Creation Science
Dialogue
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In this issue

Cold Light- Cold Courtship

by Moxie

Imagine a June evening in south central Canada or the nearby United States. As dusk deepens, tiny dots of light appear on bushes, grass or in the air. The tiny lights seem to flash in code. These remarkable lights are fireflies. The more we learn about these insects, the more amazing they appear. This is certainly not a case of familiarity breeding contempt.

Adult fireflies are beetles, but unusual beetles. They possess the ability to produce light within their bodies. The adult phase, which many of us have seen, is short and spectacular. Most adult fireflies last only a few days and their principal purpose is to reproduce. Prior to adulthood, fireflies live in the soil as grub-like creatures. After resting as pupae through the winter, they emerge in the spring as full fledged adults for their brief flash of glory.

For the adult firefly, mating is not all 'sweetness and light.' For a start, the gender ratio, very favourable from a female perspective, is about fifty males to one female. Although the females do not fly, they have no trouble finding a suitable mate. The male does fly, but locating a suitable female is only part of his troubles. He must also persuade her to mate. The way to a lady firefly's heart is a precisely correct series of light flashes. The male must fly at the proper altitude, at the proper speed, at the proper time of the evening, all the while emitting light at precise intervals. Once the male perceives a correct response from the grass, he must continue to give his signal as he approaches the female. Any delay or an error in the protocol can result in the hapless male losing out to a rival.

In North America there are two main groups or genera of firefly. One of these contains about sixty different species. The females in the group are what the French would call *femmes fatales* or fatally irresistible ladies. Once the females in this group have mated, they no longer give their own response pattern. Instead they mimic the response patterns of females of other species. Imagine the unsuspecting males which approach, expecting to find a suitable mate. Instead they are ruthlessly eaten! One researcher in Florida observed females of one such species which could mimic the codes of seven other species. These unscrupulous females switch from one code to another depending upon the species flying overhead. Biologists, in their dry way, describe this phenomenon as 'aggressive mimicry'.

Along certain swampy rivers in south-east Asia, the blackness of the night is broken in a most unexpected

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Montana Bound

Four times a year, a group of scientists who recently participated in more than one million dollars worth of research into radiometric techniques for estimating the age of rocks, now conduct meetings to communicate the results of their research to the public. These scientists sought a fundamental correction to the usual assumptions that the earth is extremely old. The research, conducted from 1997 to 2005, and sponsored by the Institute for Creation Research and by the Creation Research Society, uncovered previously unknown and highly significant information. Thus far only a few selected communities in the United States have had the privilege of hosting one of these RATE (Radioisotopes and The Age of the Earth) seminars. It is thus all the more special that Bozeman, Montana is scheduled to

host such meetings on April 20-22, 2007.

The RATE team will meet at Grace Bible Church, 3625 South 19th Street in Bozeman. This small city is located on Interstate 90 in a broad mountain valley in southwest Montana. The speakers will be meteorologist Dr. Larry Vardiman, physicist Dr. Rus

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way. Rows of trees light up with millions upon millions of tiny lights. The flashes all occur at exactly the same moment, from one end of the row of trees to the other end. The tempo is about 3 flashes every 2 seconds. In between these neon-like displays, everything is utterly dark. Such displays continue hour after hour, night after night, for weeks or even months. It is fireflies that are responsible for these displays. The trees are full of fireflies, both male and female, but only the males emit light. As the adults

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live only a few days, the population must be continuously renewed with fresh adults as the old ones die off.

A number of perplexing questions surround this lovely natural phenomenon. How do the beetles manage to synchronize their flashes? Why do they bother to synchronize their display? Trees full of fireflies in the West Indies, for example, are continuously lit as the individual beetles flash independently of one another.

Many scientists have devoted their careers to the study of bioluminescence (emitting light). During the 1950s and 1960s, children in Baltimore, Maryland were paid a penny for each live firefly they delivered to a biology professor at Johns Hopkins University. Two organic compounds essential to light production can be extracted from such mashed up fireflies. The light producing compound is called luciferin (Latin for light-bearing). The other compound is an enzyme called luciferase. The enzyme is essential in coupling a high energy compound, common to all biological systems, and oxygen to the luciferin. As the luciferin reacts with oxygen, it enters a high energy "excited" state. The oxidized compound then releases the energy as a photon or flash of light.

The light which fireflies produce is called cold light. The firefly lantern organs do not heat up as they flash. Almost all (88%) of the available energy goes to producing light. Man-made lighting systems, by contrast, lose large percentages of the available energy as heat. Incandescent lights lose 95% of the energy they consume. Flourescent lights are more efficient. They lose only about 80% of the energy as heat.

The ability to produce cold light is highly unusual when compared to other biochemical reactions. In most cases a long series of reactions is needed to produce a compound with high energy content. In fireflies however only two reactions are needed to convert a low-energy ground state compound to one in a high-energy excited state. Many biologists have wondered why there is such a phenomenon as cold light in nature at all? Many organisms similar to those with bioluminescence, do well without this talent. Many creatures in habitats where some are able to emit light, live successfully without this ability. It is not as if the ability to emit light comes as a simple modification of compounds found in most creatures. This is not the case. The phenomenon of cold light, indeed a challenge and a delight to observers, bears ample testimony to the work and the artistry of the Creator.

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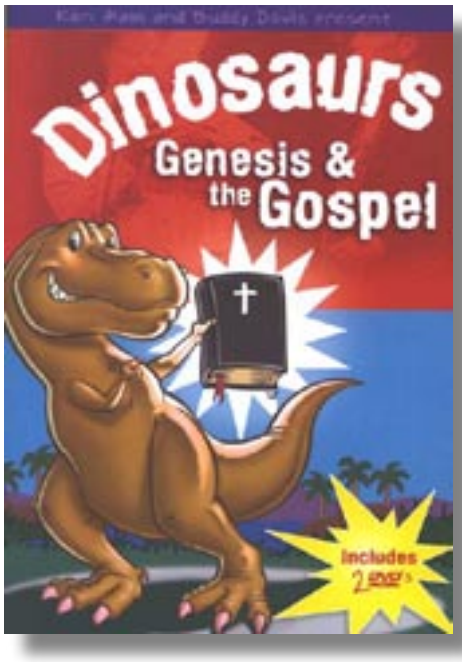

It's edutaining!

Good DUD

Recently I became aware of a video put out by Answers in Genesis called "Dinosaurs, Genesis, and the Gospel". The description on the DVD case reads "It's edu-tainment" packed with laughter, music and great biblical teaching". That sounds good, but I couldn't help wonder what it really meant. So I popped DVD 1 of this two DVD collection into my player and here is what I found.

Initially there is a brief introduction by Buddy Davis whose role is to provide the entertaining aspect to the presentation. He explains that throughout the video information tidbits are highlighted. Children are supposed to pay special attention to these points as there is a quiz at the end of the video. This quiz game definitely makes the experience more interactive and helps to reinforce the information provided.

For the majority of the video, you join Ken Ham as he speaks to an auditorium full of children. Using numerous cartoon drawings, he tackles questions such as: How long ago did dinosaurs live? Did God make dinosaurs? Were there dinosaurs on the ark? With his Australian accent and sense of fun, Ken Ham is able to keep the attention of his childish audience as he provides good solid information.

Interspersed throughout the lecture portion, Buddy Davis sings a number folksy kids' songs on the topics that are being discussed. For instance Ken Ham talks about how the complex design of the woodpecker contradicts the theory of evolution, and then Buddy Davis sings the Woodpecker Song. The lyrics are provided on the screen so that children can sing along.

On DVD 1, in addition to the main session, there are some special features. Buddy's songs can be listened to apart from Ken Ham's talk. As well there is a brief message to the parents and a full length talk to parent's called "Raising Godly Children in an Ungodly World".

On DVD 2 you'll find a second session on the topic of "Dinosaurs, Genesis and the Gospel". Just as with part one, this session includes quiz questions, songs, cartoons and some good answers to good questions. The focus of part two is dinosaurs and fossils. How were fossils made? How long does it take to make a fossil? and so on. Special features on this DVD include Buddy's songs all on their own and also a brief message to the parents.

On the video case AIG suggests that this video is appropriate for children aged 4 – 8, however, based on my preschooler's reaction, "Where are the dinosaurs?" (I think he was expecting an animated dinosaur movie and did not intend to sit and listen to a man talking about dinosaurs), I would say that this is better for a slightly older audience.

"Dinosaurs, Genesis and the Gospel" is an ideal resource for elementary aged children. In particular it is useful for children who have run into long ages and evolution in the media or at school and are asking how these tie in with the Bible. As they watch this video, their attention will be captivated and their questions will be answered.

Dinosaurs, Genesis and the Gospel Answers in Genesis, 2 DVDs approx. 30 minutes each, free discussion guide included.

There are few books which can boast such beautiful illustrations as Jason Lisle's *Taking Back Astronomy*. Recently published, this small book is lavishly splashed with full colour images from space. Happily the discussion proves just as appealing as the packaging.

Among his professional projects in astronomy, Dr. Lisle, a solar astrophysicist, made use of the Solar and Heliospheric Observatory (SOHO) spacecraft in order to study the sun. Currently he is a member of the Creation Research Society and a research scientist with Answers in Genesis.

The book which he has written, clearly introduces important distinctions between the secular/naturalistic worldview and the Christian worldview. In the context of astronomy,

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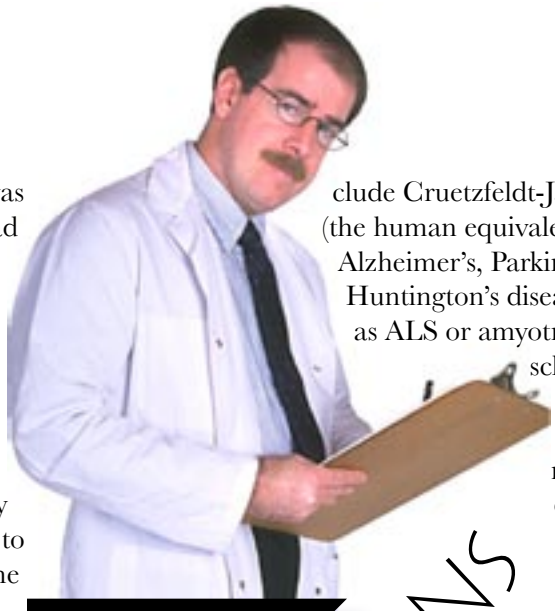


PROTEINS LIKE ORIGAMI

by Margaret Helder

When I was 19, I had a summer job in a hospital laboratory in Sherbrooke, Quebec. The hospital was fairly small, as it served an English community of perhaps 20,000 to 30,000 people in the extended region. The director of the lab, a pathologist, took a keen interest in the summer students. Everyday when he examined biopsies and other pathological specimens, he invited the summer students to come and watch. He then explained in detail what he was observing and later he told us the diagnosis. I remember very clearly a crumbly white tissue from a post mortem. The patient's internal organs had turned to this crumbly material. The diagnosis was amyloidosis, now believed to result from the abnormal folding of proteins. I remember asking if there was a cure. There was none. The cause of this condition was unknown. We still don't know very much, but scientists are keenly interested in diseases caused by misfolded proteins. What we are learning is how narrow the boundary is between good health and serious diseases.

Altogether, scientists now estimate that incorrect folding of proteins is the cause of some twenty diseases. Among these, the most infamous include Cruetzfeldt-Jakob disease (the human equivalent of BSE), Alzheimer's, Parkinson's, and Huntington's diseases as well as ALS or amyotrophic lateral sclerosis. More common protein misfolding diseases include late onset diabetes when protein fibrils destroy the islets of Langerhans in the pancreas, and cataracts. Not surprisingly, many research projects have focused on the issue of protein folding. Why does the normal process sometimes go wrong? The results to date provide considerable food for thought. The production of desirable versions of proteins is nowhere near as automatic as we might have imagined.

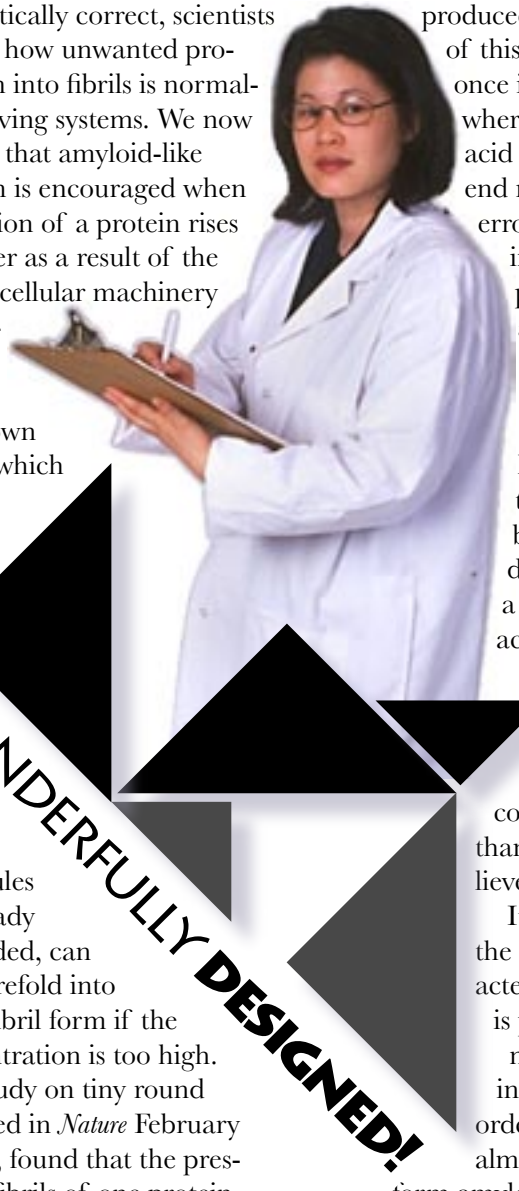
The first piece of bad news was the discovery that many proteins can assume a disease causing fibril shape. In other words, the familiar proteins which normally exhibit highly complex shapes (linked to their functions in the cell), can on certain occasions, adopt a thread-like form called amyloid fibrils. The fibrils typically clump into plaque. Previous to this discovery, cell biologists had believed that there is only one possible shape which any given protein can assume. It was the order of amino acids in the protein molecule (like beads strung end to end) which dictated how the protein would fold and what the final shape would be. Now however, it appears that a given protein can assume alternative shapes. What, one might wonder, causes a given protein to ever assume the preferred shape? Apparently correct protein folding is made possible by elaborate mechanisms in the living cell. It is not a process left to chance.

In order to manufacture enough molecules of a needed protein in the cell, many tiny molecular machines simultaneously produce long chains of amino acids. Since space within the cell is extremely limited, the result is that many identical protein chains, already partly folding, but still long and gangly, will accumulate within touching distance of one another. However these chains must not touch, because if they do, they will form non-functioning clumps. The cell must segregate these lengthening chains from each other. The special devices to do this are called molecular chaperones. These provide a private environment within which each molecule will fold properly. More than 50 families of molecular chaperones are known. One family, called the chaperonins, includes the GroEL-GroES chaperon, which has been particularly well studied.

This GroEL-GroES molecular machine is a somewhat barrel-shaped structure with openings at both ends. Both the size of the cage and surface charge on the inside surface, are ideal for speeding up the folding of a number of different protein chains. Once a protein chain is sequestered inside the cavity at one end, a lid (GroES molecule) clamps the barrel shut. The protein chain then has 10-15 seconds to fold inside the cage before a chemical reaction causes the lid to come off, the protein to emerge, and a new chain to enter at the opposite end, now clamped inside by another molecular lid. Thus protein molecules are alternately processed at opposite ends of the barrel. An additional feature to the barrel is that upon release of a folded molecule, that end of the cage becomes smaller and the other end becomes larger. The whole thing is an endless see-saw effect.

The beauty of the chaperone system is that it prevents proteins from misfolding and clumping into fibrils, which is one of the hazards of concentrated protein molecules. A recent discussion of the GroEL-GroES chaperone, concludes with terms which suggest the input of planning and purpose (design) into the system thereby hinting at the action of personality: "It is a testament to the ingenuity of natural selection that the chaperonin cage not only combats aggregation caused by crowding outside the cage but also uses crowding to accelerate protein folding inside the cage. Nanoengineers trying to improve the yield of therapeutic proteins could profit from studying the tricks of the chaperonin nanocage." (*Nature* June 27/06 p. 362). Since "natural selection" is a process which cannot show personality or any other personal attribute, they more appropriately might have used the word "designer" instead.

In view of the fact that protein folding is so complicated, and by no means automatically correct, scientists ask themselves how unwanted protein association into fibrils is normally avoided in living systems. We now know, after all, that amyloid-like fibril formation is encouraged when the concentration of a protein rises in a tissue either as a result of the breakdown of cellular machinery regulating protein synthesis, or as a result of the breakdown of machinery which expedites the recycling of unwanted protein molecules. It is a further disturbing fact that protein molecules which are already completely folded, can be induced to refold into an abnormal fibril form if the protein concentration is too high. Moreover, a study on tiny round worms, reported in *Nature* February 16/06 (p. 767), found that the presence of a few fibrils of one protein was enough to prompt seven other proteins, normally stable, to misfold. The result was fatal for the worms.



Mutations, of course, are another factor which can lead to misfolded proteins and serious disease. An article in *Nature* (September 7/06) describes a case in mice. Scientists unexpectedly discovered a mutation which resulted in one amino acid occasionally being substituted for another amino acid when proteins are produced. The frequency of this substitution is only once in 500 situations where the first amino acid is called for. The end result of this small error is protein misfolding, accumulation of protein aggregates and progressive degeneration of the mouse nervous system. This study led to the realization that the line between a tolerable degree of error and a catastrophic loss of accuracy in protein synthesis is very narrow, and that the margin of error in protein composition is smaller than previously believed. (p. 42)

It is apparent that the thing which characterizes a healthy cell is precisely designed molecular machines in good working order. The idea that almost any protein can form amyloid fibrils is shocking to many, because it indicates that good design is what is required for health rather than spontaneous chemistry. Good health is a gift not to be taken for granted. Even in the small details within the cell, are we not wonderfully designed?

by Josh Munan

Why snakes are the way they are

How'd you like to live the life of a snake? For one thing, you'd find getting around much different without arms and legs. But then dust would be a big part of your diet. Blah! Scientists have learned that snakes use their forked tongues for tasting and smelling. Even with its mouth closed, a snake can stick out its tongue; an amazing feat indeed. These slithering reptiles smell their prey by picking up scents from the air and from dust on the ground in order to find their next meal. The tongue then carries these particles to a specialized organ located on the roof of the mouth, called the Jacobson's organ. This sense organ performs a chemical analysis of the ingested particles. Think of the salivating smells from some fine cooking. A snake bites the dust of the ground not so much for nutrition but for smelling his way to his next meal.

Long before scientists discovered the purpose of a snake's forked tongue, God had revealed a very interesting detail in His Word. In at least three places, Scripture tells us that snakes do in fact ingest dust. Take Micah 7:17 for example. Here we read that "They (the enemies of God) will lick dust like a snake, like creatures that crawl on the ground." Moreover Isaiah 65:25 declares: "the wolf and the lamb will graze together, and the lion will eat straw like the ox; and dust will be the serpent's food." Lastly, soon after the fall of the human race, God punished the serpent with these words: "Because you have done this, cursed are you above all the livestock and all the wild animals! You will crawl on your belly and you will eat (ingest) dust all the days of your life" (Gen.3:14).

When we think "snake", a limbless reptile comes to mind. But has this always been the case? In response to the serpent's role in the Garden of Eden, God said of the serpent, "you will crawl on your belly." Does this passage suggest that these slithering reptiles once had legs? Recent fossil finds in Israel and Argentina give evidence of snakes with pelvic girdles (hips) and hind limbs complete with a femur, tibia, fibula and digits. The name of the fossil from Argentina is quite interesting. The discoverers named it "Najesh rionengrina" which comes from the Hebrew "Nagesh', the legged biblical snake of Genesis.

Evolutionary scientists point to these fossils as positive proof for Darwiinian evolution; proof that snakes underwent progressive loss of their limbs as a result of a gradual decrease in their use. Evolutionists give two common accounts for the gradual loss of limbs. The first is that snakes ditched their legs to enable them to burrow into the soil in search of food. Their limbs got in the way as they struggled through narrow tunnels and small crevices. Not having limbs would be an advantage. So over time they ditched the limbs. Evolutionists who espouse this viewpoint find support in the fact that burrowing lizards have reduced limbs or no limbs at all. The second account for why snakes lost their legs is that limbed snakes leaped into the water, lost their legs for lack of use (why they did not develop into fins is anyone's guess), and then slithered back on land. As one evolutionist stated "whichever evolutionary path snakes took – by land or by sea – snakes lost their legs." (see URL below)

True enough. But even if fossil evidence suggests snakes had limbs at one time, does this prove an "amoeba to man" type of evolution? This kind of process requires huge gains in genetic information. The genetic information in humans is far more complex than in an amoeba. Darwinian evolution needs a mechanism for creating new structures, not losing them! The creation model would predict a loss of anatomical features such as we see in snakes. Loss of anatomical structure is evidence of "devolution", because of deteriorating genetic information since the time of the Fall.

So the next time you see a slithering snake, reflect on their past history and how they came to be the way they are.

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http://www.usatoday.com/tech/columnist/aprilholladay/2005-06-10-wonderquest_x.htm

Montana Bound

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sell Humphreys, geologist Dr. Andrew Snelling and geophysicist Dr. John Baumgardner. They will present powerful evidence that the radiometric dating methods are unreliable. Furthermore, they have discovered why these methods yield calculated ages of millions and billions of years even although the earth is young. Based on helium diffusion in zircon crystals, the RATE team has been able to determine that there was a period of accelerated radiometric decay sometime in the past 6000 years. The main RATE presentations will be on Saturday morning, April 21 but the speakers will also discuss other subjects on Saturday afternoon. In addition, scientist emeritus Dr. Duane Gish of ICR, will open the conference on the Friday evening, April 20 with a lecture on fossils and the relevance of Genesis.

Western Canadians, especially those from Alberta, may well find this conference very conveniently situated. There is no fee for attendance and further information can be obtained from the church secretary at 406-586-9782.

Meteorologist Michael Oard of Bozeman, is one of the organizers of this conference. He himself recently presented five lectures in the Edmonton area for the Creation Science Association of Alberta. His lecture topics were "Is Genesis Relevant for Today?" "Startling Evidence that the Flood Really Happened", and "An Ice Age – Only the Bible Explains It". His lectures were extremely well received and many people declare that he has provided them with considerable new food for thought.

...more on edu**tainment**!

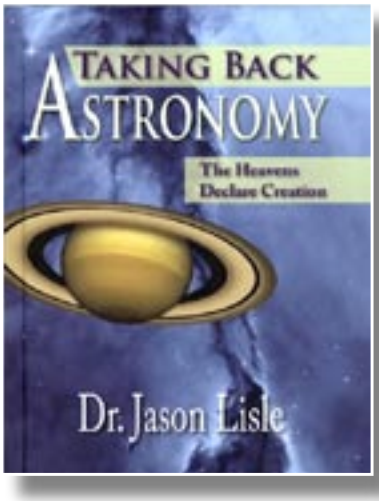
Good Book

Continued from page 3

he firstly discusses the splendor, wonder and diversity of the universe. Next he demonstrates ways in which the Bible actually described, long ago, features of the universe which we have only recently discovered. Among these issues he discusses the physical laws (ordinances of heaven and earth); the number of stars; and conservation of mass/energy.

Among this list he also includes the expanding universe. Support for this idea, in astronomy, comes largely from a shift in the spectrum of distant light toward longer and redder light waves, as he himself points out. This 'redshift' is supposed to indicate speed of retreat of these bodies from us, but only when this idea is coupled with long periods of time is there any hint that the universe is expanding. Since Dr. Lisle steadfastly argues in the next chapter for a young universe, it seems inconsistent to make use of the redshift to support expansion.

But enough of such small concerns. The next chapter features discussion on the age of the universe. A number of arguments, some of which have been considered old fashioned, are refurbished and promoted. The problem of distant starlight is discussed, as are the recession of the moon, decay of earth's magnetic field, the existence of spiral galaxies, and comets.



In the fourth chapter, a really exciting discussion on the nature of matter in the universe is provided. Apparently secular science cannot explain the absence of certain particles called antimatter. This is an issue which receives little attention in most discussions of astronomy. In addition this chapter covers a number of issues such as our unique earth, extra-solar planets, the search for extra-terrestrial life, and UFOs.

The final chapter provides a Christian view of the universe and of our lives. In level of difficulty this book is ideal for advanced junior high readers or for adults who lack any background in the topic but who would appreciate some insights. The book provides a glossary, endnotes, an index, and the isolation of more difficult matters in boxes. *The Astronomy Book* by Jonathan Henry is much more basic (suitable for grades 6-7) and *Universe by Design* by Danny Faulkner is considerably more technical. This present book is beautiful and interesting. Enjoy.

Taking Back Astronomy: the Heavens Declare Creation. Jason Lisle. 2006. Master Books. Hardcover. 125 pages.

Discontent makes rich men poor, while contentment makes poor men rich.

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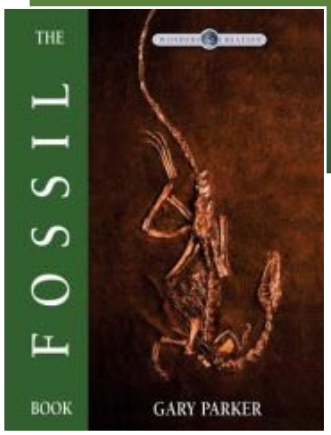

The Fossil Book
Gary Parker

Loaded with colour illustrations, this book is an ideal resource for all junior high readers who are fascinated with fossils. The books tells how and where fossils are found, how old they are, and how to interpret the geological column. An attractive reply to the more popular books on the subject.

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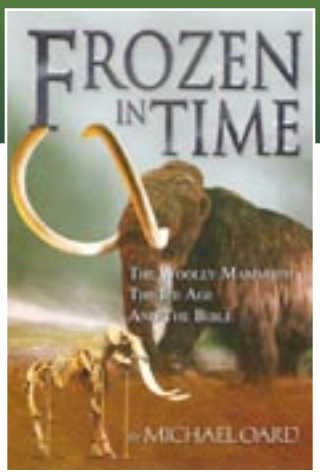

Frozen in Time
Michael Oard

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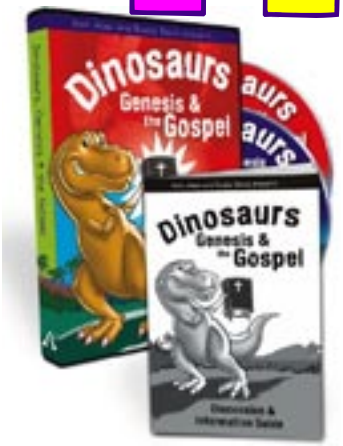

Dinosaurs, Genesis & the Gospel

Filmed before an audience of children, Ken Ham and Buddy Davis provide teaching on day six of the creation week. Their light hearted but informative style is sure to appeal.

DVD/60 minutes

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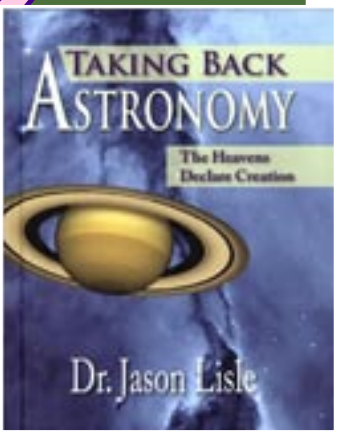

Taking Astronomy Back
Jason Lisle

The author shows that the popular idea of billions of years is unnecessary and that one need only look to the Creator to explain the origin of the stars and universe. Filled with fascinating photographs and illustrations for easy comprehension.

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