Another change not mentioned above and with no tricotyledon ancestry, was a cotyledon split half way from the apex to the base.

Conclusions

Tricotyledony or the more inclusive condition, pleiotropy, in tomatoes is evidently hereditary and recessive but the ratio of normal to mutant has not been determined.

Like mutations in general, this change reduces the vigor of the plant. Loss is manifested in later bearing and less resistance to cold and other unfavorable environmental factors. This loss is another difficulty for the theory of evolution, which is dependent upon mutation.

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[4]Personal letter to the author.

ONE MAN'S VIEW ON THE TEACHING OF ORIGINS IN THE PUBLIC SCHOOL SCIENCE CLASSROOM

RICHARD BLISS*

The teacher in public school must avoid coercion and unfair dogmatism in the presentations of origins. Students should be given empirical data bearing on origins and then be allowed to examine alternatives to the evolution concept. This objective might be achieved in part if student teachers were asked to write about arguments opposing evolution during their own college preparation. It is also suggested that data regarding competitive theories be collected into an appendix or addenda for use with all types of textbooks or laboratory manuals.

The word evolution means different things to different people. I find that, as I am asked to speak on the subject of "Teaching Evolution in the Classroom," I am often confronted with this problem in semantics. To be sure that this is not the case in this paper, let me clarify what I mean.

That evolution is *"the continuous genetic adaptation of organisms or species to the environment by the integrating agencies of selection, by hybridization, inbreeding and mutation"* is the biological definition often used. In this respect evolution or adaptation is constantly going on around us and would be difficult if not nearly impossible to deny.

There is another aspect of evolution, however, that impinges upon origins. I am referring to the evolution of all species from a single coacervate cell, or some substance, that has spontaneously developed from some primordial soup.

Now this is where the problem comes into view and I wish the reader to understand that this is what I am referring to. It is this point of view that brings some of the most bitter controversy, a controversy that I personally cannot avoid because it is dealt with in practically every biological textbook, and science curriculum (K through 12) is inescapably my business.

I begin, then, with "One Man's View" that may well be considered unorthodox and totally unacceptable to some.

Background Observations

Some time ago an article appeared in a science journal in which the author was reacting to the non-evolutionist, and he stated that any educated person who says evolution was not the case is basing his position upon rejection of scientific evidence and not the application of it. (This statement was made from the point of view of the *amoeba to man hypothesis.)* Then he went on to say:

> This rejection may be for a variety of personal reasons, which we must respect. In a democracy a citizen can believe anything that he wishes and, in a large country such as ours, surely every conceivable point of view must have at least one adherent. Some believe the earth is flat; others do not believe that micro-organisms can cause disease. But we can hope that few of the former will become pilots of our planes and ships, and few of the latter will become physicians and surgeons. *We can also hope that few who hold these views, or reject evolution, will have the responsibility for teaching science to our young people."*[1] (Emphasis in original.)

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A few years ago I found myself in a graduate course related to the history of biology. One of the requirements of this course was to present a paper on any subject germane to our study. As we had spent some time on the subject of evolution in relation to historical figures of the past, I decided to do a paper on Darwinian Evolution; only I thought I would do my research with a particular view in mind, that is, "Evolution in Question."

The professor presiding said: "Bliss, this is a monumental task, you will never find anything significant or worth reporting." After this statement I was sure that I wanted to pursue the task, so I began writing letters and searching out other scholars in the subject area. Information began coming in and the more that arrived the more interested I became.

I tested some of the views out on my fellow graduate students and found that they too had harbored doubts on many aspects of evolution. And I was told by well meaning friends, "You're nuts if you bring that paper in, it isn't worth the grade you will get." The indication was that I had better be careful on this subject with this professor because he might become vindictive.

Now, I don't want to intentionally cast aspirsions on these fine men or on the respectable *theory* of evolution. Rather I would like to draw attention to the seriousness of coercion in the academic community which we must admit is frequently happening.

To Challenge, or Not to Challenge

I feel, respectfully and perhaps naively, that even among many of our most brilliant educators in the field, that we have closure on this subject without a full realization of its implications to science. There is testimony to the effect that evolution is a *theory;* yet, when one dares to attack this theory, a person literally places his academic integrity on the line. I like G. A. Kerkut's way of putting it when he says: "If one tries to question, the protagonists round on one and say in an accusing tone of voice, don't you believe in the theory of Organic Evolution? What better theory have you got to offer?"[2]

Now it seems to me that if there is anything in this world today that we should be able to rely upon, it is the empirical knowledge that we are able to gain from scientific investigation. There is little danger of being accused of using unfair dogmatism, if a clear contextual representation of fact is made, and a highly controversial and competitive theory is placed *in proper context* and not scrambled in among the facts. However, I often feel that some ignore the basic tenets of science and in effect propagandize young people, thus stultifying their minds in favor of one's own prejudices.

At this point, let me ask, what are we attempting to do as far as science education is concerned? In the K-6 sequence we teach our children to discover scientific relationships by using the "Process of Science." We ask the child to observe-classify—infer—communicate his findings—experiment—build models—predict, etc. Over and above the cognitive aspects of these experiences are those of the effective domain where we teach our children, through science, to respect logic—to consider the consequences—to long for understanding—to consider the premises—to question all things and I am sure we could extend this value arrangement.

However, we turn around, in our life science and biology classes, and not only indoctrinate them in the highly controversial theory of organic evolution, but all too often demand preset evaluative responses to the theory. Sadly, this somewhat rigid response is often no higher taxonomically than memory or translation. I really wonder what kind of answers we would get from these young people if we just gave them the empirical view as far as is possible and asked for a response on the creative level?

Many Views on Origins—One View?

On the subject of evolution the academic powers (those that are on the college and university level and actively engaged in research) have a loyal following of young and fewer older biology teachers, that are carrying the torch for organic evolution far beyond the point that they would personally condone.

Of course the research scientist is fully aware of the tremendous possibilities for error and misinterpretation. Therefore, the scientist who is engaged in research activity is not the object of my concern. Rather, I am concerned about the classroom teacher who is espousing the scientists' views. Often, the classroom teacher has not been given the breadth of exposure to have a complete understanding of evolutionary controversies. In fact, in talking to many young biology teachers over the years, I find that a frightening few have any view of origins outside of the evolutionary theory.

I remember how concerned one person was that his students would understand that evolution (amoeba to man) was the case. He expressed this view after stating that he had personally researched all aspects of the subject and it was clarified by his professor. I asked if he thought that any opposing view to this subject should be entertained. The response was that there wasn't anyone in the field of science that he knew of or had read about that would entertain any other point of view.

I sincerely feel that an indictment is on those college and university professors that neglect,

either by accident or design, to inform their students about the logic of all points of view . . . or I wonder . . . is there really only *one* point of view??? What could be better in a two credit course on biological origins than to have included all of the fine writings on all sides of this issue?

A volume entitled, *Man's Origin, Man's Destiny*, by A. E. Wilder Smith[3] was recently given to me by a student in my methods class. As I read the book, I found no quarrel with his argument from the point of view he chose. Here is a man that holds doctorates in three areas of science, is widely known as a speaker to university student groups both in Europe and the United States, has been involved in research plus a long list of other credits. Certainly in every respect he is a qualified scientist and writer.

Now are we going to offer our students an opportunity to reflect on this man's views? Or do we just categorically reject anything that comes from his pen because he has a creationist point of view? These are the decisions that are going to have to be made in the college classroom.

If we are determined to give young people the freedom of their own logic, the science teacher is going to have to be scrupulously direct in presenting all scholarly points of view. Why shouldn't we insist that a student in science, and certainly one that is going to enter the profession of teaching, do a literature research based on writings from scientific scholars who harbor opposing points of view on evolution?

Too often have I heard that these views are derived essentially from faith and lie outside the realm of scientific reasoning. What is it then that we have when we say the fossil record points to a progressive type of evolution? It seems that we are employing a great deal of faith in this respect, as well as in many other cases.

Conclusions and Proposals

If I were to propose a curriculum in biology and the life sciences, I would suggest use of a text that deals, not in the centrality of evolution, but rather in the centrality of universal order and the diversity of all living things. Within these general areas of order and diversity one could develop the necessary conceptual patterns and relationships without dealing with the serious conflicts within the area of origins. I can think of nothing more exciting for a young person than to be able to observe life in a factual context, or at least a context where there is unanimity of view and draw from these some non-directed conclusions regarding the speculatives.

But this wouldn't be complete, for we must also give him the opportunity to view the speculations and theories proposed by scholars in science. In this respect then, the student should have access to scientific interpretations of even the most controversial of these theories. The question now is, how is this going to happen if we don't place it in the body of our material?

I propose that we collect the highly conflicting and competitive theories in an appendix or addenda to our high school biology texts.* I propose that the fine textbooks and lab manuals that are presently on the scene be rewritten to include these suggested features. If we are so inclined to do this, it will be then and only then, that we can say that our science curriculum places an emphasis on developing logical thought patterns and where serious conflicts and reasonable doubts occur we are depending upon the student mind to make sensible choices.

I submit this paper as one man's opinion.

*Editor's Note: It is obvious to C.R.S. readers that some action along the lines suggested by Mr. Bliss has come recently. The text book, *Biology, A Search for Order in Complexity*, is available through Zondervan Publishing Company, Grand Rapids, Michigan. This will serve either as a central text for public school classes, or as an auxiliary text to provide creationistic evidences. Then, too, a Handbook for Teachers has been prepared by the Creation-Science Research Center, 2716 Madison Ave., San Diego, Calif. 72116. This handbook entitled, *Science and Creation*, and written by Drs. Morris, Boardman, and Koontz is ready for widespread circulation and usage.

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