



# Dialogue

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## August Sky

by Margaret Helder

Do you ever take a moment to gaze at the night sky? During late August and early September of 2003, who could miss the sharply focused bright red spot in the sky? Other celestial bodies may have seemed faint and far away, obscured perhaps by light pollution, but that bright body claimed our whole attention anyway. It was Mars, the red planet, which burnt into our memories. The interesting thing is that this scene was just as remarkable and unique as it appeared. Astronomers tell us that Mars has not been this close to Earth in 60,000 years. They base such conclusions on computer models of planetary motion. However, in a young universe, it may be that Mars has never approached us this closely before. We live in special times.

We take the motions of the planets for granted. What could be more reliable than the appearances of the planets in the night sky? The topic seems so humdrum that text books hardly discuss the solar system any more. But things are far from boring and far from being clearly understood. It was French mathematician Jules Henri Poincare (1854-1912) who first argued that the long term motions of the planets are not as predictable as

had been supposed. Indeed Poincare is famous for his demonstration that there is no single and obvious solution to equations involving the motion of three or more moving objects. While it

is perfectly possible to solve equations predicting the motion of two bodies about each other, once there are more moving objects, the calculations are swamped with unknowns which block clear answers. Thus n-body (where n is more than two) equations involving orbiting bodies are formally unsolvable. (This is not the case for equations in your math text books. They may seem unsolvable, but usually an answer can be found if you work long and hard enough at it!) We therefore have no theoretical explanation for planetary motions in the solar system. Why they stay in place, undisturbed by nearby moving bodies, we can't really say.

So, one might ask, how is it that modern astronomers have computer models of planetary

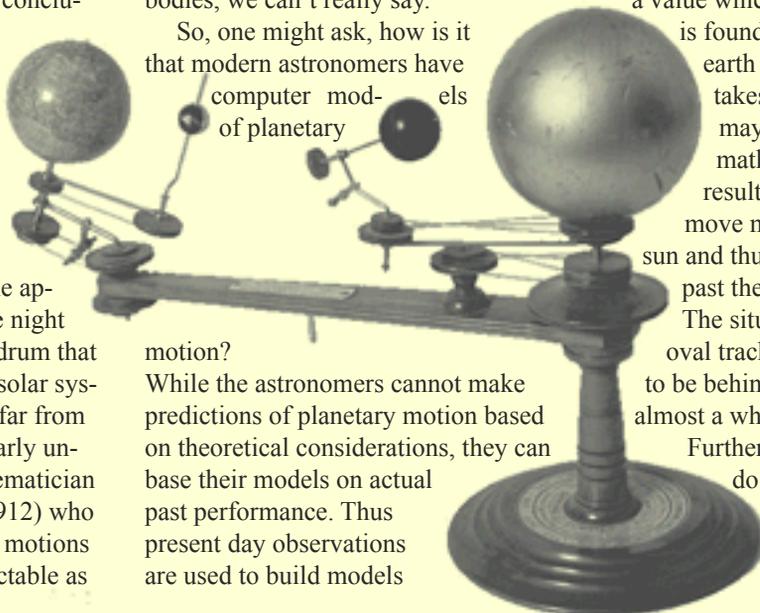
motion? While the astronomers cannot make predictions of planetary motion based on theoretical considerations, they can base their models on actual past performance. Thus present day observations are used to build models

which are run backwards to see what possibly happened in the past, and forwards to see what may happen in the future. From this, astronomers draw conclusions about Mars' past positions relative to Earth.

The scene is not simply one of the planets moving in simple orbits about the sun. German astronomer Johannes Kepler (1571-1630) first proposed that the planets follow elliptical orbits. This complicates the situation since each planet moves most rapidly when it is closest to the sun and more slowly when it is farthest from the sun. Kepler apparently was fascinated by the beautiful mathematics of the motion of the planets. In addition, he found that the length of time a planet requires to proceed once around the sun (its year), varies with that object's distance from the sun. In other words, the distance from the sun (in astronomical units where the earth to sun distance equals one astronomical unit), once cubed, yields

a value which when the square root is found, equals the number of earth years which that planet takes to orbit the sun. This may sound too much like math for your taste, but the result is that the inner planets move much faster around the sun and thus they regularly whiz past the more remote planets. The situation is like racers on a oval track. One runner may appear to be behind another, but is in reality almost a whole lap ahead.

Further complicating factors do arise however, like the shape and tilt of the elliptical orbits. While most of the planets'



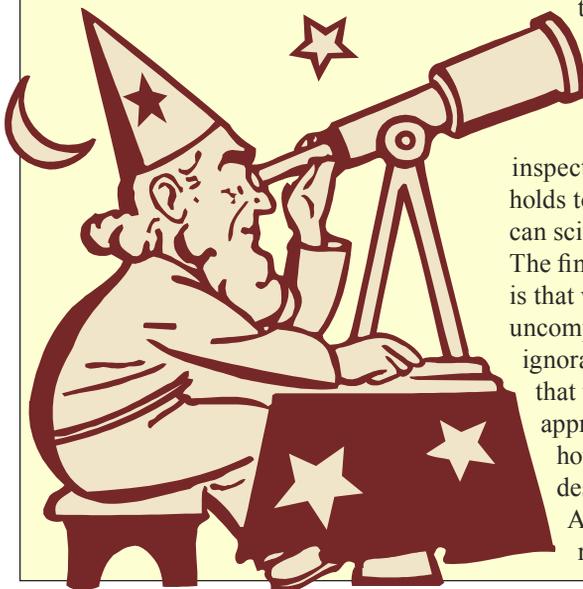
orbits are nearly circular, the orbits of others are considerably longer and thinner. There is actually a fair amount of variety in orbit shape. Scientists call this value eccentricity. While the eccentricity of a circle is zero, the orbit of the planet Earth has an eccentricity of 0.017. In addition, the orbits of two planets are more nearly circular than Earth's: namely Venus at 0.007 and Neptune at 0.010. Mars however has a considerably longer ellipse with a value of 0.093. The most extreme eccentricities are found with innermost Mercury at 0.206 and outermost Pluto at 0.248. Apparently Mercury's elliptical orbit is particularly interesting. The ellipse rotates about the sun so that a diagram of the ellipse positions looks like daisy petals (with the sun as the daisy centre). Moreover it is Mercury and Pluto which also have the most extremely inclined (tilted) orbits while the tilt of the other orbits are all much like Earth's.

It is the difference in orbit shape which has led to this unusual close approach of Mars to Earth. Astronomers tell us that on August 27, 2003, Mars was a mere 55 million kilometres from Earth. Depending upon the computer model used, this is said to have last happened 50,000 to 100,000 years ago. The unusual proximity came about because Mars was at its closest approach to the Earth on August 27 and also at its shortest distance from the sun on August 30. The rendezvous began on August 10, 2002.

At that time Mars was on the opposite side of the sun, about 400 million kilometres from Earth. The result of the much decreased distance in late August 2003, was that Mars appeared 85 times brighter than it did the year before. However, like ships passing in the night, the two planets are now, in their continuing ballet, moving away from each other again.

Questions arise as to why the orbits of the planets are so different. Secular explanations for the origin of the solar system would probably favour more circular orbits of similar shape for all planets. In addition, Poincare's n-body problem suggests to mathematicians that the solar system may be chaotic. This means that the system could suddenly fall apart into random tumbling motions. Some of the computer models have suggested that if the system continued over millions of years, this would happen. In similar vein, a recent study suggests that the Earth/Moon system plays an important dynamic role in maintaining the stability of the orbits of Venus and Mercury. Without the Earth and her moon, suggests this study, gravitational push and pull from the large planets would cause the orbits of the two inner planets to immediately lose their position. (L. Innanen, S. Mikkola and P. Wiegert. 1998. *Astron. J.* 116: 2055). The result could potentially be a terrible crash! Our nice regular solar system would be utterly devastated. Isn't it wonderful that the Earth and Moon are so precisely positioned?

Our image of the clockwork regularity of the solar system thus disintegrates on closer inspection. The fact that the system holds together is not automatic nor can science explain why it does so. The final lesson for us from this topic is that when things seem simple or uncomplicated, it is often merely our ignorance that makes them appear that way. What we most need to appreciate is with what finesse and how precisely our solar system is designed. The events of this past August certainly reinforce this realization.



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# FAQ

(Frequently Asked Question)

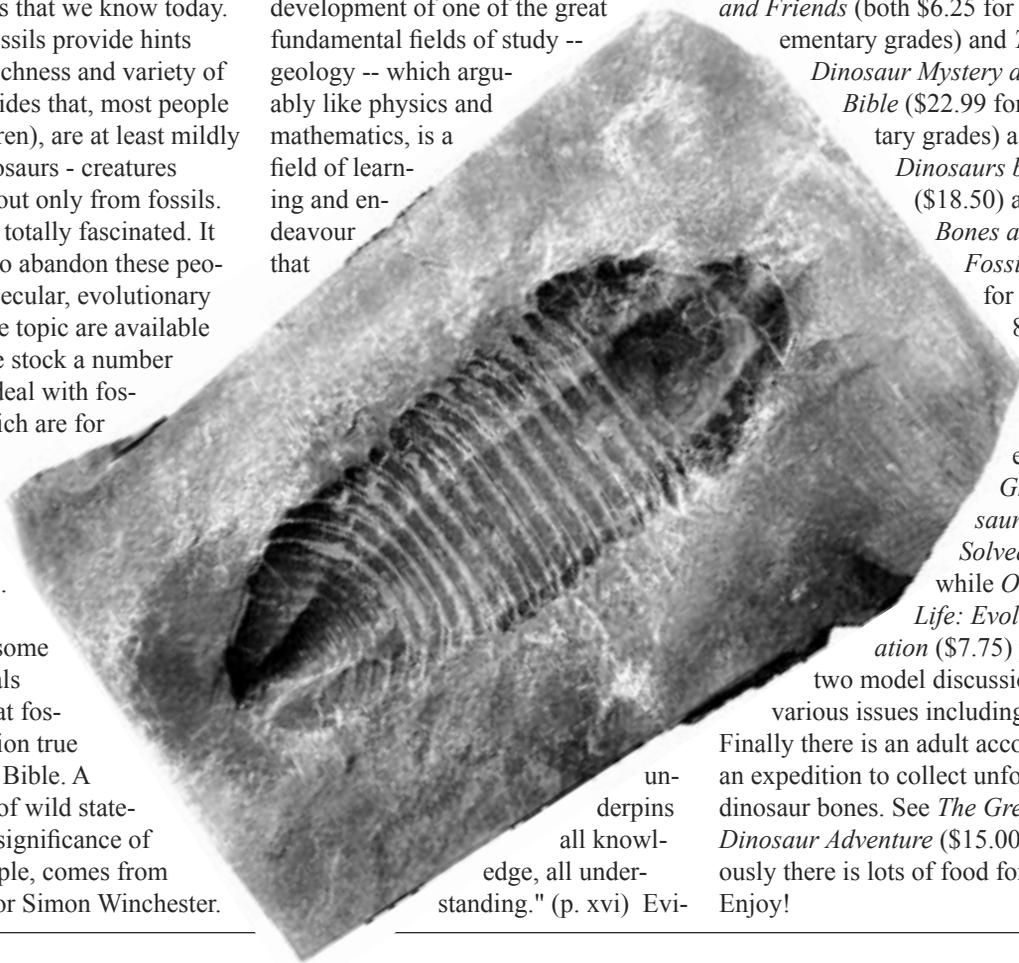
## Why do we pay so much attention to fossils?

Some people may wonder why we pay so much attention to fossils. These artifacts, of course, are the traces preserved in rock, of organisms that lived some time in the past. Well why do we concern ourselves so much about organisms which are dead and gone? After all, human biology, the environment, the wonderful diversity of organisms alive today, and new products and machines are interesting enough and of current value besides. While all the above issues are interesting and relevant, there are a number of reasons for our interest in fossils. Firstly, fossils reveal to us the former existence of communities of organisms many of which are quite unfamiliar to us. Nevertheless, most are members of groupings of organisms that we know today. Anyway these fossils provide hints concerning the richness and variety of the creation. Besides that, most people (especially children), are at least mildly interested in dinosaurs - creatures that we know about only from fossils. Some people are totally fascinated. It would be a pity to abandon these people so that only secular, evolutionary discussions of the topic are available to them. Thus we stock a number of books which deal with fossils, many of which are for children.

There is another reason as well for our interest in fossils. For many years and even today, some secular individuals have declared that fossils prove evolution true and disprove the Bible. A blatant example of wild statements about the significance of fossils, for example, comes from best selling author Simon Winchester.

His earlier book *The Professor and the Madman*, the story of the development of the English Oxford Dictionary, first brought this author to popular attention. Then in a new book published in 2001, he related the story of William Smith, who used the occurrences of fossil beds in England, to develop the idea of the geological column. Certainly Mr. Winchester is well suited to write on the topic. He studied geology in England, at Oxford University. However he seems to have grandiose ideas about the significance of his subject.

In the prologue to his book on the geological column (entitled *The Map that Changed the World*), Mr. Winchester makes some pointed remarks: "It is a map that laid the foundations of a field of study that culminated in the work of Charles Darwin. It is a map ..... that allowed human beings to start at last to stagger out from the fogs of religious dogma, and to come to understand something certain about their own origins --.... It is a map that had an importance, symbolic and real, for the development of one of the great fundamental fields of study -- geology -- which arguably like physics and mathematics, is a field of learning and endeavour that



underpins all knowledge, all understanding." (p. xvi) Evi-

dently some people, based on the study of fossils, claim all religious faith has been rendered obsolete. Winchester, in his book, specifically mocks Christians who believe that the early chapters of Genesis are literally true. A review of this book in the *National Post* (August 18/01) complains about this author's anti-religious bigotry, but nevertheless remarks that "... it should be a social duty to mock public figures who still believe the world is 6000 years old." What other identifiable group, if any, is it O.K. to mock these days?

In the face of such attitudes, the victims of this ridicule obviously need good contrary information. As a matter of fact, the fossils fit the young earth model rather nicely. We think many people want to know that fact. Thus we sell many children's books on fossils and some adult books such as *Grand Canyon: Monument to Catastrophe* (\$24.75) and *Completing the Picture* (\$12.95). Children's books include *D is for Dinosaur* (\$18.00 for grades K - 1 or younger); *Fossils, Hard Facts from the Earth and Fossils, Frogs, Fish and Friends* (both \$6.25 for upper elementary grades) and *The Great Dinosaur Mystery and the Bible* (\$22.99 for elementary grades) as well as *Dinosaurs by Design* (\$18.50) and *Dry Bones and other Fossils* (\$19.99 for grades 6-8. Another book for junior high readers is *The Great Dinosaur Mystery Solved* (\$16.50) while *Origin of Life: Evolution/Creation* (\$7.75) provides two model discussion of various issues including fossils.

Finally there is an adult account about an expedition to collect unfossilized dinosaur bones. See *The Great Alaskan Dinosaur Adventure* (\$15.00). Obviously there is lots of food for thought. Enjoy!

# RECENT WORK PAYS DIVIDENDS

by Margaret Helder

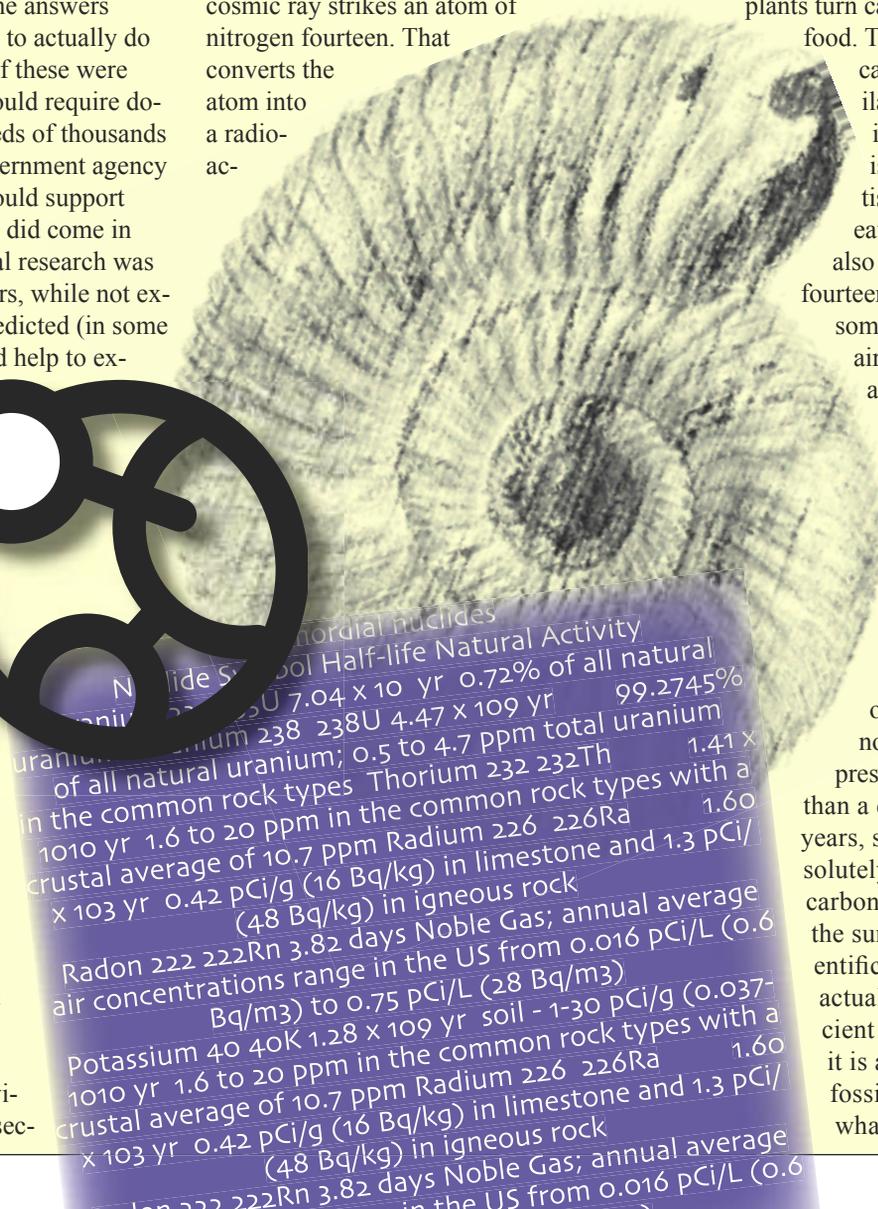
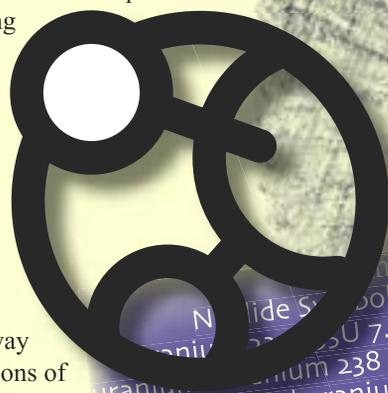
American scientists from the **Institute for Creation Research** and the **Creation Research Society** set up a committee to study dating techniques which are often used to justify claims that the earth is very old. This was several years ago. Specifically, these scientists wanted to find out how the numbers obtained from most studies on rocks, could be explained in the context of a relatively young earth. They therefore asked some supplementary questions that secular scientists were not asking. This team had their own ideas as to what the answers would be, but they had to actually do the studies to find out if these were valid. This research would require donations totaling hundreds of thousands of dollars since no government agency in the United States would support such work. The money did come in and the highly technical research was carried out. The answers, while not exactly what they had predicted (in some cases), nevertheless did help to explain how young rocks and thus a young earth came to be the way they are. The secular data, when examined in the context of these recent studies, in no way justify conclusions of an old earth.

Originally the RATE team (short for Radioactivity and the Age of the Earth) had not intended to look specifically at carbon fourteen dating. In that the half life of carbon fourteen is only 5730 years, this element obviously is not a popular sec-

ular dating choice when the expectation is for ages in the million or billion year range. What this element can do for us, however, is to indicate an unexpectedly young age for certain materials. With so short a half life, a quantity of carbon fourteen, no matter how large, will be all gone (turned back into nitrogen fourteen) within 43.6 half-lives or the passage of 250,000 years. Most natural carbon exists in the stable form called carbon twelve. Nowadays only one atom in one trillion is carbon fourteen. This latter atom is produced when a cosmic ray strikes an atom of nitrogen fourteen. That converts the atom into a radioac-

tive atom of carbon fourteen. However after 5730 years, one half of the radioactive carbon atoms present, will have reverted to stable nitrogen fourteen. After another 5730 years, a further half will have decayed, leaving only a quarter of the original carbon fourteen left after only 11,460 years. And the process of decay continues. Everybody agrees on all this of course, so how can this be a problem for secular science?

Living plants and animals all accumulate some carbon fourteen while they are alive. Through photosynthesis, plants turn carbon dioxide into food. Thus radioactive carbon in fairly similar proportions to its presence in air, is turned into plant tissue. Animals eat plants, so they also contain carbon fourteen in proportions somewhat similar to air. Once a plant or animal dies however, it stops the intake of nutrients. The only place for the carbon fourteen levels already present in this tissue to go, is down and out. Obviously organic material, no matter how well preserved, if it is older than a quarter million years, should contain absolutely zero radioactive carbon. Imagine then the surprise of the scientific establishment to actual analyses of ancient carbon. Whether it is ancient coal or fossilized shells or whatever, all



Isotope	Half-life	Natural Activity
Uranium 238	4.47 x 10 <sup>9</sup> yr	99.2745%
Uranium 235	7.04 x 10 <sup>8</sup> yr	0.72% of all natural
Thorium 232	1.41 x 10 <sup>10</sup> yr	1.60
Radium 226	1.60 x 10 <sup>3</sup> yr	0.42 pCi/g (16 Bq/kg) in limestone and 1.3 pCi/g (48 Bq/kg) in igneous rock
Radon 222	3.82 days	Noble Gas; annual average air concentrations range in the US from 0.016 pCi/L (0.6 Bq/m <sup>3</sup> ) to 0.75 pCi/L (28 Bq/m <sup>3</sup> )
Potassium 40	1.28 x 10 <sup>9</sup> yr	soil - 1-30 pCi/g (0.037-1.60 pCi/g) in the common rock types with a crustal average of 10.7 ppm Radium 226
Radium 226	1.60 x 10 <sup>3</sup> yr	0.42 pCi/g (16 Bq/kg) in limestone and 1.3 pCi/g (48 Bq/kg) in igneous rock
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organic material contains detectable levels of carbon fourteen. Does this mean these materials are young in age? That is a good question!

Early carbon fourteen studies, performed in the 1950s, 60s and 70s, were conducted using a beta-decay counting technique. This method however was unable to distinguish cosmic rays from particles emanating from the carbon source. Thus the method could not reliably measure low levels of carbon fourteen. Within the past twenty years however, the much more sensitive accelerator mass spectrometer (AMS) method has come into general use. These machines are so precise that they are fully capable of measuring carbon fourteen levels as low as 0.001 percent of modern carbon (pmc). Based on the known rate of carbon fourteen decay, a measurement of 0.79 pmc translates by a simple equation into an age estimate of 40,000 years, 0.24 pmc to 50,000 years, 0.070 pmc to 60,000 years, and 0.011 pmc to 75,000 years and 0.001 pmc to 95,000 years.

The expectation of the secular science community obviously has been that organic carbon materials considered to be millions, ten of millions or even hundreds of millions of years old, will contain no radioactive carbon. The scientific literature however is full of studies on ancient materials, which have documented significant quantities of carbon fourteen far in excess of the AMS threshold, even when extreme pre-treatment methods are applied to exclude any modern contamination. The recent study is a case in point.

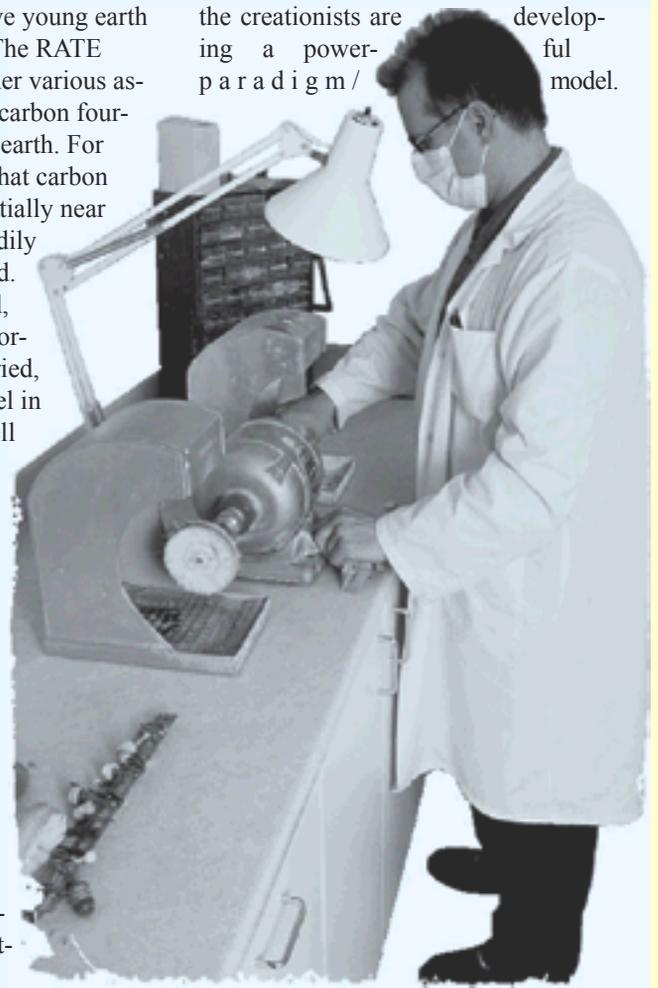
The RATE team obtained ten samples of coal from the U. S. Department of Energy Coal Sample Bank maintained at Penn State University. The large original samples in the energy bank had been carefully collected from recently exposed surfaces in active mines. They were placed in argon gas in specially sealed containers to prevent contamination. Later these samples were divided into smaller amounts, also sealed in non reactive argon gas. The RATE team selected ten samples from geographically widely dispersed sources, of which three

were said to be of Eocene age (about 40 million years), three of Cretaceous age (about 100 my), and four of Pennsylvanian age (about 300 my). These samples were then analyzed for carbon fourteen at one of the foremost AMS laboratories in the world. Obviously none of these samples should have contained any carbon fourteen. Nevertheless they all did. The highest measured level was 0.46 pmc for a Pennsylvanian age coal and the lowest was 0.10 pmc for a Cretaceous specimen. These measurements suggested ages of 40,000 to 60,000 years for samples which secular scientists would date at 40 million to 350 million years. In similar studies, strenuous attempts by secular scientists have been conducted to eliminate any modern contamination, but in paper after paper, these people have had to admit that such values are "intrinsic to the samples" or real.

Many readers will realize that estimates such as 60,000 years are far older than a conservative young earth model would suggest. The RATE authors however consider various assumptions about likely carbon fourteen levels on the early earth. For example, they assume that carbon fourteen levels were initially near zero and that these steadily increased as time passed. By the time of the flood, when huge amounts of organic material were buried, the carbon fourteen level in the atmosphere may well still have been much lower than our modern values. Thus the starting values of radioactive carbon in these organic materials may have been much lower than modern observations would suggest. It would then require a much shorter period of decay to reach the values we observe today in these coal samples. Thus the real time interval could be much shorter than 60,000 years.

One further interesting observation is that the average values for the three coal samples are all close together: 0.26 pmc for Eocene samples, 0.21 for Cretaceous, and 0.27 pmc for Pennsylvanian. These values were all obtained by a world class laboratory. The data suggest that these samples were all buried about the same time. The indication is that huge depths of sedimentary rock were deposited in a single event -- presumably the flood of Noah.

The RATE team has more studies, all with hard data and theoretical models, and all are consistent with a young earth model. Observers who are already committed to long ages, may choose to ignore these studies. The data however merit serious consideration. Now, more than ever, people who think that science has "proved" the earth to be ancient, should pause to read these papers. Discussion and criticism are fine and are appreciated. Ignoring these studies is not fine. Make no mistake, the creationists are developing a powerful paradigm / model.



Kurt P. Wise. 2002.

***Faith, Form and Time: What the Bible Teaches and Science Confirms about Creation and the Age of the Earth.***

Broadman and Holman Publishers. Nashville, TN. Paperback 287 pages.

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 reviewed by Margaret Helder

Few Christians in science today are as qualified as Kurt Wise to talk about origins theory. His field of expertise is fossils and he obtained his Ph.D. in this discipline from Harvard University. His research director was none other than arch-evolutionist Stephen Jay Gould who well understood that Wise was a creationist. After graduation Dr Wise accepted a position in a small Christian college in Tennessee. There he has encouraged a nucleus of like-minded scientists to cooperate on technical research of relevance to creation.

Not only does the author discuss what the Bible tells us about the Creation, but he also discusses the importance of these statements. For a start, he points out that "if the Bible is the preserved issuance from the mouth of God and carries some of the attributes of God in its basic essence, then it seems only natural to give it authority over any claim of man." (p. 20) Having established that the Bible is the standard by which to evaluate any question, Dr.

Wise then goes on to examine the issue of evidence from the natural world. Here too, he declares, that the Bible is the standard.

Dr. Wise next anticipates the reader who might well, in response, ask what value there is in making observations and collecting evidence from nature. He replies that there is much value, not the least of which is that God wants us to study His Creation. Following a Scriptural defense of this argument, he next launches into a discussion of the "Great Synthesis". Just as the "Great Divorce" (in the style of C. S. Lewis) is the pursuit of knowledge without recourse to God's revelation, the Great Synthesis on the other hand is an attempt to "focus on God once again and base all our academic disciplines on God and His truths." (p. 27) This objective, of course, includes science. Indeed, declares Dr. Wise, it is a fact that

study of nature can only be justified in terms of a Biblical worldview. Of the three necessary presuppositions that must be true if science is to be pursued, none can be proved but are based on the word of God. These presuppositions are that the physical world exists, that information about it can be known, and should be known.

Having established that God wants us to study His Creation,

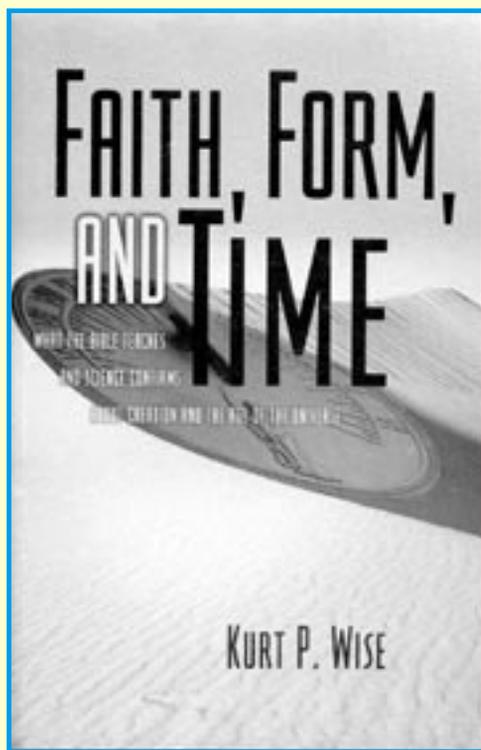
Dr. Wise then proceeds to discuss the Creation week, the implications of the fall of Adam, the Flood and the march of history since. Plenty of scientific issues are connected with this past history. One issue of special concern to

most people is the age of the universe and of earth itself. The author's initial statement that a face-value examination of the creation suggests an ancient universe, will certainly surprise many readers. However he is not actually saying that the universe bears witness to an old age. As we read on, he clarifies this remark. His point is that such conclusions are based on a superficial reading of the evidence and are in fact not justified on several counts.

As Dr. Wise moves briskly though a wide variety of disciplines in connection with a discussion of the creation week, he shares with us some interesting insights into God's character. It is his contention, for example, that God loves variety. We see this, he says, not only in the great diversity of form among heavenly bodies but also among living creatures. Furthermore and perhaps even more interestingly, God reveals His love of communication. Not only do we see this in the structure of the genetic code, but the whole universe bears similar witness in that so many aspects can be described in mathematical terms (also a language).

Beyond the creation week Dr. Wise turns his attention to events in the Garden of Eden. Later he discusses not only Scripture but also probable geological ramifications of the Flood. The modern theory of plate tectonics for example, is taught to every school age child in geography or earth science courses. This theory requires millions of years to work, but catastrophic plate tectonics (connected to the Flood) achieves the same or better results within a short time frame.

Dr. Wise wrote this book to encourage us to fight untruth and error. Certainly not every creationist will agree with all his interpretations of the scientific details. Nevertheless all can appreciate his objective which is to reach a much wider audience than the scientifically literate. While not everyone enjoys the details of science, everyone can appreciate the discussion of Scripture. In addition, the details from nature are discussed in such general



terms that most people should obtain some worthwhile insights. *Faith, Form and Time* is recommended for anyone studying or teaching Scripture or science, as well as for anyone who enjoys learning about these disciplines. That should include most of us.

Gary Parker. 2003.

***Exploring the World Around You.***

Master Books. Green Forest, Arizona. Paperback. 140 pages.

Dr. Parker has done it again! He has translated his friendly lecturing style into an interesting discussion of a scientific topic. Books on ecology and the environment abound, of course, but very few are written from a Christian perspective. Fewer of these still, are written at a level suitable for junior high students. Dr. Parker first

the author moves to specific teaching. As he carries the reader through each aspect of this discipline, he defines his terms and provides interesting examples which illuminate each point. Plenty of illustrations, both line drawings, diagrams and photos are provided, all in black and white. Generally the illustrations are helpful, but titles or captions would improve their impact in some cases.

Dr. Parker carries the reader effortlessly through the various aspects of ecology, from interactions of organisms with the environment, interactions within communities and within populations etc. The reader may well be surprised to discover how often a Christian outlook may differ from the secular/evolutionary interpretation. These contrasting views are most apparent when we come to questions of pollution control and human population levels. Here we see Dr. Parker's genial, and well balanced approach at its best. In a manner that is neither hard-line nor extreme, he describes Christian objectives and ways to achieve these. What he seeks to provide is an informed Christian attitude, not one-size-fits-all solutions.

The book comes complete with general introductions to each of the five themes or units, and with detailed end of chapter questions (answers at the back), and with an excellent glossary and index. This is a user friendly book which provides for excellent learning in biology. Student grade level could vary considerably depending on the nature of extra research projects assigned to complement the text. A simple pollution related topic (like recycling), would be suitable for grades seven or eight. More complex topics like global warming would be suitable for grades nine or ten.

There may well be other readers who simply are interested in a Christian discussion of the environment. This book is for you too! Whether one

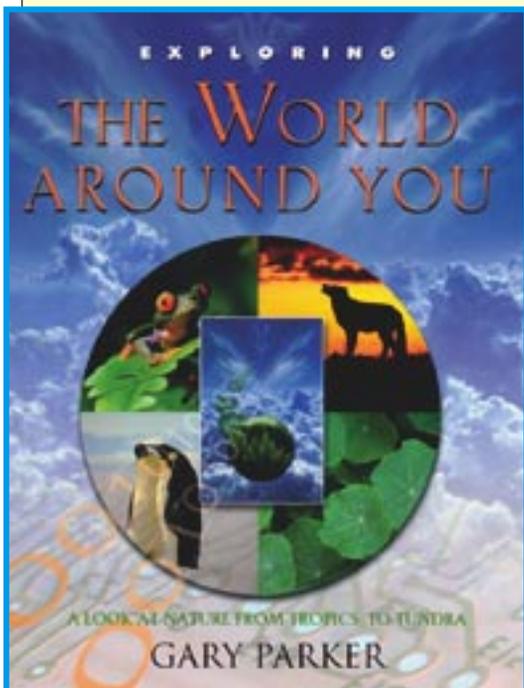
is a student or other concerned person anxious to treat the environment in a Christian manner, Dr. Parker's book is a winner.

B. J. Reinhard. 2000.

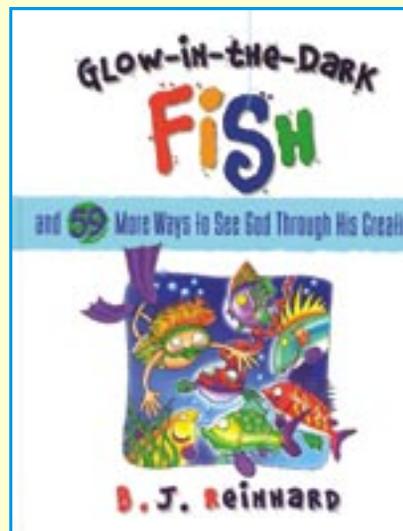
***Glow-in-the-dark Fish and 59 More Ways to See God through His Creation.***

Bethany House Publishers. Minneapolis. Hardcover. 153 pages.

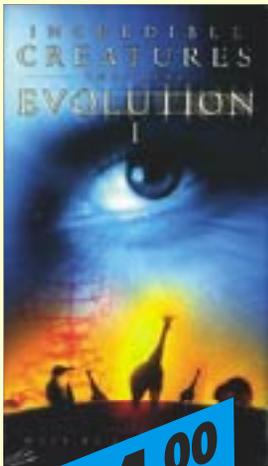
How many adults have sought to inspire children to value nature because it is interesting and because it bears testimony to the Creator? Here is a book that delightfully achieves these two objectives. Elementary age children and their mentors (parents or teachers) will love the interesting details from biology which are recounted in upbeat fashion. The author relates each topic to Bible verses on a related



defines a Biblical outlook on nature. What impact did our early history have on organisms today? How do we determine what is good about nature and thus needs preserving, and what is bad and thus needs healing? In short order



theme. The book includes many intriguing and little known aspects of biology and some related word games with answers provided at the back of the book. Another fun feature is suggestions for further investigation under the title: "Dig Deeper." Altogether this is a child friendly, adult friendly book which will help to introduce youngsters to a life time of appreciation for God's handiwork.



## Incredible Creatures that Defy Evolution/1

with Jobe Martin

This is a powerful examination of design in such creatures as the bombardier beetle, the giraffe and woodpeckers as well as many other creatures. The whole family will love the excellent scenes of these creatures in action as well as the amusing, but interesting discussion. Find out why everyone, who has seen it, is talking about this video.

**Video/Reel Productions**  
46 minutes

**\$24.00**

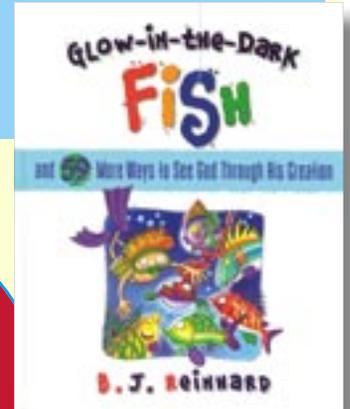
Use some greycells today by reading a good book!

## Glow-in-the-dark Fish - B. J. Reinhard

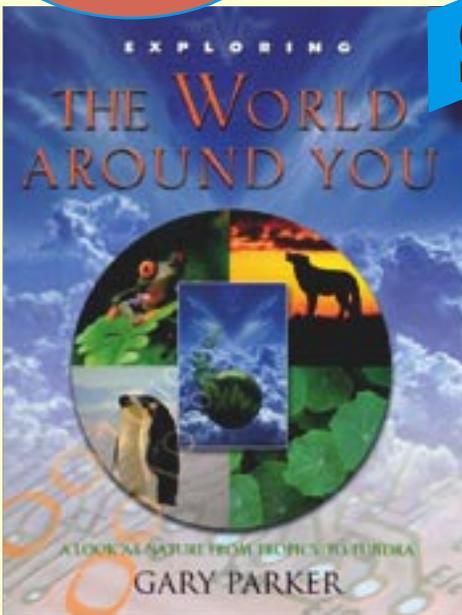
How many adults have sought to inspire children to value nature because it is interesting and because it bears testimony to the Creator? Here is a book that delightfully achieves these two objectives. Whole families will enjoy this upbeat devotional with associated word games and suggested topics for further investigation.

**Hardcover - 153 pages**

**\$23.00**



Remember that one is not rewarded for having brains, but for using them!



**\$19.95**

## Exploring the World Around You - Gary Parker

In very readable and interesting fashion, Dr. Parker conducts the reader through the various aspects of ecology and environmental science. Also, where there are differences of interpretation compared with secular, evolution-based treatments of the topic, he discusses these issues. This is the fourth title in the "Exploring" series for junior high readers and comes with the same features of end of chapter questions etc.

**Paperback - 140 pages**

## Faith, Form and Time

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