L. Sinsheimer, of the California Institute of Technology, announced the synthesis of infectious phage $\phi\chi$ 174 DNA. A speech delivered by President Lyndon B. Johnson the day before had alerted the nation's press concerning the significance attached to the announcement that would be made the next day by Kornberg and associates. In this speech, President Johnson hailed these scientists for "unlocking a fundamental secret of life," and stated that the story to be released would be "one of the most important stories you ever read."

Our nation's press rose to the occasion. The United Press International release that followed the next day, headlined "Two Scientists Create Living Virus," went on to say that "two scientists announced yesterday they have manufactured a 'simple or primitive form of life' in a test tube." The same day the Associated Press article, headlined "Scientists Synthesize Infectious Virus," stated that Doctor Kornberg had said that the genetic material he had helped to synthesize in a test tube could be considered "with reservations," a primitive form of life.

Two years previous to the announcement by Kornberg, Dr. Sol Spiegelman had announced the same accomplishment,¹ except that the viral nucleic acid he had duplicated was RNA (ribonucleic acid) rather than DNA (deoxyribonucleic acid). The difference attached to the significance of these two results was probably due, first, to the elaborate press conference staged by Kornberg before the publication of his paper, and, second, to the fact that

DNA and not RNA is the type of hereditary material found in the cell. One interesting newspaper account that followed Spiegelman's announcement, however, was a syndicated column by Ralph McGill.² In this article, McGill stated: "About two years ago knowledgeable persons were saying, out of personal awareness of laboratory experiments, that within 'three to five years' at least one research laboratory would report the creation of life. This prediction now has become fact." After describing what Spiegelman had done, and drawing a few implications from this work, McGill went on to say: "Theology, too, will need to cope with this test-tube creation of a living, reproducing 'thing.' The fundamentalists will be the most strained by this awe-producing secular success. Stuck, or bound, as he is by literalness, the fundamentalist will be troubled."

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The implication of McGill's article is clear. Now that man has created life, according to McGill, the fundamentalist must revise his interpretation of Genesis. Did life really require God for its creation? Perhaps if mere man can create life, it simply arose spontaneously by natural processes.

In both Kornberg's and Spiegelman's cases, the scientists were very careful in stating exactly what had been accomplished. The details of Kornberg's work were in press at the time of the news conference.³ A scientist who is careful in announcing his results cannot be held responsible for the way these results may be interpreted by others, nor for the implications that may be conveyed to the public by the popular press. Nevertheless, a distorted view of the results of Kornberg's work was given to the public.

My purpose in this paper is to interpret the results of Kornberg and associates and to relate these results to the creation of life.

An examination of their report of their work reveals that no virus was synthesized, nor was life, primitive or otherwise, created. In fact, nothing at all was created, for only biologically active material was duplicated. Let us see exactly what was accomplished.

The bacteriophage $\phi\chi$ 174 is a small, simple, circular virus that infects *Escherichia coli*, a common beneficial intestinal bacterium that, among biochemists, has become a favorite object for research. A particular strain of *E. coli* was infected with the virus in the presence of tritiated thymidine, a radioactive substance that labels DNA as it is produced, forming tritium-labeled phage DNA. The phage was obtained from these infected cells, and the circular DNA strands were separated from the protein of the virus. These single, circular strands are called the (+) strands. This isolated viral DNA was placed in a flask along with two enzymes isolated from *E. coli*, *E. coli* DNA polymerase, and *E. coli* polynucleotide joining enzyme. The DNA poly-

merase is the enzyme that joins the nucleotide building blocks together to form the DNA chain, and the joining enzyme forms the bond that unites the two ends of the DNA chain to close the circle. Another absolute requirement for an active mixture is the presence of the four deoxyribonucleoside triphosphates which are the building blocks for the synthesis of DNA, and the phosphate bonds of which provide the energy necessary for this synthesis. For good activity, a boiled extract of *E. coli* was also required. Synthesis in the absence of this extract amounted to only about five percent of that obtained in its presence. The reason for the effect of this extract on the synthesis is not known. The complete system included the following components:

- 0.18 mM tritium-labeled $\phi\chi$ 174 phage DNA
- 0.45 mM each of the deoxyribonucleoside triphosphates
- E. coli* DNA polymerase
- E. coli* joining enzyme
- 8 μ M DPN
- E. coli* boiled extract
- 5 mM magnesium chloride
- 20 mM potassium phosphate buffer, pH 7.0
- 1 mM β -mercaptoethanol
- albumin

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In this mixture, the DNA polymerase, using the (+) strands as a template, joins the deoxynucleotides together in a chain that is complementary to the (+) strand. (FIGURE 1)

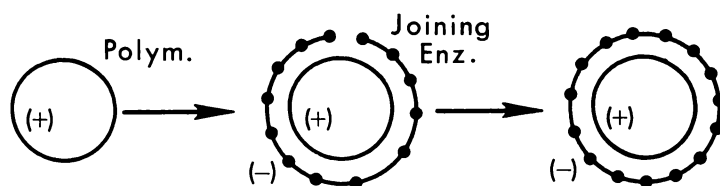


FIGURE 1

This complementary strand is called the (−) strand. In this strand, adenine in the (−) strand pairs with thymine in the (+) strand, cytosine pairs with guanine, thymine pairs with adenine, and guanine pairs with cytosine. When the new chain is complete, the joining enzyme forms the bond between the two ends of the chain to close the circle. The result is a double stranded, circular viral DNA, known as the replicative form.

In order to permit the separation of the synthetic (-) strand from the natural (+) strand of this double stranded replicative form, the synthesis was carried out in the presence of 5-bromodeoxyuridine triphosphate in the place of deoxythymidine triphosphate. Bromouracil has a spatial configuration almost the same as that of thymine, and it can replace thymine for synthesis of DNA. The chain containing bromouracil is heavier than the chain containing thymine, and the two can be separated by centrifugation. DNA synthesis in the presence of bromouracil resulted in a double stranded replicative form, the (+) or natural strand of which contained thymine and the (-) or synthetic strand of which contained bromouracil.

The two strands were separated from one another by brief treatment with pancreatic deoxyribonuclease. This treatment resulted in some cases with opening of the (+) circles, leaving the (-) circles intact, and in other cases with opening of the (-) circles, leaving the (+) circles intact. The natural (+) circles were then separated from the heavier synthetic (-) circles and open chain forms by density-gradient sedimentation. (FIGURE 2)

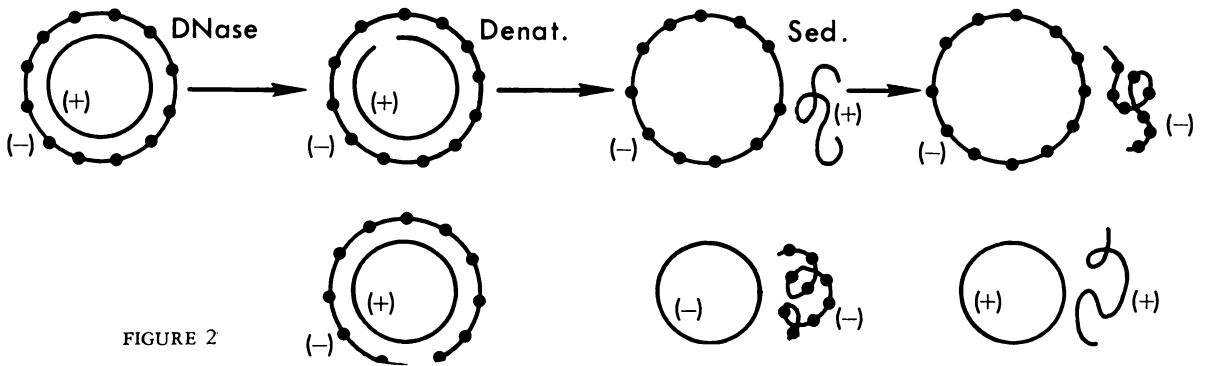


FIGURE 2

The synthesis was then repeated, with the use of the synthetic (-) circular strands as the template. This resulted in a fully synthetic double stranded circular replicative form. (FIGURE 3)

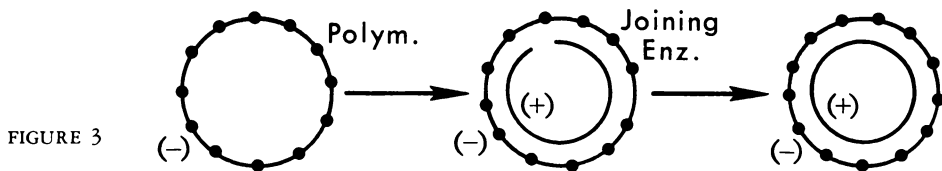


FIGURE 3

The synthetic single strands and the synthetic double stranded replicative form were found to be infective in *E. coli*, although their relative infectivity was lower than the corresponding natural forms isolated from infected *E. coli*. With the naturally occurring forms, the (-) or complementary circles have about twenty percent of the relative infectivity of the (+) circles (the viral DNA is isolated from infected cells). The replicative form has about five percent of the relative infectivity of the (+) circles, unless denatured, in which case the relative infectivity is increased to that of the (+) circles.

This work by Kornberg and his associates was significant in that it showed, as Spiegelman had shown in the case of viral RNA, that DNA polymerase can produce accurate copies of viral DNA outside of the cell when the nucleotide building blocks, energy, and certain other requirements are provided. The twentyfold increase in synthesis brought about by addition of the boiled extract of *E. coli* suggests that there is some other, as yet unrecognized, requirement for synthesis. The low level of synthesis in the absence of the extract may have been due to contamination by an unknown component or components in the viral DNA or bacterial enzymes. Nevertheless, it was shown that intact cells are not required for the synthesis of biologically active DNA.

It must be noted, however, that nothing was created in the true sense of the word, since the product produced, viral DNA, was an absolute requirement in the starting mixture. Without addition of viral DNA, isolated from infected cells, no synthetic DNA could have been produced. What was present in this mixture to begin with could not be said to have been created, but rather that it was replicated or multiplied. Neither can it be said that the viral DNA replicated itself, for without the presence of the two enzymes no viral DNA would have been formed. The function of DNA in this process is entirely passive. Lederberg has stated: "According to the simplest nucleic doctrine, DNA plays no active role in its own replication other than furnishing a useful pattern."⁴ It should be said that the two enzymes, with the use of the viral DNA as a pattern, replicated the viral DNA. There is no self-replicating molecule known anywhere in nature, and it is certain that there never has been.

Contrary to statements in the news releases, no virus was synthesized. A virus includes not only nucleic acid, but also a vitally important protein coat. The information required for synthesis of both the viral nucleic acid and the protein apparently is contained in the nucleic acid. Thus, the function of the nucleic acid is to bear information. One known function of the protein is to serve as a protective coat. Naked viral DNA would be readily inactivated in

nature. The protein coat is therefore a vital part of the virus. It may serve additional functions, as viral research is already beginning to indicate.⁵ The complete virus was not produced until the viral DNA was used to infect *E. coli*.

The bacteria produced the complete virus. It has been said that almost every part of the cell is involved in protein synthesis. When we have assembled in a test tube the apparatus necessary to synthesize a complete virus, including both DNA and protein, what we will have will be essentially the cell itself.

Another claim that was made for the accomplishment of Kornberg and co-workers was that they had, "with reservations," created a primitive form of life. This is utter nonsense. Neither viral DNA nor the complete virus possesses any metabolic activity whatsoever. It possesses no enzymes nor energy source. It can form or break no chemical bonds. It cannot replicate itself. Alone, it is totally inert. It possesses no more "life" than any other biologically active molecule.

What would constitute the most primitive organization that could be called "life"? Lederberg has listed the following requirements as the least requirements of a primeval organism:⁶

1. DNA.
2. The four deoxyribotide pyrophosphates in abundance.
3. One molecule of the protein DNA polymerase.
4. Ribotide phosphates as precursors for RNA.
5. One molecule of the protein RNA polymerase.
6. A supply of the 20 aminoacyl nucleotides or, failing these, each of the 20 enzymes which catalyze the condensation of an amino acid and corresponding RNA fragments together with sources of these components.
7. One molecule of the protein aminoacyl-RNA polymerase.

Although this list describes a complex apparatus indeed, probably it is an incomplete list. There must surely be a membrane for maintaining the integrity of this organization and for regulating exchange with the environment. A membrane capable of functioning in such a way would in itself be complex. Furthermore, even a most primitive organism must possess regulatory mechanisms. Genes must be turned on and off at the right time. This mechanism might require, among other things, the presence of certain proteins, similar to the histones. Some mechanism must be present to tell the organism when to divide. The DNA required would be very complex indeed, for it must code for all the macromolecules present as well as provide for all the control mechanisms.

Omitted also in Lederberg's formulation is a provision for a constant supply of energy. The deoxyriboside triphosphates would supply energy. But from where would these high energy compounds come? A truly independent, self-replicating form of life must be capable of providing for its own energy needs. In the cell as we know it, a complex system of enzymes contained in structures known as mitochondria make up the apparatus, or part of it, that is necessary for the production of the energy required by the cell. These mitochondria are complex in themselves and are now known to contain DNA peculiar to mitochondria and found nowhere else in the cell. This metabolic machinery is capable of converting an exogenous source of energy into a form of energy utilizable by the cell, and delivering it to the right place, at the right time, and in the right amount.

Our expanding knowledge of the cell should serve to induce an awareness of the incredible complexity of the cell.⁷

A living organism must have certain minimal requirements: 1. It must be capable of self-replicating. 2. It must have a definite structure that allows the maintenance of its internal organization and that permits a dynamic interchange with its environment. 3. It must have a metabolic system that permits synthesis of vital macromolecules and other essential constituents, provides for a continuous and regulated source of energy, and allows growth and repair to take place. 4. It must include control mechanisms that initiate replication and allow for the orderly regulation of its metabolism. Although there are other simpler definitions for the term "life,"⁸ all such definitions seem to me to fall far short of being realistic.

Even if we can assume that Lederberg's formulation is sufficient to constitute a living thing, we can see that it is a formidable organization for man to duplicate. In fact, one can say that man's ability to duplicate a living thing is infinitesimally small. One might go even further and say that man will never create life until he knows everything about life — and that means never.

If we assume that man could duplicate a living thing, or "create life" as it is often called (I use the term duplicate rather than create, because man would be merely duplicating something God had already created), what would be the implication? The atheist, the materialist, would claim that this achievement had dealt the final blow to the concept of Deity, certainly to the belief that God is required for creation of life. If man can "create life," then God is no longer needed. At the least, as McGill said, the fundamentalist would be strained and troubled by this event.

Would the fact that highly intelligent creatures — using the results of

knowledge accumulated over many decades by thousands and thousands of highly trained investigators, endowed with multimillion-dollar laboratories outfitted with sophisticated and complex apparatus — were able to *duplicate* a living thing prove that life could have evolved from a dead, inorganic world? Would it not only reaffirm the simple statement of Scripture, “In the beginning God created”?

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Whither Adventist Higher Education?

CHARLES B. HIRSCH

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Since the end of World War Two, Seventh-day Adventist higher education has been moving in many directions. The war veteran with his GI education benefits gave the colleges a new lease on life. The ex-serviceman brought with him a mature outlook, an appreciation of his faith and belief in God, and a seriousness that was a welcome challenge to the teachers. Equally as important (if not more so to the administrator) were the financial benefits this student brought with him. The cash flow to Adventist colleges reached new proportions!

Most of the campuses greeted their returned war heroes with facilities that were outmoded, obsolete, and often condemned as firetraps. Oddly enough, although many of these buildings have suffered the blows of the wrecking ball and hammer since then and have served for the fire exercises of the local fire departments, some are still not only in existence but in actual use today — perhaps as reminders of the good old days!

Yet the physical conditions of the campus plant were not a serious deterrent to the Adventist student. He came with a purpose and a desire for a Christian education that he knew could be obtained from a dedicated and committed Christian faculty — not from bricks and mortar. The loyalty of Adventist youth to the educational program of the church is evidenced by the continuous upward movement of the enrollment thermometer.

Our statistical report for 1967 indicates that 13,979 students were enrolled in Adventist colleges and universities in North America. Of these, 1,493 earned baccalaureate degrees and 484 graduates went into church employment. Ten years earlier, in 1957, 7,888 students attended, 769 were

graduated, and 284 went into church employment. The past decade shows a tremendous jump in comparison with the preceding decade. In 1947 there were 7,824 students enrolled, 634 graduated, and 311 taken into church employment.

Projections for the nation indicate that higher education will feel the greatest pressure it has had, with enrollments increasing forty percent by 1975. This is particularly due to the fact that there will be an increase of thirty-seven percent in the population of college age — ages twenty to twenty-four.

If the past decade is any criterion, church-related schools will share in this pressure, though perhaps not to the extent that may be experienced by the public schools. Seventh-day Adventist young people in general will continue to be loyal to the church. But because they and their parents are becoming more conscious of the need for quality education, they will be seeking out the colleges with the best qualified and most dedicated faculty, adequate laboratories, adequate libraries, and adequate physical plants.

College trustees and conference administrators have been making budgetary provisions for new buildings and facilities, but not until the past decade have ten-year master campus plans become the *modus operandi* of most colleges. Lack of planning in the past has resulted in a hodgepodge of buildings, poor architecture, and, in some instances, inability to project proper and sensible expansion. Some colleges are trying to cope with this past lack of foresight, but the remedy is not inexpensive. In most cases, present building programs are meeting the immediate needs of the institutions, but the indebtedness involved makes building for the future difficult.

There has been increasing realization that the church is facing a crisis in the financing of Christian education. One contributing factor in the United States is our traditional stand against the acceptance of government aid for education. Certainly, federal funds should not be considered a panacea for our financial problems. At best, such aid would only *help* to shoulder the economic burden under which our schools find themselves; the real support must come from ourselves.

Tuition and fees, a chief source of income, must reach certain limits, however. It is true that more scholarships, loan funds, and grants are available for the student than ever before in history. On the other hand, many students still must earn a good part of their way through college. Whereas thirty years ago a student could earn his entire tuition and fees by working 706 hours, that same student would have to work 944 hours today to take care of similar expenses. Hence, increases in costs must definitely keep this

group in mind, especially in view of the increasing availability of community and state colleges, where charges are comparatively negligible.

Although tuition and fees may appear to be high, we should remind ourselves that each student's education is being made possible by a generous annual operating subsidy provided by the Adventist church conferences. On the undergraduate level this amounts to from \$150 to \$200 per student. In specialized and professional areas, the subsidy per student is considerably higher. In medicine it is \$4,620; in dentistry, \$1,106; and in college nursing, \$843.

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A second source of income comes in the form of operating and capital subsidies from the local, union, and national church conference organizations. These have been and are the mainstay of financial support, some conferences giving as much as twenty percent, or more, of their annual operating budget for education. It is here that a limit has been reached. When we add capital and special subsidies to subsidies for operating, we find that several colleges are averaging over a half million dollars per year in overall subsidies from the conferences. Use of additional conference funds for education would mean a diversion of monies from evangelistic and overseas responsibilities. Certainly, the evangelistic thrust of the church cannot be diminished, for this is the reason for our existence.

A third source includes gifts from alumni, individuals, churches, foundations, and others. The contributions from this source are relatively small. One of our perhaps more prestigious colleges, reporting on their alumni solicitation program for a recent year, noted that the total income from their former students averaged seventeen cents per person! This third source is one that could be further developed and nurtured.

As additional teachers, equipment, facilities, and campus space become necessary because of steady increase in enrollment, the strain on the available financial resources will become more critical. In 1957, the faculty and staff for our colleges numbered 932; and of this number, 106 had doctoral degrees. In 1967, there were 2,793 on faculty and staff payrolls. Of these, 305 had their doctorates. This threefold increase in doctoral degrees during the past decade is significant in itself.

During this same period, salaries, allowances, and perquisites for college personnel have made tremendous advances. More money has been invested in persons sent for advanced work and doctoral studies. The basic salaries for teachers, regardless of sex or marital status, have been equalized. In the area of allowances, too, the gap between single and married personnel has narrowed. These changes add up to more expenditures for the colleges. If

these increases, which have been long overdue, continue and if the number of personnel increases proportionately during this next decade, the frustrations of administrators attempting to operate on balanced budgets will reach new proportions.

During the past few years, those in responsible positions have become more cognizant of, and at the same time more perturbed about, the rising costs of church education in North America. Local and regional church conferences for the most part, have been permitted to develop their educational programs on the basis of local needs and availability of financial support. The result has been the movement of educational programs in "many directions," as I mentioned earlier.

Vertically, we are attempting to educate from the preschool level to the doctoral level. We are operating graduate schools, a theological seminary, a school of medicine, a school of dentistry, schools of nursing, plus others, while concurrently we have pressures to start schools of law, optometry, religion, and even another school of dentistry! The same is true horizontally. We are endeavoring to offer everything from anthropology to zoology. Meanwhile, administrators are having a difficult time trying to find qualified personnel to fill existing vacancies on their faculties.

This striving to be everything to everybody has thinned out our talents as well as our resources. Viewed from an educational as well as a financial base, the proliferation of courses and majors and institutions is almost scandalous. Even the greatest educational institutions in our country regardless of how rich they are in resources, cannot afford to do everything or to be everything. There must be an order of priorities. Our administrators and trustees must not go on the assumption that anything done in the name of higher education must necessarily be worthwhile!

One of the most crucial issues facing education on the national scene has to do with the search for proper direction. Can this be any less an issue on the parochial level? Seventh-day Adventist higher education is in desperate need for a direction. We may *seek* answers to the question *Where is Adventist education going?* But it is more imperative that we *find* the answers to the question *Where SHOULD Adventist education go?*

Arriving at the correct and proper answers will not be an easy task. What is necessary is assessment of the educational program on a national basis. Our thinking and planning should no longer be confined to local, parochial, and provincial lines. There must be a broader and more cooperative outlook on the planning of Adventist schools. An assessment, study, survey, or census, such as would be essential to the gathering of the necessary in-

formation, would probably take the better part of three years, would require properly qualified personnel, and would need an adequate budget.

At first consideration, such a survey might be regarded as too expensive; but if it would give the essential data, it could save the church many times that amount in future plans and projections. At the present time, a committee named by the General Conference of Seventh-day Adventists is giving study to the possibility of underwriting such a survey.

Another essential need is for better communicating to administrators the availability of qualified personnel. The establishment of an Adventist registry on a computer basis would do this. In time, such a registry would have the basic information about all Adventist educators, church-employed or not, and, on a moment's notice, would produce a list of teachers with the qualifications necessary for specific openings. It could also make known to teachers the openings at various institutions both in the United States and abroad. An annual operating budget would have to be provided before this program could be implemented.

As I indicated earlier, there has been a lack of central direction and guidance as to the expectations of the church from its education system and the limits we should set in providing for the education of our youth. Definitely there has been a lack of control. By this I mean not control as sheer power without purpose, but control with purpose — the purpose of defending our particular faith and of implementing the goals and objectives of the church. A pragmatic approach to a coordinated education system would be to stipulate that the local conference have jurisdiction over all education on the elementary and intermediate levels, the regional conference over secondary education, and the national division over higher education. Overall coordination should be the responsibility of the North American Division and the General Conference of Seventh-day Adventists.

The colleges and universities of the church will have real strength and support only if they combine their resources in the pursuit of the goals and aims for which they have been established. To go in separate directions means ultimate disconnection from the church and joining of the group of once-church-related colleges.

Even now, in some quarters there is serious question as to whether or not the church-related college will be able to survive in the future. At a recent annual meeting, the Association of American Colleges approved a plan, recommended by its Commission on Religion in Higher Education, for a conference on the theme, "Is it either useful or desirable for colleges to maintain church relationships?" The commission concluded that the

time is ripe for investigation of the fundamental question as to whether or not denominational relationships are of value to academic institutions now and in the future! Could this conclusion be another portent of the times?

Adventist institutions of higher education and some of their supporting bodies should be stirred from their obsolete and complacent notion of self-sufficiency. The past two decades have witnessed gigantic strides in the advance of our church system of education. But it is quite possible that some individual institutions have forged ahead without the proper logistical support. Sometimes what has been done not only has been more than we can encompass but has been approached with inadequate study and consideration for the overall needs of North America. Some programs attempted by individual colleges would have had a better chance of survival had they been developed through the mutual efforts and cooperation of the several institutions.

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The need for interinstitutional cooperation has been voiced for some time by administrators, churchmen, and, especially, faculties, whose members are more knowledgeable about the strengths and weaknesses of their programs because they are "where the action is!" In spite of the millions of dollars invested annually by the conferences, the manpower needs of the church education program are far from met. There are not physicians to fill the long list of calls waiting at the national headquarters. There are not nurses to fill the posts in our hospitals, many of which have less than fifty percent of qualified nurses on their staffs. There is a desperate need for teachers who are properly qualified and certificated, for many conferences still have to staff the classrooms with teachers who have less than four years of college work.

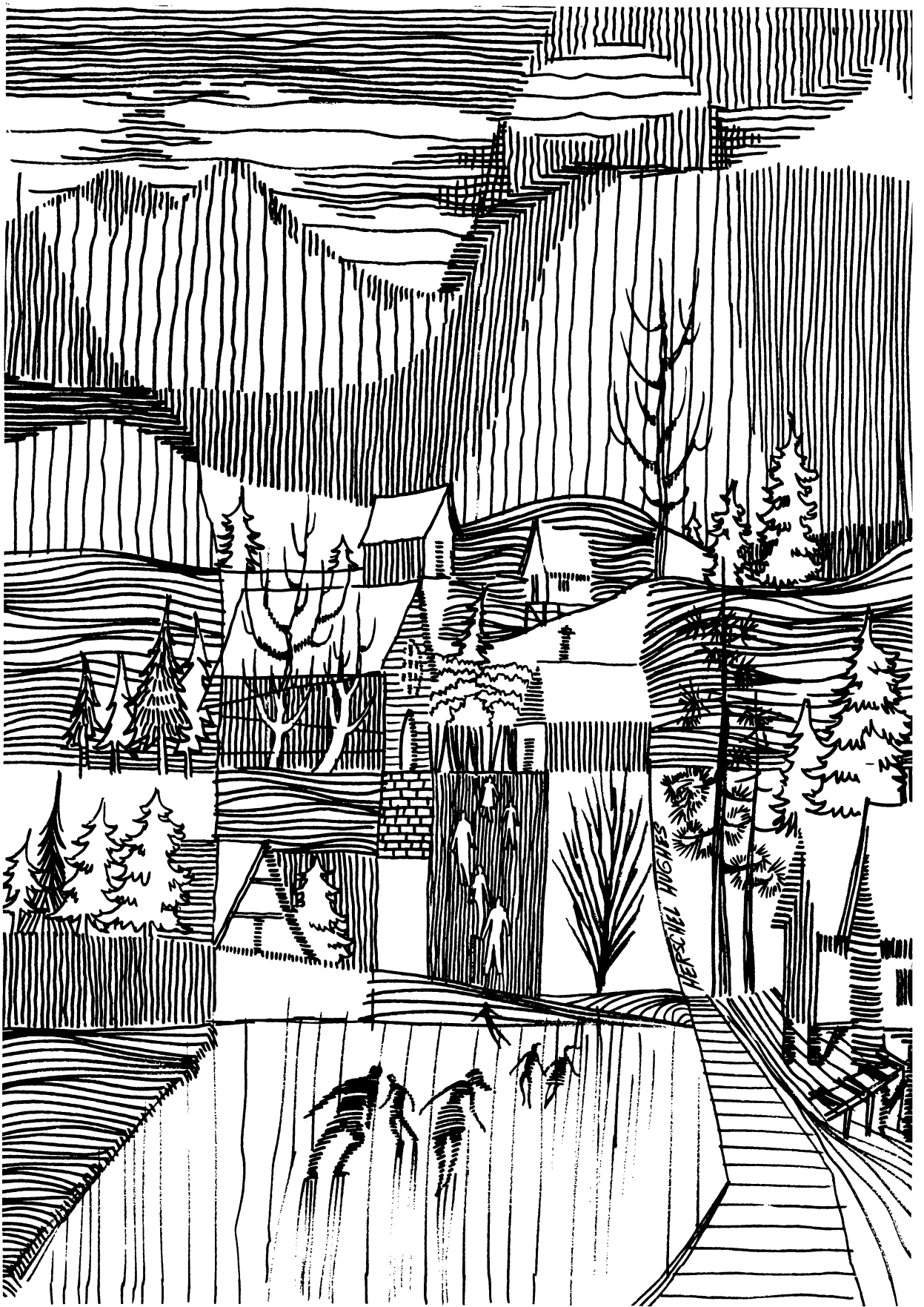
The colleges are involved in research of various sorts. How much of this has been geared to assist the church program? How much study has been given to finding ways to improve the work in the mission fields? The challenge before us is tremendous. The total Christian community in India is only two percent of the population, in Nigeria only three percent, and in Japan only one percent. When we think of these facts, we must ask, How much have we actually accomplished? How much thought has been given to the preparation of the ministry for the needs of urban life — for the inner cities? Should not our knowledge and research abilities be harnessed to meet the aims and objectives of the church?

It is only through acting in concert that our colleges and universities can make their greatest impact on the world in which we live. Much could be accomplished through bilateral and multilateral arrangements. Coopera-

tion and interaction mean give and take. Future policies and operational procedures should be thought out intelligently, with serious consideration of short-range as well as the long-range implications. Such consideration could mean the retracting of certain existing programs and the strengthening of others.

When the church is ready to give positive direction and guidance in its educational pursuits, and when the colleges are ready to accept this direction through further interaction, cooperation, and a desire to meet the national rather than the local needs, then we will know better whither we are going!

If each college persists in going its own way, it is not too difficult to predict that Adventist higher education could easily wither away.



HERSCHEL HUGHES

Should Adventists Take Federal Aid For Their Schools?

ALONZO L. BAKER

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The issue of federal aid for education, and more particularly for Seventh-day Adventist educational institutions, is being debated these days all the way from Takoma Park straight across the nation in every conference. The Religious Liberty Department of the General Conference of Seventh-day Adventists appears to be adamant against the more essential phases of federal aid. The Department of Education of the General Conference, on the other hand, is in advocacy of accepting much more such aid than we are now doing. Many church members have decided views.

In one of the publications of the Religious Liberty Department of the General Conference, *Liberty News*, there has been issued a series of "position papers" on federal aid to education. The second of these papers, dated April 19, 1968, starts with a quotation from North Carolina United States Senator Sam J. Ervin, Jr. Senator Erving, probably the most dedicated segregationist in the Senate, is very much against federal aid to the schools of the nation, and for the very evident reason that any school receiving federal aid must be desegregated. This, Senator Ervin cannot brook. Considering Senator Ervin's motivation, we deem any statement from him on federal aid to education subject to question. Indeed, one of the commendable aspects of federal aid to the schools is compulsory desegregation. If the words of our pledge of allegiance to the flag are to mean anything — "one nation, under God, indivisible, with liberty and justice for all" — our nation cannot continue segregated schools.

The *Liberty News* article cites several kinds of federal aid which Seventh-day Adventists do accept. One of these is the Hill-Burton Act of 1946, which

grants financial aid to general hospitals and medical facilities. Adventist hospitals have accepted millions of dollars in Hill-Burton funds for construction purposes, authorized by the Autumn Council of 1949.

The National School Lunch Act of 1946, extended to parochial schools in 1949, enables church schools, hospitals, summer camps, homes for the aged, and similar agencies to receive surplus foods. Seventh-day Adventists are participants in this program.

The National Defense Act provides funds for public and nonprofit private educational institutions to make loans to college students at low interest rates if the student is preparing for a teaching career. Adventists make generous use of this program.

Adventists also participate in the program of education set up in the GI Bill of Rights. Thousands of Adventist young men have profited greatly through this program, and in our educational institutions, too.

Adventists also share in the National Institutes of Health scholarship plan for the subsidization of those who take the nursing curriculum.

Our Adventist colleges and universities also take grants and make contracts with the federal government for research projects. There are eighteen research programs available under the Public Health Service Act. Our schools are beneficiaries of this program.

All our colleges in the United States also participate in the Federal Student Work Program by which our schools are given money from Washington to employ needy students in various work projects on the campus. Hundreds of students in Adventist colleges right now would have to drop out if it were not for this money from the Department of Health, Education, and Welfare, a federal executive agency.

Our educational institutions have also benefited from the Surplus Property Disposal Act, not only in furnishings, machinery, and various lines of equipment, but also in the acquisition of land and buildings. At such schools as the Monterey Bay Academy in California and the Thunderbird Academy in Arizona, real estate worth millions thus was passed over to our schools by the federal government.

The foregoing is only a partial list of examples of largess which our church has accepted from the federal government. But now there arises an inconsistency in our policies, for the official action of the General Conference declares that Adventist schools "shall refrain from accepting gifts of land, buildings, or equipment from the government, or public tax money for capital improvements, the salaries of teachers, or the maintenance, operation, or support of the services which the schools supply."

Personally, I could go along with the latter part of that statement, but not with the first half which concerns "gifts of land, buildings, or equipment from the government, or public tax money for capital improvements." I am in complete disagreement with this section of the policy statement, for I wholeheartedly believe we Adventists should accept federal monies for buildings, equipment, and libraries, and not only for our colleges and universities, but also for our secondary schools.

Why do I thus believe?

One of the reasons for my position is that if Ellen G. White were alive today, she would take the same view of the federal aid issue. Let me quote from *Testimonies to Ministers and Gospel Workers*, pages 202-203.

Just as long as we are in this world, and the Spirit of God is striving with the world, we are to receive as well as to impart favors. We are to give to the world the light of truth as presented in the Sacred Scriptures, and we are to receive from the world that which God moves upon them to do in behalf of His cause. The Lord still moves upon the hearts of kings and rulers in behalf of His people, *and it becomes those who are so deeply interested in the religious liberty question not to cut off any favors, or withdraw themselves from the help that God has moved men to give, for the advancement of His cause.*

We find examples in the word of God concerning this very matter. Cyrus, king of Persia, made a proclamation throughout all the kingdom, and put it into writing, saying: "Thus saith Cyrus king of Persia, the Lord God of heaven hath given me all the kingdoms of the earth; and He hath charged me to build Him an house at Jerusalem, which is in Judah. . . ."

The Lord God of Israel has placed His goods in the hands of unbelievers, but they are to be used in favor of doing the works that must be done for a fallen world. The agents through whom these gifts come may open up avenues through which the truth may go. *They may have no sympathy with the work, and no faith in Christ, and no practice in His words; but their gifts are not to be refused on that account.* [Italics mine. ALB]

It is very strange that some of our brethren should feel that it is their duty to bring about a condition of things that would bind up the means that God would have set free. God has not laid upon them the responsibility of coming in conflict with the authorities and powers of the world in this matter.

Under what circumstances did Ellen G. White pen the above?

The government of Rhodesia in the middle of Africa, through its Prime Minister, Sir Cecil Rhodes, had offered Seventh-day Adventists 12,000 acres of fertile land absolutely free if we would start a mission station there with a school and a medical dispensary. The brethren in Africa wrote the General Conference in Battle Creek for counsel. This was in the year 1894. The Religious Liberty Department was then headed by Alonzo T. Jones and Calvin P. Bollman. These two men wrote our missionaries in Africa telling them not to accept the gift, for this would constitute a union of church and state.

When this letter arrived in Africa, Elder Stephen N. Haskell was making a visit to our African missions. He read the letter from Battle Creek and then said, "Let me send a letter to Mrs. White in Australia asking her counsel."

He did. The quotation from *Testimonies to Ministers* I have cited above was her reply. As a consequence we took the 12,000 acres of gift land from the Rhodesian government, and upon that site our great Solusi Mission came into being. From that day to this God has abundantly blessed the Solusi Mission. Thousands, yes, tens of thousands of Africans, know about Christ as a result of the acceptance of this land from the government.

To be sure, the issue of federal aid to education was no issue at all during Mrs. White's lifetime. She died in 1915. No one up to 1915 had ever even thought of federal programs to help education in the United States. Expenditures for education in all the years of Mrs. White's life were negligible when compared with our age. At that time only a very small percentage of American youth went to college, and even the number of those going to secondary schools was infinitesimal compared with our day. In fact, up to 1915, far more than half of the children in the United States did not even complete elementary school.

But contrast 1915 with 1968! Today America has some fifty million children and youth in the educative process. California, for example, requires by law that all young people complete a twelve-grade high school. In California sixty percent of all high school graduates continue on into college. In America we have more than seven million young people in college.

This burgeoning of education in America costs a prodigious amount of money, most of it provided by the individual states and their political subdivisions. Of recent years, particularly since World War Two, it has become painfully evident that the states must have federal aid in education, or else millions of youth cannot go to school; or if they do, they will get an education of inferior quality.

John F. Kennedy was the first American president to realize that the federal government must give massive aid to education. When Lyndon B. Johnson succeeded to the presidency, he, too, saw that federal aid to our schools and colleges was no longer optional but mandatory if America's youth are to receive a quality education. President Kennedy put through the Higher Education Facilities Act of 1963, and then under the Johnson administration came the Elementary and Secondary Education Act of 1965. In 1966, President Johnson followed through with the gigantic appropriation by the Congress of \$3,500,000,000 for aid to education, a history-making forward step in the annals of our nation.

An equitable share of these monies and gifts is available for Adventist schools. Most private schools are taking advantage of this generosity on the part of "kings and rulers," as Ellen White phrases it. These schools are therefore able to give more education to more young people, and education of much higher quality and relevance than if they refused the gifts.

For many years I taught at the University of the Pacific, a Methodist institution in Northern California. When in 1949 I joined that faculty, the university had a student body of 900 and was desperately struggling to keep afloat financially. Many predicted that the university would have to close its doors, and that would have been tragic, for University of the Pacific was the first college chartered in California, eighteen years before the state university was even heard of.

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But just at the time the future looked so black for University of the Pacific, along came the federal government with its program of major aid to American education. The university gladly accepted that aid, and soon new buildings sprang up all over the campus — classroom buildings, laboratory buildings, and residence halls for young men and for young women. New colleges were added — pharmacy, engineering, law, dentistry — mostly with federal money. Now the University of the Pacific has more than 2,500 students, all of them getting top-quality education. Without federal aid, this would have been quite impossible.

Public educational institutions, too, have profited immensely by federal aid. The University of California, for example, one of the half dozen truly great universities of the world, with a student body of 90,000, has an annual budget of \$700,000,000. Approximately half (forty-eight percent) of that budget is furnished by the federal government in the way of grants, research contracts, and construction funds for the nine campuses.

Are Seventh-day Adventist schools in need of new buildings, new equipment, new libraries, all of which could be supplied by federal funds?

Yes, desperately so!

While it is true that our General Conference has poured generous monies into Andrews University and the Loma Linda campus of Loma Linda University, yet most of our colleges are starving for money for libraries, laboratories, residence halls, classroom buildings, and suitable auditoriums, all of these in the realm of capital expenditures. It may be quite justifiable that we should not accept monies from the government for teacher salaries and other operational expenses, but in my mind there is no argument whatever against accepting government monies for capital expenditures. Let the church furnish the money for operations through tuitions and gifts, but let

the federal government, anxious to assist us, help in building and equipping the physical plant.

For the school year of 1968-69, a full-time resident student in the College of Arts and Sciences at Loma Linda University will pay \$2,228. This is about as much as we can expect the average Adventist parent to pay per year for a Christian college education for his son or daughter, particularly if he has several children to educate in one of our institutions. But the sad fact is that this amount of money does not pay the operational costs of the college, and, of course, it provides not one cent for capital expenditures. Capital funds have to be supplied by the conferences that form the constituency of an Adventist college. These conferences never have funds adequate to the need of an expanding Adventist educational program; therefore Adventist colleges, all of them, suffer, and suffer drastically. They cannot give an education which is one hundred percent adequate in the last third of the twentieth century, a century which has witnessed an explosion of knowledge which far exceeds the much-talked-of population explosion.

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Take education in the sciences, for example. None of our colleges has anywhere near a full complement of facilities for quality training in physics, chemistry, and biology. Much of what we have is fifteen to twenty-five years old. When science knowledge doubles every ten years, as it does today, our Adventist colleges have a lamentable time lag in science equipment. Nowadays there is a rapid turnover and obsolescence in science equipment. Our limited budgets cause us to fall far behind.

Then there are the behavioral sciences — psychology, sociology, and anthropology. Neither the libraries nor the laboratories in our colleges are anywhere near up to date in these fields. This sad state of affairs means we cannot give our students a quality of education that equates with the present.

One of the areas where many of our colleges fall short is in the teaching of business administration. Our schools simply cannot afford the degreed manpower and all the vast array of business machines and equipment necessary to turn out topflight competent business administration majors who can compete with those from institutions with plenteous monies from state funds. To my knowledge, scores of Adventist youth desirous of becoming proficient in business administration quit our schools after one or two years to enroll "outside." When queried they all give the same reply, "Adventist colleges have neglected this area, don't have enough faculty members trained in the various phases of business administration, and this college doesn't have the requisite machines, computers, etc., used in first class schools."

Education, all of it, is in the computer age. Even in the two fields I am trained in — political science and international relations — the computer is rapidly becoming a must for a full educational program. In every phase of the acquisition of learning, the computer will soon be a major factor, even in high schools. That inescapable fact means the expenditure of huge amounts of money to computerize Adventist education in the next decade or two.

When it comes to the heart of any college campus, the library, all of our Adventist higher institutions of learning fall far short. Most of our libraries are housed in small and totally inadequate buildings. The saddest fact of all is that their shelves are only half filled, and then often with volumes of ancient vintage. Loma Linda University Schools of Medicine and Dentistry both have excellent collections. Andrews University is building an adequate library for theology students. Aside from these two, all our other college libraries are not more than fifty percent of what they should be for undergraduate work.

When it comes to the libraries in our secondary schools, it makes one cry just to glance at the average academy library. They usually turn out to be about twenty-five percent adequate. It would appear that too many of our boards think that if they provide a building labeled “library” and have a set of the *Encyclopaedia Britannica*, a Webster’s dictionary, a couple of Bible dictionaries, and a few Adventist periodicals and books, the school is all ready for business!

Some of our colleges are now planning to give graduate work leading to the Master of Arts degree, and higher. In fact, some are already conferring such degrees. But can these schools give graduate work of acceptable quality when our libraries are woefully inadequate even for undergraduate work? The outlook for building up first class libraries is very, very dim.

None of these lacks is necessary, for the federal government is ready and willing to help our schools with buildings, laboratories, equipment, and libraries. If we would accept available government monies for major capital improvements, then we could use more of our own money for upgrading our faculties, both on the secondary and college levels. We could send more teachers for advanced study in order to keep up to date in the fast-advancing fields of learning. As it is now, sabbaticals are hard to come by in any appreciable number. Even regular attendance at the annual national or regional meetings of the various disciplines is quite impossible because of a shortage of funds. If more money were available for more teachers, then faculty loads could be reduced so that the individual teacher would have adequate time for research and study.

Our church in the United States should have established a school of pharmacy and a school of law long ago. Many of our leaders agree this should be done but ask, "Where is the money coming from?" The money is available in federal aid.

The world we live in today demands nothing but the very best in the way of educational preparation for life. Twentieth century life requires much more education in scores of new fields than was required in the simple days when we set up our first Adventist colleges in the 1880's. Too much Adventist educational thinking and planning is done in the framework and context of fifty and seventy-five years ago.

Additionally, and even more importantly, too much educational policy in our denomination is made by noneducational personnel. Open the yearbook and take a fast look at the makeup of any college or academy board. The number of educators on that board is dwarfed by the noneducator personnel. To be sure, those who pay the bills, such as the conference presidents and treasurers and committee members, should be represented. But should their voices always be the decisive ones in education planning? Do non-educators know more about education than do educators?

Some will ask, "But wouldn't the acceptance of government money to build a boys' dormitory on our campus constitute a union of church and state?" No more than building a new wing to our local sanitarium and hospital with Hill-Burton funds. Let us be consistent: what is good for the hospital goose is also good for the education gander!

Someone else may exclaim, "If we accept federal aid for our schools, some day the government may tell us what to teach and what not to teach." Remember the citation in which Ellen White recounts the building of a temple for Jehovah God in Jerusalem by Cyrus, the heathen king. Did not the Jews of that day run the risk of Cyrus telling them just how to worship when once he had finished the temple? That possibility did not seem to worry God, nor did it worry Ellen G. White.

Another may ask, "If we do not accept federal aid for our schools, then what?" Without government aid, our schools will lag farther and farther behind in major lines of learning as the cost of higher education rapidly mounts. That means more and more of our young people will seek their education in other than Adventist schools. Youth today, yes, even Adventist youth, will not be denied excellence in learning. If they cannot get it from us, they will go elsewhere. With federal aid we can give them anything and everything they can get at the state university, plus the indispensable and invaluable values of the Christian pattern for living.

THE CHRISTIAN AND WAR 1

The Case For Selective Nonpacifism

CHUCK SCRIVEN

How shall the Christian relate to war?

41 Selective nonpacifism, in my opinion, is the only consistent stance. By selective nonpacifism I mean that some wars will be deemed unjust and the Christian will conscientiously refuse to fight in them. I mean, furthermore, that some wars will be deemed just, and the Christian will conscientiously determine to fight in them.

This position implies a rejection of pure pacifism and of so-called “conscientious cooperation,” as traditionally advocated by Adventists. It is taken in full awareness that present laws in the United States are unsympathetic toward selective nonpacifism. I hold that these laws ought to be changed — a matter to which I will give brief attention later.

If selective nonpacifism is the only consistent stance for the Christian, how can its implications be squared with *agape*, or Christian love? As will be seen, it is precisely because of Christian love that pacifism and “conscientious cooperation” must be rejected.

Christian love manifests itself in deep and impartial concern for the well-being of all people. Ideally, it does not retaliate and it does not mistreat even an enemy. In the context of a fallen world, however, we are not in an ideal situation. Sometimes, for example, an imperative to restrain from killing may conflict with an imperative to preserve life. When one is faced with such conflicting ethical alternatives, actions that are compatible with *ideal* Christian love will be impossible. We must then choose in faith the way that seems most nearly to correspond with ideal Christian love. The character of our world is such that, paradoxical as it may seem, refusal to kill, in some contexts, may be the breaking of the sixth commandment and a betrayal of Christian love.

Selective nonpacifism rests on the theory of the just war, hinted at in Plato and formulated in Christian terms by Ambrose and by Augustine in greater detail. The advancing technology of warfare has stimulated continuing dis-

cussion and adaptation of the just war theory. Contemporary ethicists who advocate just war would agree, in the main, that such a war must —

1. Have as its goal the restoration of peace and realization of justice.
2. Mount destructive power equal only to the task of destroying the power of the oppressor. This destructive power must, insofar as is possible, refrain from devastation of civil populations, and must never involve malicious atrocities or reprisals.
3. Be a limited war. Unlimited warfare is never just, because today in unlimited warfare the distinction between victory and defeat would be so blurred as to be unrecognizable; indeed, there would be victory for neither side and defeat for all.
4. Have no absolute ends, but be only an instrument of specific national policy.
5. Have reasonable chance of victory, so that futile destruction of life is not inevitable from the outset.
6. Be conducted in an attitude of Christian love.¹

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The purpose of the just war theory is to affirm that the Christian, in a world of conflicting ethical alternatives, must pursue the best of these alternatives. Where war is the best alternative, a man is ethically compelled to participate. The decision to do so will never be easy, of course, because there will be no war where the strategy and motives of any side will fit perfectly the specifications of the just war theory.

What may be said of pacifism? The Christian pacifist contends that his stance is a witness, that it is the only way to avoid compromise of Christian principle. He is fearful, as Roland Bainton puts it, "that, if in withstanding the beast he descend to the methods of the beast, he will himself become the beast, and though the field be won the cause will be lost."² Pacifists assume that participation in war is sin, in every case, and point out that sin is never permissible even in pursuit of justice. To seek the relative good, they say, may be to forfeit the absolute.

They deny that withdrawal from the course of the country is irresponsible or cowardly and point out that protection, even of one's own family, cannot be the ultimate concern. And any good that may be accomplished by military intervention needs to be set over against the damage inflicted.

I would agree that it is not necessarily cowardice to dissent from the course of one's nation. Protection, even of one's own family, is indeed not the ultimate. And war surely demands weighing probable accomplishment against probable infliction of damage.

I take issue, however, with the pacifist's insistence that nonpacifism is

always a turning away from the principle of Christian love. I would argue that the pacifist misunderstands Christian love because his view of it leaves it incapable of grappling with the common problems of a fallen world. By his abstention, he becomes irrelevant; by his unwillingness to destroy the oppressor, he forsakes the oppressed.

Isn't a correct understanding of Christian love the most compelling argument for selective *nonpacifism*? After all, the Christian's concern for the well-being of all people requires, where there are conflicting ethical alternatives, that he choose the way that contributes the most to human happiness for all men. Where this concern calls for violent action against an unjust aggressor, the Christian, in response to the demands of love, must fight.

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Adventists have traditionally opted for what is called "conscientious cooperation." My objection to it is that it rides the fence. Indiscriminate non-combatancy simply avoids some important ethical issues — such as whether a war is just or not. The conscientious cooperator fancies that he is doing all that is required of him simply by (a) heeding the call of his country, no matter what war it has gotten itself into, and (b) refusing to kill the enemy.

In a just war, the only consistent action is that action which seeks the quickest possible termination of enemy aggression. Presumably, killing is involved here. In unjust war, the Christian ought not to participate in the military at all.

At present, the laws of the United States rule out selective nonpacifism. In order to be excused from participation in a war, according to the Universal Military Training and Service Act, one must be "opposed to participation in war in any form."³

These draft laws ought to be reformed so that selective conscientious objection to particular wars can be a legal option. It seems only reasonable that a man ought to have the right to decide whether in good conscience he can participate in a war.

But would this not open the way for anarchy? Not if an adequate test of the seriousness of a candidate for exemption from a particular war were introduced. He should be required to defend his position, and he should participate in alternative civilian work during the years of his obligation to the country.

Such a law would have the advantage of creating a demand for improved political discourse in America. The government would benefit from the arguments of conscientious objectors and would be forced to counter with arguments of its own.⁴

How, then, shall the Christian relate to war? First, he should go through

the agony — for agony it will always be — of deciding whether war, as a response to some threatening evil, is justifiable or not. If it is, he should fight in that war in response to the demands of Christian love. If the war is unjust, he should refuse to fight.

Because United States law does not now provide for conscientious objection to particular wars, the most immediate concern of the church should be agitation for a law which would do so. Expertly written, such a law could avoid “the excessive individualism of anarchy” and destroy “governmental tyranny over conscience.”⁵

THE CHRISTIAN AND WAR 2

A Defense of the Adventist Position

DONALD R. McADAMS

Seventh-day Adventists abhor all war. War causes great human suffering and interferes with our primary objective of preparing ourselves for the world to come and carrying the gospel to this generation. But war exists, and we cannot avoid it. Men have been fighting since the beginning of time; they will be fighting when the Lord returns.

How, then, should the Christian relate to war? Certainly he should avoid it if avoidance is possible. The early Christians took no part in war. As long as they were a minority of the Roman Empire, this position was tenable. But when the Roman Empire became Christian (one may assume the Romans were not true Christians, but many thousands must have been sincere believers), Romans had to fight to protect themselves from the barbarian hordes.

From the fall of the ancient world until the present, the states of western Europe have called themselves Christian; but Christian nations, as other nations, have to be defended. The medieval Christian states had two alternatives: defend themselves or, barring the direct intervention of God on their behalf, be gobbled up by their less Christian neighbors. The logic of the situation forced the feudal states of Europe to accept war. Even the Catholic Church reconciled itself to reality by condoning just wars. In the feudal wars that followed, both sides claimed that justice resided with them. Faced with the dilemma of not fighting and being destroyed, or of fighting with no assurance that the cause was just, each side assured itself that its side was just.

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Fortunately, because war was fought by the few, most medieval Christians could avoid the question of the justness of war. Feudal society was protected by heavily armored knights. Armies of as much as a thousand men were rare, and the heavy armor kept the casualties at a minimum. The great majority of the people took no part in war.

Armies grew in size as Europe entered the modern era, but they were still comparatively small. The majority of the people could still avoid the crucial problem of how to relate to war. Then in 1517 the Protestant Reformation shattered the superficial religious harmony of Europe. The next century and a half witnessed bitter religious wars. Protestants and Catholics alike fought not only for what they thought was right but for what they *knew* was just. In doing so they devastated Europe. With entire populations taking part in what they regarded as a just war, the civilization of Europe was almost destroyed.

Fortunately, with the subsiding of religious passions in the late seventeenth century and with the growth of the enlightened skepticism of the Age of Reason, war became once more a problem that most people could ignore. Throughout most of the eighteenth century, war was the sport of kings, fought for dynastic goals. Civilian populations were disturbed as little as possible.¹ Citizens from belligerent states could travel freely between countries, and only the scum of society was impressed into military service. Frederick the Great regarded the conscription of artisans as an abuse that no monarch in his right senses would countenance. War was played for small stakes, and theorists thought it right that not justice nor right nor any of the great passions that move people should ever be mixed up with war.²

Morally, war waged from political motives is profoundly shocking. Human conscience cannot condone war, with its waste and misery, except in

sheer self-defense or in pursuit of some transcendent moral or social good. War in the eighteenth century, however, was war that killed few; hence most citizens could ignore it. As Edward Gibbon wrote: "The European forces are exercised by temperate and undecisive contests."³

Two forces upset this gentlemanly balance of power and reintroduced human passions: democracy and the industrial revolution. In the War for American Independence and then especially in the revolutionary and Napoleonic wars, nationalism became the great inspiration for war, and citizen armies now numbered in hundreds of thousands instead of in tens of thousands. Passion was reintroduced into war. The Comte de Mirabeau warned the French National Assembly in 1790 that a representative parliamentary body was likely to prove more bellicose than a monarch.⁴ It was.

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The American Civil War and Bismarck's three Prussian wars of aggrandizement added industrialization to democracy as the great force changing the nature of war. War was transformed more than contemporaries realized. The relatively small wars fought in the late nineteenth century did not afford insight into the new nature of warfare. However, with the Great War of 1914-1918 the world finally realized that a new era in warfare had arrived.

The new weapons — machine guns, tanks, airplanes, submarines, gas — and the use of mass armies increased the casualties to unbelievable percentages. Whereas from the twelfth century to the seventeenth century the casualties of war were from 2.5 to 5.9 percent of the strength of armies, in World War One they soared to 38.9 percent of armies that were much increased in size in relation to population.⁵ Industrialization had given man the weapons of mass destruction; nationalism had given him the desire to use them to annihilate the enemy. In this first modern total war, nine million soldiers were killed, and ten million civilians lay dead.⁶ Civilian populations not only suffered greatly; they also contributed greatly to the war efforts of their countries. With total war, workers were needed for munitions factories and the other jobs necessary to enable industrial states to function. Propaganda on both sides kept citizens inflamed. With this war, wrote a contemporary observer, "war had passed out of the phase of a mere battle. It is now a contest between the will and determination of whole nations to continue a life-and-death struggle in which 'battle' takes a very small part."⁷

All that has been said about World War One was doubly true about World War Two. In this most bloody of human conflicts, fifty-five million human beings were killed as a direct consequence of war.⁸ Civilians suffered terribly, and their importance to the war efforts of their countries increased.

During the Battle of Britain in the autumn of 1940, the morale of the civilian population was as important as the strength of the military forces. In the Soviet Union, having babies contributed to the war effort. Stalin established a fertility prize, the Order of Motherly Glory, for those who bore more than seven children.⁹

As a member of twentieth century society, can the Adventist disassociate himself from this kind of total war? If he refuses to serve in the military forces or to work in any industry related to the war effort, still he supports the military actions of his country, for modern corporations are so diversified that a business machine company or a paper manufacturer may produce the *materiel* of war. If these jobs could be avoided, one would still contribute to the country's war effort by work in services important to the state, for any educational, medical, or industrial worker helps make the country strong. The United States government recognizes this and gives scholarships called National Defense Fellowships to train literary critics and historians as well as scientists; all contribute to the national strength. If one makes his living painting designs on china, nearly fifty percent of his taxes support our country's military forces. In an age of total war, the only way one can keep from assisting the war effort is by emigrating. And where can he go? War is endemic in the modern world, and even neutral states maintain strong military forces.

The problem is no less complex in the armed forces themselves. The army medic, treating wounded soldiers so they can fight again, contributes to the military strength of his country. So do we all, unless we are hippies.

This is the dilemma of the American Adventist today. He abhors war, but willy-nilly he participates in his country's military efforts. If he must participate, let it be in a humane and compassionate way. Thus the General Conference of Seventh-day Adventists recommends, but does not insist, on 1-A-O status for Adventist young men. Those who serve in this non-combatant way serve their country, and they do so with compassion and healing.

One last point. If the citizen cannot help contributing to war effort, why not bear arms? As a citizen of a state, the Adventist, as do all other citizens, receives the benefits of citizenship; he receives the protection of the law and protection from foreign aggression. He should render Caesar's due. Why not bear his share of the obligations of citizenship and do his share of the dirty work of killing? Perhaps if the cause were just, he would. Men of ancient Israel killed in defense of their country, and God was with them. If God commanded today, Adventists would fight also. Even without God's command, we would fight to protect our families from individual acts of vio-

lence. But without divine revelation one cannot determine if any country fights a just war.

The diplomacy of our day is so complex that justness is seldom, if ever, on one side. And if it were, we would not know it. For example, if the *Pueblo* crisis had led to war, which side would have been fighting a just war? Even the guilt of Germany in World War Two can be disputed. (Although that is a historical argument beyond our interest here, the Versailles Treaty and the depression of the 1930's can be used to indicate that Germany was not alone responsible for World War Two.)

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A further complication would concern allies. Would it be just to help an ally in a just war? What would one do if during a just war for the defense of an ally the objectives of the war changed and the ally began to fight for personal gain? The difficulties are beyond the competence of the individual citizen. If the individual decided to participate in just wars, he would do so in ignorance of their justness. Nationalistic propaganda convinces all people that they fight for what is just and necessary. Adventist young men from different countries would find themselves killing one another in the name of justice.

The Adventist position is a compromise position. Like most compromises, it is a middle ground open to attack from both sides. If carried to its logical conclusions, the position is even absurd: A country that was one hundred percent Adventist would be defenseless and soon nonexistent. Nevertheless, the position is one that has the virtue of working. We are, and always will be, a small minority of this country. We do owe something to our country for the benefits of citizenship, and we must contribute whether we like it or not. As a medic, the young man can render willingly to his country, in the compassionate relief of suffering, the allegiance he must give. On the other hand, he need not fear that he will kill unjustly under the hypnotic irrationality of a nationalism that justifies every act of its own country. Because the transformation of war under the impact of democracy and industrialization makes complete conscientious objection impossible, and because the confusion of modern diplomacy makes discovery of the justness of a war equally impossible, the Adventist position is a compromise that works.

Obviously not all Adventist young men will agree with this position. Some will prefer to support with arms what they consider a just war. For these there is no problem. The state does not question the motives of those who serve as combatants. Other Adventists will refuse military service of any kind, preferring social or hospital work here to what they consider the greater evil of noncombatant military duty. The Selective Service laws have

made provision for such men. They can serve their country as civilians. To do so they need the support of their church.

The Seventh-day Adventist Church should continue to support those young men who accept noncombatant roles in military service, in accordance with the guidance of the General Conference. The Church should also, recognizing diversity, give encouragement and support to the complete conscientious objector. We are living in an age when the demands of conscience are recognized by government and society, and we no longer need to convince the state of our loyalty. It is commendable that our church gives guidance to our young men. It is necessary that we support those whose consciences lead them in a different path.

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- 3 EDWARD GIBBON, *The History of the Decline and Fall of the Roman Empire* (volume four of seven volumes. London: Methuen and Company; New York: MacMillan and Company, Limited, 1896-1902), p. 166.
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- 5 P. SOROKIN, *Man and Society in Calamity: The Effects of War, Revolution, Famine, Pestilence Upon Human Mind, Behavior, Social Organization and Cultural Life* (New York: E. P. Dutton and Company, Inc., 1942), p. 92.
- 6 Perhaps twenty-two million were wounded.
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The Case For Conscientious Objection

EMANUEL G. FENZ

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A Christian attempting to discover Christ's teaching on war faces historical and theological confusion. On the one hand, the Scriptures enjoin him to love his enemies (Matthew 5:44), to establish peace with all men (Hebrews 12:14), not to avenge himself, for vengeance is the Lord's (Romans 12:19), and not to kill (Romans 13:9). On the other hand, he is confronted with the fact that for at least seventeen centuries most Christians have taken active part in their nations' wars, often fighting against each other.

Seventh-day Adventists have seemingly resolved this problem by taking a noncombatant position, on the ground that by so doing they are following the example of Christ in not taking human life, but rather rendering all possible service to save it. Does the Seventh-day Adventist Church, when it takes this position, really follow the example of Christ? Or is this position inconsistent with the spirit of the gospel, the writings of the apostles and disciples, and examples drawn from the history of the Christian Church?

From apostolic times to the decade A.D. 170-180, no evidence has been uncovered that Christians participated in military service.¹ The Christian community, in fact, was condemned for its unwillingness to support actively the wars of the Roman Empire. In A.D. 173 the Roman Celsus, a pagan, addressed the Christian community as follows: "If all men were to do the same as you, there would be nothing to prevent the king from being left in utter solitude and desertion, and the forces of the empire would fall into the hands of the wildest and most lawless barbarians."

In describing the Christian position, Athenagoras, a leading Christian contemporary of Celsus, stated that Christians "do not strike back, do not go to law when robbed; they give to them that ask of them and love their neighbors as themselves."

Justin Martyr, another outstanding Christian leader of this period, wrote: "We who are filled with war and mutual slaughter and every wickedness

have each of us in all the world changed our weapons of war. . . . [We have changed our] swords into plows and spears into farming tools,” and “we who formerly murdered one another now not only do not make war upon our enemies, but we gladly die confessing Christ.”

Church father Clement of Alexandria, who lived early in the third century, described the Christian community as “an army which sheds no blood.” “In peace, not in war, are we trained.” “If you enroll as one of God’s people, heaven is your country and God your lawgiver. And what are His laws? . . . Thou shalt not kill. . . . Thou shalt love thy neighbor as thyself. To him that striketh thee on the one cheek, turn to him the other.”

Lactantius, writing in A.D. 304-305, maintained: “God in prohibiting killing discountenances not only brigandage, which is contrary to human laws, but also that which man regards as legal. Participation in warfare therefore will not be legitimate to a just man whose military service is justice itself.”

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It is to the latter part of the second century that archeologists trace tombstones that identify Roman Christians who were soldiers — probably men who remained in the service after having been converted to Christianity. The canons of Hippolytus, which date back to the early third century, obviously refer to this situation when they state that “a soldier of the civil authority must be taught not to kill men and to refuse so if he is commanded.” Martin of Tours clearly points out the conflict that Christians seem to have experienced during this period. Having been converted, he remained in the army for two years. When an actual battle was imminent, he turned in his resignation.

Not until 314 did the Church, at the Council of Arles, approve of Christians serving in the army. Still the question of actual killing by Christians remained unresolved. Not until the latter part of the fourth century did theologians begin to discuss the “just war” theory. St. Ambrose and St. Augustine, both church fathers, continued to emphasize the primacy of love, even stating that Christians as individuals had no right to self-defense. Borrowing from Stoicism and the Old Testament, they did find it permissible, nevertheless, to participate in communal defense even to the point of bloodshed. The only requirement was that the war must be just.

According to the just war theory, a war had to be declared by a just authority, for a just cause, had to use just means, and had to have reasonable expectations of success. A further requirement was that the lives of non-combatants had to be spared and that the means employed were to be no more oppressive than the evil remedied. Thus, it seems that Christians who

lived during the first three centuries of the Christian era followed a consistent policy of opposition to war and military service and that only in later years did they begin to formulate the just war theory. The theorizing which began as a rationalization aimed at justifying wars in defense of Christianity against paganism, ended in justifying wars of self-defense as well as wars of aggression.

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Throughout the ages, nevertheless, there remained small groups of Christians who were unable to justify taking an active part in the wars of their countries. During the early Middle Ages, pacifism continued to be practiced by the Christian clergy and by various monastic orders, and in later years by small sectarian groups. Early in the thirteenth century a group of Waldensians made its return to the Church dependent upon a number of concessions, one of which was exemption from military service. Also, Wycliffe held that the highest Christian ideal required complete abstention from war, even though he admitted that war might be waged for the love of God or to correct people. Peter Chelciky, outstanding leader of the pacifist branch of the Hussite movement, maintained that Christ's law was the law of love, that the Christian's weapons were spiritual only, that his mission was to redeem souls, not to destroy bodies, and that Christians should therefore refuse military service.

During the Reformation and the period of post-Reformation, the sects continued the opposition of Christians to war. Among these, the Anabaptists (Mennonites and Hutterites) during the sixteenth century, the Quakers during the seventeenth, the Brethren in the eighteenth, and the Jehovah's Witnesses in the nineteenth century consistently opposed all wars and refused to become active participants in wars.

On the other hand, the larger Protestant bodies, generally following the Catholic tradition, found it morally justifiable to engage in warfare as long as they were able to rationalize the justness of specific wars. This view enabled the Kaiser's armies to march enthusiastically onto the battlefields, having been told that they were fighting for God, the Kaiser, and the Fatherland (*Für Gott, Kaiser, und Vaterland*). This view, further, enabled Hitler's Gestapo to select as its motto *Gott mit uns*, "God with us."

And while young Germans were fighting for God, the Kaiser, and the Fatherland, Reverend A. F. Winnington-Ingram, the Bishop of London, exhorted young Englishmen "to kill Germans — to kill them not for the sake of killing but to save the world, to kill the good as well as the bad, to kill the young as well as the old, to kill those who have shown kindness to our wounded as well as those fiends who crucified the Canadian Sergeant. . . .

As I have said a thousand times, I look upon it as a war of purity; I look upon every one who dies in it as a martyr.”²

More recently, many Christians were somewhat perplexed when they heard Cardinal Spellman of New York proclaim, during a visit to South Vietnam, that American troops there are “the defense, protection, and salvation not only of our country but, I believe, of civilization itself.”³

Where do such statements leave us? Where should we stand in this matter of war, defensive or offensive, declared or undeclared? Should we make a distinction between a moral and an immoral war, a just or an unjust war? Or should we support or oppose all wars on principle? Personally, I believe that there are four choices an individual can make when he is confronted with the problem of war.

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1. He can either support or take an active part in war on the grounds that as a citizen of a country he is obligated to serve in its armed forces.

2. He can support and take an active part in war as long as the war seems to him to be a just war, but oppose it as soon as in good conscience he feels that the war has become immoral and unjust.

3. He can support and take an active part in war in noncombatant capacity, civil or military, in or out of uniform, and contribute thereby to saving lives.

4. He can oppose all wars on the grounds that war is unchristian, entirely opposed to and foreign to the doctrine of Christ. He thereby refuses to serve his country even in noncombatant capacity, because by doing so he would aid and abet his country, in a sense, in the destruction of human life.

Let us now briefly analyze each of these alternatives.

The first choice really need not detain us, since most Seventh-day Adventists would probably object to indiscriminate participation in war. I am certain that most of us would object to following orders blindly, since we believe that a man is responsible for the actions of his life, a sentiment which was given a certain legal standing perhaps most dramatically at the Nürnberg trials. Adolf Eichmann, credited as the author of the “final solution,” did not accept this position when he declared that in exterminating Jews he was only following the orders of his government.

The second choice could be defended on the grounds that the Old Testament is full of just wars, that killing of the unjust seems to have been favored by God and that even in the New Testament there are a number of texts (Revelation 13:10, for example) that seem to imply that under certain conditions killing is justified. The problem with this position is that, even though there may be some justification for believing that a Christian may

take an active part in a just war, modern wars cannot be considered morally justifiable, because they bring death to vast numbers of people indiscriminately, even if one allows for the high motivation and the “good intention” of a government. Also, because modern diplomacy is complicated, it is extremely difficult to ascertain at the outset of a war the responsibilities for its outbreak.⁴

The third choice is the one officially taken by the Seventh-day Adventist Church. On the surface this appears to be the best choice, since no one can really object to the saving of life, even when this saving takes place on the battlefield. From the Christian standpoint, a close examination will nevertheless show that this position is not really a valid one. The United States Field Manual states specifically that the primary duty of medical troops, as well as all other troops, is to contribute their utmost to the success of the command of which they are a part. Now I would find it difficult to visualize a German Christian in Hitler’s army contributing his utmost to the success of the command under which he was fighting. I would find it just as difficult to justify a Christian medical doctor’s acceptance of a full-time position at a brothel if he accepted that position with the understanding that his main function there would be to cure his patients of venereal disease so that they could get back to their “jobs” as soon as possible. What do our medics sent to the battlefield do but bring healing to our wounded in order to get them back into action — to enable them, that is, to kill, since killing is the soldier’s main purpose?⁵

The fourth position is probably the only one that affords a Christian conscience relative safety. Of course, it may be argued that one contributes indirectly to his country’s military effort even by engaging in civilian work. Maybe we could learn something from the example set by Thomas Lurting, a Quaker, who, having been impressed on a man-of-war, refused to engage in military and nonmilitary service on the ship itself, but agreed to load grain into warships, on the ground that he had been commanded to love his enemies. Though there may be a touch of legalism in the stand Lurting took, as Roland Bainton points out, nevertheless it has to be recognized that he was trying to obey his conscience and that he succeeded in doing this by drawing a line between direct contribution to war with humanitarianism and direct humanitarianism with an incidental assistance to war.⁶

Conscientious objection to military conscription in the United States today is governed by the Military Selective Service Act of 1967. This Act specifically states in Section 6 (j) that no person will “be subject to combatant training and service in the armed forces of the United States who, for

reason of religious training or belief, is conscientiously opposed to participation in war in any form." The Act does not exempt from such training and service persons who, because of "essentially political, sociological or philosophical views, or a merely personal moral code," object to serving in the armed forces.

The problems that modern warfare has brought to the consciences of Christians are tremendous. Realizing this fact, many Christian churches in recent years have tried to come to grips with the problem of war and conscientious objection.⁷ Wishing to allow full freedom of conscience to their members, they have reevaluated their positions and have gone on record as recognizing the principle of the moral right of conscientious objection. They have also resolved to give assistance and full moral and spiritual support to their members who follow the voice of conscience either by participating or by refusing to participate in war or in training for war.

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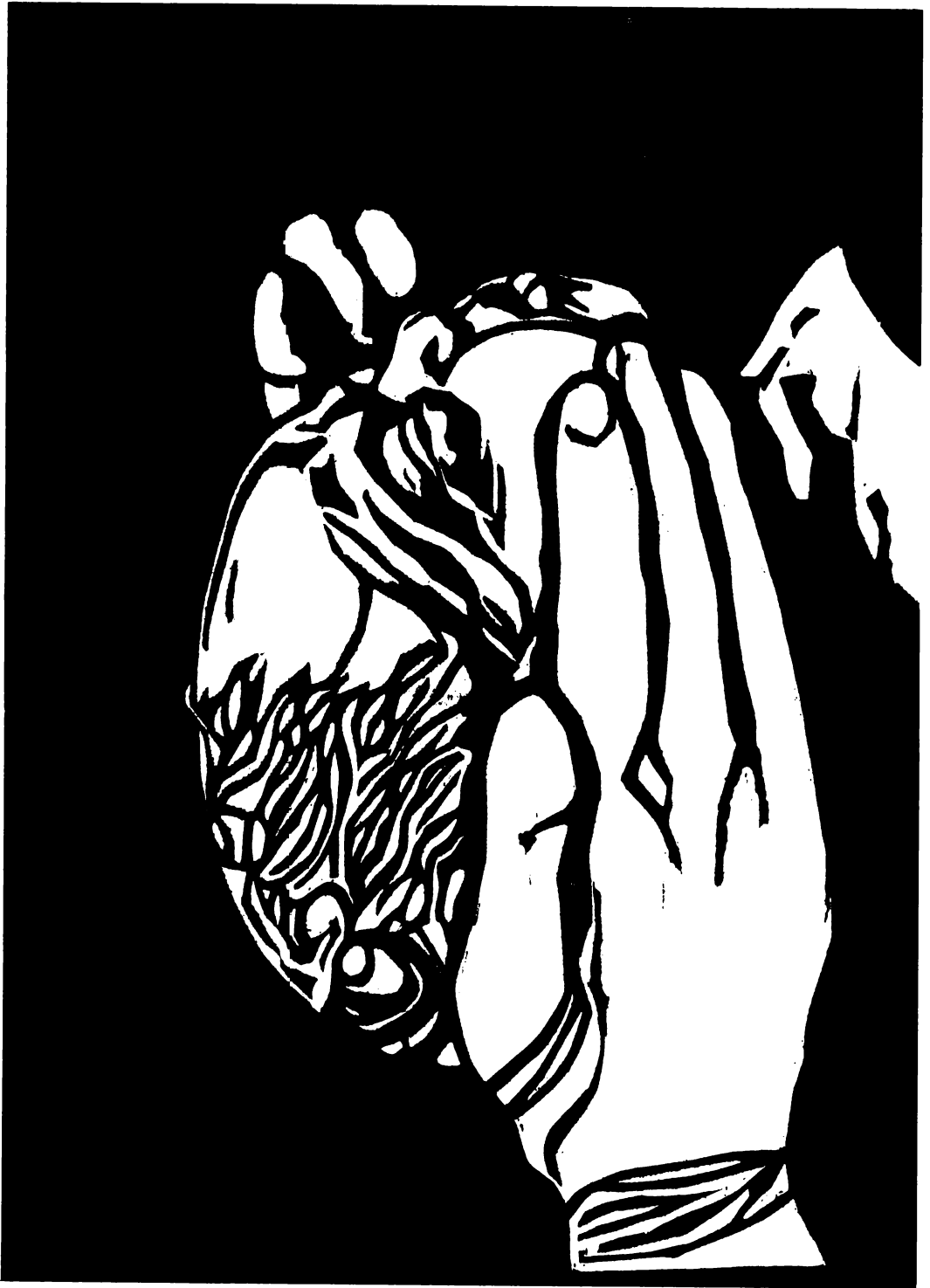
The Seventh-day Adventist Church acknowledged the right of its members to live by the dictates of their consciences when it decided that participation or refusal to participate in war should not affect church membership. I firmly believe, therefore, that the Church should face the consequences of this stand by extending its full support to all its members who, wishing to follow the dictates of their conscience, decide either to participate or to refuse to take an active part in their nation's wars.

REFERENCES AND NOTES

- 1 The historical documentation quoted in this article was drawn from ROLAND BAINTON's excellent study, *Christian Attitudes Toward War and Peace: A Historical Survey and Critical Re-evaluation* (New York: Abingdon Press, 1960).
- 2 *Ibid.*, p. 207. The reference to the crucifixion of a Canadian sergeant was a fabricated atrocity story circulated by the Allies during World War One.
- 3 *New York Times*, December 26, 1966.
- 4 A good case for selective pacifism is made by CARL COHEN, Case for Selective Pacifism, *The Nation* 207, 11-15 (July 8, 1968).
- 5 EDGAR L. JONES, One War Is Enough, *Atlantic Monthly* 177, 48-53 (1946).
- 6 BAINTON, *op. cit.*, p. 164.
- 7 Among the larger religious bodies which have recently come out in support of conscientious objection are the Lutheran Church in America, the American Baptist Convention, the Southern Baptist Convention, the Church of the Nazarene, the Central Conference of American Rabbis, the Methodist Church, the United Presbyterian Church in U. S. A., and the Central Committee of the World Council of Churches.

NOVUM

... PETER ERHARD



Morality From Science?

ERNEST J. PLATA

SCIENTIFIC PRINCIPLES AND MORAL CONDUCT

By James B. Conant

Cambridge University Press, New York, 1967 47 pp \$1.95

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A lecture delivered by James B. Conant before the A. S. Eddington Foundation, of Cambridge University, is recorded in *Scientific Principles and Moral Conduct*. The Eddington Foundation sponsors this lectureship to deal with aspects of scientific thought considered as it bears on the philosophy of religion or on ethics and to explore the relationship of the scientific, the philosophical, and the religious methods of seeking truth. In this presentation Doctor Conant discusses whether a normative system, a guide of conduct, can be based on science alone and whether there is a unity that underlies these three methods.

He divides all human experience into three realms: nature (manipulation of objects), human nature (encounters between people), and religious experience. He argues convincingly that since most moral problems arise from interactions between people, rather than from interaction with inanimate objects, a standard of conduct must be derived from either the realm of human nature or the realm of religious experience.

The validity of a normative system derived from religious experience rests either on one's own religious experiences or on a firm belief in the dogmas of one religious branch or another. This means, in turn, complete confidence in reported religious experience. A normative scheme from the realm of human nature can be appraised only by examining the conduct of its adherents.

There are many men and women whose ambition is to be moral persons. They would subscribe to a set of interlocking statements, any one of which, if taken by itself, would be difficult to justify and accept. Thus moral man envisages his primary function not in forwarding change in the accepted set of postulates that guide his actions, but in the development of a society in which an even larger number of people conduct themselves according to principles he has made his own.

Doctor Conant shows how a scientist is guided in his scientific experiments by the established principles of the entire man-made fabric of contemporary science. But when he is out of his laboratory, he is guided in his interpersonal relations by another normative system. The two systems, the author contends, are totally unrelated.

Concerning the question of whether a system of morality based on religion might be more desirable or less desirable than one based on human experience, the author chooses to remain silent. Whereas, he says, in science there is only one conceptual scheme, in religion and human nature there are many different concepts to order the

experiences associated with personal encounters. The justification of a choice is stated in terms of a conceptual scheme with many posits, but often the choice is made not on the grounds of logic but on the basis of emotional experiences in childhood.

About the integration of the three avenues toward truth, he states that the conceptual schemes in each of these realms are man-made fabrics, and each, individually, must stand the test of consistency and simplicity. An attempt to formulate a unifying hypothesis or theory that can bring together the essential elements of the three realms is a presumptuous undertaking. One must instead confront a specific deduction from the conceptual scheme of one category with a relevant deduction from another, and thus form an integrational statement that encompasses the three realms. Some deductions are unprofitably discussed when there is paucity of our knowledge concerning them in one or more realms. Thus, every thoughtful person must function at times as a lay physicist, at almost all times as a moralist, and at times as a lay theologian.

The many hours of thought engendered by this booklet clearly justify its cost and the hour of reading.

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A Matter of Fertility

BRUCE E. TRUMBO

FAMINE — 1975! AMERICA'S DECISION: WHO WILL SURVIVE?

By William and Paul Paddock

Little, Brown, and Company, Boston, 1967 276 pp cloth \$6.50 paper \$2.35

The reviewer is associate professor of statistics and mathematics at California State College at Hayward. He holds the doctor of philosophy degree (1965) in mathematical statistics from the University of Chicago. He was a National Institutes of Health fellow in biostatistics at Stanford University in 1963-64.

Small children can sometimes endure tedious sermons by playing a word-counting game. Anyone who has ever played the game realizes that its recreational success depends on the selection of an appropriate word to be counted — usually a noun the relationship of which to the subject assures its overuse during the course of the sermon.

I recommend the word *catastrophe* to anyone who dedicates himself to reading every page of *Famine — 1975!* The book is heavily, even excessively, documented, but it is a sermon, a work of single-minded advocacy, rather than a treatise. It contains errors, some of them serious, but its central theme of impending disaster is plausible enough to deserve serious thought.

The Paddocks, of course, did not discover the potentially disastrous relationship between the fertility of humankind and the fertility of the soil. In 1798 the English economist Thomas Robert Malthus predicted eventual famine in his *Essay on the Principle of Population*, which a modern writer claims has remained "indispensable reading for anyone interested in the problem of undeveloped countries,"¹ even though the subsequent growth of agricultural technology has so far saved the world from the dismal future he predicted.

At the beginning of chapter nine, the authors summarize the key arguments that they develop in great detail in the first eight chapters. In essence these arguments are:

1. The underdeveloped nations have exploding populations and static agricultures.
2. The "Time of Famines" will be seriously in evidence by 1975, when food crises will have been reached in several of these nations.
3. The "stricken peoples will not be able to pay for all their needed food imports. Therefore, the hunger in these regions can be alleviated only through the charity of other nations" (p. 205).
4. The only important food in famine relief will be wheat, and only the United States, Canada, Australia, and Argentina grow significant amounts of wheat.
5. The United States, the only one of these four countries that has historically given wheat to hungry nations, is the "sole hope of the hungry nations" in the future (p. 206).
6. "Yet the United States, even if it fully cultivates all its land, even if it opens every spigot of charity, will not have enough wheat and other foodstuffs to keep alive all the starving" (p. 206).
7. "THEREFORE, the United States must decide to which countries it will send food, to which countries it will not" (p. 206).

The authors propose in chapter nine that the concept of "triage" be borrowed from military medicine to help provide criteria for the assistance of the starving nations, and they encourage the reader to take a grisly little multiple choice test in order to get into the spirit of deciding which nations will be aided. The agricultural, political, and demographic characteristics of each of seven nations are described briefly, and the reader is asked to vote for one of three choices: "Can't Be Saved," "Walking Wounded" (that is, will suffer, but eventually survive without aid), and "Should Receive Food."

The authors' choices are thoughtfully provided on page 222 for a check. India, for example, is written off as a loss, perhaps only because of the hopelessness of its overpopulation problem, or perhaps also because it stands poorly the test of one or more of six auxiliary factors to consider (military value to the United States) or to ignore (prospect of communist takeover). Pakistan, on the other hand, "should receive aid," presumably since it meets the ancillary criteria fairly well and will "survive" if and only if it does receive aid. A working definition of survival is never provided.

The argument that the hungry nations will be crucially dependent on the developed world for food in the middle of the next decade depends on two assumptions: (a) that they cannot curb their exploding populations and (b) that modern science cannot discover in time new sources or kinds of food. In view of the fact that the supporting evidence for each of these concerns is largely statistical, the disarmingly forthright remark on page 40 should not be overlooked:

In college I took two courses in statistics. The first I almost understood. The second was incomprehensible, but Professor Josiah Livermore closed the course with a piece of advice I have applied profitably many times: "When the statistics go against your reasoned judgment, throw the statistics out the window!"

The author's modesty and the professor's advice are both soundly based. The most

outrageous abuses of statistical reasoning and presentation are all too frequent in the early chapters of the book. Recognizing that not all readers are statisticians, I will exercise some restraint by criticizing only one point.

In a diagram on page 53, the authors invite a comparison of a graph of population *growth* (which goes up steeply) with one of *per capita* food production (which fluctuates, except for a gratuitous plunging *projection* beyond 1965). The latter graph, of course, includes population information, and so it alone tells how much each person has to eat, which is presumably the issue at hand.

But any criticism of the authors' interpretations of statistics offers small comfort, because the data on population and food supply presented in this book (or indeed almost any other data on these subjects) need little manipulation to bring into focus a most disagreeable picture. Furthermore, although it may be dangerous to assert categorically, as do the Paddocks, that no development in any of the "panacea" areas — synthetic foods, hydroponics, desalinization, oceanography, agronomy, contraception — will come in time to avoid worldwide famine by 1975, the authors validly point out that many scientists who have claimed that "something will turn up" have supposed it will turn up in someone else's field of investigation. For a scientist to find hope in his own data or research has been rare. (An exception is the guarded optimism of Dudley Kirk, who claims to detect trends toward a marked decrease in the birthrates of some underdeveloped countries during the next decade.)²

Those who try to predict food supply and population often yield to the temptation simply to extend present trends and rates into the future. Carried to extremes, such projections lead to the kind of statements frequently seen in Sunday supplement magazines that by the year 2000 there will be only X square inches of land per person or that people will be stacked around the earth in layers Y people deep. Clearly, drastic changes in trends and rates would take place long before such spectacular fecundity could be accomplished. Paul Ehrlich, a Stanford University population biologist, is quite blunt about this.

But, later or sooner, one thing is certain. The human population *will* stop growing. This halt must come through either a decrease in the birthrate, or an increase in the death rate, or both. A corollary of this is that anyone or any organization opposing reduction in the birthrate is automatically an agent for eventually increasing the death rate.³

One nonstatistical example of the possible error of projecting the status quo into the future is the supposition in *Famine — 1975!* that surplus food produced in Canada, Australia, and Argentina will continue to be unavailable to impoverished nations in spite of the moral, political, and economic pressures of an approaching worldwide famine.

In conclusion, I would like to draw from a consideration of the world population problem three lessons that ought to be of particular concern to Seventh-day Adventists.

First, for some years the church has been preaching its eschatological doctrine, with emphasis on everything from the falling of the stars in the past century to the ecumenical movement in this century. However much these events may reinforce the faith of those who are already convinced that the present order of things is nearly

ended, it seems clear that the traditional arguments of the church along these lines have been less than universally effective in evangelism. Meanwhile, it has become obvious to many informed people, on strictly scientific grounds, that population pressures are soon going to put present institutions, if not the human race itself, in jeopardy. Perhaps not all of the signs of the times have been published.

Second, the church has long advocated vegetarianism as a principle of health. It has claimed that sounder bodies and brighter minds result from the vegetarian diet. Perhaps these arguments would be more forceful if the desirable effects claimed were more conspicuously in evidence. However, starvation is dramatic enough to be understood by even the staunchest skeptic, and certain remarks made by the Paddocks suggest that the church may soon have unsuspected support. The authors point out (while discussing another issue) that soon "America's own consumption of food will have to be curtailed or altered in order to maintain the same level of food aid. Curtailment of meat is an example. Every pound of grain-fed meat a person eats takes four to twelve pounds of feed grain" (p. 209).⁴ If the Paddocks' predictions of famine are correct, diet in the 1970's may become less a matter of "doctrine" and more a matter of subsistence for much of the world.

Third, the church has long emphasized medical work as "the right arm of the message," particularly as an evangelistic tool in primitive countries. In the minds of some, the humanitarianism of medicine and public health has taken on predominant importance. In a world where each life saved through medical means must soon be balanced by one lost through starvation, the morality of this sort of "humanitarianism" may be due for a reexamination. Perhaps the day is at hand when those trained in agriculture will have at least as much to contribute as those trained in public health or medicine. (The importance of agricultural training will not be a novel concept to those familiar with the writings of Ellen G. White.) A story related in *Famine — 1975!* (pp. 19-20) makes this point well.

One of the Paddocks tells of a friend who was a guest of the ruler of a semi-developed country. On her first visit she was sickened to see people along the rutted main street of the capital city "eagerly scooping up water out of the puddles, along with the horse manure and anything else that had happened to accumulate during the dry season," for drinking and cooking use. She asked the ruler why he permitted such conditions to exist when his country was prosperous enough to afford sanitary water facilities.

The ruler replied, "I know it is not pleasant to see people drinking from the ruts in the road, and we do have enough money at least to change things here in the city. But the problem is not that simple. Rather, I have visited other countries, especially India, to see what happens when a city gets pure drinking water. My decision was that when India learns how to feed all of the people who have been kept alive because of the good water, then I shall order a modern water system here." My friend was not convinced that this was right but she was intelligent enough to accept it as a thought-out policy.

The Paddocks are not plagued by any such uncertainty. They applaud the ruler's reluctance to initiate public health reforms as "a major factor why the population increase rate is not out of hand and why the nation . . . is relatively prosperous."

ADDENDUM. Since this review was written, Paul Ehrlich's book *The Population Bomb* (Sierra Club-Ballantine, New York, 1968, 223 pp., paper \$.95) has become available. In one chapter Ehrlich quotes *Famine — 1975!* extensively and devotedly, saying (p. 161) that it "may be remembered as one of the most important books of our age." Ehrlich's book does not seem to be just a reiteration of *Famine*, however, since he sounds some of the same warnings as do Rachel Carson (*Silent Spring*) and the conservationist Sierra Club concerning "the progressive deterioration of our environment [which] may cause more death and misery than any food-population gap" (p. 46). A cursory examination leaves me with the impression that, compared with the Paddocks' *Famine*, Ehrlich's *Bomb* is less statistical, more philosophical, and equally fervent.

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- 1 RICHARD T. GILL, *Evolution of Modern Economics* (Englewood Cliffs, New Jersey: Prentice-Hall, 1967).
- 2 DUDLEY KIRK, World Population: Hope Ahead, *Stanford Today* 8 (winter 1968).
- 3 PAUL R. EHRLICH, World Population: A Battle Lost? *Stanford Today* 2 (winter 1968).
- 4 It does not seem likely that all cattle production will become economically unfeasible, since certain land has always been (or has become, through overgrazing and resulting erosion) suitable only for cattle grazing.

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Problems in Darwinism

ARIEL A. ROTH

MATHEMATICAL CHALLENGES TO THE NEO-DARWINIAN INTERPRETATION OF EVOLUTION

Edited by Paul S. Moorhead and Martin M. Kaplan

Wistar Institute Press, Philadelphia, 1967 xii plus 140 pp illustrations paper \$5.00

Doctor Roth is chairman of the department of biology at Loma Linda University and a member of the Geoscience Research Institute at Andrews University, Berrien Springs, Michigan. He received the doctor of philosophy degree (1955) from the University of Michigan.

This report of a symposium held at the Wistar Institute of Anatomy and Biology, April 25 and 26, 1966, outlines some of the problems and questions that can be raised about the currently accepted mechanism for evolution (neo-Darwinian evolution). These problems are presented by the use of mathematical models based on the concepts of modern genetics. The formal presentations of the symposium are enriched by what appears to be a verbatim record of the often spirited discussions during and following each presentation.

The symposium was organized as a result of a "heated debate" that had developed between four mathematicians, Drs. Murray Eden, Marcel Schützenberger, Stanislaw

Ulam, and V. F. Weisskopf, and two biologists, Drs. Martin Kaplan and Hilary Koprowski, about problems of contemporary explanations for neo-Darwinian evolution. Fifty-two participants were present, including a few mathematicians and a number of biologists specializing in evolution or in fields related to evolution. Many of the leading authorities in these fields were among the participants.

The contents of the report suggest that none of the speakers, including the mathematicians posing the challenges, entertain any idea but the general theory of evolution as an explanation for the origin of living forms. Doctor Eden states that "what looks to us as teleology need not be," and Doctor Schützenberger denies an accusation that his "argument is simply that life must have come about by special creation." The challenges are directed at the inadequacies of the present mechanism proposed for evolution, not at the general conclusions of the theory. The fact that the symposium was held indicates willingness to recognize and study problems with the theory.

Doctor Eden, of the Massachusetts Institute of Technology, suggests that, on the basis of random variation, there has not been enough time, on a geological scale, to permit a significant degree of probability for evolution. One of the first problems he outlines has to do with obtaining the proper sequence of amino acids for a specific protein needed for a particular function in a living organism. It should be explained that the term "space" as used by Doctor Eden in the quotation below refers to the total number of different kinds of proteins possible within the defined limits. The problem is posed in the following terms:

Let us consider first the space of polypeptide chains of length 250 or less. We may think of words which are 250 letters long, constructed from an alphabet of 20 different letters. There are about 20^{250} such words or about 10^{325} . Let us compare this with certain other quantities, for example the number of protein molecules that could ever have existed on earth in organisms. Assume a biosphere of cells 1 cm. thick over the surface of the earth, a protein concentration in these cells of 30%, a density of 1, an age for life on earth of 10 billion years and an average lifetime of a protein molecule of 1 second. Of course all these quantities except density err very heavily toward the high side. The number of protein molecules that ever existed is by this computation about 10^{52} . Clearly the number of species of protein molecules is much smaller than this, say 10^{40} , but it would be immaterial to our purposes to try to make such a reduction. It is obvious that 10^{52} is such an infinitesimal number when compared with 10^{325} that we would be understating the case badly to say the space of protein molecules has barely been scratched. Yet this relatively small set of 10^{52} proteins contains within it all the useful proteins which have existed to date.

Doctor Eden emphasizes his conclusion by pointing out that existing proteins appear to have great similarities in amino acid residues and do not appear to have been drawn from a random assemblage of polypeptides.

One of the interesting findings of modern bacterial genetics is that, in a number of instances, several genes, which for our purposes we may interpret as ordered sequences of nucleotides producing ordered sequences of amino acids, are under the direction of an operon. The striking feature of some of these arrangements is that the genes are arranged in the order in which they will be utilized in a particular metabolic pathway. Thus, not only are the amino acids for a particular gene in order, but the genes are arranged in the order in which they will be utilized. This poses a further restriction on the random organization of genetic material. Doctor Eden considers

the probability of obtaining by transfer in the bacterium *Escherichia coli* two genes in the order in which they will be utilized. After outlining the assumptions and mechanisms necessary, Doctor Eden states:

Then to achieve a single ordered pair of genes on these assumptions would require something like 10^{36} genetic transfers. Sexual genetic transfer in *E. coli* takes about two hours and there are only about 10^{12} such periods dating from the beginning of life to now. Finally, genetic transfer between bacteria is a rare event. I have been unable to find estimates in the literature but I will assume that at any instant in time 10^{-6} of the bacterial population are "mating." Thus, one would need an average population of *E. coli* of 10^{30} (about 10^{13} tons or a layer on the surface of the earth two centimeters thick) if one expected to find a single ordered pair in 5 billion years.

It should be noted that sometimes more than two ordered pairs of genes are present. Doctor Eden does not discuss the probability of obtaining this more complex picture by random rearrangements. A further problem implying that the geological time scale is too short for neo-Darwinian evolution involves the changes necessary for the development of higher forms of life. As an example, the complement of man comprises about 10^9 nucleotides, or bits of information, which together comprise the hereditary dictum of an individual. If one assumes no nucleotides to start out with, an average rate of accrual of one meaningful nucleotide per year is necessary to develop a full complement of genetic information. Assuming randomness for the substitutions and additions, the development of a meaningful system seems highly improbable. In his preliminary working paper, also published in this book, Doctor Eden states:

If randomness is taken to mean that a uniform probability is assigned to each possible independent substitution or addition, the chance of emergence of man is like the probability of typing at random a meaningful library of one thousand volumes using the following procedure: Begin with a meaningful phrase, retype it with a few mistakes, make it longer by adding letters, and rearrange subsequences in the string of letters; then examine the result to see if the new phrase is meaningful. Repeat this process until the library is complete.

It does not help the problem very much if one starts with a simple form of life instead of nothing. For instance, a bacterium having 10^7 nucleotides represents only one percent of the 10^9 nucleotides needed for man.

Doctor Schützenberger, of the University of Paris, has directed a challenge at the gap between the genetic material of an organism, which is viewed as a blueprint, and the physicochemical makeup, which reacts with the environment. Both systems represent highly organized structures. When one follows a neo-Darwinian model, the question arises as to how selection pressure on the organism can effect organized changes in the genetic system. Using a sequence of letters to represent genetic material, Doctor Schützenberger concludes:

We believe that it is not conceivable. In fact if we try to simulate such a situation by making changes randomly at the typographic level (by letters or by blocks, the size of the unit does not really matter), on computer programs we find that we have no chance (i.e., less than $1/10^{1000}$) even to see what the modified program would compute: it just jams.

Doctor Schützenberger concludes that there is a considerable gap in the neo-Darwinian theory of evolution, and he does not believe that this gap can be bridged "in the current conception of biology."

The arguments presented by the mathematicians do not go unchallenged by the biologists. A number of mechanisms are not considered in the models presented by the mathematicians. Examples are: restriction of space to permit altered probability, block substitutions, epigenetic mechanisms (causal study of the way the genotype space is translated into the phenotype), multiple changes, meaningless changes, etc. These concepts are either not applicable to the challenges posed or cannot be defined in terminology sufficiently precise to permit their incorporation into mathematical models. The problems faced by some of the participants can be noted in comments, such as, "We are comforted in knowing that evolution has occurred" and "We are not interested in your computers!"

A number of presentations are made on subjects related to the main theme of the symposium. One deals with principles to be followed in the mathematical formulation of rates of evolution and another with mathematical optimization in natural selection.

Several of the biologists also present topics pertinent to the symposium. Dr. Ernst Mayr, of Harvard University, discusses "Evolutionary Challenges to the Mathematical Interpretation of Evolution." He gives some examples of what he considers rapid evolutionary changes, including the well known case of industrial melanism. Also he emphasizes the importance of small isolated populations as a means of rapid evolution and the unpredictable nature of a combination of factors. Other presentations by biologists include discussions of the problems of vicarious selection by interaction within a society of organisms, and the effect of the order of environmental changes on the genetics of a population of organisms. None of these topics provides answers to the precise challenges posed above by the mathematicians.

A number of times during the discussion, reference is made to the statement by Professor Karl Popper that the real inadequacy of evolution is that it is unfalsifiable. In other words, the postulated changes of evolution are so broad in their scope that they can be used to explain anything if the variables are changed; and since evolution can explain anything, one cannot suggest a way of disproving the theory. Not all of the participants at the symposium agree with this criticism of evolution.

An interesting incident that illustrates the ease with which one can adjust his thinking to various desired patterns of thought is reported by one of the participants, Dr. John C. Fentress, of the University of Rochester. At one time he was testing the effect of an overhead moving object on the activities of two species of field mice. He found that one species that lived in the woods would freeze in the presence of an object moving overhead, whereas a species living in the field would run away. Not being a zoologist, he went to see some of his zoologist friends for an explanation — except, for fun, he reversed the data, asking them why a mouse in the field should freeze and one in the woods should run. Doctor Fentress states, "I wish I had recorded their explanations, because they were very impressive indeed."

Reading this book is a rewarding experience because it gives insight and understanding to the struggles involved in the search for truth. To follow the arguments demands some basic background in genetics as well as in mathematics. Unfortunately the mathematicians did not elaborate on most of their calculations in the presentations made. Although this omission makes the book readable for a person without background in mathematics, one with such training can be somewhat unsatisfied.

As one considers the highly significant improbabilities of the neo-Darwinian concept of evolution, one is constrained to consider other possible solutions, including solutions beyond the generally accepted but limited confines of formal science. Once one permits possibilities beyond these confines, the challenges posed in this volume can become strong support for an alternate concept, that of creation, and, in the words of Doctor Eden, "what looks like teleology" might very well be interpreted, under a broader system of possibilities, as teleology.

A New Role for Eschatology

HEROLD WEISS

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THEOLOGY OF HOPE

By Jürgen Moltmann; translated by James W. Leitch
Harper and Row, New York, 1967 342 pp \$8.50

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When the history of twentieth-century theology is written from the vantage point that only time can give, it will probably characterize this period as the time when eschatology came into its own.

Rationalism and romanticism had all but given the death blow to eschatology, especially in its apocalyptic form. This situation, however, was altered by the radical studies of Johannes Weiss, who gave to the concept of the kingdom of God its proper eschatological meaning. Then Albert Schweitzer conducted a postmortem examination of the vast theological effort (called "the quest of the historical Jesus") that had overlooked the basic eschatological thrust of Jesus' life and message because it failed to take His apocalyptic background seriously. Since Weiss and Schweitzer, eschatology has taken a predominant position in Biblical studies.

Opinion has polarized between those who understand the eschatological message of the New Testament to refer to a future consummation of history and those who deny the legitimacy of any transcendental expectations for the future. Among the latter there are those who view eschatology as a *summum bonum* actualized in the Incarnation (e.g., C. H. Dodd) and those who consider that eschatology has no chronological reference at all but transcends time and partakes of eternity (e.g., Rudolf Bultmann). The existentialists assign only relative theological value to history, whereas those who see eschatology as having to do fundamentally with the future (e.g., Oscar Cullmann, W. Kümmel) tie theology closely to history.

Jürgen Moltmann's *Theology of Hope* represents an attempt to take seriously the basic polarities of futuristic and existentialistic eschatology and yet find a third position beyond them. He defines the polar alternatives as, on the one hand, "the reflective philosophy of transcendental subjectivity for which history is reduced to the 'mechanism' of a closed system of causes and effects," and, on the other hand, "a theology of

saving history, for which . . . 'sacred history' has not yet been subjected to critical historical thinking." These positions are judged as claiming, respectively, too little and too much for the theological values of history. Moltmann wishes, therefore, to make these set estimates of history malleable once more in order to be able to reconcile them and to point to them as the way to the future.

By marrying modern historiography, theology has become not only dependent on the value assigned to history. It has become also aware of the anguish caused by the attempt to talk about God in a language that claims to be subject to the scientific principle of empirical verification. Therefore it is necessary for anyone breaking new theological ground first to clear away the linguistic debris left by those who harvested the field before.

Unlike Tillich, Moltmann does not attempt to make a completely new set of tools with which to work; rather, like Barth, he settles for the traditional vocabulary of theology but gives to the traditional words new meanings. The perspective from which Moltmann derives these new meanings is his understanding that according to the Biblical view of reality the basic theological principle is God's *promise*. Therefore, eschatology, which is the verbalizing of how the promise is to be fulfilled, should not be the last chapter (usually short and vague) of theological work; it should be the basis upon which all theology stands. Eschatology must inform all other doctrines. It is not the case, then, that on the basis of a doctrine of revelation one is able to talk about eschatology; on the contrary, it is on the basis of eschatology that one may formulate a doctrine of revelation and in turn all other doctrines.

God is to be understood, Moltmann tells us, as the One who has promised, whose essence is "not his absoluteness as such, but the faithfulness with which he reveals and identifies himself in the history of his promise as 'the same'" (p. 143). The trouble with much recent theological discussion is that it has operated in terms of a debate between "revelation theology" and "natural theology" that sets up the God of revelation in opposition to the gods of nature.

Once the alternatives are drawn on these lines, the whole problem of theology becomes the problem of the knowledge of God. But by making eschatology, rather than revelation, the basis of theology, Moltmann sets up "the God of promise" in opposition to "the gods of the epiphanies." That is, the God of the Bible does not confront man in order to reveal *Himself*, but in order to give man a promise — to give him hope for the future. If in the word of promise God reveals something about Himself, it is that He exists in the future. The Holy Spirit, the agent of God to accomplish His work in man, is identified as "the power of futurity." God is understood primarily as neither intraworldly nor extraworldly, neither in us nor over us, but *in front of us* as the God of hope.

In order to talk meaningfully about the God of hope who reveals Himself from the future, Moltmann recognizes, one needs first to criticize Kant's metaphysics of transcendence and his concept of reality. Accordingly reality is understood not as that which stands in an eternal present and shines forth in special moments of disclosure, but rather as a process of discovery. In a theology of hope, theological concepts do not function as "judgments which nail reality down to what is, but anticipations which show reality its prospects and its future possibilities" (pp. 35-36). Thus "the condi-

tions of possible experience which were understood by Kant in a transcendental sense must be understood instead as historically flowing conditions. It is not that time at a standstill is the category of history, but the history which is experienced from the eschatological future of the truth is the category of time" (p. 50). In other words, it is not a transcendental concept of time that gives us the measure of history; rather, the futurity of God is what makes us historical beings and thus allows us to understand time.

Basing the possibility of human experience on the flowing conditions of history rather than on transcendental reality would seem to place Moltmann within the tradition of "progressive revelation" or "salvation history." But while he gives this approach credit for its "underlying polemic against an abstract materialism and an unhistoric historicism" (p. 72), he maintains that it identifies revelation too closely with history and so fails to unmask the godless world and all its history before the cross. For it makes moments in history the epiphanies of God, rather than setting up God as standing over against history. "The theology of saving history does indeed perceive the process of promises and events, but not the contradiction in which the promise stands to reality" (p. 226).

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Stated in terms of alternatives, "the decisive question is, whether 'revelation' is the illuminating interpretation of an existing, obscure life process in history, or whether revelation itself originates, drives, and directs the process of history" (p. 75). Choosing the second alternative, Moltmann declares that "revelation . . . does not acquire its character of progressiveness from a reality foreign to it, . . . but itself creates the progress in its process of contradiction to the godless reality of sin and death. It does not become progressive by 'entering into' human history; but by dint of promise, hope, and criticism it makes the reality of man historic and progressive" (p. 226). In other words, the waiting God is the One who by means of His promise pushes man forward toward Himself and thus creates history.

Now the concrete word of promise that gives to man his future and thus his reality is the resurrection of Jesus. The revelation of the God who promises consists in the appearances of the risen Lord. This means that "the 'vital point' for a Christian view of revelation . . . lies . . . in the fact that in all the qualitative difference of cross and resurrection Jesus is the same. . . . It is that that is the ground of hope which carries faith through the trials of the godforsaken world and of death." Thus, the concept of revelation is primarily an eschatological rather than an epistemological one. Revelation is "the ground of the promise of the still outstanding future of Jesus Christ." It is not "the illumination of the existing reality of man and the world, but has here constitutively and basically the character of promise" (p. 85).

To establish theology on the concept of promise, and to make the resurrection and subsequent appearances of Jesus the ground of promise, is not only to express a fundamental theme of the Old Testament and the very heart of the New Testament. It is also Moltmann's way of questioning the whole modern conception of reality, which is derived from the philosophy of Kant.

The word of promise that is present in the death and resurrection of Jesus effectively calls all reality into question and suggests alternatives to the modern, post-Kantian concept of science, to the critical concept of reason, and to the monopoly of

history as the only valid method of treating reality. Moltmann considers that modern theology was driven to its present impasse, best epitomized in "the death of God," by its own adoption of Kant's critical method. He insists, therefore, that what is to be looked at critically is not God, or ourselves, who are a portion of reality. Rather, talk about God must call the whole of reality into question, which is precisely what the death and the resurrection of Jesus accomplish.

In order to make clear that he is indeed questioning the modern understanding of reality as a whole, Moltmann speaks of "the eschatological future of the truth." By this he means to indicate that truth really exists only within an eschatological context — that is, from the perspective of the future that is expected on the basis of past promises.

The task of theology, therefore, is "to expose the profound irrationality of the rational cosmos of the modern, technico-scientific world" (p. 179), which has been "factualized and institutionalized" in such a way that it excludes the element of contingency (p. 93). This has left modern man bereft of a sense of "the historic," a sense that is crucial for theology, because the eschatologically new can be understood only in a world in which there is room for contingency. This does not mean that the task of theology is to reintroduce "chance" into the modern consciousness; the need is "to give this world itself a place in the process that begins with the promise and is kept going by hope" (p. 94). And this requires the formulation of a new understanding of reality.

Moltmann's proposed new understanding of reality based on the resurrection of Jesus depends on the fact that in his history and in his future Jesus is the same. This fact is the ground of history, because it is the ground of hope. "The stage for what can be experienced, remembered, and expected as 'history' is set and fitted, revealed and fashioned by promise" (p. 106). It is not what is experienced in history that makes faith and hope; it is faith and hope, sustained by promise, that make possible the experiencing of history as such.

In other words, history is informed from the future. According to this way of relating history and eschatology, history does not swallow up eschatology (as in Schweitzer's psychological explanation of the origin of eschatology), nor does eschatology swallow up history (as in Bultmann's existentialist interpretation). Instead, "the promise which announces the *eschaton*, and in which the *eschaton* announces itself, is the motive power, the mainspring, the driving force and the torture of history" (p. 165).

In the New Testament there is no faith that does not start with the resurrection of Jesus. Moltmann is correct, therefore, in pointing out that, when the resurrection is understood in historical, existentialist, or utopian terms, the idea of God is not finally necessary. Within any of these frameworks, God's participation in the resurrection may be optional. But when God is understood as the God of the resurrection of the dead, faith and hope on the basis of His promise become both possible and necessary "in an objectively real sense" (p. 168).

Thus the only framework in which the resurrection of Jesus may be truly understood is an eschatological one. The resurrection is "historic" not because it took place in history, but because it points to the future in which we can and must live. To affirm

the resurrection of the body is to call into question the value of history as a way of grasping reality. The resurrection cannot be classified among the events of the world. Time does not mark the day of resurrection; rather, it is the future of Christ, revealed in His own resurrection, that gives time existence.

History, "the reality instituted by the promise" (p. 224), is the framework wherein the disciples may carry out their mission to the world. The "historic" character of reality is now experienced in the contradiction between the unrealized future of the promise contained in the resurrection and the reality of a world in which "God is dead," or at least absent. In this world, Christian faith must be meaningful and relevant — meaningful in an eschatological context and relevant in a political context.

Therefore the mission of the church is not merely the propagation of faith and hope but also the "historic," that is to say promised, transformation of life (p. 330). To affirm the resurrection of Christ, for Moltmann, is not to involve men and their future in a cosmological, otherworldly utopia, but to affirm that in man's future the promised righteousness of the kingdom of God is to be fulfilled. This eschatological theology does not affirm that God is somewhere in the beyond, but that He is coming, and that as the Coming One He is now present. And the irrefutable argument for the reality of the Coming God is that men have the historic and eschatological possibilities for mission (p. 285).

Adventists who wish reassurance for their otherworldly eschatology will be disappointed by Moltmann's theology of hope. But to my knowledge no one has made a systematic attempt to take seriously the eschatology of the first Christians with greater discipline than has Moltmann. Almost everyone who has traveled this road has been either swallowed by the spirit of modernity or caught by the world view of the first century. Aware of these dangers, Moltmann has made a new attempt, and it is to his credit to have succeeded in establishing a new route. One may disagree with his judgments (for example, whether God establishes His covenant with men on the basis of their response to His promise or in order to give them the promise) (pp. 120-121). One may challenge his identification of the Biblical God with the God of the theology of hope. One may have doubts as to whether one wishes to go the way he proposes. But one cannot deny that Moltmann's way "to do" theology merits serious consideration.

This book is made valuable also by the facility with which Moltmann is able to traverse rather formidable theological terrain. He has read and understood well, and he can gratefully stand on other people's shoulders. Beyond this, he has attained additional insights through a remarkable ability to synthesize, not in a popularizing but in a systematic way. When he criticizes the work of others, he does so by opening up its essential character. But the book is much more than a "history of recent research" type of study (although it would be well worth its price and our time if it offered only its incisive account of what has been going on lately at the theological front); it reveals the exhilaration of a creative theological mind at work.

Here is a Christian in earnest about the Biblical message, struggling valiantly to make this message relevant to his contemporaries — one who in the face of modern currents within Christianity still wishes to affirm that in order to be a Christian one must stand on the Bible.

Wall of Separation

KENNETH D. WALTERS

DATELINE SUNDAY, U. S. A.

By Warren L. Johns

Pacific Press Publishing Association, Mountain View, California, 1967 252 pp Illustrations cloth \$3.95 paper \$1.95

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Sunday laws have always been under attack by both the religious and the unreligious. Complaints have been generated by everything from feelings of religious persecution to annoyance at being unable to buy a Sunday afternoon ice-cream cone. In *Dateline Sunday, U.S.A.*, Warren L. Johns tells (the cover announces) "the story of three and a half centuries of Sunday-law battles in America."

As many readers will know, Johns, a lawyer, is the religious liberty secretary for the Pacific Union Conference of Seventh-day Adventists. His familiarity with problems of Sunday laws and his ability to write lucid English are marks of his professional skill. He has given the general reader a refreshing and entertaining book. It is refreshing because it exceeds the norm of much that is written and spoken about religious liberty. It is entertaining because it traces in sparkling detail the absurdities and incongruities of America's Sunday laws. *Dateline Sunday* is happily devoid of the cumbersome prose that too often characterizes lawyers' literary attempts. But the popular style of the book has not been achieved at the expense of serious scholarship.

No special alertness is necessary to recognize that Sunday laws have not kept pace with America's social structure. Some states still prohibit such activities as "bearbaiting" or "rope dancing" and make exceptions for "ferrymen" and "stages." Johns has compiled an impressive array of state statutes that are patently absurd. He is at his best as he chides lawmakers for the foolish distinctions made by Sunday laws and points up the enforcement problems facing the police.

Sunday "crimes" are by their nature limited to a twenty-four hour period. In some cases arbitrary time slots within that period, such as after 2 p.m. and before 6 p.m., compound the confusion. The harrassed enforcer had better be armed with a stopwatch. Next he has to check the geographical boundary. Is this a county which exercised its local option to operate outside some portion of the Sunday-law scheme? Or is this a city with a population level exempted by the legislature from the operation of the law? The police officer had better have his map, his compass, and a recent census report.

But before he makes an arrest, he also should check through the forbidden list and cull out the "essential" from the "nonessential." Selling a car might be forbidden, but selling an auto accessory could be all right. A pair of tennis shoes would be a valid purchase as "sporting equipment" but might be banned if classed as "wearing apparel."¹

Since it is hard to find a period in our history without a Sunday controversy in one state or another, Johns finds no shortage of subject matter.

One is impressed throughout the book by the ready, often eloquent, voice of Seventh-day Adventists, raised in protest against Sunday laws throughout the last hundred years of American history. In the legal tangles arising from Sunday problems, Seventh-day Adventists have frequently been progressive agents of law reform and have even had the distinction of making some important constitutional law.

We Adventists see ourselves as perhaps more knowledgeable about matters of religious liberty than the general public is. Our pride may be justifiable. We publish a magazine devoted to religious freedom. We contribute to an annual offering to promote this program. No small number of ministers serve as watchdogs over legislatures constantly being tempted to enact or strengthen Sunday laws.

Our general interest and concern for religious liberty, however, is not always matched by a profound understanding of the specific issues. Too often our religious liberty literature creates the impression, undoubtedly unintentionally, that freedom of religion is a simple idea. Public officials are pictured as being either for religious liberty or against it. We see the issues in black and white terms. Such an oversimplified perspective often belies our actual ignorance of the complexity of church-state problems.

A case in point is Johns' concluding statement that until blue laws are "erased from state statute books . . . something less than absolute religious freedom will remain."² As reasonable as that sounds, does Johns really mean "absolute religious freedom"? Surely there are some activities that should not be allowed even if they are done in the name of religion. The distinctions of some religious groups are perhaps more eccentric than worshiping on a "different" day. Should freedom of religion allow citizens to take narcotics if this is part of their religious ritual?³ Should freedom of religion have permitted Mormons to continue plural marriages because their religion encouraged this practice?⁴ Even infanticide has been practiced by some small Eastern religions; probably all would agree that freedom of religion should not extend this far. But the question remains, how far *should* it extend? The answer is presumably somewhere short of absolute religious freedom.

All have heard of the "wall of separation" between church and state. When a question arises about the propriety of a proposed government policy that in some way affects religion, many immediately ask if the "wall" would not be "breached" by this action. (Johns states, "Blue laws have pierced the wall of separation."⁵) This widely espoused church-state philosophy could perhaps be referred to as the "antiseptic theory of church and state." Church and state must never "touch" each other, or debilitating contamination will inevitably result. Each must be kept in its own compartment, antiseptically separated by "an impenetrable wall." The notion is that any policy "piercing" or "breaching" the wall must be unconstitutional. The analysis sounds very simple.

Though the antiseptic theory admittedly simplifies the analysis of church-state problems, unfortunately it is complete nonsense. Mr. Justice Reed of the United States Supreme Court once warned against deciding church-state dilemmas by simple reference to a wall of separation, saying that "a rule of law should not be drawn from a figure of speech."⁶ Some have argued that tax exemptions for religious institutions, tax deductions for charitable contributions, exemptions from military service

for seminarians and for chaplains in prisons and military installations, all breach the wall of separation, since all constitute direct or indirect aid to religion. Presumably most Adventists would agree it is fortunate that those who have so argued have not persuaded the Supreme Court. These proponents have made the distinct contribution, however, of showing us how the phrase "wall of separation" is amenable to differing interpretations. The wall of separation is not a kind of judicial litmus paper that automatically indicates the solution to church-state constitutional dilemmas.

In point of fact, this phrase was not set out in the Constitution or the Bill of Rights, but taken from a letter written in 1802 by Thomas Jefferson and later read into the Constitution by the Supreme Court. Competent historians differ as to the intentions of the founding fathers in writing the First Amendment and choosing its specific words.⁷ Since evidence as to their intent is open to dispute, we can only look for the law to later interpretations by the Court itself. When we do, we find that the Court has given to the no-establishment clause of the First Amendment a rather broad and inclusive meaning, embracing church-state separation in a fairly strict sense. This is still the predominant view on the Court today. There are, nevertheless, many (myself included) who feel that the Court should liberalize its interpretation and that additional kinds of financial aid could properly go from government to church schools without impairing the religious teachings and practices of the church.

One disappointment in *Dateline Sunday* is the author's failure to spell out in any detail his overall church-state philosophy. One cannot intelligently assess the wisdom and constitutionality of Sunday laws apart from the whole galaxy of church-state relationships that make up the great continuing church-state controversy in America today. Sunday laws constitute but one challenge to religious freedom. Warren Johns is clearly capable of telling us more about the broad aspects of religious liberty. One hopes that he will write a book on these larger issues at some later time.

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- 2 *Ibid.*
- 3 *People versus Woody, California Reports, Second Series* 61, 716 (1964); *Pacific Reporter, Second Series* 394, 813 (1964).
- 4 *Reynolds versus United States, United States Supreme Court Report* 98, 145 (1878).
- 5 JOHNS, *op. cit.*, p. 232.
- 6 *McCollum versus Board of Education, United States Supreme Court Report* 333, 203, 247 (1948).
- 7 See, for example, MARK DE WOLFE HOWE, *The Garden and the Wilderness: Religion and Government in American Constitutional History* (Chicago: University of Chicago Press, 1965).

The Earth As It Is

DONALD E. HALL

GEOLOGY ILLUSTRATED

By John S. Shelton

W. H. Freeman and Company, San Francisco, 1966 446 pp 382 illustrations \$10.00

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Shelton's book, "addressed to thoughtful and observant people who enjoy the outdoors," is serious, but it is simple enough to be appreciated by a wide range of readers. It is easy and enjoyable to peruse; yet spontaneously one will want to study it slowly in many places to absorb its full impact.

The book owes much of its digestibility to the splendid illustrations that occupy nearly half of its total space. Particularly stunning are the examples of medial moraines on the Greenland icecap outflow and of zigzag ridges in the Pennsylvania Appalachians. The author is an aerial photographer as well as a geologist, and he uses many pictures he himself has taken specifically in order to demonstrate the point at hand.

Shelton is good about presenting the physical evidence, independently of the theories, and encouraging the reader to draw his own conclusions.

The discussion of the Spokane Flood and its relation to glaciation seems particularly enlightening. Perhaps this portion appeals to me because I have seen this part of the country for the first time only recently and the local topography seems new and strange. The "channeled scablands" that have been eroded across the Columbia River basalt flows must represent one of the most violent floods that has ever taken place on the earth. The multiple channels separating and reconnecting in braided flow, some twenty miles wide; the twenty-foot boulders moved fifty miles; the "ripple marks" that are hundreds of feet from crest to crest — all indicate a rate of flow far greater than anything seen in modern times. This flood must have occurred sufficiently later than the lava flows so that a blanket of fine windblown deposits (over a hundred feet thick in places) could be laid in the intervening time. Also, there is a natural explanation for this flood in the emptying of glacial Lake Missoula, which was formed when the Pleistocene ice advance blocked the Clark Fork River.

The Spokane Flood discussion illustrates a point that is often forgotten by those who criticize the inadequacies of what they think is uniformitarianism. The principle does *not* say that all things have always happened in the same way and at the same rate as at the present time. Rather, it says that the same basic physical laws have always applied; and the operation of these laws will actually bring about catastrophic events from time to time. Thus the knowledgeable uniformitarian by no means rejects catastrophism; he only sees it as arising from natural causes rather than from supernatural intervention.

Another point that stands out in a consideration of the Spokane Flood is the contrast between it and the Grand Canyon of the Colorado River. The latter needs to have been cut slowly in order to have its present form. Those who would attribute

the Grand Canyon to the receding waters of a Noachian Flood must explain how a sufficient amount of water to create the canyon could pass through in a very short time and yet be confined to a single channel. Instead, it ought to have spread out over the surrounding plateaus in braided flow.

My overall reaction to Shelton's book is one of delight, and I am emboldened in my enthusiasm by noting the favorable reviews that have appeared in *Science*, *Geotimes*, and *Scientific American*. *Geology Illustrated* should be a useful book to all who are interested in studying for themselves the important evidence preserved in the earth's surface about its history.

CHALLENGE

MOLLEURUS COUPERUS

Few if any periods in human history can equal ours in the magnitude of change to which we are subjected nor in the degree of tension and chaos that are interwoven. These disjunctions and alterations are evident in the political, economic, and ideological struggles that tear at the very roots of man's existence. Science, technology, philosophy, and religion, all, are involved in our feverish striving for change.

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Increasing fear of man's inability to solve the almost overwhelming complex problems of our age generates progressive doubt and finally abandonment of what seemed, until very recently, securely established bases for judgment, faith, and action.

A bewildered and disillusioned generation now gropes for answers that may still save mankind from both utter meaninglessness and doom. Everywhere there seems to be spurning of old patterns of thinking and embracing of new. The participation of the younger generation in this unprecedented passion for rejection of the old and quest of the new is particularly evident in the areas of authority, morals, and personal involvement. Confrontation with political, judicial, cultural, and religious traditions, thus, is unavoidable.

Even though new views and solutions often may be futile and unrewarding and may end in blind alleys, striving for change and improvement has ever been the way of man's growth. The questing quality of the human spirit is evident in the bitter struggles for truth, and for the freedom to express it, that are part of the history of every area of human knowledge and endeavor. And when this will to search is suppressed by any means whatever, stagnation, impoverishment, spiritual enslavement, and a steady darkening of mental horizons follow, until at last revolt is the only course left for those whose spirits remain free. The agonizing struggle now going on within the Roman Catholic Church provides an example.

It is in this search for new visions and better answers that we feel impelled to participate. *SPECTRUM* is dedicated, from a Christian viewpoint, to probing the questions that trouble the minds of modern man and to

examining the illnesses that sicken our society. We are much concerned about God's relation to the human situation, about what the truth is about God, and about how to speak the truth in language that is fresh and pertinent to today.

Our discussion of the important issues of our time ought to be frank, sincere, tolerant, and charitable. As much as we are able, we hope to look without prejudice at all sides of a subject, to evaluate the merits of diverse views, to be critical only if we can do so constructively, and to stimulate discursive interchange among readers. In all this, our purpose is to promote growth and development.

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We hope that many able men and women from all disciplines will provide contributions that are based on sound scholarship, that result from critical and honest investigation, and that spring from deep Christian concern for all mankind, including Seventh-day Adventists.

Notes on Contributors

GODFREY T. ANDERSON (*The Christian Scholar and the Church*) earned the master of arts degree from Northwestern University and the doctor of philosophy degree (1944) in history from the University of Chicago. He has been academic dean and history teacher at Atlantic Union College, South Lancaster, Massachusetts, and president of La Sierra College, Riverside, California. In 1954 he was named president of Loma Linda University, an office he held until 1967. He now continues with the university as professor of history.

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DUANE T. GISH (*Has Man Created Life?*) is a graduate of the University of California at Los Angeles and of the University of California at Berkeley, where he received the doctor of philosophy degree (1953) with a major in biochemistry. Doctor Gish was a member of the group (headed by Dr. Vincent du Vigneaud, Nobel Prize winner in chemistry) that synthesized one of the hormones from the pituitary gland, and a member of the group (led by Nobel Prize winner in medicine Dr. Wendell N. Stanley) that elucidated the chemical structure of the protein of tobacco mosaic virus. In 1960 Doctor Gish joined the research staff at the Upjohn Company, Kalamazoo, Michigan.

CHARLES B. HIRSCH (*Whither Adventist Higher Education?*) is secretary of the Department of Education of the General Conference of Seventh-day Adventists, an appointment he has held since 1966. Previously he had taught history at Columbia Union College, Takoma Park, Maryland, and in 1959 he was named president of the college. Before moving to his present position, Doctor Hirsch also served as vice president for academic administration at Andrews University, Berrien Springs, Michigan. He earned the doctor of philosophy degree from Indiana University.

ALONZO L. BAKER (*Should Adventists Take Federal Aid for Their Schools?*) took his undergraduate work at Pacific Union College and earned the doctor of philosophy degree in political science from the University of Southern California. From 1948 to 1964 Doctor Baker was professor of political science and international relations at the University of the Pacific, Stockton, California, and he is now professor of political science at Loma Linda University. His interest in international affairs has taken him to nearly every country on the globe and he is a frequent lecturer in contemporary history both inside and outside the United States.

CHUCK SCRIVEN (*The Case for Selective Nonpacifism*) is a ministerial intern at Lewiston, Idaho. He was graduated with the bachelor of arts degree from Walla Walla College and received the bachelor of divinity degree from Andrews University. One of his fields of special interest is Christian ethics.

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lege and the master of arts and doctor of philosophy degrees from Duke University. Doctor McAdams is assistant professor of history at Andrews University, Berrien Springs, Michigan.

EMANUEL G. FENZ (*The Case for Conscientious Objection*) was born in Florence, Italy. He earned the doctor of philosophy degree (1967) from the University of Colorado, where he was also a teaching associate in Italian. He has taught history at Purdue University, Lafayette, Indiana, and at present is engaged in studies of minority groups at the University of Michigan, Ann Arbor.

BEN JACQUES, the author of the poem *Into the Stone Mountain*, was born in Tanganyika, East Africa. He completed three years of an English major at Atlantic Union College and is now attending California State College at San Bernardino, California. He has been writing poetry since he was in high school.

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DAVID POST, whose *Forms in Nature* (1, 2, 3) appear in this issue, is a graduate, with a major in art, of Atlantic Union College in Massachusetts.

HERSCHEL HUGHES, the creator of *Snow Mountain*, is assistant professor of art at Loma Linda University. His bachelor of arts degree in art was earned at Pacific Union College and his master of arts in painting at Fresno State College. He has had numerous one-man exhibits and has lectured to art groups in the Riverside and San Bernardino area. He was elected president of the Riverside Fine Arts Guild in 1966.

PETER ERHARD, the artist who created *Novum*, attended Andrews University for a time and then earned the bachelor of fine arts degree at the School of the Art Institute of Chicago. He is now taking graduate work in visual communication in the area of design in photography at the Illinois Institute of Technology. He has been interested in the visual arts since early childhood.

BOOK REVIEW EDITOR

BRUCE E. TRUMBO, one of the consulting editors of SPECTRUM, will become, in addition, book review editor beginning with the spring issue. Doctor Trumbo, who has contributed a review for this issue, is associate professor of statistics and mathematics at California State College at Hayward. He requests that book reviews be sent direct to the SPECTRUM office, Box 866, Loma Linda, California.





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GRADUATE SCHOOL

March 17, 1969

Dear Friends:

There is, in my judgment, a need for SPECTRUM, which has just made its appearance as a quarterly journal of the Association of Adventist Forums. This magazine will give Adventists and other Christians with similar interests and concerns an opportunity to express their views and to share their knowledge and insights. SPECTRUM will be of special interest to the educated Adventist layman who is a serious student of the Word of God and the heritage of the Church.

A magazine of this type will enable its editors to discuss with Christian candor topics that are relevant to our times and of particular interest to Adventists and other committed Christians. There is no other journal at the present time, published with the cooperation of the Church, that has these objectives.

The editorial staff intends to maintain a high level of quality, and to deal with some of the questions that perhaps do not appropriately merit coverage in any other denominational journal. They also plan to maintain a substantial and constructive emphasis throughout. Behind this effort lies the sincere desire of the members of the Association to make a contribution to the Church to which they are, above all else, committed and devoted.

I trust that SPECTRUM will have a long and distinguished career and that its circulation will be a benefit and blessing to many.

Very sincerely yours,

Godfrey T. Anderson
Professor of History

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