

HOW CHRISTIANS RESPOND TO SECULAR SCIENCE

By Dr. Margaret J. Helder

Setting the Scene

Nowhere in this world is the battle between Bible-believing Christians and the world more evident than in the discipline of science. In Alberta, for example, there is a world class museum devoted to palaeontology. The stated purpose of the Royal Tyrrell Museum in Drumheller, is to celebrate three and one half billion years of life. Naturally the interpretive theme of this institution is evolution - or - in other words the idea that random processes, rather than purposeful design, brought about all things.

For ten years, until very recently, there was a prominent sign in the museum: "Speak to the Earth, and let it teach you." (Job 12:8) In that the museum discusses only evolution, the sign appeared to tell us that both nature and Scripture testify to evolution. Had the composer of the museum text however read the very next verse in Job, he would have seen "Who knows not in all these that the hand of the Lord has wrought this?" The message of Scripture is unequivocal, that God is the creator of all things. Scripture does not sanction the idea of time and chance as agents of creation as the sign in the museum implied. Neither however does nature point to random processes as the creative agent. The sign in the Royal Tyrrell Museum therefore was wrong on two counts.

Once Christians recognize that secular accounts of origins are contrary to Scripture, then they must devise strategies to deal with, and respond to the popular interpretations. Particularly during the last thirty years, but not confined to that period, the traditional creationist approach has been to show what is wrong with evolution theory. Books such as *The Flood* by Alfred M. Rehwinkel. 1951. Concordia Publishing House, St. Louis and *The Genesis Flood* by John C. Whitcomb Jr. and Henry M. Morris, 1961. Presbyterian and Reformed Publishing Company, Philadelphia were early, influential works. These were followed by a whole host of other titles such as *Evolution: the Fossils say No!* by Duane T. Gish. 1972. Creation-Life Publishers, San Diego; *Scientific Creationism* edited by Henry M. Morris. 1974. Creation-Life Publishers and *The Natural Sciences Know Nothing of Evolution* by A. E. Wilder-Smith. 1981. Master Books, San Diego. In addition, beginning in the 1970's such specialists as Drs. Gish and Morris undertook to debate prominent evolutionists on university campuses all over this continent and indeed around the world. These gentlemen were soon joined by numerous other creationists such as Dr. Gary Parker, Dr. Wilder-Smith and lately lawyer Phillip Johnson. Even today it is widely understood that creationists generally win such debates. The 1980's saw the appearance as well of numerous well illustrated creationist books for children. Many of these titles, especially in the beginning, were "two model" discussions designed to appeal to public schools. For the most part, they didn't

The most important effect of these initiatives was to provide encouragement and information for Christians. A few secular individuals, impressed with the argument, went on to consider the claims of the gospel and were converted. Other scientists who had formerly supported secular scenarios for origins, later changed their minds. For example

Dean Kenyon (see Foreword to *What is Creation Science?* by Henry M. Morris and Gary E. Parker. 1982. Creation-Life Publishers) and Gary E. Parker's 1977 testimony *From Evolution to Creation...* Creation-Life Publishers. There were other benefits from these initiatives as well. Children in the classroom and at home, were provided with quality creationist resources. In addition such efforts forced changes in secular texts so that at least for brief periods, the message of evolution was muted. For example see Nicholas Wade. 1972. Creationists and Evolutionists: Confrontation in California. *Science* 178 Nov. 17 pp. 724-729; James L. Mariner. 1977. The Evolution-Creation Controversy in the United States. *Journal of Biological Education* 11 #1 pp. 6-11; Stephen Jay Gould. 1982. Moon, Mann and Otto. *Natural History* 91 #3 pp. 4-10; and Karen Schmidt. 1996. Creationists Evolve New Strategy. *Science* 273 July 26 pp. 420-422. Lastly pressure from creationists certainly has kept evolutionists on the defensive. This pressure may even have been a factor contributing to certain recent revisions in evolution theory.

Thus the effort to demonstrate problems with evolution theory remains an important aspect of creationist strategy. Faced with a continuous barrage of evolutionist propaganda and interpretations, many Christian laymen need answers. This is especially so for those people with children who are confronted by such material in the classroom. As one American graduate student, whose studies involve research on DNA sequencing, remarked about instances when people ask him for help: "I can't simply ignore these people when I have some reasonable answers if I can understand claims made by evolutionists, then it is important that I share my God-given understanding with other Christians and encourage them not to doubt the written word of God." (Todd Wood, personal communication, April 9, 1996). However this graduate student emphasizes that such defences against evolution theory are merely a necessary first step for the Christian. The most important task for creationists involved in the study of science, is to develop "a Biblically-centred, God honouring view of earth and life history. Everything else is peripheral." (Todd Wood, April 9, 1996).

Recent developments have brought a positive Christian interpretation of nature closer to realization. During the past two to three years, significant progress has been achieved in the establishing of research facilities dedicated to creationist questions. Not only has the Institute for Creation Research (based in California) carried out field research for more than a decade in the Grand Canyon and environs of Mount St. Helens, but they currently are in progress of outfitting laboratory facilities with an electron microscope and a spectrometer for measuring low-level radiocarbon activity in coal. In addition, the Van Andel Research Center in Arizona, has been established. It provides a base for scientists to conduct studies in the vicinity of the Grand Canyon. Lastly, an important dinosaur bone bed in Wyoming has recently come under creationist control (*Creation Dialogue*. 1996. 23 #1 p. 3)

The internet is perhaps an even more significant tool of the creationists. Formerly young earth scientists often existed in not-so-splendid isolation. Their colleagues at work were very unsympathetic or overtly hostile to their interests and the people at church, while friendly, had no interest or expertise in the details of science. So there was no one with

whom to discuss their insights. All that has now changed dramatically. Over the internet, creationist scientists share current information, discuss implications of recent studies and generally get to know each other. This triumph of communications enables creationists from around the world to bounce ideas back and forth. It is leading to a clearer statement of the creationist position and agenda.

Young earth creationist scientists are confident that the clear statements of Scripture about beginnings indeed translate into reality in the material world. There is one truth, not many truths. As Kurt Wise, a palaeontologist who graduated from Harvard, tells us: "Macroevolutionary theory is wrong. Theories for an earth which is billions of years old are wrong They are wrong because they simply aren't true, and we know they are not true because we know Scripture is true and Scripture indicates that organisms were created separately and that the creation is only thousands of years old." (Personal communication, July 3, 1995)

Like a nuclear reaction that achieves critical mass, creationists over the internet are encouraging each other. Sometimes people who support a literal understanding of Scripture, are nevertheless nervous about creationist interpretations of nature. Such people fear that if/when a single creationist argument is found not to be supported by data, then the whole position may be discredited. Some people might indeed abandon their literal interpretation of Genesis on such a pretext. But this response, declares Kurt Wise, is not reasonable. The creationist position is a *unified model*. It stands whatever individual components may be lost. As Dr. Wise remarked: "We all MUST realize that the strength of the young-age creation model is not in any given argument, but rather in the explanatory power of the model AS A WHOLE. (This is the strength of the evolution model as well)." (Personal communication, June 30, 1995) Creationist scientists have been saying this for many years, but Dr. Wise states it most clearly. He goes on to emphasize: "There is an enormous amount of disparate data which is explained by the creation model. This makes the model powerful, regardless of how strong or weak any given argument turns out to be."

It is exciting to the young earth scientist to see how studies from nature testify to the work of a designer, to information imposed on matter from outside of the characteristics of matter (eg. the information content in the genetic code), and to a short age of the earth. Rather than trying to disprove evolution theory, with its constantly changing scenarios, creationists instead should concentrate on the positive details of their own model. At the same time the inadequacies of the evolution model will become more evident. Let us look at an important field of study concerning origins. As we shall see, the data fit creationist expectations. Evolutionists in response have made modifying assumptions so that the data can be accommodated within their model. Their best efforts however have not been rewarded with success.

Cambrian Explosion

Animals are a prominent part of nature. Their origin is interesting to most people. According to the evolution model, these organisms developed from less complex (simpler) forms over long periods of time. According to the creation model all things

were created within six days. Are there any indications in nature as to what might have happened in the past? Insofar as sedimentary rocks have trapped and preserved traces or fossils of organisms which lived long ago, we can at least obtain some indication about what organisms were contemporaneous. It is the expectation of the evolution model that the lower levels of rock will have fewer and less complex fossil forms than the higher levels. In other words we expect to see a trend from simple to complicated forms and from a small amount of variety to a large amount as we proceed from relatively older rock layers to younger rock deposits. On the other hand it is the expectation of the creation model that a wide variety of complicated organisms will appear suddenly in the rocks.

What do the geologists find? They find great depths of rock with nothing but microorganisms (Fig. 1). In these lower layers they find bacteria as well as algae, fungi and protozoans. None of these contains much variety in cell types. The protozoans, for example, consist of one cell only. Some of the plants (algae or seaweeds) are larger but they have only a few types of cell. Then suddenly a level is reached in the rocks which includes very complicated large animals. There is an immense gap in terms of characteristics between single celled protozoans (which contain one set of chromosomes or genetic information per cell) and metazoans (Fig. 2) (which involve coordinated activity of millions of cells of many different types all of which contain two sets of chromosomes per cell).

The term "Cambrian Explosion" is an expression which almost seemed to coin itself. J. William Schopf in 1975 referred to an "explosion of advanced forms" (*Endeavour* 34 p. 51) while Bruce Runnegar in 1982 used the term "Cambrian explosion" (*Journal of the Geological Society of Australia* 29 p. 395) as did Stephen Jay Gould in 1984 (*Natural History* February issue p. 14). The term has been in general use ever since. For example see S. Conway Morris. 1989. Burgess Shale Faunas and the Cambrian Explosion. *Science* October 20 pp. 338-346 and Rick Gore. 1993. The Explosion of Life: the Cambrian Period. *National Geographic* 184 #4 pp. 120-136.

Is "Cambrian Explosion" merely a popular term or is it a real phenomenon? Is there really a sudden appearance in the rocks and if so what is it that suddenly appears? This is what Andrew Knoll, professor of evolutionary biology at Harvard University wanted to find out. He and his colleagues spent fifteen years travelling to remote spots on the globe to study suitable rocks. They found that Cambrian rocks were conspicuously different from those underneath. First there were no animals, and then there was rich variety, but nothing in between. There was a sudden appearance of complex animal fossils. There were no gradually changing animal ancestors. As Dr. Knoll remarked concerning some rocks which lie just slightly lower than Cambrian rocks: "We now know that the Ediacaran radiation was indeed abrupt and that the geologic floor to the animal fossil record is both real and sharp." (*Scientific American* October 1991 p. 64) In sediments below the Ediacaran level, they found no indication at all of multicellular animal life, not even of trails or burrows. Dr. Knoll described the situation: "Despite the presence of multicellular algae and diverse single-celled eukaryotes [cells with nuclei], there were no indications of animal life in the Spitsbergen sediments. Tracks, trails or

burrows normally associated with animal activity simply have not been found in these rocks or in other beds of comparable age.” (p. 65) It is true that they found traces of delicate single celled protozoans, but no hints of the existence of many celled animals.

Evolutionist scientists do recognize that the Cambrian explosion is not an expectation of the evolution model and they do recognize that this is a problem. Stephen Jay Gould indicates that according to the standard interpretation of the fossil record, huge depths of rock contain only microbes. Following the sudden appearance of multicellular animals, the representation in higher levels of rock changes little other than in detail from the first representatives. According to Dr. Gould: “Three billion years of unicellularity, followed by five million years of intense creativity and then capped by more than five hundred million years of variation on set anatomical themes can scarcely be read as a predictable, inexorable or continuous trend toward progress or increasing complexity.” (*Scientific American* October 1994 p. 89) [Creationists dispute the ages of the various rocks mentioned by Dr. Gould, but not the order or relative thickness of the various layers.] Anyway as far as Dr. Gould is concerned “The Cambrian explosion was the most remarkable and puzzling event in the history of life.” (p. 89) What confuses him is how to accommodate this information into his evolutionary model.

Jeffrey S. Levinton of the State University of New York at Stony Brook, similarly mused about the sudden appearance of many celled animals and the later absence of genuinely new body plans after the first appearances. He wrote an article about the “Big Bang of Animal Evolution” (*Scientific American* November 1992 p. 84-91) and he characterized the situation thus: “Evolutionary biology’s deepest paradox concerns this strange discontinuity. Why haven’t new animal body plans continued to crawl out of the evolutionary cauldron during the past hundreds of millions of years? Why are the ancient body plans so stable?” (p. 84) Evidently for the evolution model the problem involves not only sudden appearance of animals but also the almost immediate cessation of further basic change.

Having presented information that indicates how abrupt is the appearance of complex animals in Cambrian rock, Dr. Knoll nevertheless finds, on the basis of his faith in the evolution model, that he must question his data and conclusions. He suggests that small, many celled animals actually developed hundreds of millions of years before the Cambrian sudden appearances. He continues: “Such dates can be reconciled with the geologic record if one accepts the prevailing view that the earliest animals were tiny, soft-bodied forms that eluded fossilization.” (*Scientific American* October 1991 p. 66) Thus Dr. Knoll, who knows that single celled protozoans were preserved in the sediments, nevertheless is willing to believe that soft many celled animals while present were still not preserved.

Dr. Knoll is not alone in his beliefs. Jeffrey Levinton and colleagues Gregory Wray and Leo Shapiro similarly are distinctly uncomfortable with the way in which recent refining of the geological record has highlighted the abrupt appearance of animal fossils. They note for example that the earliest trilobite fossils were distinctly different in distant parts of the world and all of them were what one would describe as “highly derived” or

complicated, sophisticated animals. How could these develop without a lengthy evolutionary past, they asked themselves. The fact that such fossils were absent from rocks lower than Cambrian, does not convince them that ancestral types never existed. They suggest that the organisms were too soft and too small to preserve. It is their objective to look for indirect evidence that the animal phyla had a long Precambrian evolutionary history. (Wray, Levinton and Shapiro. 1996. Molecular Evidence for Deep Precambrian Divergences Among Metazoan Phyla. *Science* 274 #5287 pp. 568-573).

These scientists looked at specifics of the genetic code within seven important genes in a wide variety of animals. Any one gene, when compared among all the animal types, was found to have a basic design. However the code differed in detail among the various groups. Some collections of organisms differed less from each other than from other groups of organisms. Thus organisms of various body plans could be grouped into clusters that were more alike in gene composition, or less alike each other. The team of scientists used these clusters of similarity or difference in genetic code to estimate how long ago it was that all of them had made up one population with the very same gene.

This sounds very scientific and very factual. However, in order to estimate time since the organisms were one population - a number of unprovable assumptions had to be made. Firstly they had to assume that the different body plans all descended from a common ancestor. [Creationists, of course, assert that they were all separately created. If this is so, then the rest of these speculations are a waste of time.] Secondly they had to assume that the genetic code (the technical term is nucleotide sequence) slowly but continuously changes. As Geerat J. Vermeij (1996. Animal Origins. *Science* 274 #5287 pp. 525-526) suggests, the rates of molecular substitution could have been much faster at certain times than others. So nobody knows. This assumption is queried even by other evolutionists. Thirdly the team had to find a way to estimate the rate at which the substitutions occur. They based this on other estimates made from other organisms. Their conclusions are only as reliable as their starting assumptions.

Drs. Wray, Levinton and Shapiro concluded that the basic animal groups became separate and distinct, as far as their genetic composition was concerned, as much as 1.2 billion years ago. By evolutionary estimates, this would double the age of the animal groups. This hypothetical progressive change in genetic information was not, presumably, accompanied by a change in the outward appearance of these organisms. These organisms all remained small, flat or tubular and all relied on passive gas exchange and passive food intake over the entire outer surface, according to Vermeij. These scientists apparently believe, and they encourage us to believe that the genetic changes were so pronounced in these nondescript little animals that all the animal phyla (basic body plans) were able to develop explosively within a few short million years. A question these specialists might profitably have asked themselves was what kind of selection might have led to populations so similar in appearance but so different in genetic make-up? This hypothesis does not make sense, even according to evolution theory.

Even if there had been mythical ancestral "squishy types" (Levinton's informal

description quoted in the *Edmonton Journal*, October 26, 1996) of animal, the problem of abrupt appearance does not go away. In fact recent studies have indicated that the problem is worse than ever. The animals which are found in the lowest Cambrian rocks, are not simple small creatures. Rather they are large, extremely sophisticated and obviously part of complex communities comparable to those we see today.

One of the lowest lying organisms in Cambrian rock is *Anomalocaris*, first described from the Burgess Shale in British Columbia. (Derek E. G. Briggs. 1979. *Anomalocaris*, the largest known Cambrian arthropod. *Palaeontology* 22 pp. 631-664). The animals were large with prominent eyes and monstrous front appendages (Fig. 3). Their shape was unique but motorized models indicate that they swam smoothly. Their mouth parts were unusual too. Fossil specimens of these animals have been found in Europe, Australia and China (Briggs. 1994. *Science* 264 May 27 p. 1283). Analysis of the mouth parts and appendages suggests that these animals grasped relatively large victims. A team of palaeontologists from China concluded about their specimens: "Anomalocarids were active predators, as indicated by the raptorial anterior appendages. The hydrodynamic profile would allow fast swimming to pursue and capture prey." (Jun-yuan Chen, Lars Ramskold, Gui-qing Zhou. 1994. *Science* 264 May 27 p. 1306) In order to support such large predators, a complex community of organisms at lower trophic levels would be required (eg. plant producers, animal grazers of various types and even other predators). The Chinese team thus conclude "The biotic system appears to have quickly reached a level of complexity not far from that present in modern oceans." (p. 1304)

Even more remarkably, Chen *et al* suggest that *Anomalocaris* and the rest of this complex community "may have lived only 5 million years after the 'Cambrian explosion' began" (p. 1304). Development from single cells or even from small squishy creatures to complex communities in the blink of an eye, as geological time estimates go, is not an expectation of the evolution model. Of course *Anomalocaris* is not an isolated phenomenon. Other studies from around the world similarly indicate how modern were the organisms trapped in Cambrian rock. A specialist in the Canadian Northwest Territories similarly observed: "Identification of an elaborate and essentially modern crustacean filter apparatus [eg. shrimp are crustaceans] by early Cambrian points not only to the remarkably advanced state of the Crustacea at that time but also the probability that such forms constituted an essential link in the trophic webs of the earliest Palaeozoic [Cambrian], just as they do today." (Nicholas J. Butterfield. 1994. *Nature* June 9 p. 479). Thus sudden appearance of complex animals in sedimentary rocks is a real phenomenon.

Attempts to Rescue Evolution Model

When a sudden event occurs, we look for a cause. There is no such thing in nature as a spontaneous sudden event. Any spontaneity is merely apparent. There is always a cause. So what might have triggered a sudden burst of evolutionary change? If the Cambrian data are to be accommodated in the evolution model, then scientists must find a cause for the Cambrian radiation or explosion. According to J. William Schopf in 1978, it was the photosynthetic talents of blue green algae which released oxygen into the atmosphere (popularly estimated to have first appeared two billion years ago) and

the development of cells with organized nuclei (popularly estimated to have happened 1.5 billion years ago) which led to the Cambrian event (*Scientific American* 239 #3 pp. 110-138). However these events were supposed to have occurred long in advance and could scarcely be said to have initiated a sudden change. It was back to the drawing board.

Andrew Knoll (1991) speculated that a sudden increase in oxygen in the atmosphere might have allowed for the development of larger, more complex animals. He suggested that for many millions of years, photosynthesis (which releases oxygen into the atmosphere), and decomposition of dead cells (which consumes oxygen) must have been essentially balanced. Thus there was no oxygen surplus or deficit. Then perhaps something happened, he speculated, which resulted in the burial before decomposition of tremendous amounts of algal cells. As he put it: "... during much of the late Proterozoic [late Precambrian], burial rates for organic carbon matched or exceeded the highest levels seen during the subsequent 540 million years [Cambrian and since]." (*Scientific American* 265 #4 p. 71). He suggested that with half of the oxygen cycle partially blocked - the part in which oxygen gas is consumed, the result would be much higher levels of oxygen in the atmosphere. Dr. Knoll

calculated that this burial of organic matter happened to such an extent that more material was buried in these sediments than in rocks at the Cambrian level or above. This is an interesting suggestion. We know about huge deposits of coal, oil and gas in rocks higher than Cambrian, but we have identified none in Precambrian rocks. What gave Dr. Knoll such an idea?

Dr. Knoll looked at the ratio, in appropriate sedimentary rocks, of two forms of the carbon atom. Carbon occurs in three forms or isotopes. One of them, carbon fourteen is radioactive and changes with time into nitrogen fourteen. However carbon thirteen and carbon twelve are stable. Carbon twelve is the normal form and it makes up 99% of all carbon atoms. Carbon thirteen is present in only very small amounts but there is a lot more of it than of carbon fourteen. Dr. Knoll examined the proportion of carbon thirteen to carbon twelve in chalk-like (carbonate) salts in Precambrian sedimentary rocks. He compared this ratio to that in modern and other sediments. He found that the proportion of carbon thirteen to carbon twelve was elevated in the earlier rocks. He looked for an explanation and concluded that the elevated carbon thirteen came as a result of the burial of tremendous amounts of organic carbon. This however is an incorrect interpretation of carbon chemistry in bodies of water. The phenomenon which leads to elevated levels of carbon thirteen in the sediments is increased rates of photosynthesis. The chemical data can be interpreted in terms of larger populations of photosynthesizing algae present but there is no evidence to suggest that dead algae did not decompose in the normal way.

An interesting insight into the cause of precipitation of calcium carbonate (chalk) was a surprise discovery in imaging data from LANDSAT, SKYLAB and NOAA satellites over the Great Lakes. What was observed was large amounts of chemical precipitation or whiting in the water column of these lakes at times when there were large populations of algae present in the water. (Alan E. Strong. 1978. *Remote Sensing of Environment* 7 pp. 61-72) The chemistry is as follows. Carbon in the form of carbon dioxide enters

water from the air and reacts with water to form carbonic acid. Then the mineral calcium oxide in rocks of the water basin similarly dissolves in water and reacts with the carbonic acid to form calcium bicarbonate. Simultaneously plants in the water, mainly algae, need to obtain carbon dioxide in order to photosynthesize. They prefer dissolved carbon dioxide gas but there is very little available. Removal of the carbon dioxide then causes calcium bicarbonate to dissociate into calcium carbonate (which in the form of a white solid sinks out of the water column), as well as water and carbon dioxide which the plants remove. But there is an additional factor determining which carbon precipitates as a solid and which enters the plants. As far as isotopes are concerned, the plants prefer normal carbon twelve and they discriminate against carbon thirteen. Thus the larger the photosynthesizing population, the more calcium carbonate we see precipitated and the higher is the ratio of carbon thirteen to carbon twelve in this insoluble material.

A rival team of scientists presented evidence in 1995 that Dr. Knoll's explanation was in error and would not work as an explanation for the Cambrian event. After looking at the ratios of carbon thirteen to carbon twelve in extremely tiny amounts of organic matter in Precambrian sediments, it was the conclusion of these scientists that the algae must have decomposed at the surface of the sea. The remains of dead algal cells, they concluded never made it down through the water column to the sediments. The algae decomposed high up in the water. Thus there was no surplus oxygen in the air to trigger dramatic changes in the speed of evolution. (Graham A. Logan, J.M. Hayes, Glenn B. Hieshima and Roger E. Summons. 1995. *Nature* 376 July 6 pp. 53-56).

As S. Conway Morris summarized the situation in 1993: "... a coherent explanation for the origin and scope of the early metazoan radiations is still missing." (*Nature* 261 January 21 p. 224). And he amplified his position with the following observation: "The Cambrian explosion is a real evolutionary event, but its origins are obscure. At least twenty hypotheses have been proposed, and although arguments linking diversification to oxygen levels, predation, faunal provinciality and ocean chemistry all attract support, it is the case that 'The emergence of the Metazoa remains the salient mystery in the history of life.' (p. 222). As Dr. Morris says, many explanations have been attempted, but none of them works. Of course there will be other attempts in the years to come.

And so concerning the sudden appearance of animals in Cambrian rock, we see that the expectations of the creation model are met. We also see that secular scientists have not been able to find an explanation which can accommodate these data into their evolution model. The latter model does not predict abrupt appearance. They need some kind of phenomenon to initiate such an event.

The implications of the Cambrian explosion are obvious to Christians. The sudden appearance was the result of supernatural intervention. It is the opinion of some Christians that this intervention took the form of a universal flood burying large and diverse animal communities along with human populations. Some secular scientists also see the hand of God in the Cambrian Explosion. As Peter Ward remarked in this 1992 book *On Methuselah's Trail: Living Fossils and the Great Extinctions* (W. H. Freeman

and Company): “If ever there was evidence suggesting Divine Creation, surely the Precambrian and Cambrian transition, known from numerous localities across the face of the earth, is it.” (p. 29) But this man, and the vast majority of scientists, ignore the implications of such data. The situation reminds one of the attitude of unregenerate man as described by the Apostle Paul in Romans 1: 20 and 21:

“For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead; so that they are without excuse: Because that, when they knew God, they glorified him not as God, neither were thankful”

The process of ‘doing science’ is not now, nor ever has been as objective and as reliable as many secular people like to believe. Our one reliable yardstick, with which to measure all other ideas is, of course, the Bible. It is clearly the duty of Christians, in their studies of nature, to consistently interpret the data in a God-honouring fashion. Foundational to such an approach is the concept of the young earth and separate creations of the various kinds of living things.

USEFUL REFERENCE BOOKS ON CREATION SCIENCE

Austin, Steven A. (Ed.) 1994. *Grand Canyon: Monument to Catastrophe*. Institute for Creation Research, Santee, California. pp. 284. (paperback)

For those readers who understand undergraduate science, this book is first rate. It also contains discussion of living animals in the canyon and travel hints. These are written at a level to appeal to the general reader.

Brown, Walt. 1995. *In the Beginning: Compelling Evidence for Creation and the Flood* (Sixth Edition). Center for Scientific Creation, Phoenix. pp. 230. (paperback)

This is a multiple resource book. It contains firstly an up-to-date overview of evidence in life sciences, astronomical and physical sciences, and earth sciences. Also it contains answers to frequently asked questions such as "Is there a large gap between Genesis 1:1 and 1:2?" In addition lists are provided of New Testament references to the early chapters of Genesis and comparisons are provided in table form of Theistic Evolution and the Biblical Account. This is an extremely attractive and useful reference.

Helder, Margaret J. 1990. *Completing the Picture*. Creation Science Association of Alberta, Edmonton. pp. 139. (paperback)

Are you curious about dinosaur fossils in Alberta, the strange marine creatures of the Burgess Shale in B.C., or stromatolite beds near Schreiber, Ontario? Written in parallel sections at junior high and adult levels, this book provides fascinating answers concerning many fossil groups.

Johnson, Phillip E. 1991. *Darwin on Trail*. Inter Varsity Press, Downers Grove, Illinois. pp. 195. (hardcover or softcover available)

An eminent lawyer at University of California, Berkeley examines the arguments for neo-Darwinism and finds them wanting. He also finds that most evolutionists have a pronounced anti-Christian agenda.

Morris, John D. 1994. *The Young Earth*. Master Books, Colorado Springs. pp. 136 of text plus 65 pp of transparency masters. (paperback)

This is an excellent discussion for high school and adult readers. The Christian approach to nature studies is contrasted with the secular. Both are methods of interpreting information. Up to date discoveries on many aspects of earth history are persuasively present in a young earth context.

Ouweneel, W. J. 1982. *Creation or Evolution: What is the Truth?* Believers Bookshelf, Inc. Grimsby, Ontario. pp. 58. (paperback)

A popular and delightful introduction to the topic written at the junior high level.