

## The Reconciliation of Faith and Science: Henry Eyring's Achievement

Few men in Mormon history have exemplified the unity of science and religion better than Henry Eyring. A devout student of science for over sixty years, a brilliant chemist who was internationally renowned, and at the same time a faithful believer, he exemplified the crucial possibility of being in the world but not of it for three decades. Despite his towering scientific achievements, he may yet be remembered in Mormon history as a model for LDS scientists — and for the well-educated Mormon generally — who wanted to stay happily and productively in the Church's mainstream.

As Edward L. Kimball has noted in his biographical paper, "Harvey Fletcher and Henry Eyring: Mormon Scientists" (this issue), this ability began with a strong grounding in fundamental beliefs in committed Mormon homes, continued with a personality that accepted these tenets, invested primary energy in service and professionalism, and concluded with the fortunate circumstance that the Church could and did use this combination of personal and professional skills in prominent and well-rewarded places.

Where Henry Eyring was concerned, however, the ability to keep a foot firmly planted in both the scientific and the religious camps was buttressed by a determination to keep both camps equally legitimate, an important attitude at a time when science was seen as the enemy of faith in some quarters and when the possibility of withdrawal into primitive fundamentalism at least showed itself on the horizon.

In 1946, fresh from his triumphs at Princeton, Eyring came to the University of Utah as dean of the Graduate School. He brought remarkable strength to the university, and as one colleague put it, "was the single most important person in transforming Utah into a research institution."<sup>1</sup>

When Eyring moved to Utah in 1946, he was virtually unknown among members of the Mormon Church except for family, some friends, and a few Mormon scientists. Within three years of his coming, he had won the respect and admiration of thousands within the Church. Within months, he had been appointed a member of the Sunday School general board, received such honors

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as the Research Corporation Award in 1948, gave an increasing number of fireside talks to various groups, and was personally charismatic. In February 1948, the Church's official organ, the *Improvement Era*, ran a two-page biography by associate editor Marba Josephson and his address, "Science and Faith," was broadcast nationwide on CBS's "Church of the Air" program.<sup>2</sup> In that address, he affirmed, as he would thousands of times, that for him there was no "difficulty in reconciling the principles of true science with the principles of true religion."

Eyring's arrival in Utah preceded a crisis in the relationship of Mormonism to modern science. Earlier, Mormonism had not concerned itself with some of the fundamental questions like fixity or immutability of species and the contention that life is dependent on a vital force which is immaterial and divine, organic evolution, and the age of the earth which other Christian religions had defined as conflicts between science and religion. When authoritative pronouncements on organic evolution or the age of the earth had been made, Mormonism generally supported science.<sup>3</sup> Beginning in 1953, that alliance with science was eroded by President Joseph Fielding Smith, president of the Quorum of the Twelve. President Smith's "anti-science" views were in partial reaction to what was perceived as an unsettling willingness on the part of some of the Church educational system's teachers to teach every "new up-to-date ultra modern" viewpoint in its religious instruction classes. President Smith, recognized as the Church's most eminent scripturalist, was further perturbed because of his literalism in reading the scriptures.<sup>4</sup> Speaking on "The Origin of Man," to BYU students on April 22, President Smith attacked not only evolutionary theory but the scientific mindset. By mid-1954, he had produced a full-length book, *Man, His Origin and Destiny*, which as one author recently observed, marked "a milestone. For the first time in Mormon history, and capping a full half-century of publication of Mormon books on science and religion, Mormonism had a book that was openly antagonistic to much of science."<sup>5</sup>

In this book, President Smith used all four standard works as the basis for his arguments and continued his literal interpretation. In particular, he asserted that the temporal existence of this earth was very short, only a few thousand years; that there was no human life on this earth prior to Adam; that the so-called pre-Adamite finds of science were frauds or fakes; and that the theory of evolution espoused by biologists and geologists was irreconcilably opposed with religious views.<sup>6</sup>

The book was viewed by many within the Church as authoritative. It even had the support of a recognized Mormon scientist, Melvin A. Cook, who provided a special two-page introduction to it. But for many Mormon educators, scientists, and students, it represented a serious threat. Because Eyring had distinguished himself in science and was also a faithful Mormon, many turned to him for advice and support. Shortly after the publication of the book, he recalls the following sequence of events:

When President Joseph Fielding Smith's book, *Man, His Origin and Destiny*, was published, someone urged it as an Institute course. One of the Institute teachers came

to me and said, "If we have to follow it exactly, we will lose some of the young people." I said, "I don't think you need to worry." I thought it was a good idea to get the thing out in public, so the next time I went to Sunday School General Board meeting, I got up and bore testimony that the world was four or five billion years old, that evidence was strongly in that direction. That week, Brother Joseph Fielding Smith called and asked me to come in and see him. I said, "Brother Smith, I have read your books and know your point of view, and I understand that is how it looks to you. It just looks a little different to me." He said as we ended, "Well, Brother Eyring, I would like to have you come in and let me talk with you sometime when you are not quite so excited." As far as I could see, we parted on the best of terms.<sup>7</sup>

President Smith's book was being considered at the highest levels. Elder Adam S. Bennion of the Quorum of the Twelve asked Eyring for his opinion of it. His letter of response amounts to a tactful but unsparing review of its scientific shortcomings.

Dear Brother Bennion:

President Joseph Fielding Smith's book "Man — His Origin and Destiny" poses a variety of interesting questions. First it is an impressive compilation of scriptural references on Earth History and of statements of selected church leaders. One must say selected because our trained scientists among the general authorities are not only not quoted but are not even mentioned. It would be instructive to have President Smith comment on "The Earth and Man" by James E. Talmage, delivered from the tabernacle August 9, 1931, and "published by the Church of Jesus Christ of Latter-day Saints;" or on "Science and the Gospel" by Brother John A. Widtsoe, the Young Men's Mutual Improvement Association Manual of 1908-1909. Both those latter brethren regard the earth as having a very great antiquity.

The consensus of opinion among the foremost earth scientists places the beginning of life on this earth back at about one billion years and the earth itself as two or three times that old. Whether or not these scientists are right is something which is best discussed dispassionately on the basis of a careful weighing of the evidence. Any other approach will not influence serious scholars.

Here I will briefly sketch a few of the more or less familiar lines of evidence on the age of the earth. The world is filled with radioactive clocks which can be read with varying accuracy but usually within ten percent or so and often considerably better. The principle involved is essentially simple. The heaviest elements such as uranium are unstable and fly apart sending out particles which can be counted in a Geiger Counter. From the number of counts one can tell how much of the radioactive substance one has. As the substance continues to decompose, the counts decrease, always remaining proportional to the number of particles not yet decomposed. Now the particles that are shot out are helium so that if the decomposing uranium is enclosed in a rock this helium will also be entrapped. Thus by determining how much helium is entrapped and how much uranium is present in the rocks one can tell exactly how long it has been since the rocks were laid down in their present form, since it always takes exactly the same amount of time for a given fraction of the uranium to decompose.

There is another check on this. Each time a uranium atom decomposes it leaves a lead atom behind as well as ejecting the helium atom. Thus the ratio of these residual lead atoms to uranium is another wonderful clock. Four and one half billion years must elapse in order that half of the uranium present will be gone. Half of what remains will decompose in another four and a half billion years and so on. Thorium, another radioactive clock, has a half life of fourteen billion years and there are a variety of other long time clocks as well as some short time ones like carbon fourteen with a half life of five and one half thousand years. The radioactive clocks, together

with the orderly way many sediments containing fossils are laid down, prove that the earth is billions of years old.

In my judgment anyone who denies this orderly decomposition of sediments with their built in radioactive clocks places himself in a scientifically untenable position. Actually the antiquity of the earth was no problem for one of our greatest Latter-day Saint leaders and scientists, Brother John A. Widtsoe (see *Evidences and Reconciliations*, Vol. I.) It also offers not the slightest difficulty to me and to most of my scientific L.D.S. friends. The Lord made the world in some wonderful way that I can at best only dimly comprehend. It seems to me sacriligious to presume that I really understand him and know just how he did it. He can only tell me in figurative speech which I dimly understand but which I expect to more completely comprehend in the Eternities to come.

Probably one of the most difficult problems in reading the scriptures is to decide what is to be taken literally and what is figurative. In this connection it seems to me that the Creator must operate with facts and with an understanding which goes entirely outside our understanding and of our experience. Because of this, when someone builds up a system of logic, however careful and painstaking, which gives a positive answer to this difficult question, I can't help but wonder about it, particularly if it seems to run counter to the Creator's revelations written in the rocks. At least can't we move slowly in such matters?

Our prophets have been given to see clearly the road we should follow and can point the path to the celestial kingdom, but being human they too must walk by faith and wait and study in order to partly understand many of God's wonderful works. I can understand "Man — His Origin and Destiny" as the work of a great man who is fallible. It contains many serious scientific errors and much ill humor, which mar the many beautiful things in it. Since the Gospel is only that which is true, this book cannot be more than the private opinion of one of our great men to be admired for the fine things in it. I find it much less satisfactory in scientific matters than the excellent writings of Brother Talmage and Brother Widtsoe with which it is in frequent disagreement. Our scientists in general have no difficulty in reconciling Earth History and the Gospel as presented by our scientifically trained general authorities. The concern of most L.D.S. scientists is as to what extent President Smith's interpretations must replace those of Brother Talmage and of Brother Widtsoe where they fail to agree with President Smith.

I hope my opinions offered for what they are worth will not seem presumptuous. Please feel free to make such use of this letter and the enclosed material as you may choose. Both Dr. Stokes and Dr. Smith are devout active members of the Church and are representative of our thoughtful L.D.S. scientists. Each is willing to document his opinions further if it would be helpful.<sup>8</sup>

Henry Eyring

This letter, obviously meant as an educational device, circulated widely and brought some interesting responses. Lowell Bennion, then director of the Church's Institute of Religion at the University of Utah, wrote Eyring: "Thanks to the courtesy of Elmo [Morgan], I read a copy of your letter to Adam S. Bennion and wish to congratulate you on the clarity, integrity, and humility which are evident throughout."<sup>9</sup>

When President Smith obtained a copy of the letter a few months later in April, he felt obligated to respond directly to Eyring. Eyring promptly answered the lengthy letter in a conciliatory way and expressed gratitude that brethren in high positions in the Church were allowed to disagree on questionable subjects. The two letters, important documents in the development of the issue as shaped by both men's personalities, are reproduced.

Dear Brother Eyring:

At the time of the General Conference of the Church a copy of your letter to Elder Adam S. Bennion was placed in my hands and I was given to understand that it had been given rather wide circulation. This letter was no doubt solicited for the purpose of obtaining scientific information that would discredit what I have written. If so, it is evident that it was not intended for Elder Bennion alone. The nature of the letter indicates the necessity on my part for a reply, although it was not written to me, and presumably not intended that it should fall into my hands. Permit me to say that I have rejoiced in your great accomplishments in your chosen field. I was present on one occasion when honors were conferred upon you and I joined in the applause which I felt was merited. Moreover, I am always pleased when members of the Church obtain honors and are rewarded whether it is in the field of science, art, or any other field. The great discoveries that have been made during the past one hundred years and more have been of inestimable value to mankind. I am firmly convinced, however, that every discovery and invention has come through the inspiration of the Spirit of the Lord which was promised by the Lord through Joel, for this dispensation of The Fulness of Times.

My contention with our scientific brethren and men of the world, lies in another field. I speak frankly and to some my words may appear harsh, and even filled with "ill humor," by those who hold to the theories which I have attacked. Nevertheless I feel that I am justified in referring thus to those who hold these evolutionary theories and who feel themselves to be superior in intelligence and wisdom and entitled to treat the rest of us as school boys and need disciplining and have no right to call them in question. It remains a definite fact that the majority of scientists have considered themselves to be superior in intelligence and wisdom. I am reminded of Job's answer to his brethren: "No doubt but ye are the people, and wisdom shall die with you." I am sure I have not said things more harsh than have been said by these advocates of organic evolution. We who believe in the mission of Jesus Christ have been designated as "curs," our doctrines have been ridiculed. We have been designated as ignorant, harking back to the days of "primitive savagery and ignorance," for believing the foolish doctrine of an anthropomorphic God! Surely these advocates are not immune from some harsh words when we consider their arrogance and claim to superior wisdom. Are we not justified as much as was our Lord when he referred to the wise men among the Jews as "hypocrites," "whited sepulchres," and "sons of Satan?" It may hurt when we retaliate in the same language which they use in references to the sacred beliefs of those who accept the revelations in the Bible. I have stated sincerely that these men whom I have called in question, "are honorable and presumably honest in their convictions." I have also spoken in the highest terms of the many who, through their discoveries have benefited mankind. (See Man, page 22.) No one realizes more than I, that I am "a fallible man;" and I accord to every other man, including the scientists, the same compliment.

There is one place, however, where I feel that men are infallible. That is when they, as prophets, reveal to us the word of the Lord. We have four published works which have been accepted by the members of the Church as *standard* in doctrine, revelation and government. These are: The Bible, the Book of Mormon, The Doctrine and Covenants and the Pearl of Great Price. We accept of course, the Bible, as far as correctly translated. It is a well established fact that the copies coming to us based on translations, more or less semi-modern, contain many errors but when the Bible is in full accord with the other records, we accept what is written, whether the things written harmonize with the teachings of science or not.

President Joseph F. Smith has stated the case clearly:

The Church holds to the definite authority of divine revelation which must be the standard, and that, so-called "science" has changed from age to age in its deductions, and as divine revelation is truth, and must abide forever,

views as to the lesser should conform to the positive statements of the greater; and further, that in institutions of education, its instructors must be in harmony in their teachings with the principles of doctrine.

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The truth persists, but the theories of philosophy change and are overthrown. What men use today as a scaffolding for scientific purposes from which to reach out into the unknown for truth, may be torn down tomorrow, having served its purpose, but faith is an eternal principle through which the humble believer may secure everlasting solace. It is the only way to find God! (*Man: His Origin and Destiny*, p. 8.)

The following I stated at the conference in October 1952:

So far as the philosophy and wisdom of the world are concerned, they mean nothing unless they conform to the revealed word of God. Any doctrine, whether it comes in the name of religion, science, philosophy, or whatever it may be, if it is in conflict with the revealed word of the Lord, will fail. It may appear plausible. It may be put before you in language that appeals and which you may not be able to answer. It may appear to be established by evidence that you cannot controvert, but all you need to do is to abide your time. Time will level all things. You will find that every doctrine, every principle, no matter how universally believed, if not in accord with the divine word of the Lord to his servants, will perish. Nor is it necessary for us to try to stretch the word of the Lord, in a vain attempt to make it conform to these theories and teachings. The word of the Lord shall not pass away unfulfilled, but these false doctrines and theories will all fail. Truth and only truth, will remain when all else has perished.

I, as a fallible man, do not claim to be able to give the answers to all the questions propounded by science; but I am convinced that if there arises any theory which is in conflict with the revelations given by the Lord, they will perish. It is a great regret to me that our scientific brethren at times take a contrary view which is, if the theories of science appear to be definite and possibly true and are in conflict with the revelations in these Standard Works, *then science is right and the revelations are wrong!* This attitude certainly gets some of our brethren in trouble. This is placing the judgment of man superior to God!

Here are a few doctrines taught by revelation which are rejected by evolutionary scientists because they are in conflict with their theories:

1. Adam was the first man on the earth. This is declared in the Bible, the Book of Mormon, Doctrine and Covenants and Pearl of Great Price. In the Prophet Joseph Smith's revision of the Bible, the last verse in the lineage of Christ in Luke, reads as follows: "And of Enos, and of Seth, and of Adam, who was formed of God, and the *first man on the earth.*" This is the same as recorded in the Pearl of Great Price, and the Doctrine and Covenants, Section 84:16. Those who accept organic evolution contradict this doctrine.
2. The scriptures teach that Adam was the first flesh on the earth. This is the doctrine in the Bible, Book of Mormon, and Pearl of Great Price, but it is rejected by the advocates of organic evolution.
3. These scriptures teach that Adam was *not* subject to the mortal and spiritual death before the Fall, and that the fall brought these deaths into the world. This doctrine is denied by organic evolutionists.
4. These scriptures teach that Jesus came into the world to atone for Adam's transgression and through his death redeemed Adam and all mankind from the effects of the fall. This is denied by the organic evolutionists.

5. These scriptures teach that through the death of Jesus Christ came the resurrection of the dead, and that *every soul* will be raised with spirit and body inseparably united. This is denied by organic evolutionists.
6. These scriptures teach that this earth is passing through seven days of *temporal* existence of one thousand of our years for a day, and that it was not temporal before the fall. This is clearly stated in the Bible, the Doctrine and Covenants and the Pearl of Great Price, but it is definitely and positively denied by organic evolutionists.
7. These divine records promise us that the earth on which we dwell will be renewed and restored to its primitive beauty for one thousand years and be cleansed of all its iniquity. This is denied by most scientists.
8. These divine records declare that the earth shall die, for it is a living body, and will rise again in the resurrection through the redemption of Jesus Christ, to become a celestial globe and the abode of the righteous. Scientist[s] preach a far different doctrine.

Now, Dr. Eyring, you state that I have "an impressive compilation of scriptural references on Earth History and on statements of selected church leaders, but that I have avoided the quotations of the "trained scientists among the general authorities," and you mentioned two, Dr. James E. Talmage and Dr. John A. Widtsoe. In my defense I have to say that I quoted the Prophet Joseph Smith, Presidents Brigham Young, John Taylor, Joseph F. Smith and his counselors, Parley P. Pratt and Orson Pratt and others. Four of these held the keys of the Priesthood and revelation for the Church, the others were taught under the guidance of the Prophet Joseph Smith. Moreover, I backed what they had to say by the revelations in the Standard Works of the Church which we have received as the word of the Lord. Beyond such eminent testimony there was no need for me to go.

You also said: "It would be instructive to have President Smith comment on 'The Earth and Man,' by Dr. James E. Talmage, delivered from the tabernacle August 9, 1931, and published by the Church of Jesus Christ of Latter-day Saints." I assure you that it would have been a pleasure to have commented on that talk. No one is more familiar with it and how it came to be published than I, and I can state positively that it was not published by the Church, nor by the approval of the Authorities of the Church. There are some circumstances concerning this discourse which I think it is hardly proper for me to write inasmuch as the First Presidency, one of whom was President David O. McKay, gave the answer to Dr. Sterling B. Talmage in reply to an inquiry from him, which, in my opinion, sets forth the facts as I have stated them. I suggest that you write Dr. Sterling B. Talmage and ask him to permit you to read this communication from the First Presidency, Presidents Heber J. Grant, J. Reuben Clark, Jr., and David O. McKay, dated December 19, 1935.

I understand that some of the things taught by Dr. Widtsoe in his M.I.A. lesson are no longer held as acceptable theories even in the scientific world. So far as his articles on "Evidences and Reconciliations" are concerned, I would be happy to discuss them with you personally, if we could do so calmly. Likewise some of the views of Dr. James E. Talmage in this memorable discourse and others of his writings. It might be of considerable interest.

So far as the evidence is concerned of the "Radio-active clocks," perhaps it might be possible for you and me to come to some common understanding as to the exceeding length of time it takes for the uranium, thorium and other elements to decompose. We might agree to change the viewpoint of their beginning. From what I have read it appears that the scientists look upon these elements as having been placed on the earth in their virgin, or creative state, when the earth was formed, and have been slowly, but consistently, disintegrating ever since. The Lord revealed to the Prophet Joseph Smith, and it is recorded in the Doctrine and Covenants, (Section 93:33.) that the elements are eternal, I can readily believe that when the earth was formed, the Lord

brought the elements together and placed them in the earth wisely, and in such a manner that they would be discovered in his own due time for the use of man. I can believe that the gold, silver, copper, tin, carbon and every other element, including lead, if you please, were brought to their respective places of deposit in the rocks and the earth and that they had been existing from untold ages, before the earth was formed. This could be true of radio-active elements which could have been brought here as well as any other elements in the condition in which they are found. I have been taught to believe that the Lord knows the end from the beginning and that these things have at times been revealed to his servants who were told to seal them up, for they were not to come forth until the due time of the Lord. It will be no surprise to me to discover that the Lord when he comes will do as he has said:

Yea, verily I say unto you, in that day when the Lord shall come, he shall reveal all things —

Things which have passed, and hidden things which no man knew, things of the earth, by which it was made, and the purpose and the end thereof —

Things most precious, things that are above, and things that are, beneath, things that are in the earth, and upon the earth and in the heaven.

I am sure that when the day comes there will be many surprises when the history recorded in the beginning by prophecy is revealed and the activities of our present day will be discovered to have been recorded many centuries ago.

Yours sincerely,  
Joseph Fielding Smith

Dear President Smith:

Thanks for your letter of April 15, 1955. I am happy that you read my letter, which you refer to, as it expresses accurately my point of view.

Considering the difference in training of the members of the Church, I never cease to marvel at the degree of agreement found among believing Latter-Day-Saints. So far from being disturbed to find that Brother Talmage, Brother Widtsoe and yourself didn't always see scientific matters alike, this situation seems natural and as it should be. It will be a sad day for the Church and its members when the degree of disagreement you brethren expressed is not allowed.

I am convinced that if the Lord required that His children understand His works before they could be saved that no one would be saved. It seems to me that to struggle for agreement on scientific matters in view of the disparity in background which the members of the Church have is to put emphasis in the wrong place. In my judgment there is room in the Church for people who think that the periods of creation were (a) 24 hours, (b) 1000 years, or (c) millions of years. I think it is fine to discuss these questions and for each individual to try to convert the other to what he thinks is right, but in matters where apparently equally reliable authorities disagree, I prefer to make haste slowly.

Since we agree on so many things, I trust we can amicably disagree on a few. I have never liked, for example, the idea that many of the horizontally lying layers with their fossils are wreckage from earlier worlds. In any case, the Lord created the world and my faith does not hinge on the detailed procedures.

Thanks again for your kindly, thoughtful letter.<sup>10</sup>

Sincerely your brother,  
Henry Eyring

Following the exchange of these letters, President Smith invited Eyring and Cook to visit with him about the questions his book raised. Later, Eyring re-

called the substance of that meeting and his personal feelings for President Smith:

As many people have remarked President Joseph Fielding Smith was a man without guile. He presented every question exactly as he saw it and accepted the consequences of his position whether this was pleasant or unpleasant. Every one who knew him even remotely knew that he was against sin, but it is only less generally known that he loved the sinner. . . .

A lively hour-long discussion [on "radioactive dating"] ensued. As so often happens, each person brought up the argument which supported his position and we parted each with much the same position he held when the discussion began. But what was much more important, the discussion proceeded on a completely friendly basis without recrimination and each matter ended there. No one was asked to conform to some preconceived position. The church is committed to the truth whatever its source and each man is expected to seek it out honestly and prayerfully. It is, of course, another matter to teach as a doctrine of the church something which is manifestly contradictory and to urge it in and out of season. The author has never felt the least constraints in investigating any matter strictly on its merits, and this close contact with President Smith bore out this happy conclusion.<sup>11</sup>

This meeting did not, of course, settle the issue. In the spring of 1956, David O. McKay, president of the Church, requested information from Eyring on a paper Cook had written for President Smith questioning the reliability of radioactive time clocks such as radiocarbon. He argued that carbon dating is valid only if it is in equilibrium in the earth as a whole but for such an equilibrium it would take 30,000 years before an overall unbalance could be detected experimentally. Also important in Cook's view is the theory of continental drift. Using this theory and his literal interpretation of scripture, he accounts for Biblical events like Noah's flood and the dividing of the earth in the days of Pleg.<sup>12</sup> Eyring's reply continued to be tactful but firm:

Dear President McKay:

In accordance with your request, I am writing my opinion regarding Dr. Melvin A. Cook's paper, "Geological Chronometry." Dr. Cook has done a great deal of reading in the last few months and has thought intensively on the subject. His manuscript points up the accepted fact that there are pit falls in accurate radioactive dating. He has also provided a useful bibliography for the serious student. As he points out, the all but universal opinion of earth scientists at present is that the earth is around 3 billion years old. Three hundred years ago the general opinion in Christendom placed the earth's age at around thirteen thousand years or less.

The change in viewpoint came as the result of intensive study by many scholars with an outlay of time and effort equivalent to many millions of dollars. One may expect to upset this river of opinion only by supplying a massive array of carefully established facts. In my opinion, Dr. Cook has not succeeded in doing this. This is likewise the opinion of his geological colleagues, who have listened to several lectures he has given recently on the campus.

In particular, his argument that radioactive carbon in fact supports an age of about 12,600 years rests on very shaky foundations. His argument requires that the content of radioactive carbon in the atmosphere started at zero concentration in the beginning and has since risen to about three quarters of its final steady-state value. The basis for this is extremely tenuous. To plead that he quotes the same authorities whom he finds so unreliable on other points leaves much to be desired. If in fact the radioactive carbon content of the atmosphere is presently more nearly its final steady-

state value, a correspondingly greater antiquity for the earth would be given by his calculation. The usually accepted assumption is that for all practical purposes the radioactive carbon content has already reached its final steady-state value. This assumption leads to the usually accepted great antiquity of the earth.

I am sure if any of the brethren have the time and desire to listen to a scientific presentation of pertinent evidence of the great antiquity of the earth presented by believing Latter-Day Saints that such lectures could be readily arranged. In my judgment, such considerations are without bearing on the real question as to the divinity of the gospel, but are naturally of great scientific interest.

I hope you will feel free to show my letter to any person whom it might interest. If you care to talk to me further, I will be happy to call at your office any time.<sup>13</sup>

Sincerely your brother,

Henry Eyring

It is difficult to judge what effect Eyring's letter had, but by the next spring, the Quorum and First Presidency had, at least internally, expressed the view that the Church had no official position on the matter of evolution and related questions and that *Man, His Origin and Destiny* represented the personal views of its author.<sup>14</sup>

Interestingly enough, during this controversy, Eyring and a colleague, Frank H. Johnson, wrote a paper on evolution and rate theory, Eyring's scientific specialty, called "The Critical Complex Theory of Biogenesis." This paper outlines a theory of prebiological evolution and addresses the question of why living things are optically active. Even in different species, the amino acids are all of the l-configuration (left-handed). Using absolute rate theory and estimates of reactant concentrations, a reasonable rate of appearance of optically active templates is arrived at. These templates, capable of self-replication, began the era of biological evolution. But the chemistry is the same for the d-configurations (right-handed) and the likelihood of a world with d- rather than l-type optical isomers in living things is just as great. If analogous events occurred in nuclear evolution, it is possible to visualize a world with positive electrons rotating about negative nuclei. The result is there are four possible evolutionary worlds: l-type and positive nuclei (as our world is), l-type and negative nuclei, d-type and positive nuclei, or d-type and negative nuclei.<sup>15</sup> For Eyring, it was not how this earth was created nor how life was placed on it that mattered. The gospel of Jesus Christ was true and God had already created this world and life on it the way he did it, and that could not be changed. "The Critical Complex Theory of Biogenesis" explains only how it might have happened.

During the decade of the 1950s, Eyring had clearly established himself as an important authority, at least from the Mormon point of view, on the subject of science and religion. He had carefully avoided being engulfed in a controversy that could have ruined his reputation. Many had encouraged him to take a more rigid stance, but he believed that the gospel was the truth, and, consequently, that both science and religion could provide answers. As a result, he became the Church's example during the next decade of how one can achieve academically and still be faithful. As early as 1961, he was featured

in a Church-sponsored film, "Search for Truth" produced by Brigham Young University. Its message was precisely what Eyring had advocated his entire scientific life: that the principles of true science and true religion are in complete accord. The film, directed toward strengthening the youth of the Church, contained dramatized scenes from Eyring's early life when he left for the university in 1919 and ended with his search for truth in "the six worlds of today": the world in which we live, the biological world, the chemical world, the astronomical world, the nuclear world, and the spiritual world.<sup>16</sup>

In addition to many fireside talks on science, Eyring willingly wrote articles on that subject for the *Improvement Era* and *The Instructor*. In 1958, Paul R. Green compiled *Science and Your Faith in God*, writings and talks by seven prominent Mormon scientists, including five of Eyring's early articles.<sup>17</sup> A good friend, Dr. Francis W. Kirkham, published *The Faith of a Scientist* in the spring of 1967. The book contained twenty-seven articles on science and religion and two short, previously published biographical sketches. Its two printings provided Church members with a single influential source for his philosophy on this important subject. The book sold 8,265 copies and is now out of print.

Elder Mark E. Petersen was so impressed with the collection that he spearheaded an official project to reproduce a portion of the book in paperback for official distribution. Nine essays were selected, and during 1969 and 1970, 146,000 copies were distributed principally to the youth of the Church. The sound, consistent judgment of Eyring had prevailed and his views went to the Church with some official energy behind them.

Because of the book and his many speeches, his correspondence from both fans and seekers was voluminous. Of the thousands of letters written requesting advice on science and religion, Eyring showed interest and genuine concern, responding with the same courtesy to a stranger as to a friend.

An LDS woman from Arizona, after reading Eyring's book and discussing the possibility of pre-Adamites with her husband, asked Eyring's opinion on the theory that this earth was created from the materials of an older one. He responded:

I was trained as a mining engineer so that the evidence seems to me to point toward an age of the earth between four and five billion years and to the existence of pre-Adamic man. I don't think that it is reasonable to explain the observed geologic formations on the theory that they were moved from some other worlds. I have no difficulty reconciling myself to the idea of life before Adam and to a great age of the earth. Our scriptural accounts are brief and don't seem to me to rule out these possibilities. The scriptural emphasis is on God's dealings with Adam and his descendants and the treatment of pre-Adamic history is sketchy, no doubt for a good reason.

It seems, to me, clear that the Lord used the Prophet Joseph to restore His gospel. This is the important thing for me. Just how He runs the world, I'm obliged to leave up to Him. All I can do is find out how he does it by every means available.<sup>18</sup>

In 1967, President N. Eldon Tanner of the Church's First Presidency, asked Eyring how to respond to a letter he had received asking why BYU

required their teachers to acquire doctorates when higher education frequently made LDS teachers “lose their faith.” Eyring answered:

The gospel embraces all truth. Brigham Young especially emphasized the propriety of seeking all truth. The assumption that because a man understands something about the operation of the Universe, he will necessarily be less faithful is a gratuitous assumption contradicted by numberless examples. God, who understands all about the Universe, is apparently, not troubled by this knowledge.

Some people drift when they study, but some people drift when they don't study. If the Church espouses the cause of ignorance, it will alienate more people than if it advises man to seek after truth, even at some risk.<sup>19</sup>

These two letters are typical of the many in Henry Eyring's files, each containing a healthy dose of his sturdy integrity. Possibly the best summary, however, comes from an address he delivered on 4 December 1979 at the University of Utah shortly after receiving the Berzelius Gold Medal from the Swedish Academy. His intention was to give the advice he would give if it were his last lecture. For Eyring, the supreme good would be to bring happiness to as many people as possible for as long as possible. How? He advised his listeners first to be “honorable” in all their doings, “have no secrets”; second, to make plans by “walking into the future or backing into the future” (in other words, being flexible enough to change); third, “to work hard and do everything well” (he cited his mother who took her knitting when she visited); and fourth, “to compete only with oneself” (“the reason people like you is because you're helpful, not because you're smart”).<sup>20</sup> That philosophy made Henry Eyring a folk hero in the Church.

## NOTES

1. Conversation with Sterling McMurrin, 17 May 1978.
2. Marba C. Josephson, “Henry Eyring — Distinguished Scientist and Churchman,” *Improvement Era*, 51 (Feb. 1948):81, 111. His speech was reprinted in pamphlet form and distributed by the Church in 1956. In 1958 it was published in a compilation by Paul R. Green, *Science and Your Faith in God* (Salt Lake City: Bookcraft, 1958), pp. 11–17 and in 1967 it was included in Henry Eyring, *The Faith of a Scientist* (Salt Lake City: Bookcraft, 1967), pp. 31–37.
3. For a thorough discussion see Duane E. Jeffrey, “Seers, Savants and Evolution: The Uncomfortable Interface,” *DIALOGUE: A JOURNAL OF MORMON THOUGHT* 8 (Autumn/Winter, 1974):41–75.
4. See J. Reuben Clark, Jr., “The Charted Course of the Church in Education,” address to Seminary and Institute teachers, 8 Aug. 1938. (Salt Lake City: Church Education System, n.d.).
5. Jeffrey, “Seers, Savants,” pp. 65–66.
6. *Man, His Origin and Destiny* (Salt Lake City: Deseret Book Company, 1954). For a concise view of his position, see Bruce R. McConkie, comp. 3 vols., *Doctrines of Salvation — Sermons and Writings of Joseph Fielding Smith* (Salt Lake City: Bookcraft, 1954), 1: chs. 5, 9.
7. Interviewed by Edward L. Kimball, “A Dialogue with Henry Eyring,” *DIALOGUE: A JOURNAL OF MORMON THOUGHT* 8 (Autumn/Winter 1973):102.

8. Henry Eyring to Adam S. Bennion, 16 Dec. 1954, in possession of Henry Eyring family; photocopy in Steven H. Heath, "Henry Eyring, Mormon Scientist" (M.A. thesis, University of Utah, 1980), appendix eleven.
9. Lowell Bennion to Henry Eyring, 15 Jan. 1955, in possession of Mrs. Winifred Eyring, Salt Lake City, Utah.
10. Joseph Fielding Smith to Henry Eyring, 15 April 1955, in possession of Mrs. Winifred Eyring, Salt Lake City, Utah; Henry Eyring to Joseph Fielding Smith, 18 April 1955.
11. Henry Eyring, "A Tribute to President Joseph Fielding Smith," *DIALOGUE: A JOURNAL OF MORMON THOUGHT* 7 (Spring, 1972): 15-16.
12. See Melvin A. Cook and M. Garfield Cook, *Science and Mormonism* (Salt Lake City: Deseret Book Company, 1968).
13. Henry Eyring to David O. McKay, 26 March, 1956, in possession of Mrs. Winifred Eyring, Salt Lake City, Utah.
14. Jeffrey, "Seers, Savants," pp. 66-67.
15. Henry Eyring and Frank H. Johnson, "The Critical Complex Theory of Biogenesis," *The Influence of Temperature on Biological Systems* (Washington, D.C.: American Physiological Society, 1957), pp. 1-8.
16. Dorothy O. Rea, "Church Sponsors Film 'Search for Truth' on Science, Religion," *Church News*, 23 Dec. 1961, pp. 4, 7, 8. See also Henry Eyring "Our Five Worlds," *The Instructor* (June 1953): 171-72. This article was revised and published as "Our Six Worlds" in 1967 with the appearance of Eyring's *The Faith of a Scientist*.
17. The other scientists were Carl J. Christensen, Harvey Fletcher, Joseph F. Merrill, Frederick J. Pack, John A. Widtsoe, and Franklin S. Harris.
18. Rosemary Kutch to Henry Eyring, 22 Jan. 1971, and Henry Eyring to Rosemary Kutch, 27 Jan. 1971, in possession of Mrs. Winifred Eyring, Salt Lake City, Utah.
19. Eldon Tanner to Henry Eyring, 16 Oct. 1967, and Henry Eyring to N. Eldon Tanner, 19 Oct. 1967, in possession of Mrs. Winifred Eyring, Salt Lake City, Utah.
20. From notes taken by Harold Bauman, professor in the history department, University of Utah, who was present at the lecture.