

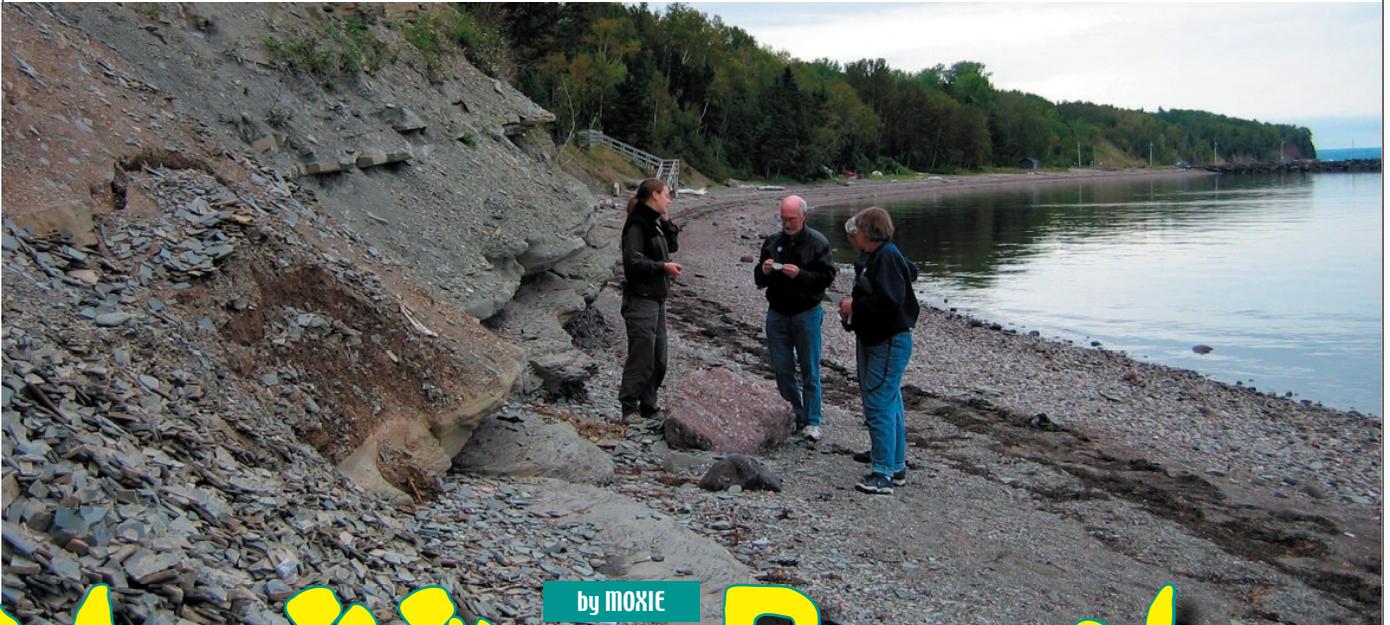


Dialogue

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by MOXIE

Maritime Beaches

Their Grim Story

One might suppose, judging by this title, that the beaches in Canada's maritime provinces are not happy places to visit. Actually they are beautiful. Nevertheless, the story of these landscapes provides remarkable food for thought.

Our journey starts just inside the province of Quebec, on the southern coast of the Gaspé Peninsula. Follow the signs from the town of Nouvelle, to the museum in Parc national de Miguasha. A small but completely bilingual museum overlooks the beach. The cliff behind the building is still actively excavated for fossils, and palaeontologists daily walk along the shore to look for fossils freshly eroded from the cliff. Visitors to the museum

do not take long to discover that fossils from these cliffs tell a fascinating tale of horror and destruction.

This beach has long been famous for the exquisite nature of the fish fossils found there. Dramatic evidence of the fate of the Miguasha fishes is apparent throughout the entire 118 m depth of rocks which preserves this watery community. The same species are found throughout this entire rock deposit. This strongly suggests that no lengthy time interval separated the fish entombed at the top and bottom of the deposit. Even modern lakes and oceans may show changes in species composition over time, but this community does not show this. Thus whatever happened, it happened quickly.

It appears that rivers of sand and clay, in pulse after pulse, were swept

by watery torrents from nearby hills, down upon the fishy community in the depths. Carried along with the sediments came fragments of giant fern trees (*Archaeopteris*) and some horrible scorpion-like creatures. The sediments separated as they settled into characteristic patterns of coarser and fine layers. Such patterns are considered to be an indication of the rapid deposition of these sediments. These under-water avalanches are called turbidity currents and specialists easily identify them. Indeed, all the sediments that were laid down in this body of water, were turbidites.

The fish themselves, trapped in these sediments, bear ample testimony to the sudden nature of the disaster which overtook them. In some cases soft internal tissue, as well as hard bones

and scales are preserved. Also the hard parts of entire fish are often found. All this indicates a very rapid burial, before rot or scavengers could take their toll, causing disintegration of the skeleton. Even more interesting are fish preserved in the postures of life: for example, a lungfish dining on crustaceans; a ray fin fish cannibalistically eating a smaller specimen, head first. Death and burial came to these fish as they pursued their normal activities. Indeed, many specimens of armoured fish and also lungfish have been found in the posture of swimming, apparently oriented by brisk water currents advancing from the northwest. All such fish were advancing into the current.

Another indication of sudden burial are the fish specimens with exploded guts. The abdominal cavities are open at the front with scales scattered nearby in the sediments. It seems that gas generated in these decaying bodies, could not escape because the carcasses were entombed. Finally the abdominal wall gave way and the gas eventually dispersed into the sediments.

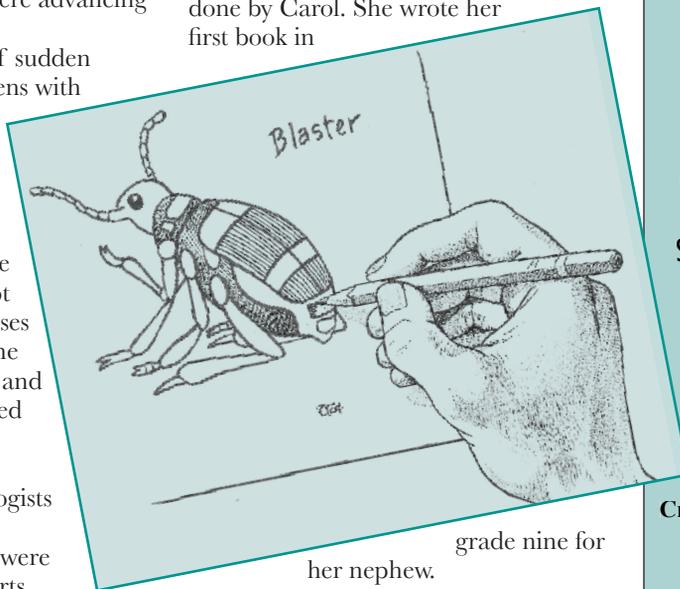
Faced with these astonishing artifacts, geologists have come to the obvious conclusion that these fish were buried rapidly. Most experts however assume that pulses of crisis interrupted long periods of normalcy. This is not however a reasonable conclusion. The fact that the whole rock column is so similar, suggests that this was a one time event, a flood of astounding proportions – no doubt a worldwide event.

Leaving Miguasha, we cross New Brunswick and come to Amherst, Nova Scotia. We continue on the main highway towards Halifax, but turn west at Truro. This takes us to Hantsport. We are now on the south shore of the Minas Basin, part of the Bay of Fundy. The incredibly high tides of the Minas Basin (14 m), have served to expose fossil beaches at nearby Horton Bluff and Blue Beach. The ripple marks look fresh, but are actually rock (said by experts to be 350 million years old – 20 million years younger than the Miguasha rocks). These fossil beaches also

Continued on page 7

Profile Carol Tupper

Carol Tupper is an Albertan, an artist, and an author. Born and raised in southern Alberta, she loves the prairies and has also fallen in love with our forests and the Canadian Rockies. Since early childhood, Carol has enjoyed art and English. Both are gifts that she is using for the benefit of many. The town of Three Hills sports a mural done by Carol. She wrote her first book in



grade nine for her nephew.

Carol grew up in a family that modeled a love for God's Creation. One particular event she remembers is finding a bird's nest one summer. Her whole family studied it, and when they were done, her mother carefully placed it on a prominent shelf in their living room.

As a teen, this love of creation, combined with a faith in the Creator, answered a lot of questions that regular teenagers struggled with. Rather than rebelling, she found this to be a time to examine and solidify the foundations of her faith. Knowing her creator and the security of His love has developed into a deep faith with a quiet confidence.

Out of a love for both God and children, Carol team-teaches a Sunday School class for 4-6 year olds. As is often the case in small country churches, the budget for materials is small. Someone has observed that necessity is the mother of invention. That appears to be true for Carol. Often she finds herself

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ANOTHER GREAT RESOURCE

Reviewed by Margaret Helder

Illustra Media, the producers of the widely acclaimed video *Unlocking the Mystery of Life*, have now released another excellent documentary. This hour long program entitled *The Privileged Planet*, does for astronomy fans what the earlier video did for biologists. This new release features beautiful photography and also many computer animated images of space. Despite all this, *The Privileged Planet* does not quite achieve the pizzazz of the *Unlocking the Mystery of Life* video. This is perfectly understandable however when one considers that astronomy is more remote from everyday life, so that the concepts are less familiar. Another interesting feature of this video is the commentary by well known experts like astronomer Robert Jastrow and Donald Brownlee (co-author with Peter Ward of the book *Rare Earth*).

The discussion begins with the image, captured by Voyager I on February 14, 1990, of our sun and six circling planets. Among the latter planets, was a tiny dot representing our planet, recorded by the spacecraft from four billion miles away. The focus of this part of the video, is to assess the significance of this tiny dot. Is there anything special about our globe, or is it just another artifact, among many, in space?

The modern view that earth is an insignificant globe, has its roots in the description of our solar system made by Nicolaus Copernicus in the sixteenth century. Previously, based on Greek thought, everyone believed that

the earth was the focal point of the heavens. This displacing of earth from a central position, has been extended by modern scientists into a philosophy. They consider that nothing about our globe, ourselves included, is at all special or remarkable. The work of Edwin Hubble in the 1920s also greatly contributed to the same view. Based on his work, astronomers realized that our galaxy is only one among billions in space, not the only one, as had formerly been assumed. The video then discusses how new scientific studies are making it harder and harder to sustain this prejudice about our lack of significance in the universe.

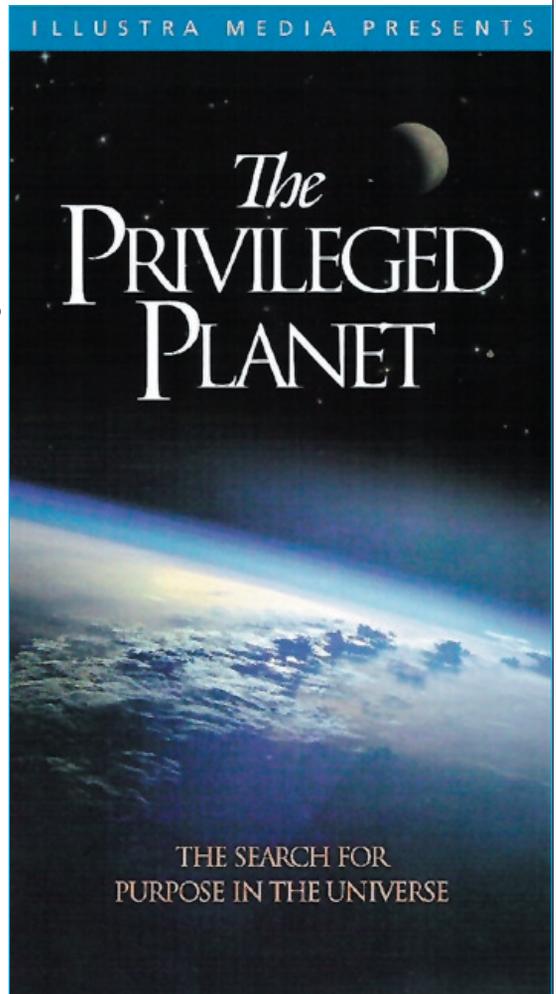
Firstly the SETI (Search for Extraterrestrial Intelligence) program is reviewed. For almost 45 years, astronomers have tried to detect radio signals from distant advanced civilizations. So far nothing has been detected despite increasingly sophisticated listening equipment. The discussion focuses on why intelligent life appears to be so rare in the universe. Not only do suitably sized planets seem rare in our galaxy, but the factors which also must be present for life to exist (such as water and oxygen) turn out to be exceedingly rare. The probability of a planet possessing all such factors turns out to be basically nil, a situation which demonstrates that our globe is actually "very very special, miraculous or extraordinarily unusual." These words are spoken by Seth Shostak, a senior astronomer at the SETI Institute. He does not believe our globe is that special, but that is where the discussion actually takes us.

The second half of the program is based on a book by astrobiologist Guillermo Gonzales and Jay Richards. Beginning with the remarkable situation which allows our moon to completely eclipse the sun, thereby allowing the sun's corona to be seen and studied, these scientists assess the significance of earth's position in space. They establish that the earth is in the best possible position in our

solar system and in our galaxy, not only for life to exist on earth, but also for us to view and appreciate the heavens. Moreover Australian astrophysicist Paul Davies points out that we have been provided with brains which are able to study the universe at the same time that our remarkable position in space allows us to do so. The question as to why this is so, takes us to the final topic in this program.

The universe is obviously ordered and intelligible. Something beyond matter, indeed it is obviously God the creator, who has wrought this wonderful universe. At the end, in a computer animated sequence, we retreat through space from the earth, from the solar system, from the galaxy, and through deep space characterized by a three-dimensional frothy arrangement of the celestial bodies out there. Even deep space has structure and order, however subtle.

This video, in VHS and DVD formats, is excellent for high school science classes and adult audiences.



TELL THE WORLD

by Margaret Helder

WHAT THE EXPERTS NOW KNOW

This is not exactly recent news, but the one hundredth birthday of evolutionist Ernst Mayr draws renewed attention to it. Within the past thirty years, the standard view of evolution theory has been shown to be woefully inadequate. The experts, in response, have not sat around to bemoan the situation. Instead, they have simply executed a dramatic about face, and all have marched smoothly off in the opposite direction. They have carried public policy with them too. Everyone is reacting to the embarrassing finding, with nobody admitting that there ever was a problem.

Ernst Mayr is the last survivor of the golden age of the “Evolutionary Synthesis”, developed during the period 1930-1950. This man, on the occasion of his birthday in July, naturally used the occasion to reflect on the significance of his work. It was his early interpretation, supported by colleagues at a meeting in Princeton in 1947, which popularized the small populations approach to the origin of species. This view became conventional wisdom for a long time to come. For

example, prominent ecologist Eugene Odum articulated this view in the 1971 edition of his textbook *Fundamentals of Ecology*. As described by Odum, new species arise mainly through the process of geographic isolation (p. 241). He even pointed to the Galapagos finches as a prime example of this phenomenon.

The idea is that on an island, new mutations in a small population might allow the following generations there to adapt rapidly to a novel environment. Thus in the case of finch populations, each on a separate island in the Galapagos archipelago, a population might exploit a new food resource and thus develop into a new species. The real situation there however is that no island (except the tiniest outcrops) has only one species. Some have as many as ten. (David Lack. 1953. Darwin’s Finches. *Scientific American* 188 #4 pp. 66-71). On a single island, interbreeding of the population would prevent diversification (appearance of new species). How did multiple species get there? To make the geographic isolation scenario work, scientists had to suppose that indi-

vidual species emerged on separate islands and then all invaded the territory of other species. There is no evidence for this process, of course. One might more logically conclude that all these species arrived together from the mainland.

Subsequent to the 1947 meeting, everyone knew, or thought they knew, that island archipelagos were an important site for the production of biological diversity (lots of new species). More recently however, studies in nature have revealed that islands are bad news as far as increases in diversity are concerned. One such “experiment” has continued for ninety years. It was in 1914 that the building of the Panama Canal led to the flooding of Lake Gatun. A host of tiny islands appeared in the lake. These had formerly been hilltops, all fully covered by the lush rainforest typical of the area. Now however, they were isolated landscapes, some as small as 0.1 hectare, others of 0.8 hectare to 7 hectares, with one big specimen: Barro Colorado Island with 1500 hectares. This latter island (along with five adjacent peninsulas) was established as a nature monument

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in 1923. Since 1946 the Smithsonian Institute has administered the facility.

One of the important projects carried out by Smithsonian scientists has been to compare the diversity of tree species on the islands with that on the adjacent mainland. Initially the entire landscape was connected and thus these sites were similar in overall composition and diversity. However, during the next 75 years after the isolation of the islands, the variety of species found on each island plunged dramatically. The rate of decline was discovered to be 30-40 times greater than the experts had expected on the basis of chance "adverse events". This shocking discovery provided quite a dilemma for biologists. Obviously such rapid declines were far faster than any process of speciation could be expected to work. The islands, which were losing the diversity they already had, could scarcely be expected to produce new diversity. It is evident that geographic isolation such as in island archipelagos, does not lead to an evolutionary increase in new species. The Smithsonian is now researching a similar phenomenon, the effect of fragmentation of the rainforest through deforestation. Established in 1979 near

Manaus, Brazil, this research facility is comparing rainforest fragments with adjacent continuous forest.

Other studies had shown results similar to the Panama Canal study. According to a 1967 monograph entitled *The Theory of Island Biogeography* (Princeton University Press) by Robert H. MacArthur and E. O. Wilson, new species spread from adjacent continents out to remote islands such as Fiji. Once there, new species replace older ones which had previously arrived. Thus animal communities on islands are greatly affected by immigration and local extinction. Speciation is not a factor.

Another author, John Terborgh (1974. *BioScience* 124 pp. 715-722) studied islands which, only thousands of years ago, presumably had animal communities similar to the mainland. Assuming his basic assumptions were correct, what he found was that some "unrelenting forces yet to be identified" had led to marked declines in biodiversity. He thus concluded that only large natural reserves, at least one thousand square kilometers in extent, are adequate to prevent a rush of extinctions.

One might suppose that evolutionists would now revert to plan B, that is to call upon large populations to increase biodiversity. Unfortunately we already

know that new mutations have little hope of spreading in large populations. The chance that mating individuals will both carry the same mutations, is very small indeed in a large population. Without expression of the mutation, the potential for selection, favourably or otherwise, is small.

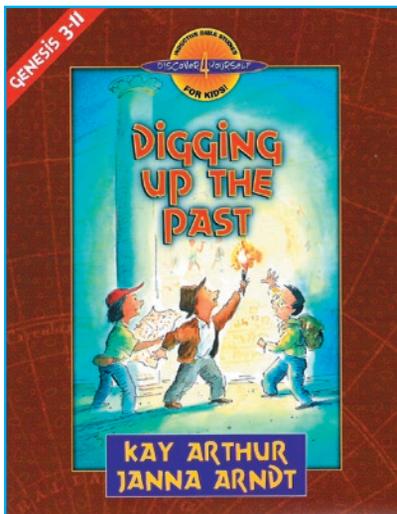
With the knowledge that small or fragmented populations are not the raw material of evolution, as formerly supposed, but rather lead to extinctions, prominent biologists have now begun to advocate the preservation of huge tracts of natural lands. Thus in western North America, prominent individuals have advocated the Y2Y Yellowstone to Yukon wildlife corridor and also in eastern North America, the A-to-A Algonquin Park to Adirondack Park wildlife corridor. The idea is that we need huge tracts of protected land if we are to maintain the present level of biodiversity. In western Canada, at least, governments are already attempting to protect "buffer zones" and "access corridors" around and between various parks. Whatever the merits of these policies, no one is mentioning that the whole approach is a striking indictment of evolution theory. Dr. Mayr, however, is not admitting anything. At 100 years of age, he is still busy attacking the "creationists."

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New Learning Tool for Children

Reviewed by Moxie



Parents and educators will be very pleased to find out about some new workbooks which enable children up to grades 4 or 5 to find out for themselves what the early chapters of Genesis teach us. The workbooks in the *Discover 4 Yourself* series are divided into a first book on Genesis 1-2, and a second title dealing with Genesis 3-11. Each book provides the full text of these chapters in the *New American Standard Bible* (updated edition).

The children read each chapter, draw a picture of the main event (with their own title) and then, with colour coding crayons, mark the main words in each chapter. After that each young person answers questions about what happened, completes puzzles to reinforce the concepts, reads other relevant passages, answers questions and completes puzzles on these too, and so delves deeper and deeper into the events, their meaning and significance. Where appropriate (as for example during consideration of the flood), children are directed to carry out several simple experiments. These shed light on how the flood might have happened, but the emphasis is on the fact that God tells us that it did happen and nothing is too difficult for Him!

Each day a lighthearted story line about children on an archaeological dig, encourages the young people similarly to dig into the text to uncover the contents. The program is divided up into brief daily activities with plenty of reinforcement of what was discovered previously. Answers to puzzles are

provided at the back of the book. The first book covers six weeks of study while the second book takes nine weeks to complete. These would be ideal for two successive summer holidays, or of course, for the Scripture component of study during one school year.

Some parents may not be enthusiastic about a promotional sheet at the back of the book which advocates making movies concerning some Scriptural events. This page, advertising other book titles, can simply be pulled out. Everything else seems excellent and non-controversial in any circles.

Kay Arthur and Janna Arndt.
2001. *God's Amazing Creation: Genesis 1-2*. Harvest House Publishers, Eugene, Oregon. 153 pages & *Digging up the Past: Genesis 3-11*. 219 pages.

Surprises in the Pasture

By Margaret Helder

Have you walked in a pasture lately, closely examining some fresh cow dung? A delightful little fungus grows there. It is so interesting you will wish to give it more than a fleeting glance.

It seems a pity that such an interesting fungus as *Pilobolus* should grow in such an unsavoury location. In actual fact however, the beauty of *Pilobolus* is that it is so well designed for this habitat. Thin white threads of mold run over and into the surface of fresh horse and cow droppings. Standing erect from the growing surface are other threads more than 1 cm tall. These erect threads consist of a bulgy section at the bottom and another at the top of the thread. Sitting on top of the uppermost bulge is a heavy black cap.

The whole purpose of the upright portion of the fungus is to make sure that a cow or horse eats the spores. The difficulty from the fungus' point of view is to get from the dung, where

it grows but which the animals will not eat, onto the grass which the animals do eat. Once on the grass, the spores are duly consumed and they then pass through the unsuspecting animal. Thus the spores are ideally situated to develop on the freshly deposited manure.

As far as the upright fungus thread is concerned, the lowermost bulb is sensitive to light. This bulge seems to act as a lens, focusing the light on some kind of pigment. In response, the thread bends towards the light. This ensures that the threads are pointing towards grass and away from more manure. The bulb at the upper end has quite a different function. It sits immediately below the spore containing body. These spores are protected by a heavy black cap. Eventually a cell layer dissolves between the upper bulb and the spore containing structure above. Immediately the bulb contracts, squirting a jet of cell sap together with the dark spore cap. These latter sail into the air at an average initial speed of 10.8 m/sec (35 feet/second), flying to a distance of up to 200 cm (6.5 ft) from the manure.

It is truly amazing that so tiny a structure can achieve such force! The spores inside the cap generally end their journey by landing and sticking to a blade of grass. It seems obvious that *Pilobolus* is carefully designed to suit this habitat. Without the elegant ejecting mechanism, few if any spores would reach the fresh dung. It seems hard to imagine how such a system could have developed gradually through selection from chance variation. Is it not interesting how nature testifies to the Creator?

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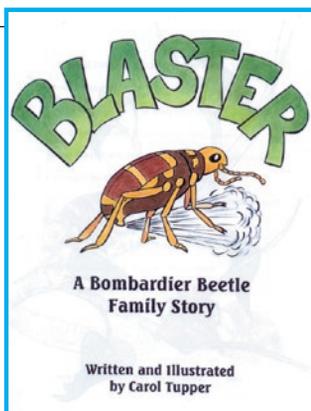


Profile Carol Tupper

Continued from page 2

composing poems, and even songs for their Sunday school class. Researching for one lesson, she came across the book "*Bomby, the Bombardier Beetle*", by Hazel May Rue, but realized it was too advanced for her class.

However it sparked an idea. Carol started looking up everything she could find about bombardier beetles.



After the research was done, a story was written and illustrated to show the wonder of creation, and the results of sin. The end product? *Blaster: a Bombardier Beetle Family Story*, written and illustrated by Carol Tupper. (and for sale by CSAA)

While Blaster looks at one small part of creation, Carol likes to look at the big picture, from Genesis 1:1 to Revelations 22: 21. Carol believes that art has a unique non-threatening way about it that allows her to explore and expound on foundational truths.

Carol is a talented young lady with a strong faith, an attitude of servanthood, a willing mind and loving heart. We will no doubt hear more about her in the coming years.

Maritime Beaches

Continued from page 2

preserve footprints made in the sediments. At Horton Bluff, some footprints are so large (each about 30 cm long) that experts now tentatively identify the animal as a semiaquatic predator called *Eryops*. This extinct amphibian grew to over 2 m long. The first observation of such footprints was made by Sir William Logan, first director of the Geological Survey of Canada. Other experts of the time (19th century) however ignored Sir William's report because they did not believe any four footed animals existed in that long ago time, certainly not such huge ones.

Nearby at Blue Beach, a wide array of tracks is preserved in sandstone, everything from fingernail size footprints to *Eryops* size. The temporary nature of these traces made in wet sediments, suggests that each layer was buried by the sudden arrival of further waterborne sediments. The absence of bones suggests that the creatures themselves may have been swept away in the same catastrophic event.

We next take the ferry from North Sydney (on Cape Breton Island), to Newfoundland. Once there, we follow highway #1 as it heads north east, and soon turn west to Stephenville, on a tiny cape in the Gulf of St. Lawrence. Here, in a river valley north of the town, we find a collection of fossil tree trunks, stumps with attached root balls, and branches of what were once gigantic coniferous trees. These extinct cordaitalean trees grew here up to 48 m tall. Geologists who work the site conclude that these trees must have been shallowly rooted

since the remains were washed from an upland plain, and dropped into a nearby valley. None of the roots (from stumps as long as 7 m) bears any traces of the original soil. This is a most interesting situation. The flooding must have involved extremely energetic water which was able to uproot gigantic trees, wash them free of debris, and bury them in rocks and gravel some distance away. This sounds like a very remarkable flood! The coarse sediments, with contained trees, lie on rock estimated by these experts to be more than 500 million years old. It is enough to cause one to wonder how reliable these time estimates (guesstimates?) really are. Did the flood really happen 300 million years ago, as the experts suppose? They confide that they dated the flood deposit based on the identity of the contained fossils. Is anything as old as they imagine?

Next issue we will continue our journey with visits to Joggins, Brule and Parrsboro, all in Nova Scotia. They are every bit as exciting. Why not plan your next vacation in Canada's maritime provinces? Meanwhile it is good to remember that the official interpretation of geological artifacts is not necessarily the correct one.

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Cover Picture - Miguasha Beach.



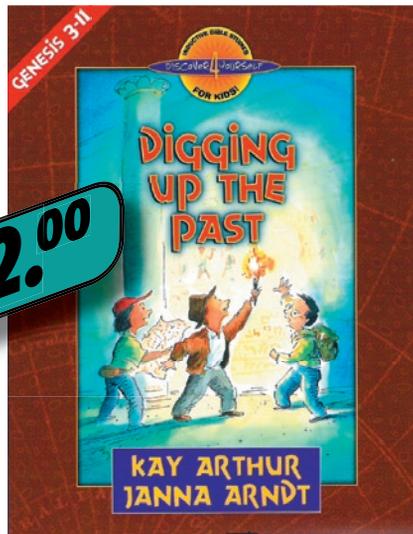
God's Amazing Creation & Digging Up The Past

Kay Arthur and Janna Arndt

These workbooks carry elementary age children through a study of Genesis 1-2 (first title) and Genesis 3-11 (second title). The authors use questions, games and puzzles to encourage understanding of the text. The first title covers 6 weeks, the second takes nine weeks to complete.

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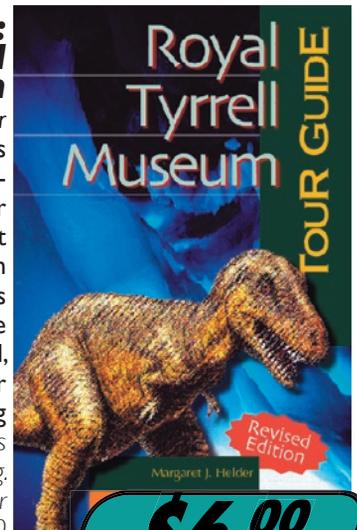
Tour Guide: Royal Tyrrell Museum

Margaret Helder

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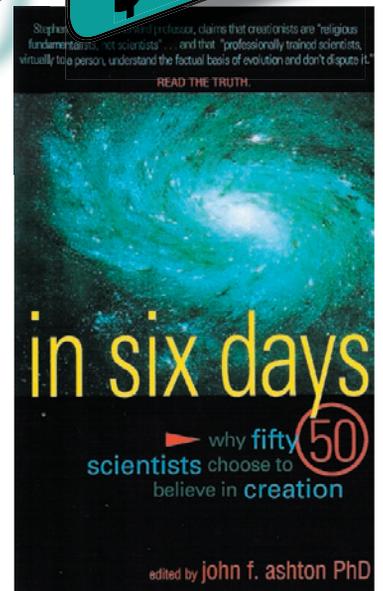
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John F. Ashton (editor)

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