

Creation Science Dialogue

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In this issue

Pg. 2 *Smash,... Kaboom!!!*

Pg. 3 *Going to the Zoo!*

Pg. 4 *Sticky Feet?*

Pg. 7 *Movie Star!*

Geologist Dr. Steven Austin has promised to provide Albertans with some fascinating and exciting information when he comes to Edmonton for the November 6-7 weekend. On the Friday evening, November 6 (place yet to be determined), he has promised to discuss "Mount St. Helens : Explosive Evidence for Creation." Since the eruption of that volcano in 1980, Dr. Austin has

Edmonton. A popular creation-based speaker on geology, Dr. Austin did not start out critical of the evolution model. When he began his Bachelor of Science studies at the University of Washington, he had no reason to question the standard evolutionary outlook on nature. While an undergraduate however, having become a Christian, he decided that the facts did not fit the evolution model. Having received his B.S. degree, he then went to San Jose State University for his M.S. degree.

His thesis topic there was a critical review of the standard evolutionary interpretation of earth history.

Dr. Austin's Ph.D., completed in 1979 at Pennsylvania State University, dealt with a flood based interpretation of the Kentucky no. 12 coal bed. This layer of coal was too uniform and too widespread to fit the popular evolution based swamp theory. A massive floating log mat fit the data much better. One year later, Mount St. Helens erupted, resulting

in a floating log mat in nearby Spirit Lake. This became the first research project of Dr. Austin's professional career. Among Dr. Austin's numerous fascinating discoveries is a fossil bed in a remote region of the Grand Canyon. In this fossil bed are countless cigar shaped nautiloid fossils (like squid with a shell). Their density and orientation tell a most interesting tale of waterborne catastrophe.

Besides professional consulting on coal and oil resources, Dr. Austin has also taught graduate courses in geology at the Institute for Creation Research, directed graduate students and of course, carried out many fascinating research projects. We in Alberta expect to learn some interesting new insights.

Happy Hunting of Horned Dinosaurs

Although they may have been a little slow on their feet, it seems safe to say that horned dinosaurs represent a flamboyant and fun group to discuss.

There are two kinds of dinosaur fossil which are particularly common in Alberta. The one group includes the duckbill dinosaurs and the other are the horned dinosaurs. These two groups are found together in many fossil dinosaur communities. The duckbills have actually been found in considerable variety in many parts of the world. Their remains appear suddenly, worldwide, in similar dinosaur communities. For this reason dinosaur specialists consider that they appear nearly simultaneously in the fossil record, with no hint anywhere of possible ancestors. This situation is contrary to the expectations of evolution theory.

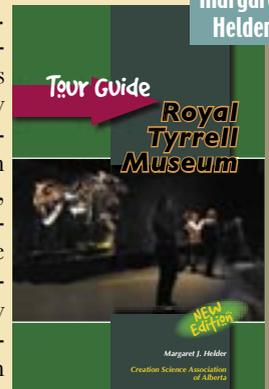
The duckbill dinosaurs were large creatures which ran on two feet. Most were from 8 to 10 m long, but some were as long as 15 m. These were large heavy animals. Their diet was plants, and they had impressive arrays of elaborate teeth wedged tightly together to form a dental battery.

The fancy horned dinosaurs are the other major group of dinosaurs in upper Cretaceous rocks in western North America. Some experts interpret Cretaceous sediments around the world as the top layer of flood deposited material.

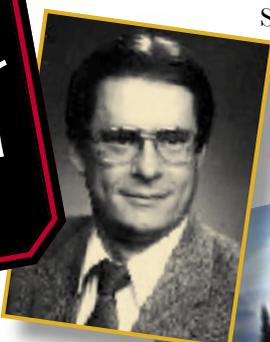
The rocks below this level have no hint of any ancestor of these creatures. The two groups differ in several aspects, but it is the skull of the horned dinosaurs which is so conspicuous and easy to identify.

The horned dinosaurs were heavy four - *Continued on page 6*

by
Margaret
Helder



Exciting Topics for Austin Lectures



Be sure to book the week-end of November 6 and 7/09 for this exciting event in Edmonton!

presented this material to many audiences and the response is always very positive. Then the next morning complimentary brunch will be available at Mill Woods Assembly 66th Street and 23rd Avenue. At 10 a.m. Dr. Austin will lecture on an exciting new topic "Where Charles Darwin Went Wrong." This is based on his December 2008 visit to this remote region in southern Argentina. Then at 2 p.m. in the same facility Dr. Austin will lecture on "Geology and the Global Flood." This will include the results of his research from various locations around the world. The formal topics to be covered here include sedimentation, tectonics, erosion, volcanism and exponential decline. The topics may sound formal, but they come to life when Dr. Austin deals with them! Lastly in the evening also at Mill Woods Assembly (all day Saturday) Dr. Austin will present "The Search for Sodom and Gomorrah", based on his explorations in Israel and Jordan. What an exciting conclusion to a remarkable week-end!

Dr. Austin brings a wealth of research expertise as well as teaching and speaking experience to his upcoming visit to

It is unusual in science to find most experts anxious to destroy the reigning paradigm. This however is the situation in physics where just about everyone is anxious to “break” the “frustratingly successful standard model” (*Nature* September 11/08 p. 156). This model “describes every known form of matter, from individual atoms to the farthest galaxies” (p. 156) and also three of the four fundamental forces in nature. The data to develop the Standard Model were collected from fancy particle smashing experiments. One might imagine that these scientists would be pleased with such a successful model, but they are not. The mathematics behind the model does not suit their philosophical assumptions.

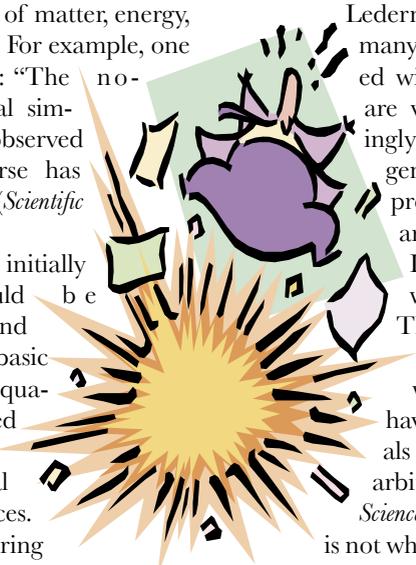
After World War II, the new particle physicists approached their discipline with certain expectations. Based on the idea that the entire universe developed by chance, physicists believed that some simple processes led to the development of everything. These scientists thus expected that uncomplicated and non-specific mathematical equations should be able to describe the appearance of matter, energy, natural laws, everything. For example, one expert declared in 1985: “The notion that a fundamental simplicity lies below the observed diversity of the universe has carried physics far.” (*Scientific American* 252#4 p. 84)

Particle physicists initially expected that they would be able to describe matter and energy, at their most basic levels, by a few simple equations. They also expected that nature manifests itself in symmetrical pairs of particles or forces. Imagine their dismay during all these years of study as it became apparent that their results show diversity, not simplicity; arbitrary values, not general “plug in any number” situations; and broken symmetry (things that they expect to be mirror images but which are not). The great hope for the LHC or Large Hadron Collider in Switzerland, or from subsequent even larger machines, is that physicists will yet be able to describe nature as simple and symmetrical. As the scientific

world awaits the results from the LHC, the situation with the Standard Model is this: the apparently fundamental particles discovered number at least 37: 18 quarks (6 in 3 “colours” each), 6 leptons, the photon, 8 gluons, 3 intermediate bosons, and perhaps the long sought after Higgs boson. (Also antimatter consists of an equal number of particles). This lengthy list of particles, mostly discovered since 1950, does not fit the scientific idea of simplicity in nature. The above interpretation of nature is called the Standard Model. Concerning this model, one commentator declared in 1985: “By the criterion of simplicity the standard model does not seem to represent progress over the ancient view of matter as made up of earth, air, fire, and water, interacting through love and strife.” (*Scientific American* cited p. 94). More recently, American physicist Joe Lukken at Fermilab declared: “We had a theory that started out really beautiful and elegant [simple], and then somebody beat on it and made it really ugly [complicated].” (*National Geographic* March 2008 p. 97).

Another American physicist, Leon Lederman, pointed out that many observations connected with the standard model are very precise and seemingly arbitrary. There is no general law which can predict why the values are as we observe them. It is just as if the values were chosen by God. Thus he declared: “Designing the world this way the Creator would have had to set twenty dials carefully at seemingly arbitrary values.” (*Popular Science* June 1987 p. 59). This is not what physicists want to discover. So the world waits for the LHC to be come functional, possibly by summer 2009. It had started up in September 2008, but soon suffered crushing equipment failures.

As we await the results of these experiments, we don’t need to worry about the outcome. The interesting thing is that there are no results, simple or complex, which can disprove the work of the Creator.



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It's a Zoo out there!

Zoos not only provide a delightful experience for children and the whole family, but they also provide “teachable moments” in which we can all learn more about these creatures, and by extension, more about the Creator who made them. Many children however have little opportunity to visit a zoo. But they can still learn about and reflect on the wonderful animals that are typically displayed at a zoo. It is certainly true that some research about these animals will cause children to be better observers. I well remember trying to interest our children in a large snake in a pet store cage. We quickly discovered that children who do not know what a snake is, are not going to be impressed by a fat yellow coil parked in the corner of a cage. So background information helps.

In addition, in the process of considering these creatures, the youngsters may well ask why there are so many kinds of animal. In this situation, the discussion will certainly point us to God, the Creator. This is the objective of the Parkers' *Complete Zoo Adventure*. This hard cover book, in full colour, is guaranteed to capture the attention of your youngsters.

In an attached envelope, the Parker book includes several kinds of cards. There are field journals with space for children to record details of the animals which they observe at the zoo. Also there is a field fact card for each animal and these cards are colour coded for animal body plan (for example mustard for hoofed mammals, or blue for mammals with paws, green for birds, grey for reptiles and red for one amphibian). Each animal field fact card has similar categories of information provided in an organized way for quick comparisons. One can compare body coverings, animal diets, when they are active, where they live etc.

In addition, seven biome cards are provided. A biome is a climatic zone determined by the general availability of water, the temperature range of the area, and the range of seasonal variation. For example, organisms which survive in a dry but cold environment will be different from those characteristic of a dry but hot climate. Thus there are seven basic biomes in the world: tundra; evergreen/boreal forest; desert; deciduous/temperate forest; chaparral/Mediterranean; rain forest and grassland/savannah. These cards describe the features of each zone including a map of where they are located and a scale indicating average temperature. This is provided only in Fahrenheit however. An adjacent Celcius scale would have been nice for Canadians. Also the cards give no indication of average rainfall, which is a very important characteristic of each biome. At any rate the cards are a great idea and should serve to focus

a young person's attention on ecology.

In the book proper, there are beautiful two or three page discussions of each animal. This includes a map of where the animal lives, the technical classification according to its body plan, and interesting details concerning its biology. Another feature of these discussions is the provision for each animal of a Bible verse which is then connected to the discussion. Some of the verses seem very remotely relevant to the animal, for example 2 Peter 3:13 (we look for a new heaven and earth) connected to the elephant..

Another feature of the Parker book is the provision of seven devotionals which provide the context for understanding biological diversity and ecology. The first one discusses God as creator and four themes for understanding our world: creation, corruption (the fall), catastrophe (the flood) and Christ (salvation). The second devotional discusses the power of God and design features exhibited by organisms. The third discusses the progression of time and ecological roles of organisms in nature. The fourth discusses days five and six of the creation week. The fifth discusses the fall of man and various consequences which followed. The sixth discusses the flood, and the seventh discusses Christ's work of salvation and our responsibility to exercise stewardship over the earth.

For easy access of information, the Parker book has dividers with tabs to separate the various sections. They also provide a few pages ready to duplicate for activities suitable to early elementary children and later elementary youngsters. Some activity suggestions are more challenging and could be suitable for somewhat older students. The Parkers

have also included suggestions for parents/teachers on how to use the material to best advantage.

The Parkers' book is exciting to look at, stimulating to read and it no doubt will provide many families with a fun filled learning experience even if they cannot actually go to the zoo! Their provision of a Christian context to the discussion is certainly helpful and interesting. Many families and school classes will find this book a joy to use.



Mary and Gary Parker. 2007. *The Complete Zoo Adventure*. Hardcover with coil and envelope with cards. Full colour. 160 pages.

NATURE'S AMAZING WONDER

The Gecko

The gecko, famous in some circles in car insurance commercials, is a very unique but average sized lizard. It is well known among biologists for its chirping vocalizations and its sophisticated adhesive toe pads that allow it to climb with ease up smooth vertical surfaces. Actually, the gecko's ability to run vertically up and down at will has astonished almost everyone who has ever seen them, from Aristotle in the 4th century BC to today.

An amazing variety of geckos exist – African clawed gecko, African fat-tailed gecko, velvet gecko, cat geckos, and the dwarf gecko, to name a few popular breeds. The largest species is the tokay gecko and the most common gecko kept as a pet is the Leopard gecko. The Leopard gecko is docile and calm, has a very colourful yellow and black coat, and adapts well to captivity. It has claws, not foot pads, and for this reason it cannot walk up walls, but it can rapidly climb up rough surfaces such as rocks or tree bark.

Common variations include size, colour, skin texture, and the ability to climb walls and walk on ceilings. Almost every colour – from bright to dull – and numerous combinations and designs produce enormous gecko variety. A reptile, a gecko can live as long as 30 years, is typically 10 - 40 cm long, and periodically sheds its entire skin.

Some species can even regrow certain structures, such as the entire tail. If the animal is threatened, grabbed by the tail, or involved in a fight, it will drop its entire tail at specific break points. As soon as the tail is lost, rapid vasoconstriction occurs to reduce blood loss. The now-separated organ wiggles for a few minutes, often distracting the predator. The gecko then grows a whole new tail in only a few weeks time.

Around 2000 different species are now known. Most are arboreal and live in warm climates in Asia, southern Europe

and North and South America. Some even live in people's homes, residents by walking up on their ceilings. They are often welcomed in homes as permanent guests because they feed on the many insect pests that thrive in hot, humid climates where geckos often live.

and North and South America. Some even entertaining the side down are often guests because

Ceiling Walking

Their ability to walk on ceilings has mystified scientists and laypersons for decades. No known animal except the gecko has the required specialized toe foot pads that allow it to adhere to a wide variety of surfaces, including glass, without the use of liquids to serve as an adhesive. Scientists have only recently discovered how the gecko foot, which is “the most versatile and effective adhesive known” functions (Autumn *et al.* 2002. *PNAS* 99 #19 p. 12252).

The gecko's secret is to use a chemical bond called van der Waals forces. These bonds form between the 500,000 microscopic hair-like setae on each foot and the surface to which they adhere. The setae split into 100 to 1000 very fine mini-bristles to allow a high level of surface contact (Autumn *et al.* 2000. *Nature* 405: 681-684). At the end of each seta, the mini-bristles, about a billion in total, are enlarged to form flattened spoon-like endings called spatulae that look like suction cups (Forbes. 2006 *The Gecko's Foot*. W. W. Norton p. 82). This design allows the foot to take the shape of the object it adheres to at the molecular level as does glue and adhesive tape. They both work the same way, allowing a strong bond to form.

Spatulae bond so strongly that they can hold about eight times the gecko's weight. The only known common ma-



material that the setae cannot bond to is Teflon, a substance engineered to resist van der Waals forces. Each seta is so small that an opening the size of a human hair could hold from three to thirty of them. The setae are also self-cleaning, removing any clogging debris after a few short steps. The gecko breaks the van der Waals bond by peeling their toes from the surface from the tip inward, rapidly breaking a few of the van der Waals forces at a time until it is freed (Tian *et al.* 2006. *PNAS* 103 #51: 19320-19325).

Professor Kellar Autumn has studied geckos for most of his professional life, both in the lab and in the wild (Forbes, 2006 p. 79). One of his major findings is that their surefootedness is not their only talent. They have finely honed senses, including enormous eyes and excellent vision that enable them to hunt at night. They also have hearing so sensitive that they can sense an insect move on a wall twenty feet away (Forbes p. 81). Geckos also, unlike most other lizards, can vocalize, producing sounds that range from chirping like a bird to a loud barking like a dog.

Able to Change Colour

Certain gecko species can actually change their colour to match the environment or even their mood. By day their colour may be light, at night dark. A gray-brown colour in response to excitement may become dark-brown (Grzimek, 1975. *Grzimek's Animal Life Encyclopedia* vol 6 Van Nostrand p. 166). The sudden colour change can be striking – one type can go from light olive-green to a velvety black-brown in a matter of seconds.

Another amazing trait of a species called Bynoe's geckos is that it can change from a sexual organism and reproduce parthenogenetically (Kearney *et al.* 2005 *Physiological and Biochemical Zoology* 78 # 3: 316-324). In other words, it gives up sexual reproduction and uses cloning instead.

Evolution of the Sophisticated Toe

Although other animals, including beetles, flies, and spiders, have complex “biological attachment devices” allow-

ing them to walk on vertical walls, only geckos have the sub-micro attachment devices. Setose or “hairy attachment systems” as well as all other biological attachment devices, are believed by evolutionists to have evolved independently, yet these devices are very similar and function in similar ways (Arzt *et al.* 2003 *PNAS* 100 #19: p. 10603). Some use fluids, others, such as geckos, use a dry system.

All known fossil geckos, including several excellent examples preserved in amber, are fully modern geckos with a fully developed “sophisticated adhesive mechanism” using setae (Arnold and Poinar. 2008. *Zootaxa* 1847: p. 62). One newly discovered example, well preserved in Burmese amber, was dated by evolutionists to the Lower Cretaceous – about 100 million years old, according to their estimates. The fossil includes fully modern setae on a juvenile about “50 million years older” than the previously oldest known gecko fossil (Arnold and Poinar p. 62, 67). Standish, for his part, concluded that the “narrow specification of the setae and their arrangement on gecko's bodies makes evolutionary explanations of their origin problematic and is suggestive of design. This is the oldest known gecko fossil, suggesting that the very first geckos had the ability to perform the remarkable climbing feats we admire today.” (Standish. 2008. *Origins* 63:p. 40).

In spite of the investment of millions of dollars, modern research still has not been able to duplicate the gecko foot design. The closest we have come is MIT researchers who have, after extensive research, developed an anti-sliding adhesive that attempts to mimic the gecko. Ironically, geckos have long been considered evolutionarily primitive due to possessing many “primitive” traits, such as primitive notochord remnants, a primitive hyoid bone, and primitive scales (Grzimek p. 153). We now know that primitive they are not, but among the most advanced, and also amazing, life forms known.

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Continued from page 1

footed creatures of moderate size. The average body length was about 5m. This length included overgrown skulls. The one group of horned dinosaurs, the centrosaurs, had skulls that were about 1.5 m long. The other group, the chasmosaurs, had much longer skulls, up to 2-2.5 m long. Obviously these bony skulls were extremely heavy although the chasmosaur skulls usually featured open areas (windows) with no bone there. It is evident that these plant eaters were less than frisky on their feet. They did however exhibit some design features which enabled them to carry out all the tasks of life.

The back of the horned dinosaur skull is swept up into a frill which may be decorated with various spikes and bony knobs. On the face, such creatures may additionally sport various combinations of horns. These skulls sometimes extend as much as one third of the body length. It seems amazing that such top heavy creatures were able to manoeuvre at all. How could they turn their heads to find food, avoid obstacles and predators, or even find mates?

It so happens that these dinosaurs had a unique design feature which greatly enhanced the manoeuvrability of their heads. They were provided with a ball and socket joint between the skull and the top of the backbone. Extending from the base of the skull was a unique, perfectly spherical ball which could be quite large, up to 95-113 mm diam. That is the size of a small grapefruit. (The technical term for this feature is occipital condyle.) Moreover the three top vertebrae of the backbone were fused together to make a strong socket for the bony projection from the skull. We see somewhat similar ball and socket connections between a vehicle and a trailer, but these connections are not

as large. Thus the horned dinosaurs had a wonderful pivot for their heavy skulls. Another marvelous design feature was the teeth of these dinosaurs. Like the duck-bills, the other prominent components of this community, the horned dinosaurs had densely packed arrays of teeth specially designed for efficient harvesting of tough plant material. Their most famous claim to fame however was the decorations on their faces and skulls.

The two groups of horned dinosaurs appeared simultaneously in the fossil record, neither ancestral to the other, and with no suggested ancestors in lower lying rocks. The centrosaurs had a short, solid or mainly so, frill swept up behind a short deep face. A horn over the nose, if present, was large. Horns over the eyes, if present,

Most are considered to represent different genera with only one species each.

The other group of fancy horned dinosaurs is the chasmosaurs. These had a long shallow face with an extremely elongated frill swept up behind. Typically there were large windows (openings) in the bone of the frill. In life, these would have been covered with skin. The windows, of course, would greatly reduce the weight of the frill. This frill boasted very little decoration. Its



size and shape were its chief claims to fame. Chasmosaurs had long horns over the eyes, but only a short horn over the nose. Like the centrosaurs, there was a lot of variability between individuals within a population and only in the genus *Chasmosaurus* have scientists described more than one species.

were small. The frill itself was often elaborately decorated with a scalloped edge of bone around the outside and with curved horns and spikes projecting in many directions. There were wild levels of variability between individuals within a population. No two individuals were ever alike. Despite the variation however, there are only a few distinctly different centrosaur designs.

The chasmosaurs, found from Alberta to Texas, occur over a much larger area than the centrosaurs. Also they occur not only in Campanian layers but also in the higher Maastrichtian rocks (the highest extent of Cretaceous sediments).

The famous *Triceratops* however fits neither the centrosaur nor chasmosaur group. It is actually something of an embarrassment to the experts. This species is found only in the very highest Maastrichtian rocks. If it were found lower than other horned dinosaurs, then the experts might have suggested that it was ancestral to the two different groups. As it is however, the scientists categorize *Triceratops* as a chasmosaur which originally had a long frill, but which “secondarily” underwent a reduction in the size of the frill.



MOVIE-STAR FOSSIL "DARWINIUS"

BY
MOXIE

A newly discovered horned dinosaur in Alberta also exhibits a blend of characteristics. Since it is found in rocks lower than the vast majority of horned dinosaurs, the experts suggest that it might resemble a species ancestral to the two groups. Thus if specimens with blended characteristics are found at a high level, they are said to be secondarily changed, and if they are found at a lower level, they are said to possibly represent an ancestor.



The fact is however that we do not see the pattern of variation that we should see if divergence (evolution of new groups) had taken place. With great diversity within populations, we should see a cluster of very similar species, and we do not see that. On the contrary we see species widely separated into separate genera.

The question on everybody's mind is the purpose of the horns and frills. Many experts have suggested that much of the variation within a population reflected differences in gender and age, and that could well be. This does not explain why these animals would have such large frills and horns in the first place. Some have suggested sexual display or use for threatening posture. Others have suggested actual use for fighting. It seems hard to imagine how these extreme designs would be more useful and successful than something a little more moderate however. It seems apparent these features are designs, chosen by God and wonderfully crafted to enhance the richness and variety of their communities.

Thus Alberta celebrates her remarkable horned dinosaur fossil beds. The meat eating dinosaurs may be the most dramatic specimens, and the duckbills may show the greatest number of species, but the horned dinosaurs are not found in many other places and they certainly show the most astonishing designs.

[The material in this article, is presented in a briefer format in the new edition of our *Tour Guide to the Royal Tyrrell Museum.*]

The mayor of New York City was at the news conference on May 19, 2009. The event was accompanied too by the showing of a special documentary film on TV, publication of a book on the topic and the unveiling of an interactive website. What could the occasion be? One of the individuals involved, Jorn Hurun of Norway, declared: "Any pop band is doing the same thing. Any athlete is doing the same thing. We have to start thinking the same way in science."

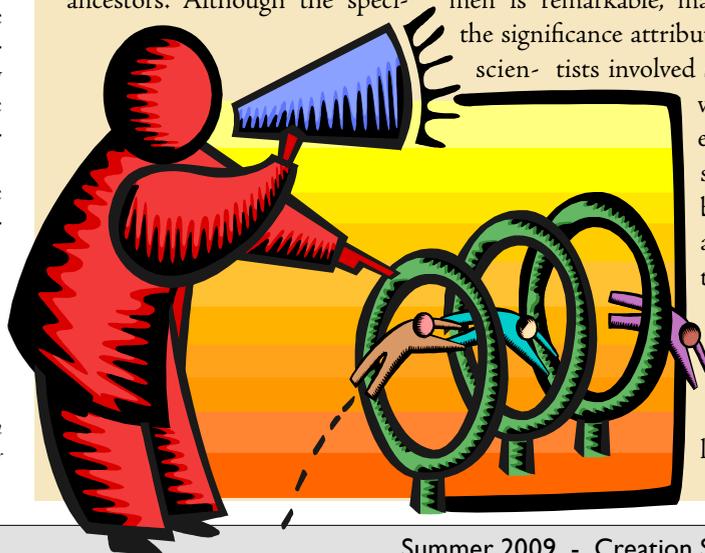
The excitement involved the unveiling of a fossil found in 1983 in the Messel Shale Pit in Germany. This disused quarry, a mile-wide crater near Frankfurt, contains significant remains of a tropical rain forest including many fossils such as ostriches and giant mice. For more than 20 years the anonymous discoverer of this fossil kept its existence a secret. Two years ago, the collector sold it (through a dealer) to Norwegian paleontologist Jorn Hurum, who paid over one million dollars for it on behalf of the University of Oslo.

What Dr. Hurun purchased was a fossil of a young female lemur, close to 2 feet long (58 cm) including long tail. It is 95% complete with soft body outline indicated by impressions of fur, and her last meal inside. There are no other primate fossils anywhere of comparable quality. Moreover most lemur fossils are known from Madagascar. One has been found in Pakistan and now this one from Germany.

This fossil lacks two features typical of extant lemurs (a fused row of teeth in mid lower jaw to help groom fur, and a grooming claw on her second toe), but otherwise it is much like the lemurs we know today. Based on the missing characteristics however, a team of scientists declared it to be perhaps the ancestor of all primates: that includes the lemurs on the one hand and the rest of the primates (including apes, monkeys and tarsiers) on the other hand. They would include humans in the latter group too. The fossil has no traits unique to the rest of primates group.

The statements by some of the big name experts could scarcely have been more dramatic. Jorn Hurum declared to be the "holy grail and lost ark of archaeology." British naturalist Sir David Attenborough called it the "missing link". German paleontologist Jens Franzen called the specimen the "eighth wonder of the world" and American Philip Gingerich likened it to the "rosetta stone," the discovery of which enabled experts to decode ancient hieroglyphics.

The scientific paper named the creature *Darwinius masillae*. It has no known ancestors. Although the specimen is remarkable, many experts question the significance attributed to this fossil. The scientists involved seem to have allowed



vested financial interests to overcome good sense. The fame of a big discovery such as an evolutionary ancestor represents future large research grants and other income. Maybe in this case the public will be less easily impressed.

Tour Guide: Royal Tyrrell Museum

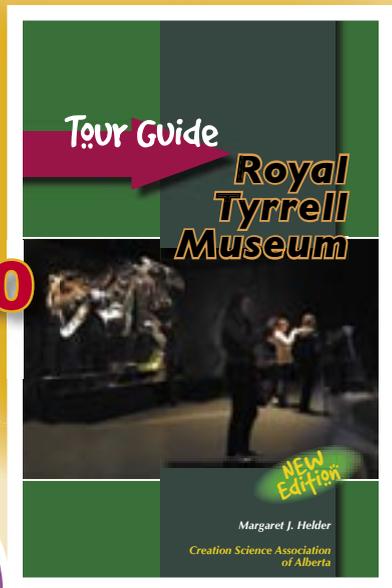
Margaret Helder

Alberta's dinosaurs are fabulous and fun, and the museum has repackaged its displays to communicate this. Consequently new descriptions and discussions were needed for this guide. There is more commentary on the significance of the displays so the guide is more user friendly than ever.

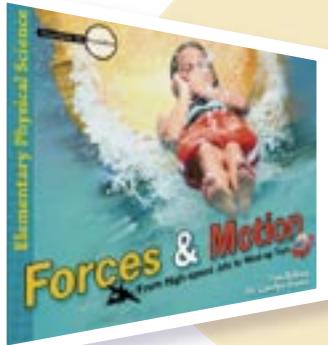
Paper (coil)/56 pages

(* plus \$2.00 shipping if only this guide is ordered)

\$6.00



A scientist recently crossed a carrier pigeon with a woodpecker. The bird not only carries messages, but he knocks on the door!



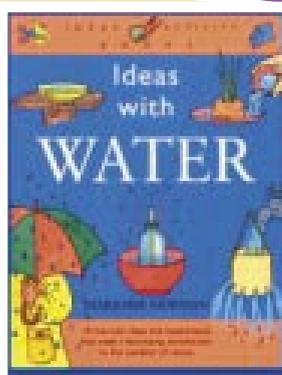
Forces and Motion

Tom DeRosa and Carolyn Reeves

Discover with your upper elementary child, some important properties of our world. Fun hands on experiments require basic supplies and the insights are so significant! Your child will never forget relative motion, friction and other topics which convey an appreciation of our created world as well as an understanding of everyday events.

Paper/88 pages/
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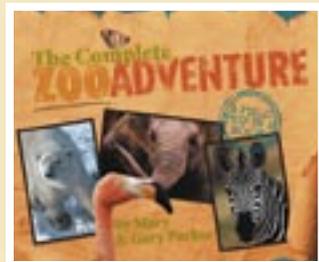
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