



Seers, Savants and Evolution: A Continuing Dialogue

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Duane E. Jeffrey's article in the Science and Religion issue of Dialogue, "Seers, Savants and Evolution: The Uncomfortable Interface," has provoked a good deal of response, a response that suggests that in some ways the interface is indeed uncomfortable. While some responses have been published in the "Letters to the Editor" section of the past two issues, we have reserved space here for three more substantial reactions to Jeffrey's article—by Stephen and Kathy Snow, Dow Woodward and Norman L. Eatough—and for Jeffrey's response to the issues they raise. Dialogue feels that such exchanges are part of the continual "sifting and winnowing" by which we can, along with other processes, find the truth. We welcome other readers to participate in the dialogue.

Duane Jeffrey is to be thanked for his article, "Seers, Savants and Evolution: The Uncomfortable Interface." It is an excellent summary of the history of thought on evolution in the Church. To illustrate its power, it made us very carefully reconsider our own anti-evolution bias and again perceive evolution as a possibility. However, as he himself stated, "For statements on Church doctrine, we are traditionally referred to the four Standard Works," and it is perhaps unfortunate that he limited himself to official and semi-official statements of this dispensation and did not deal with certain of the scriptural references which are often used to refute evolution. We, for instance, would have loved to know how B. H. Roberts explained 2 Nephi 2:22-23 in defending pre-Adamites. We have yet to hear a convincing pro-evolution discussion which takes the scriptures into account instead of laying them aside until all the evidence is in. It is not until a scientist makes such a convincing case that those for whom the scriptures take precedence when conflicts arise will be persuaded. (Hopefully we will not have to wait for the publication of Roberts' treatise.) Until such time, members on either side of the controversy should be willing to accept the fact that those who believe in evolution can still be valiant members of the Church and that those who do not now believe in it are not intellectually blighted.

After the sophisticated view of science in Richard F. Haglund Jr.'s "Science and Religion: A Symbiosis," Jeffrey's somewhat simplistic view of science was rather surprising. Compare Haglund's skepticism of scientific "truth": "In the final analysis, it is apparently the metaphysical incompleteness of physics which prevents the erection of a comprehensive, self-consistent model of the universe. And this should make us skeptical of claims for both comprehensiveness and logical consistency in any other science, because physics deals with the simplest models and has the most formal mathematical structure of all the sciences," with Jeffrey's "anyone who chooses to ignore the subject [of evolutionary processes] surely jeopardizes the development of an accurate view of the world around him." We would not advocate that one ignore evolution, but Jeffrey does seem to exhibit the tendency common among biologists to make science into Reality where physicists (as Haglund also demonstrates) have given up the attempt.

It is true that some evolutionary processes do occur; no one has ever denied that to our knowledge. The question lies indeed in the extent to which they have operated in the history of the world. Evolutionists would have us believe that this admittedly well-documented and widely-accepted theory *is* the way things *were*. What is too often forgotten is that a theory inevitably determines the types of questions which are asked and therefore the kinds of evidence collected. As Thomas Kuhn puts it in *The Structure of Scientific Revolutions*: "Those [phenomena] that will not fit the box are often not seen at all." The First Presidency, as Jeffrey fully documents, has been more circumspect than either side in the present conflict in admitting evolution as one of the possibilities of creation. Perhaps we should not even discount Orson Pratt's literal reading of the scriptural accounts of special creation as lightly as has been customary. After all, if "cloning" (replication of an individual from a somatic cell) is now possible for men, why could God not perform some similar operation to produce Adam, then Eve from his rib (!) then breathing into them "the breath of life," the part scientists have not yet managed?

This adds another mechanism to the three the First Presidency outlines: evolution, transplantation or procreation. Whichever of these was actually used, however, no one need settle on any single one of the four to see God working rationally through laws. Jeffrey cites the personal experience of many who found

that belief in evolution can produce "a deepening of religious sentiment and spirituality due to the recognition that God is a God of law, of order, of rational behavior, rather than a diety of mystery, of transcendent and capricious whims." This has been one of the standard ploys of pro-evolutionists who accuse non-believers of postulating a capricious or whimsical God. Any of these four mechanisms would be in perfect accord with law and be in no way arbitrary. In fact, we might do well to leave the door open for other possibilities. We cannot limit God to the laws *we know*.

Wherever the Truth lies, Jeffrey's article is a start on the right path. He has finally laid aside the polemic which has characterized virtually all writing on evolution in the Church, although his bias is immediately clear and could be offensive to some. Perhaps we can finally sit down to a dialogue.

STEPHEN & KATHY SNOW
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I would like to make some observations about some of the comments made by participants in your special Science and Religion issue. Much of what was stated in the major article by Duane Jeffrey is reasonable and would be difficult to dispute; I enjoyed the article. However, it doesn't go far enough and it comes across as if he were an apologist for the Church. He speaks of the many religionists who have had opinions about science and religion without any knowledge of modern science; hence they develop arguments and provide insights that are based on limited information and are reminiscent of the polemics of Darwin's era. The question I am raising is why rationalize current knowledge and facts of genetics and evolution with either ancient scripture or what early leaders of the Church thought about the subject? It is obvious that neither group thought profoundly about the subject in terms of current knowledge. To take a scientific subject that is understood to a large degree on the basis of insights possible only in the last fifty years and compare it with statements of Joseph Smith, Brigham Young or the Bible on the same subject matter, treated in vague terms at best, seems patently absurd to me. There is no reason to believe that these men should have understood the biological nature of man. We can point to non-religionists of the same eras who made similarly vague but generally "in the right direction" statements on the subject. By the same token we can find many statements by Joseph Smith and Brigham Young on the subject of science—biology—evolution—the nature of man—that on the basis of current knowledge are as misguided as the quoted comments appear to be perceptive.

What ancient or modern religionists thought about science is a matter of historical and/or esthetic interest—yet the majority of the members of the Church use this as their sole source of information about science—biology—evolution. Having only conversed with Duane Jeffrey on one occasion, my guess is that his true feelings are grossly toned down, but regardless of how he thinks, my own feeling is that some of the "known" biology needs to be said much more forcefully and documented by data much more completely.

After all, more has been learned about the biology of man in the last twenty years than in all the previous history of man. It is now known the form in which genetic information is stored and how it is dispensed. The mechanism of mutation is well understood as well as the way these molecular mechanisms are translated into the phenotypes we observe. The mechanism of genetic disease is understood and can be controlled in many cases. The technology of transmitting genes from one species to

a different species is now possible—genetic engineering is no longer science fiction but a reality if man only knew an intelligent way to use it. The molecular mechanisms necessary to explain the process of evolution are known. How with all this detailed information can one be preoccupied with what anyone prior to 50 years ago said about the subject? How many times in the history of man will it be necessary to demonstrate that religionists have never had any meaningful insight into the biological nature of man and that whenever this has become blatantly obvious, some of them simply change their stance a little to compensate and promptly restate their authoritarian position as dogmatically as before, knowing once again, they presume, more than anyone else about the subject. ("Men never do evil so completely and cheerfully as when they do it from religious conviction," Pascal.) ("Some people are more sure of what they think than others are of what they know" Descarte.) Henry Eyring stated it well in his typically pleasant underplayed, low-keyed tone describing his conversation with Joseph Fielding Smith, "I have read your books and know your point of view and understand that is how it looks to you. It just looks a little different to me."

In his discussion of "spirit" or vital force Jeffrey simply states the rather official position of the Church regarding that doctrine without any evaluation of that position. There are certainly valid logical grounds for criticism of the generally accepted position that all forms of life have a spirit in the same sense that man has a spirit. The doctrine on the one hand would have us believe that we are sons and daughters of God in a spiritual sense, i.e., our spirits are the spirit children of God and in that sense he is our Father. It would have us believe that having spirit children is a lofty position granted only to a small group who obtain exaltation in the Celestial Kingdom. All others including some very good people will not have the power of spiritual increase. These spirit children of God and his wife (?) we are led to believe are analogous to ourselves and our relationship to our mortal parents. Yet we are asked to believe that mosquitos have a spirit in the same sense—i.e., that God created it—or perhaps the closer analogy would be a mosquito God who creates it. If it is "our" God who created our spirits by "eternal increase" then does it not seem strange that our spiritual parents would be giving birth to mosquitos as well—not to mention rabbits, kangaroos and penguins? Does it not also seem strange that now that man can create life (defined by a self-replicating biological system) in a test tube or clone a frog from a single somatic cell or produce mutants artificially that do not morphologically resemble any already existing form of life—that these new creatures, that are to some degree man's handywork, would have or need "spirit"? Is there a ready made spirit waiting for any sort of theoretical organism that man chooses to produce by mutational or genetic manipulations?

Perhaps spirit means what Brigham Young speaks of when he says the earth has a spirit—a spiritual creation. This can be interpreted to mean that the spiritual creation represents God's preknowledge of existence rather than that a tangible spirit substance exists. But now I fall into the trap of trying to explain statements that may have no meaning at all in the context of current knowledge. If I create a self-replicating virus by enzymatic or organic synthesis of the DNA, my knowledge of the properties and behavior of that DNA in the environment of a host cell—i.e., that it will replicate and produce many new viruses from it—does not suggest in any way the need for spiritual substance to sustain that replicative biological system. So what I am really saying is that if Brigham Young had nothing terribly perceptive (compared to modern knowledge) to say about evolution and biology as we now

understand it, why would we expect him to know any more about the things we still don't understand? Simply because science has nothing yet to say? This is a deception that has been used for centuries—to speak authoritatively about the things that no one understands, implying that somehow God gave you insight that no one else has. If no one can prove you wrong, there is very little risk in dogmatic speculation. Translated into what happens in science itself, the subjects least well experimentally unraveled produce the most emotional dogmatic defenses.

Although I have not understood the rationale behind the idea of interviews with anonymous scientists I would like to speak to a point or two from the comments of the biological scientist. He talks about God releasing or holding back information from us as if nothing we do has any influence on how much we know or can learn. He makes it sound almost as deleterious and sterile as our educational systems that brainwash us into thinking that we can't learn unless we take a class and have an authority figure lecture to us on the subject. But he goes on to explain that the reason God withheld information in earlier times was "that they couldn't handle it." Is he by any chance trying to tell us that we have since then learned how to handle it? We certainly know how to use it to wage war, to exploit and deplete the world's resources, to pollute the air and water, to use it to support theological arguments when it helps our cause and to discard it when it doesn't, or revert to Aristotelian science when we can't cope with the reality of what is known today. So when he says, "If we are not supposed to know how to do this, we are not going to learn it," I say, "I'm not surprised that you want to remain anonymous." It is hard for me to visualize what coping less would mean. We have overpopulated the planet—many starve, others suffer from overpopulation in other ways. We develop capitalistic enterprises based on the concept of greed rather than united order type enterprises in which loss of ownership leaves no place for greed. We develop class structure—elitism—in which a privileged few enjoy the bulk of the resources at the expense of those who are exploited. The people within the Church do everything possible to chase away anyone who learns to think independently and only an occasional Henry Eyring type is able to stay with it, presumably because he has enough self-confidence and understanding of the authoritarian regimentation toward conformity that he can say, "Isn't it interesting that we think and interpret differently?" and is not threatened by it. If God will allow us to get ourselves in the mess we find ourselves in today, why would he want to stop us from learning anything we are capable of learning?

My major point is that in so much discussion about the subject science and religion, why is there such a paucity of science—and the little bit that is mentioned is ancient history?

If the readers of *Dialogue* really want to understand the interface between biology and religion, they ought to be exposed to the realities of some of the relevant biology (I'm assuming that they know most of the relevant religion). For example, to trace the evolution of the structure of a protein such as cytochrome c or hemoglobin gives a perspective about the process of evolution, as well as the reality of it that can never be approached by trite polemics and quotations from men who didn't know the difference between a protein and a jellyfish. Is the idea of *Dialogue* participants to really lay it out and see it as it is or to continue to be apologists for the Church as well as for past Church leaders?

DOW WOODWARD
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One of my pet peeves in the Church is the incessant willingness of some Mormons to change facts and adulterate history to serve current beliefs and practices. It is most distressing to see a competent scientist like Duane Jeffrey adopt these tactics. His willingness to compromise Church history to reach a conclusion that the Church has not taken a stand against his pet scientific dogma has an all too familiar tone. Readers of *Dialogue* were entitled to more than a selected rehash of quotes on creation and evolution to reach the dubious conclusion that no stand has been taken.

Jeffrey follows familiar biological orthodoxy in affirming his belief in evolution by natural selection based on a few isolated "proofs." The tiresome ploy of equating obvious and uncontested changes within "kinds" to "affirmative resolution" of the generalized theory of evolution by natural selection has been used for years. Evolution involves an increase in information content of DNA, but natural selection involves only the elimination of error or modification of information.

Evolutionists are still arguing the merits of natural selection versus genetic drift or random walk mechanisms. Biomolecular evolution is still speculation but it necessarily forms the "genesis" of evolution by natural selection. It is misleading to imply that evolution by natural selection has "long since been resolved affirmatively." "The truth," said Aristotle, "is like a barn door—nobody who throws at it can miss it entirely, but nobody can hit it all at once."

Mormonism is unique among religions in its head-on collision with the theory of evolution by natural selection. We cannot get off as easily as other religions by just reinterpreting or discarding Genesis 1 & 2. We also have modern revelation on the subject. After all, Joseph Smith revised Genesis and pronounced it correct without changing the creation account. He repeated the same account in Abraham, in Moses, and in the temple ceremony. This story of the creation is basic to our Plan of Salvation and irreconcilable with the theory of evolution by natural selection.

As with all Mormon apologists, Jeffrey has swept the basic questions under the rug in a deluge of half-truths and even admits selecting references which reinforce his thesis that there is no Church position on evolution. His display of circular reasoning is better than most. After quoting passages from nearly every Church president supporting the Genesis creation theory, including the 1909 official proclamation by President Smith and the 1925 reiteration by President Grant, he concludes the Church has taken no official position on evolution. When unable to support his conclusions with evidence he resorts to the unprofessional presentation of secret sources which cannot be revealed (reference 54).

Why are we afraid to attack the real issues? I saw no attempt to deal with the problem of fitting the spiritual creation into the evolutionary sequence. Did spirits evolve like flesh according to natural selection? Did spiritual evolution take place before or contemporary with mortal life? Was the spiritual creation engineered according to the natural selection needs of a telestial environment? Or, are we to discard the concept of the spiritual creation along with Genesis 1 & 2?

Joseph Smith said, "We believe that men will be punished for their own sins, and not for Adam's transgression." The Plan of Salvation is built around the concept of the Fall. Lehi and Alma teach there was no death before the fall, but evolution by natural selection is based on a long history of life and death before the first man. According to Brigham Young the fall of Adam and the process of death are intimately mingled. Evolution by natural selection would have us reinterpret the Fall, but without the Fall, as Joseph Fielding Smith points out, the atonement was un-

necessary; so the missions of Adam and Christ are inseparable. If there was no fall there was no need for an atonement and therefore no need for Christ—and where does that leave Christianity? If evolution as Jeffrey describes it is real, there is need for a drastic reinterpretation of the Plan of Salvation as we now know it. Basic principles of the gospel and evolution by natural selection are incompatible. It is misleading to infer otherwise as Jeffrey does.

The evolutionistic reinterpretation of Genesis 1 & 2 might be acceptable if that were the only record. However, when the same account is repeated in the modern scriptures of Moses and Abraham, upheld by the Doctrine and Covenants and the temple ceremony with literal interpretations supported by every President of the Church—to say no stand has been taken is incorrect. To imply that God used the process of evolution by natural selection as His method of creation without considering the implications is superficial. This makes God a liar, taking credit for things He did not do. Man is left devoid of a divine origin, no longer the offspring of God. Scientists who think God started with a one-celled animal or a strand of DNA or amino acids and let it evolve by natural selection into a being of His likeness postulate natural selection with a predestined end product. This leaves probability out of the process and strikes at the very foundation of the theory.

I read with amusement Jeffrey's statement, "We assert immediately that, among mortals, only the President of the Church can articulate a Church position—on anything." This has interesting implications since Brigham Young successfully "articulated" the position of Church president at a time when we had no president and no "articulation" should have been possible. Somewhat of a paradox I would say. I'll bet Sidney Rigdon and Joseph's sons would have been interested in Jeffrey's hypothesis.

Let's take a closer look at what the Church presidents have said about the method of creation. In addition to the modern scriptural accounts reinforcing the Genesis story, Joseph Smith said, "For it is a decree of the Lord that every tree, plant and herb bearing seed should bring forth of its kind, and cannot come forth after any other law or principle" (*DHC*, 4:555). Jeffrey does not accept this as a position statement because the word "specie" is not used. Seems like biologists who cannot agree among themselves as to what constitutes a specie should be the last to criticize the use of "kind" by the uneducated before 1859. In 1860 Brigham Young took care of this objection when he stated, "Every species is true to its kind." Jeffrey still doesn't accept this as nonevolutionary, inferring Brigham is ambiguous in his meaning of "species," but reading the statement in context shows Young was emphatic in what he meant—species (*JD*, 8:30).

John Taylor left no doubt about his position on evolution. In *Mediation and Atonement*, published while he was president, he stated, in a quote omitted from Jeffrey's article, "These principles do not change, as represented by evolutionists of the Darwinian school, but the primitive organisms of all living beings exist in the same form as when they first received their impress from their Maker. . . . It would be impossible to take the tissue of the lower, or, indeed, of any order of fishes, and make of them an ox, a bird, or a man . . ." (p. 164). President Taylor goes on to warn against interpreting limited changes within the species to imply general evolution, totally refuting the argument Jeffrey is attempting to make. No wonder Jeffrey did not include this quote. It would be like saying the sun does not shine while looking at it to interpret this other than a decisive denunciation of Darwinian evolution.

Wilford Woodruff seems to be talking directly to Jeffrey when he states, "Infidelity prevails throughout the world; very few, either priests or people, believe in a literal fulfilment of the Bible. They have a theory, but as to believing in a real fulfilment of prophecy, or that the Lord meant what he said and said what he meant, that is out of the question—very few believe it" (*Journal History*, Jan. 1, 1871). Lorenzo Snow was the only Presidential advocate of evolution. His "As man is, God once was, and as God is, man may become" is certainly evolutionary, but it is a process of celestial selection not natural selection.

Under the presidency of Joseph F. Smith the official proclamation of November 1909 was issued. The heart of the proclamation states, "It is held by some that Adam was not the first man upon this earth, and that the original human being was a development from lower orders of the animal creation. These, however, are the theories of men. The word of the Lord declares that Adam was 'the first man of all men' (Moses 1:34) and we are therefore duty bound to regard him as the primal parent of our race." Jeffrey wonders, "Did the article really constitute an authoritative pronouncement against evolution as a possibility for the origin of man's body?" In 1925 Heber J. Grant reiterated the 1909 proclamation (*Era*, 28:1090).

The views of Joseph Fielding Smith should be enough to convince anyone that a president of the Church has articulated a position against evolution. His book *Man, His Origin and Destiny* contains over 500 pages dedicated to showing evolution as "the doctrine of the devil." In spite of Jeffrey's alleged controversy between Talmage and Smith over the book, David O. McKay certainly did not refute the work and it is well recognized that Smith stood his ground after becoming President.

Even biologists agree repetition is the key to truth, but how often does revelation have to be repeated to be true? How many Church presidents have to condemn evolution before it becomes a Church position? There are none so blind as those who will not see. The Church position is unmistakable: evolution is not acceptable and the reasons have been stated. This position and the facts of evolution (not necessarily the theory of natural selection) are incompatible and irreconcilable. This is, indeed, a problem. Too bad Jeffrey was not willing to face it. Jeffrey's conclusion that "the critical message is not what method was used in creation, but that God was responsible for creation" shows a naive disregard for the serious implications of evolution for the validity of the Plan of Salvation. Apologists like Jeffrey who would sweep problems under the rug by asserting the Church has not spoken and pretend no problem exists only delay the inevitable results. We cannot remain like an ostrich with its head in the sand. The rift is too deep and basic to ignore. As Joseph Fielding Smith prophetically said, "There is a conflict existing between revealed truth coming from the Lord to his chosen servants and the false doctrines advocated by men of science. There is also a conflict between false religion and truth revealed through scientific investigation. The time will come when nothing will remain except truth" (*Man, His Origin and Destiny*, p.1). Science marches on, and if evolutionists can get their story together into a unified theory the truth will be obvious, but even then the Church will go on undisturbed. Mormons have shown they will believe what they want to believe regardless of the facts.

NORMAN L. EATOUGH
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Duane E. Jeffrey responds

It is at once evident, I think, that my article ("Seers, Savants, and Evolution . . .," hereinafter "SSE") was introductory only; no attempt whatever was made at formal synthesis of evolution and religion. Nor will it be made for some time (at least by me; others have manuscripts already finished). First must come a staking-out of boundaries of inquiry, and those boundaries are far less fixed than what we have traditionally been led to believe. We will do well to explore them very closely before we venture further. This response, however, attempts primarily to outline some of the areas which must eventually be traversed.

I shall try to distill out the points raised in the three preceding letters, and respond to them under specific collective headings. Unfortunately, this format loses some individuality but seems unavoidably appropriate under the circumstances.

Selection and Use of Source Materials.

As charged by Mr. Eatough, I did indeed "select" my sources. My "selection" was to take everything I could find of a direct nature that came from members of the First Presidency. I pointed out ("SSE," pp. 42-43) the reasons therefor, which should be obvious. But of the authoritative First Presidency statements, it is Eatough, not I, who is "selecting." For example, Mr. Eatough elevates the 1909 statement (and his assessment thereof) to the status of eternal truth—choosing to ignore the 1910 editorial, the 1911 editorials, and the 1931 pronouncement. What do these mean, if he is correct? Further, he asserts that the 1925 statement by Heber J. Grant *et al.* reiterates that of 1909. As pointed out in my article (p.63) the Grant administration excerpted directly from the 1909 statement right up to Mr. Eatough's "heart of the proclamation"—and then conspicuously skipped it! Why, if his position is correct? Can Mr. Eatough give us a cogent, rational, and honorable explanation for *all* these actions and statements, if his hypothesis is correct? Rather, his interpretation would appear to make the brethren guilty of duplicity. I have proposed an interpretation that fits the available collection of data; Mr. Eatough's—though not extensively developed—finds consistency only by ignoring most of it, as has been done by others for years. Further, the historical review developed in the article indicates that Mormonism has maintained, albeit with difficulty, a position from which to develop the synthesis of truth so long given lip service. Mr. Eatough's position would stifle all that, and lead us directly into the 19th-Century Christian traditions that have been known for decades to be so wanting and impotent.

If, as charged, my article is a "rehash," can it be pointed out where any of the 1910-and-following items have been quoted or even acknowledged in any other general publication since their original expression? The pre-1910 materials may be a bit of a rehash (though they were for the first time put into historical context), but the remainder, the critical material, is a resurrection of information long ignored or slighted.

Scriptural Analysis and Prophetic Commentary.

The Snows, in asking for a more thorough discussion of scripture, and Eatough in criticizing me for not affirming a literal interpretation thereof, hit upon topics of critical importance. Especially so because most aspects thereof are badly (and often deliberately) abused in our general Church communication. I speak of two tightly interwoven subjects; scriptural interpretation, and reliability and interpretation of discourse by latter-day prophets.

I think any honest person must admit that the creation scriptures, and many

others, *have* to be "interpreted"; their literal reading does not even begin to tell a coherent and internally consistent story. I do not set myself up as an assertive and definitive interpreter of scripture, and a review of the interpretations offered by LDS authorities over the years would be far too voluminous for an article like either "SSE" or this present discussion. For example, one should try sometime to distill from our prophetic commentary which scriptures refer to a physical creation and which to a spiritual.

The problem here is a two-fold one. First, zeal in preaching has produced a tendency to leap too quickly in scriptural interpretations, to define them too tightly and defend them too hotly. Secondly, there exists throughout the Church structure, from persons in high and low authority (and from authors and spokesmen, with no particular authority), a teaching to the effect that "the brethern never err," certainly not on anything "of significance." Over the years, this tendency and doctrine have cost us dearly; the doctrine is totally unsustainable. On all of the above issues (and many others), no matter which interpretation one may accept, one is forced to reject at least *some* teachings of *some* prophets. The pain in that process stems purely from the erroneous doctrine of prophetic infallibility. Even Joseph Smith, whom we traditionally view as closest of all in his intimacy with God, openly rejected the idea. Others of his successors have done likewise (cf. "SSE," fn. 6). We must internalize the validity of that rejection; the doctrine of prophetic infallibility is foreign to Mormonism.

Quoting general authorities, then, on either their own statements or on specific interpretations of scripture, is by itself not fully meaningful unless carefully placed in the context of their specific times, concerns, and experiences, and with all other available related statements and data for the time.

Further, as students of critical gospel subjects, we must become better versed on the processes by which such interpretations are made and how they become ingrained in our "theology." The Snows are correct in pointing out that a simplistic view of science will not be successful, and I think they will agree that an overly simplistic view of religion is equally dangerous. In-depth studies of all the above passages and topics (and others) are needed. Only when such studies are made and the findings recognized can we move with legitimacy to the more derived issues. Such analyses will take courage; our literature both published and otherwise is sprinkled with unfortunate incidents regarding persons who tried to call our attention to such problems. Consequently, most attempts lie mouldering on university thesis shelves or in private filing cabinets. But the studies must be made and publicized, for until we can honestly face our past, we cannot hone our tools with which to effectually face the challenge of our future.

I hope it is obvious that I am not suggesting that we disregard either scripture or prophetic commentary—I am instead pleading for incisive, analytical, and in-depth study thereof, for only thereby can the really legitimate material be identified and applied. But let us discontinue the practice of doing injustice and dishonor by forcing such sources to sustain meanings beyond their capacity; their vitality and message must not be further compromised by the exploitative treatment they have so often suffered. And, to acknowledge the direct question, I shall have to delay an answer as to how B. H. Roberts used II Nephi 2:22-23. I reiterate (as in "SSE," fn. 86), that one must not infer that Roberts' text is an argument for organic evolution *per se*; the situation is far more complex than that. I must here suffice with the observation that formal arrangements were made some time ago, with other

authors, for a fitting announcement of the Roberts' manuscript to the Church proper; it will be available for qualified study.

A "Church Stand" on Evolution.

Mr. Eatough asserts that I reach a "dubious conclusion" that the Church has no stand on evolution. I am faulted for the "unprofessional presentation of secret sources." It may be that Mr. Eatough is trying to "smoke out" such references, and I would not blame him at all if this is the case. I sincerely, almost despairingly, wish that they could be made public, but I am under obligation to say no more than I have said on that particular point. No professional who has ever done in-depth research in Mormonism will need any further explanation; my dilemma is an all-too-common one. Accepting such is just part of the price of research in many fields.

The charge applies most strongly to fn. 54 in "SSE." The same problem concerns fn. 95. Here, however, the situation is a bit less sensitive and I shall—albeit hesitantly—attempt to partly indulge Mr. Eatough's curiosity. Fn. 95, and the words in quotes regarding it in the text, p. 67, should have been ample warning that I am not just bluffing, I *can* support my "dubious conclusion." I refer first to documents from the administration of President McKay, during which Joseph Fielding Smith's book *Man, His Origin and Destiny* was published, and the entire question of science and religion came to its highest recent head. (There are enough of these responses, amazingly alike and often even verbatim in many critical phrases and paragraphs, that no individual person need conclude that he can identify any particular statement as being uniquely from *his* letter, etc. I am concerned lest erroneous identifications be made.)

First, from an interview conducted with President McKay by persons meticulous for detail, and recorded immediately afterward, quoting the President: "We do not know enough of the facts to take a definite position on evolution, but the concept is certainly not incompatible with faith. After all, the process of creation is going on continuously." Again, regarding *Man His Origin and Destiny*, "President McKay said that the book has *not* been approved by the Church; we are authorized to quote him on that. The work represents the opinions of one man on the Scriptures. Brother Smith's views have long been known. Striking the desk for emphasis, President McKay repeated that the book is *not* the authoritative position of the Church." From letters asking precisely if Brother Smith's book represented a Church view or position: "... this book [*Man . . .*] is not an approved publication of the Church. The author alone is responsible for the theories therein expressed." Again, "... the book . . . [*Man . . .*] expresses the views of the author, for which he assumes full responsibility. The book was not published, approved, or authorized by the Church. . . ."

On occasion the inquirer was sent the 1909 statement as representing "... the position of the Church upon the subject of the origin of man" but specifically warned that "... the Church has made no official statement on the subject of evolution," thus evidencing recognition of a clean distinction between the two subjects which is often lost. The responses repeatedly avowed that the Church has not taken a position, and often the 1931 Talmage paper, as published by the Church, was included. These statements, together with the First Presidency editorials and materials discussed in "SSE," make it clear that no official position exists.

Let me not be misunderstood. The letters do *not* promulgate evolution. They point out that revelation is the ultimate source of truth, though openly averring that revelation has not given answer to the issue (see the 1910 editorial, "SSE," p. 61,

among others, for an early expression of that same concept, and from the same administration, Joseph F. Smith's, which Mr. Eatough claims had previously and unequivocally settled the matter). The letters (and other data) indicate that the entire subject of evolution is unresolved; that it is a subject of continuing modification in academic circles; that it is not feasible for the First Presidency to make public statements which would be applicable to future developments as well as current positions (a point that directly relates to our earlier remarks about keeping things in their historical context); that until either revelation or science can resolve the problem with absoluteness no statement will be made, and that conflicts should be dealt with by "suspending judgment" for as long as necessary until the complete truth is obtained. If my conclusion is indeed dubious, I'm afraid it must be argued with a President of the Church, not with me. Nor is President McKay alone; similar responses on the evolution issue were made by succeeding administrations. But I have given enough already to make the point. The record reveals that the problem is an uncomfortable one; it is also unresolved.

Incidentally, while on the subject of *Man His Origin and Destiny*, my article nowhere even intimates, as I am charged, of a Talmage-Smith controversy over the book. Indeed, p. 65 clearly states that the book was not even written until after Talmage's death. If the sentence somehow refers to the Roberts/Smith altercation which occurred before the book was ever written, how can that be said to apply to the book, or called "alleged," since one has to ignore (among many other available documents) a seven-page statement by the First Presidency on the matter!

Evolution and the Atonement.

Mr. Eatough represents that evolution (he does not qualify it; it appears that he means *any* form of it, fully-theistic or otherwise) negates the atonement. I have heard this assertion many times over the years; but for the first time I can now openly query the writer: *why*? Please reflect very carefully on what the atonement is and does, and then tell me why. But I serve warning in advance: the usual arguments given in LDS literature are not firmly based. Be very *very* careful of your steps; that originally solid-looking footing turns rapidly to a morass of quicksand.

"Fixity" of Species.

I must confess to a certain admiration for Mr. Eatough's bravery in being so sure just what evolution is, what biologists agree on, what conclusions necessarily follow from specific propositions, etc. Especially is he brave since he is venturing well beyond his expertise, a point unmistakably flagged for everyone by his consistent use of the word "specie." Whatever the term may mean elsewhere, it has no position whatever in the vocabulary of biology, where it serves only to trip up those who are speaking without really having done their homework. The biological term is *species*, both singular and plural, and even Brigham Young used it correctly, though Mr. Eatough did not copy his quote thereon accurately enough to show that. And while we're on the subject, can anyone really explain, in meaningful biological terms, just what the Brigham Young quote does mean? Is it "species true to *species*," or "species true to *kind*, i.e., family or order or something at that general level?" The differences are profound.

Mr. Eatough apparently insists on a fixity of species, and cites John Taylor to forever resolve the question. In his haste to demonstrate his own respect for President Taylor, Eatough seems not to realize that it is out of similar respect that I did not play that quote more heavily than I did. For, despite Eatough's implications, I

did recognize Pres. Taylor's position as articulated in *Mediation and Atonement* (cf. "SSE," p. 58), and gave a more complete reference to it than Eatough does ("SSE," fn. 61)—but why set the President up just to knock him down? ("SSE," fn. 6 again.) The fact is that species *do* change, and it is not a question that is dependent on what any particular person says about it. As President Taylor put it in the excellent quotes with which "SSE" closes, let us "probe things to the bottom"; I am sure he would glory in the exercise.

Species change. Even most of the ardent modern anti-evolutionists admit that fact. Indeed, some of them now go so far as to claim that they have been insisting so all along! It is a very popular argument of current anti-evolutionary Christian writers to acknowledge that species change, "but *that* is not really evolution"! We shan't debate that point here; the present question being forced upon me is simply: do species change? As stated, the answer is yes! There are hundreds or even thousands of examples, which are convincing by their sheer mass even if one is not quite convinced in individual cases (the time-factor associated with the necessary observations in nature complicates *some* cases). There are many cases that are unequivocal, and obviously only one is necessary to establish the point. The simplest (though by no means the only) demonstration probably rests with allopolyploidy. This is a system whereby very rare and sterile hybrids between two different species (or even genera) undergo a doubling of chromosome number which gives them total fertility with themselves but sterility with the original parents, and often very different form etc., therefrom as well. This process is a common one both in the laboratory and in nature—many examples are known. And when one finds two putative parent species in nature with an apparent derived polyploid species, takes the proposed parental ones into the greenhouse, artificially induces a polyploid hybrid which is indistinguishable from, and totally fertile with the putative derived species in nature (thus duplicating a natural process), one has got something more than just a hunch that the process works! Are these really species, reliably? Yes they are; I know of no person well-versed in the phenomenon who would even think of arguing otherwise, not even anti-evolutionist geneticists.

A classic exercise in this regard is to take *any* non-circular definition of species one can contrive, which can be practicably applied to living things—and one will find numerous examples that transgress the definitions. By any testable definition ever proposed, species are observed to change! (The one definition whose challenge cannot be breached, of course, is the circular one: a species is that bounded unit in biology whose limits cannot change or be transcended. Some readers may wish to pursue that one; it has interesting implications). An example of polyploidy, before we leave it? The first one done artificially, though not necessarily the best, is *Raphanobrassica*, a species produced from a forced hybrid between radish and cabbage. It has been with us now since 1928, and there are myriads more known; evidence indicates that over one-third of the flowering plants and more than two-thirds of the grasses are polyploids, even polyploids of polyploids! Readers who wish to pursue such subjects further should consult *Chromosomal Evolution in Higher Plants*, by G. L. Stebbins (1971), or *Animal Cytology and Evolution*, by M. J. D. White (1973), though many other fine documentaries exist as well.

Species *do* change. That question *has* been "affirmatively resolved"—and that is *all* for which I claimed affirmative resolution. Please re-read p. 41 of my article; it can hardly be more clear. The significance of species change for the *rest* of evolutionary thought can still be discussed, but the fact is that species change is demonstrated. Being demonstrable, we should accept the demonstration "with joy"

(First Presidency). Being the active intellect that he was, I suspect that John Taylor would rejoice in it.

Adaptation, Design, and Attributes of Nature's Creative Deity.

The Snows make a critical point in relation to my comments regarding capriciousness in the characteristics sometimes attributed to Deity. I did not mean to use this as a "ploy"; I am sorry if the statement lends itself to that interpretation. But I do mean, definitely, what I said. I speak, of course, from the backgrounds within which I have studied and teach. Unfortunately (and here I must gently correct the Snows) there *are* people, and they are not at all rare, who *do* deny that *any* form of evolutionary processes occur, who sincerely feel that if they admit the validity of even one tiny piece of evolutionary biology, they will have permitted into their religious values the tip of a wedge which cannot be stopped and which they view with near horror. (We have Church writings which bolster that belief!) Every semester I meet a number of students who are very uncomfortable with the development of pesticide resistance in mosquitoes, warfarin resistance in rats, etc. Though some person will assert that these incontrovertible developments via mutation and selection have nothing at all to do with real evolution, still these trivialities cause considerable discomfort to many of our people. It is a deeply sincere position. And what do such persons offer as an alternative to explain the incredible adaptation visible in nature? Design—pure, thorough, and simple. As before, I make no attempt to pursue that question in depth (cf. "SSE," p. 44, and fn. 10). The Snows appear cognizant of the limitations of the position, and specifically circumvent it; from their point of reference the word "capricious" is quite probably inapplicable. But I doubt that theirs is the prevailing belief in the Church; even our current Family Home Evening manual comes dangerously close to falling into the trap. For trap it is, and an old one. Indeed, it was right on this issue that Darwin the clergy-candidate got his start on wondering about species—and, interestingly, his response provides an excellent case-example of the very kind of thing Brigham Young was extolling (in his quote, p. 49, fn. 36, "SSE"). Under those intense concepts of design, capriciousness is really a very *mild* word, even an understatement. Sociology and history, for starters, readily establish the point, without even beginning to invoke the detail of biology. It is the posit of intense design that bestows such problems, of course, and it was to that that my remarks were directed. I infer that the Snows find capriciousness in God to be intensely repugnant; I share their disdain. It seems time, then, that we eschew those peripheral doctrines which inescapably confer it on Him. Nature's adhering to a design by a benevolent being may well exist, but the concept seems to be not defensible on the level at which it is so often claimed.

Summary Response to Eatough.

Eatough's proposals have further errors which cannot be left unrecognized. It is not true, for example, that "evolution involves an increase in the information content of DNA," at least not in the sense of his generalization. Among other examples, the whole world of parasites demands that we do better than this. The comments on natural selection and mutation are completely incorrect. Even if one chooses doggedly to ignore the ponderous demonstrations that mutation *can* produce new genetic information, and that natural selection *can* select affirmatively for it, from the realm of genetic response by organisms to man's ever-changing pesticides, antibiotics, etc., one cannot ignore the recent experiments which have localized and studied the chemistry of the gene mutations, the altered

protein product produced thereby, and the brand-new chemical (informational) capability conferred as a result, and for which affirmative selection is observed. (This is still consonant with my earlier comments on information increase.) Mutation *can* produce new information, both in quality and in quantity; nature *can* select for it, and does. (The above examples are not cited as examples of species change; that question has been independently resolved.) The prospects of genetic engineering about which Eatough expresses interest are all part and parcel of one integrated bag of genetic tricks whose prospects are beginning to frighten even Nobel Laureate scientists—the imminent genetic revolution is just now beginning to sizzle—and the whole demonstrable bag runs directly counter to Eatough's assertions.

Eatough could not be more correct that the implications of this entire discussion run very deep, far beyond the subject itself. It is precisely that which makes it all so critical; we indeed cannot afford to keep our heads in the sand. Open discussion must be developed. In the first footnote of my article, referring to the first use of the word in the text, I indicated clearly what definition I was putting on the word "evolution." Rather than taking note of that, and of the evident and plentiful contraindications throughout the article, Eatough seems to feel that if I show any sensitivity at all to *any* form of evolution, I am thereby a fellow-traveller with, and a brazen champion of, the extreme anti-religious element, that I am demanding total and unconditional religious capitulation. That is his inference, not my implication, and totally contrary to the entire message of my article. Contrary to his assertion, I did *not* spell out any specific view of evolution in the entire article; other reviewers have rightly noted that point. I am a biologist, yes; a geneticist, yes, and I have access to all the flexibility of data interpretation that exists in those fields, but in *this* arena I am not bound by many of their limitations. The game we are playing in this search for truth is one of synthesis, not one contrived of extreme religionists on one hand and extreme anti-religionists on the other, each shouting epithets but never listening.

I deeply hope that Eatough and others will participate in this dialogue, for there is much that needs to be aired, and he has yet available to him a good many avenues which can be pursued for profitable discussion. But let us get honestly down to

Reliability.

The Snows, in their short, insightful, and sensitive letter make one further point, which relates directly to Dr. Woodward's remarks as well. This has to do with "sophistication" in science, and indeed in all other mental and spiritual activity as well. What, really, is the "level of reliability" for both mental judgments and for action?

I am not unaware of the lack of deep comprehensiveness and all-encompassing consistency in biology. Those who think it is all "cut-and dried" should address themselves to C. H. Waddington's series *Towards a Theoretical Biology*, among others. This deals only with the formal data of biology; there is more as well. The Snows quote Kuhn on items that "will not fit the box." Among a spectrum of other such commentators, Fort referred to such things as "the damned," "those things which science has forgotten." And one indeed finds them, ranging all the way from the really solid and *currently* inexplicable observations through items of progressively lesser documentation to those of sheer fantasy. We must be careful to distinguish, however, between observations that merely do not "fit" and those which are genuinely of sufficient weight and merit to force an overthrow of complete

scientific positions. I know of none regarding the fundamentals of biology that have such weight, and I do make it a point to keep current on literature that claims such.

And how does one work the mass of available data and claims down into one nice **wieldy package**? Not by dogmatism, from either science or religion—there is far more here than any version of either position can meaningfully explain. But that of course does not excuse us from the attempt, even though it does serve notice that we had better recheck our fundamentals and widen our sights. For religion too (and that includes, perhaps particularly, Mormonism) has rendered itself able to ask only certain kinds of questions, and look at only restricted kinds of data. Indeed, we have a whole coterie of commentators in the Church today who spend their time re-defining theological words so that they *need not* look for any unwanted data. Note that, next time you encounter a labored explanation of the meaning of *faith*, or *truth*, or *knowledge*, or *gathering*, or any number of others. I think I needn't give specific references to such; they are evident enough in our popular literature once one is alerted to the problem.

It seems clear, however, that the Snows fall into a category error in expecting that my comments regarding biology should subscribe in all points to the sophistication they see in Haglund. Sophistication in science can be both legitimate and blatantly otherwise. For one thing, I am not aware (though I have seen at least some of the arguments) that anyone has independently demonstrated that "formal mathematical structure" is the touchstone by which one must measure "reality." But beyond that: sophistication in discussing, say, the *nature* of light or matter is eminently appropriate; I confess to being less impressed with those who carry such sophistication to the questions of whether there *is* light or matter. Most people, it seems to me, just ignore the sophistication on such subjects and *use* light and matter to their benefit. I ask no more than that. For there *are* things in evolutionary biology which are just as straightforward as one's seeing light or perceiving matter, and it is these which underlie Woodward's response. Trying to avoid them by ultra-sophistication is to divorce oneself from the ability to do *anything* worthwhile or useful at all. I am saying, then, that though there are indeed areas of biology wherein high sophistication is appropriate, there are others (other categories) in which it is a travesty.

A type of category error appears to crop up again, in the Snows' letter, in the postulation of four possible mechanisms for the origin of man — they add cloning to the three indicated in the 1910 editorial. (Cloning, so far as I am aware, was first proposed in this vein in LDS literature by Frank Salisbury, in his *Truth By Reason and by Revelation*, 1965). Any of these four mechanisms would be perfectly in accord with law, the Snows affirm—and indicate that any of these would satisfy "God working rationally through laws." That, of course, depends totally on definitions—however subjective the term "rationally" may be, it certainly cannot be rigorously applied to laws *beyond* what we know. When we make that kind of leap for the actions of God, He becomes *arational* or *suprarational* (*not irrational*). And, lest there be further misunderstanding of the term, my comments quoted by the Snows as to God evincing "rational behavior" must be understood in the latter sense; while I would not begin to claim that we can understand all of God's direct actions—indeed I assert that we cannot even *identify* them all—I do maintain that it is folly to characterize Him in such a way that He becomes duplicitous and/or irrational. And that is precisely what he becomes with virtually all of the anti-evolution arguments with which I am familiar. For, invoking a critical point not heavily made by the

Snows, *whatever* method "God used" must eventually square with all the "factual" data (and here again we needn't burden ourselves with excess sophistication—let us keep such where it is appropriate). And when we adopt such a test (comprehensiveness of explanation, etc.) the superiority (n.b., I do not say "absolute truth,") of hypotheses which propose that *some form* of theistic evolution was involved becomes quickly apparent; the others, so far as I have observed, place God in an untenable position. For example, it seems to me quite reliable to "believe" that fossils exist. Their *interpretation* may well merit discussion; it seems to me that their legitimacy as remnants of previously-living organisms really does not. Evolutionary biology, of course, makes an attempt—a very good one—to explain them. Among others, one prominent anti-evolutionary commentator of high LDS rank had another explanation: "Well, of course we know that Satan just put those things there to deceive us." I cannot but wonder if persons who postulate this idea fully realize how widespread fossils are. They are found through and through virtually every major land mass known—if Satan really made all that, who then is the Creator of the earth? If nature indeed testifies of diety (a long-standing and still-in-vogue theological injunction), of which "diety" does it thus testify? And what is its testimony? For if the hypothesis be accepted, then God is a party to this by allowing such a monumental hoax, and indeed we have conferred on Him duplicity of truly staggering proportions! A witness of *that* sort, it appears to me, God can well do without.

The above is not an extreme example; only an illustrative one susceptible to rather ready analysis. While I doubt the Snows would invoke it, I have met many LDS who do. Other proposals run into similar problems, and it requires far more than just sophistication to countenance them. Of the proposed four basic types of mechanisms for the origin of man's physical body, I think that a "rational" and comprehensive analysis will leave no question that, for sheer superiority of data-explanation, proposals which encompass *some form* of evolutionary mechanism are far ahead of their competitors.

There is another consideration that seems to bear on the entire issue of how much—and at what levels—sophistication is appropriate in the whole broad field of evolutionary biology and its associated disciplines. Though the historical heat and perpetualness of the subject indicates otherwise, there are those who insist that, after all the discussion is over, the "evolution debate" is all a matter of academic interest only—that it makes no difference at all at which point on the spectrum of belief one casts his personal vote. I think that a moment's reflection will indicate that the matter is far more important than that. Among numerous possible justifications, one in particular seems especially critical. At the risk of appearing in the guise of a crusader rather than a dispassionate academic, let me address a relationship that many readers will not have seen, and which some may even wish to see defended. It is referred to by Woodward, and centers around the fact that our world is faced with many deep problems, not the least of which are a host of biological ones. We need not go beyond those of food-production; including wildlife as a food-resource, exploitation of the sea, agribusiness, breeding of new food strains and species, control or management of predators and insects, population curves of both man and his food-species, etc. It should be conceded by all but the willfully refractory that we must come to grips with the biology of these problems; indeed it is thought by some to be already too late to stave off human suffering on a scale not before seen. And therein, to me, is the tragedy. In the face of such impending suffering, and such opportunity for service, too many of our people turn a deaf ear, of-

fering such glib statements as, "We can always grow more; it is just a matter of more fertilizer," or, "There is enough and some to spare" pure and simple, or, "We don't need to concern ourselves about such things; Christ and the millennium will be here tomorrow and take care of all those people." We seem to have lost sight of President Lee's exhortation on that latter score, echoing President Woodruff: "The millennium may indeed come tomorrow, but I am still planting cherry trees." And what has all this to do with the evolution discussion? Put simply and bluntly: the mechanisms which must be used to resolve the food problems, etc., are the very ones at the heart of the matter regarding evolution, and many of our people willfully insist that they do not exist. Only those mechanisms give us the tools we need for management of our practical (temporal, as separate from spiritual) response to those challenges. Our wheats (and indeed much of the rest of our grocery list) are polyploids, both the ones we currently use and many of the new ones with which we are experimenting. Their productivity and nutritional values have been enhanced by the production of new mutations, and careful selecting therefor. We could not begin to feed the number of people we do with the wheat used by the Egyptians, for example. Nor can we feed the world tomorrow without further diligent application of those same principles. One may argue "evolution" all day, but we cannot afford to flout the evolutionary mechanisms which we *do* "know" (I shan't get into the etymology of that word). As indicated earlier, however much physicists and others may discuss uncertainty, predictability, etc.,—or even the precise nature of light, few persons really argue *whether* light exists, they just use it. And on precisely that same level, we must recognize the validity of, and necessity for, the management philosophy and expertise that comes from what some call "evolutionary biology"; to enumerate, that mutation as a phenomenon *does* exist and produce legitimate and valuable new genetic information, that population size and structure in biological organisms *do* have consequences, that selection *is* an operative principle of importance, both domestically and in nature, etc.

Some may feel this equation needs further discussion. I am perfectly willing to do that, but I would hope that such discussion will not impede our addressing the more serious and immediate aspects thereof. We have already been negligent as a people, to our discredit, for too long.

The Snows, of course, do not fit into the category I have just described. I have merely used their very legitimate query as the springboard to point up some of the real immediacy of the entire discussion; it is not a matter of mere academics or neatness of doctrine. I thoroughly anticipate that there will be those who will score me deeply for making the equation I have; who will accuse me of cheap sloganeering, throwing up straw-men, alarmism, etc. I am confident that the validity of my associations can be amply sustained. But regardless of the present resolution of that point, I am more than willing to place final judgment thereon on our grandchildren. We certainly will need to wait no longer than that.

In the meantime, one would hope for increased study and discussion of the many questions evoked in these exchanges. Virtually all our modern problems seem to require resolutions that invoke both technological (scientific, if you will) and "moral" (religious, etc.) responses. The bases for such response must be clearly identified and firmly grounded. It is high time we get to work.