Creation Science
Dialogue
Summer ● June ● 2003
Volume 30 ● Number 2

In this issue

Publication Mail Reg. 40013654- ISSN 0229-253X

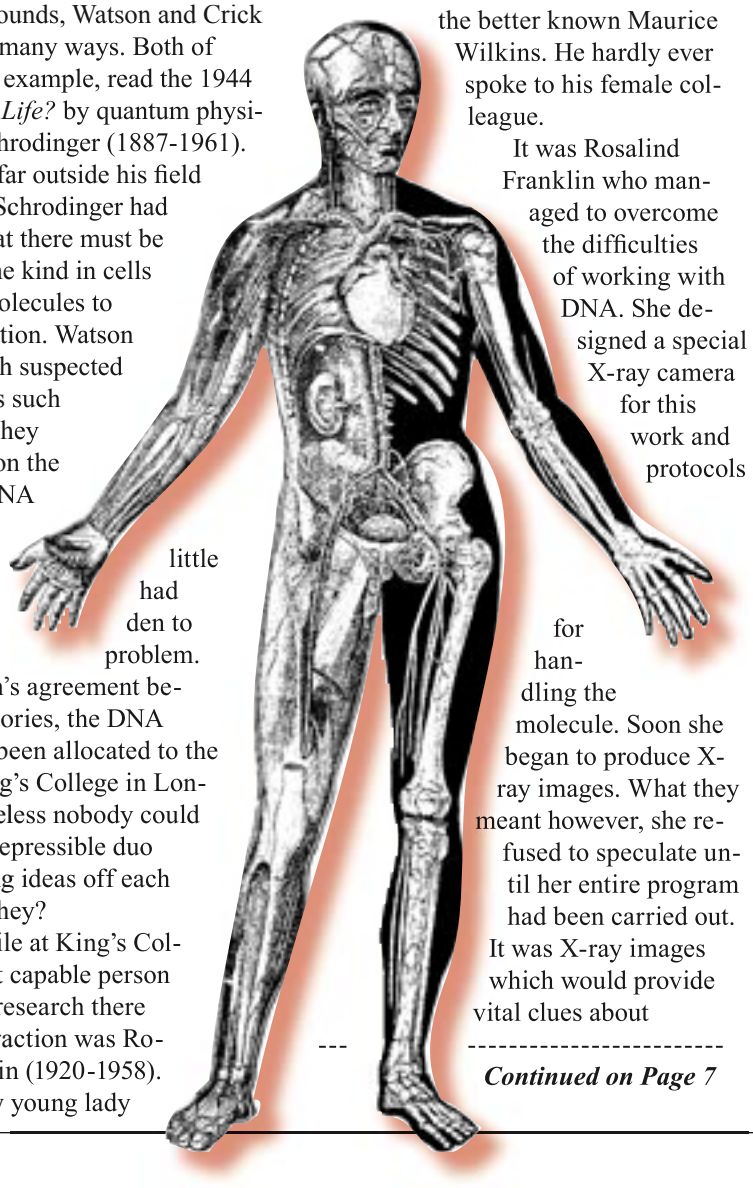
DNA/ GOOD DISCOVERY BAD AGENDA

by Margaret Helder

The big surprise in April 1953 was not that the structure, and by implication the function, of DNA had been discovered, but rather who had done it. With established scientists like American Linus Pauling of Caltech in Pasadena, and British scientists Maurice Wilkins and Rosalind Franklin at King's College, University of London, carrying out such research, it was expected that the problem would soon be solved. These scientists all had research funds, experience and appropriate equipment. On the other hand, British Francis Crick (b. 1916) and American James Watson (b. 1928) were basically nobodies in the scientific community. Crick for his part, was still a graduate student in 1953 since his education had been interrupted by war service. Crick might be merely a graduate student, but he was nevertheless skilled in the methods of X-ray diffraction, so useful in searching for the structure of large organic molecules. Moreover he had devised a theoretical method for interpreting X-ray derived images of long chain molecules (polymers). This was a highly significant skill.

The lead author of the April 1953 letter to the journal *Nature* was James Watson. He had already earned his doctorate in bacterial genetics. Then in 1951 at the tender age of 23, he arrived at the Cavendish lab in Cambridge to carry out post doctoral work on myoglobin, an oxygen storing protein found in muscles. Crick, for his part, had been assigned to carry out X-ray diffraction work on hemoglobin (the all important oxygen carrying molecule in red blood cells). Although they came from different backgrounds, Watson and Crick were alike in many ways. Both of them had, for example, read the 1944 book *What is Life?* by quantum physicist Erwin Schrodinger (1887-1961). In this work, far outside his field of expertise, Schrodinger had speculated that there must be a code of some kind in cells that allows molecules to carry information. Watson and Crick both suspected that DNA was such a molecule. They were fixated on the problem of DNA structure. It mattered little that they had been forbidden to work on this problem. By gentleman's agreement between laboratories, the DNA problem had been allocated to the people at King's College in London. Nevertheless nobody could forbid this irrepressible duo from bouncing ideas off each other, could they?

Meanwhile at King's College, the most capable person carrying out research there in X-ray diffraction was Rosalind Franklin (1920-1958). She was a shy young lady who suspected that her fellow scientists were trying to steal the results of her research. In this suspicion she was entirely correct. Unfortunately as a result of her attitude, she had few people-handling skills and thus she found herself isolated and unprotected. She was one of two people allocated to research DNA structure. The other was the better known Maurice Wilkins. He hardly ever spoke to his female colleague.



It was Rosalind Franklin who managed to overcome the difficulties of working with DNA. She designed a special X-ray camera for this work and protocols for handling the molecule. Soon she began to produce X-ray images. What they meant however, she refused to speculate until her entire program had been carried out. It was X-ray images which would provide vital clues about

---

Continued on Page 7

FAQ

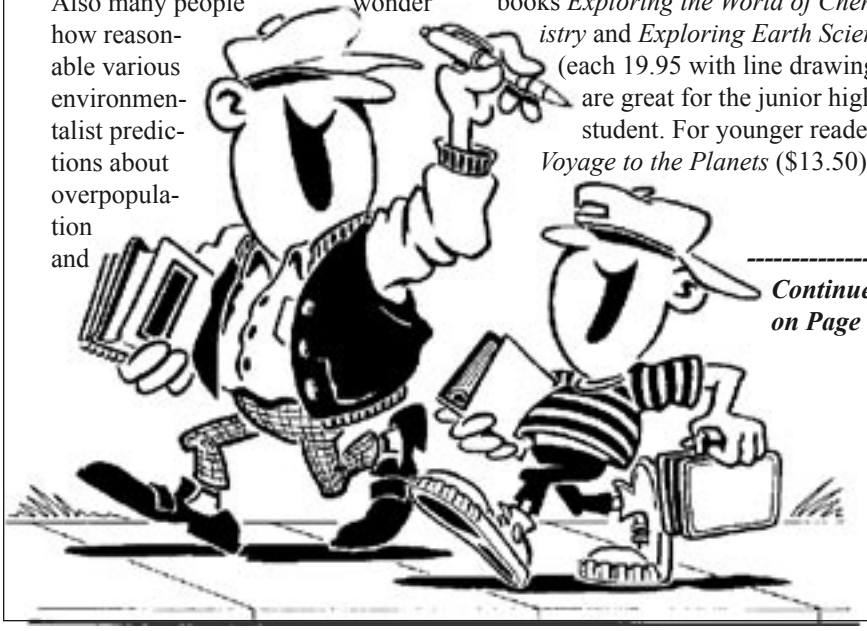
(Frequently Asked Question)

Does it matter if my child does not like science?

Nowadays, we expect every child to acquire familiarity with a wide variety of subjects -- starting, of course, with language arts and mathematics. Naturally, this makes sense since one needs to read, write and manipulate numbers before you approach almost any other discipline. But the variety of other desirable topics is almost mind boggling! Consider physical education, art, music, languages, history, geography etc.etc. etc. We happily load these subjects into the learning program and the student soon begins to complain about overload. It is hard however to object to any of these skills. Each will enable the individual to pursue many interests in life as well as to contribute to community activities. Faced with such time consuming interests, many young people wonder why they need to study science. They claim they aren't even interested in it, so why bother?

Many science courses stress the relevance of this discipline to our modern lifestyle. Questions about the spread of diseases like West Nile virus and SARS, as well as mad cow disease, are much more easily understood when one has learned some biology. Also many people wonder how reasonable various environmentalist predictions about overpopulation and pollution are. With training in ecology, one can better evaluate these claims. Ethical questions about new fertility procedures and biotechnology are covered in high school biology courses. The ability to discover the entire contents of each person's genetic code (with the various disease causing genes that each person carries) has led to new threats to personal privacy and enjoyment of life. One can better avoid these hazards when one is well informed. Such reasons for studying science however are not going to encourage youngsters to embrace this discipline. These reasons sound too much like a big bad bogeyman.

There are nevertheless many positive reasons to study and enjoy physics, chemistry and of course, biology. On a practical level, the question "What can it do for me?" is a valid one. Many boys enjoy building machines which do something interesting. Chemistry likewise is a useful tool that can help us to create new products. Physics and chemistry also help us to understand earth science and astronomy. These topics represent the close-at-hand and distant environment created to support human life. Many children enjoy learning about our surroundings. Our association recommends the excellent junior high series: *The Astronomy Book, The Geology Book* and *The Weather Book* -- each of which is wonderfully illustrated in full colour ($21. each). Also the books *Exploring the World of Chemistry* and *Exploring Earth Science* (each 19.95 with line drawings) are great for the junior high student. For younger readers, *Voyage to the Planets* ($13.50) and



Continued on Page 6

Creation Science
Dialogue

Volume 30 / Number 2
June 2003

Creation Science Dialogue is a quarterly publication of the Creation Science Association of Alberta (CSAA).
Its purpose is to discuss the creation model of origin in terms of scientific details.

Subscription for 1 year $5.00

Address correspondence to:
Creation Science Dialogue
Creation Science Association of Alberta
5328 Calgary Trail
Suite 1136, Edmonton, Alberta, T6H 4J8

Creation Science Associations

Creation Science of Saskatchewan Inc.
P. O. Box 26
Kenaston, Saskatchewan
S0G 2N0

Creation Science Association of British Columbia (B.C.)
Box 39577, White Rock P.O.
White Rock, British Columbia V4B 5L6

Answers in Genesis (Canada)
5 - 420 Erb Street West
Waterloo, Ontario N2L 6K6

Creation Science Association of Quebec
CP63, Succ. Youville
Montreal, Quebec H2P 2V2

Institute for Creation Research
10946 Woodside Ave. N.
Santee, CA 92071

Creation Research Society
Van Andel Center
6801 North Highway 89
Chino Valley, AZ
86323 - 9186

Visit us at:
www.create.ab.ca

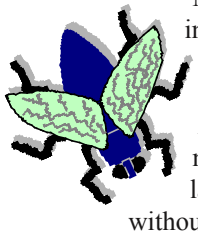
REWRITING THE BOOK ON INSECTS

by MOXIE

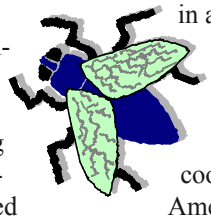
Some years ago during the summer, I was a counselor at a small camp in southeastern Quebec. Nature interpretation was my specialty. It was dark each evening by the time the campers converged on the washroom after campfire. The lights of that building attracted all manner of creepy crawlies. Frequently at this time I would hear a shout "Moxie, Moxie -- what is this thing in the washroom?" So we would look at the specimen. If it had six legs, of course, it was an insect. There were certain things in life that one could count on, and this was one of them. If it had six legs, it was an insect. However this relationship does not hold anymore. Molecular biology, interpreted in an evolutionary context, is drastically revising many useful and reasonable biological categories.

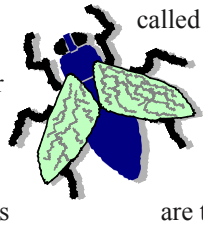
At any age the ability to categorize or assign artifacts to appropriate mental categories, is a very important skill. In such fashion we make sense of the vast profusion of living organisms by assigning them to groupings or categories which reflect common characteristics. Carolus Linnaeus, an important early biologist, believed that the vast diversity which we see is variation on the initial body plans or themes created by God. We are able to categorize organisms because God designed them to fit logical groupings. In addition, on a more practical level, the ability to categorize organisms is useful. The characteristics which creatures in the group possess, will in all likelihood be found in newly discovered members of the group as well.

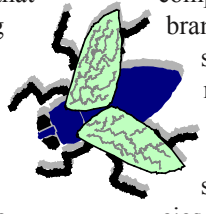
Let us consider, for example, organisms with a jointed exoskeleton (outside skeleton or tough skin to which muscles are attached). These are called arthropods. This is no insignificant group! Biologists tell us that about 85% of all known animal species are arthropods. Next we count legs. Traditionally, if the creature has six legs, we assign it to the insect class. If it has eight legs, it is a spider or a tick or similar nasty creature (chelicerate class). If it has a long body and numerous legs, it is a millipede or centipede (myriopod class), or if it has a body divided into head, thorax and abdomen, two pairs of appendages in front of the mouth, and various numbers of legs, then the creature is a crustacean. Most crustaceans live in water, either marine or freshwater. For example this group includes lobsters, shrimp and crayfish as well as waterfleas.



Many people think of insects as flying creatures and of course, most have wings and indeed do fly. Among the none-too-popular specimens without wings are lice, silverfish and hopping creatures of the forest floor called springtails. Moreover biologists have long considered that the non-flying springtails are the most primitive insects that we know about. Indeed they considered them to be most like an imagined ancestor for all insects. Over time, these scientists suppose, insect descendants of the ancestral type acquired wings and other variations on the insect body plan.







It is evident that insects have traditionally been distinguished by their common characteristics which include, besides exoskeleton (outside skeleton), a head, thorax and abdomen, eyes and six legs. Scientists have always assigned organisms with this collection of characteristics to the class Insecta. Evolutionists moreover have supposed that this collection of characteristics is so unique that all such organisms must be related by descent. Whether the reason for the grouping is evolution theory or common design, the end result was the same. All organisms with the above set of characteristics were considered to be insects.

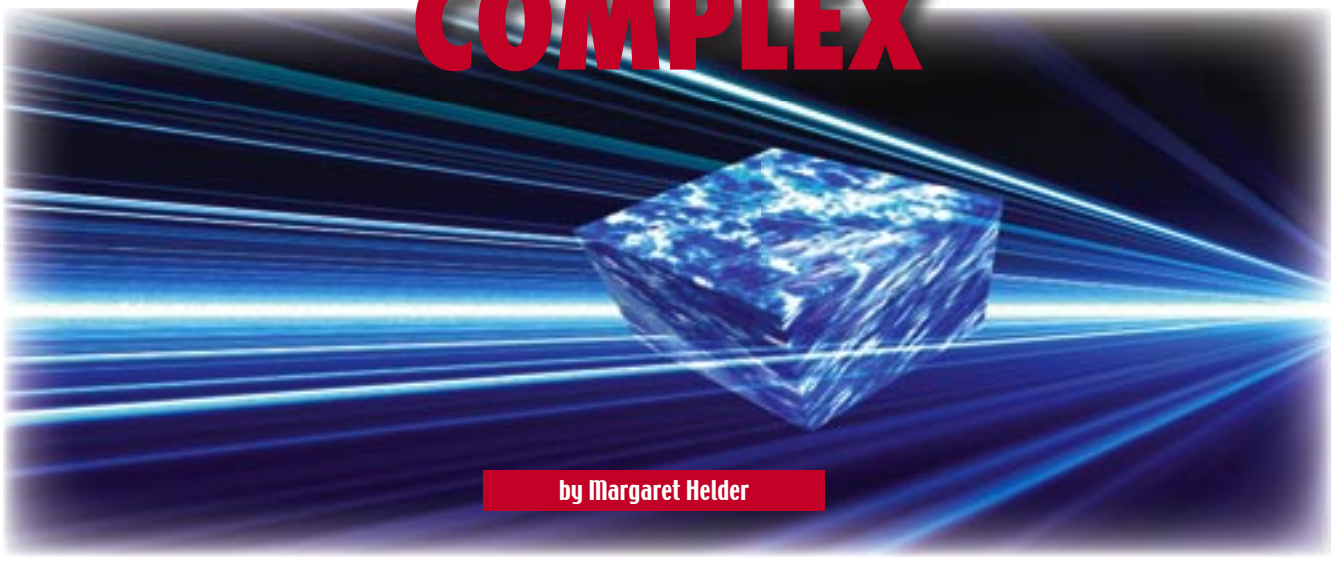
Recently scientists have made use of new information in their attempts to categorize organisms (i.e. to trace lines of evolutionary descent). This involves the coded arrangement of information in DNA molecules in each species. The evolutionary expectation is that categories based on genetics will match the groupings established on the basis of obvious body form. In study after study however, this is not the case. When the two sets of data do not agree (body form compared with DNA), scientists consider that the DNA sequences provide the reliable relationship. This means that organisms which share many specific characteristics may not necessarily belong to the same group and may not necessarily be related in an evolutionary sense. A recent international study on insects has dramatically demonstrated the problem.

In a study carried out with cooperation between Italian and American scientists, DNA sequences of 13 protein coding genes from 35 organisms were compared (see *Science* 299 March 21/03 pp. 1887-1889). A computer program produced a branching diagram designed to show which organisms were more alike or less alike. Among the organisms involved were twenty insect species, two crustacean species and various other organisms such as an earthworm, horseshoe crab and squid. The resulting computer generated pattern of relationships looked reasonable enough at first glance. However, on closer inspection, it turned out that the honeybee and louse were grouped with ticks (8 legged chelicerates). Moreover the springtails (flightless insects) were grouped with crustaceans like the waterflea and brine shrimp. Obviously these results were not at all what was expected!

It did not take the scientists too long to decide that the honeybee and louse grouping with mites was not believable. They then eliminated twenty

Continued on Page 6

THE UNIVERSE: ELEGANT, UGLY OR COMPLEX



by Margaret Helder

While secular astronomers and cosmologists agree that the universe is beautiful, they mean something altogether different from mere appearance of celestial objects. What the scientists appreciate is elegant mathematical equations. They care very little about actual bodies out in space. However, the relationship of mathematics to the universe is a matter of assumption.

Equations, astronomer Timothy Ferris tells us (in his 1997 book *The Whole Shebang: A State-of-the-Universe(s) Report)* are a codified form of logic.(p. 70). Scientists represent natural processes in mathematical form and they use solutions to the equations to make predictions about what may happen in nature.

The Christian, for his part, also takes by faith that nature can be studied. Paleontologist Kurt Wise (in his 2002 book *Faith, Form and Time*) tells us "the doctrine of the Creator (that God created the physical world so that all people everywhere through all time could come to know Him through it) is the foundation for all the presuppositions of science. Science, then, is founded upon presuppositions that are themselves founded on the truth of Scripture -- and thus on the nature of God." (p. 35) Not only then, are the presuppositions of science justifiable only in a Biblical worldview, but one such presuppostion is that the natural laws can be represented by simple mathematical equations. Of course this does not mean that any old equation will do. We obviously need to find the correct one. When it comes to astronomy and cosmology, these are not so easy to identify.

Many philosophers of science admit that attitudes are a major contributor to the type of scientific theories which receive support. In this context, most scientists believe that all reality can be derived from some very simple processes which are themselves describable by simple equations. This is all very well for operational processes such as chemistry, but we do not know if it applies as well to all reality. In this context philosopher Roald Hoffmann asks rhetorically: "Is the world simple? Or do we just want it to be such? In the dreams of some, the beauty and simplicity of equations becomes a criterion for their truth. Simple theories seem to validate that idol of science, Ockham's razor." (*American Scientist* Jan/Feb. 2003 p. 9) Ockham's razor is the idea that the simplest explanation is most likely to be true. The problem is however that there may be drastically different opinions as to what the simplest explanation is.

While the secular scientist sees beauty in simple uncluttered mathematical equations, many Christians value complexity. The latter believe that the present universe is not too different from its initial condition. The universe is beautiful because of all the diversity which we observe. While the Christian also makes use of mathematical equations, he is not trying to run these processes for billions of years, so calculations and expectations are much less complex.

One value which is particularly important to the secular scientist, is symmetry. This term is most easily understood as applying to shapes which are mirror images or opposites of each other. Thus the opposite of an electron with negative charge would be a positron with positive charge. Apparently in mathematical terms, symmetry is considered good and beautiful. A condition with no opposite (broken symmetry) is considered ugly. Thus Timothy Ferris,

in his 1997 book remarks: "Insights like this point to a new view of cosmic history, one in which the universe is viewed as a kind of paradise lost. In this sense, the cosmos has *de*volved from a state of perfect (or more perfect) symmetry to the rubble heap of broken symmetries we find around today ..... what agency broke the primordial symmetry...?" (p. 216)

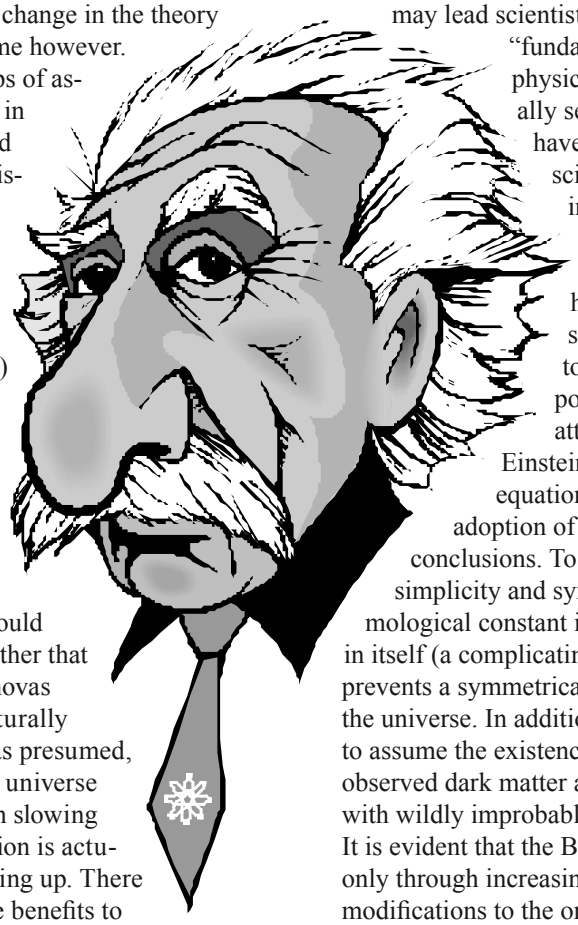
While Dr. Ferris' choice of words sounds vaguely familiar to Christians, his sentiments are very different. In his opinion, the good, the pure, the symmetrical condition existed prior to the beginning of time. What we see now, he believes, is bad because the symmetries are broken. The paradise which is lost, existed before the appearance of the universe. For Christians, on the other hand, the universe is beautiful because it was created by God. Paradise was lost only later. In Dr. Ferris' view, the agent who produced the universe actually performed a bad act because he caused symmetry to be broken. Christians, alternatively, believe that the creation was initially made "very good."

The dream of a beautiful theory of the cosmos goes back to Einstein. It was his theory of gravity (called general relativity) which described the behaviour of matter and energy, space and time. This description was codified in mathematical equations. In the 1920s one mathematician who worked with Einstein's equations was Russian Alexander Friedmann. Some of his solutions suggested that the universe was an expanded version of an initial very hot, very dense state. Assuming that this equation was a correct description of the universe, scientists would be able to calculate the age of the universe once they knew the rate of expansion, the mass density and geometric shape of the universe. The big bang however would represent a colossal breaking of symmetry unless the expansion later slowed and then reversed itself into a big crunch destined to repeat the whole process.

The idea of an oscillating universe has proved attractive to secular science since the 1960s. It preserved symmetry (expansion balanced by contraction) and eliminated any need for an agent, supernatural or otherwise, to cause the initial event. There were a few problems however with this happy scenario. One was that scientists had to assume that 95% of all matter had such strange properties that it could not be observed. Otherwise there was not enough matter to halt the expansion. This was the famous "missing mass" or "dark matter."

Observational astronomers meanwhile tried to fine tune their calculations. One of the key projects of the Hubble Space Telescope was to derive a more reliable value for the expansion rate. This task was completed in 2001 and a value was calculated which yielded an age for the universe of just nine billion years. While this sounds pretty old, it was far too young for theories of star formation. You can't have components older than the whole, so this called the whole equation into question.

More change in the theory was to come however. Two groups of astronomers in 1998 found that two distance estimates (for a very remote type of supernova) did not agree.



The discrepancy in calculated distance could indicate either that the supernovas are not naturally as bright as presumed, or that the universe rather than slowing its expansion is actually speeding up. There were some benefits to the latter view. For example, an accelerating expansion would affect the Einstein equation and push age estimates up to a more 'acceptable' 13 billion years.

This approach however raised another question. Is the density of matter still enough that technically it should bring about a collapse? Recent studies of the background radiation suggest that this is so. Then why is the universe not contracting instead of expanding faster and faster? The popular answer is that a mysterious force (cosmological constant) is pushing everything further and further apart. Thus in February 2003, NASA scientists announced that the universe consists of 4% normal matter, 23% exotic dark matter and 73% mysterious dark energy. While dark matter seems strange, dark energy is even more weird. In order to make the equation balance, scientists have to assume that this energy not only pushes things apart, but it also acts like matter in contributing to the overall geometry of space.

These very strange conclusions may lead scientists to develop a "fundamentally new physics." Traditionally secular scientists have insisted that scientific theories include only known physical processes. Now however they seem prepared to abandon this position. Obviously attempts to rescue Einstein's beautiful equation have led to adoption of some dubious conclusions. To those who value simplicity and symmetry, the cosmological constant is not only ugly in itself (a complicating factor), but it prevents a symmetrical contraction of the universe. In addition scientists have to assume the existence of entirely unobserved dark matter and dark energy with wildly improbable characteristics. It is evident that the Big Bang survives only through increasingly desperate modifications to the original theory. Why do they not consider the creation model instead? Plainly we need different mathematics.

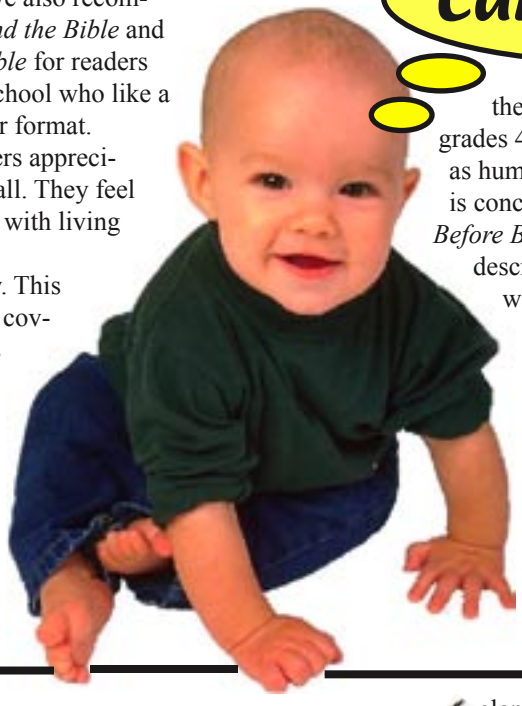
FAQ

(Frequently Asked Question)

Continued from Page 2

Voyage to the Stars ($12.25) provide lively discussion. We also recommend *Astronomy and the Bible* and *Weather and the Bible* for readers approaching high school who like a question and answer format.

Many youngsters appreciate biology best of all. They feel a sympathetic bond with living creatures in all their vast variety. This topic of design was covered in the previous issue of *Dialogue.* As well as the wonders of design however, our association encourages everyone to consider some other biological issues. *The Amazing Story of Creation* ($22.50) provides a discussion not only of astronomy, earth science, physics and chemistry, but also of biology. This comprehensive discussion is all provided at a reading level suitable for the elementary grades 4 - 6. As far as human biology is concerned *Life Before Birth* ($14.50) describes the wonders of human development to elementary age readers, and *Exploring the World of Medicine* ($19.95) discusses the long process of discovery which led to modern health care (junior high level).



Other titles which deal with biology include *One Blood* ($12.50) which discusses human biology and genetics. Lastly *Creation: the Facts of Life* ($12.25) surveys, with an emphasis on origins, many aspects of biology. Similarly *Biology and Creation: An Introduction Regarding Life and its Origins* ($8.50 - a brand new title) considers important aspects of cell biology. These last two books are most suitable for high school readers. There are thus many good reasons to study science. Obviously it is interesting and useful. Among the many aspects of this subject, there is something to interest each one of us. Not least among our reasons for studying science is the fact that God created all things. This confers an interest on nature even before we begin to consider any specific aspect of the discipline.

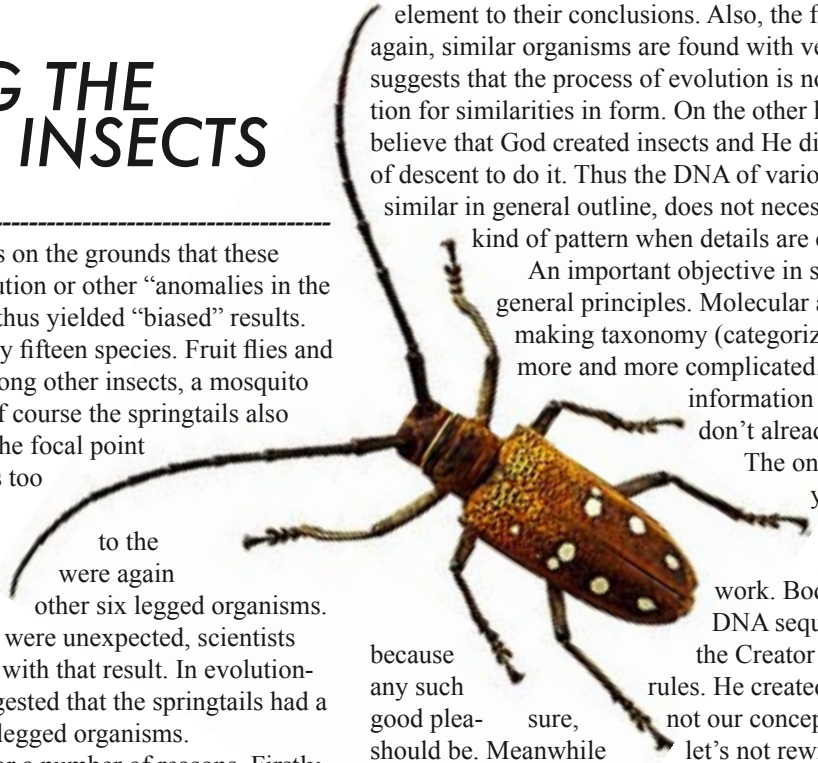
REWRITING THE BOOK ON INSECTS

continued from page 3

species from their analysis on the grounds that these showed different rates of evolution or other "anomalies in the mechanism of evolution" and thus yielded "biased" results. The next analysis included only fifteen species. Fruit flies and moths were eliminated but among other insects, a mosquito and a flour beetle remained. Of course the springtails also remained because these were the focal point of the study. This new analysis too placed crustaceans (many legs and special antennae) closer to the insects, while the springtails were again located farther away from other six legged organisms. Although the springtail results were unexpected, scientists concluded that they could live with that result. In evolutionary terms, this conclusion suggested that the springtails had a separate origin from other six legged organisms.

This study is interesting for a number of reasons. Firstly, it is evident that scientists discard results with which they do not agree. This practice means that there is a subjective element to their conclusions. Also, the fact that time and again, similar organisms are found with very different DNA, suggests that the process of evolution is not a good explanation for similarities in form. On the other hand, many of us believe that God created insects and He did not use a process of descent to do it. Thus the DNA of various organisms, while similar in general outline, does not necessarily reflect any kind of pattern when details are considered.

An important objective in science is to derive general principles. Molecular analysis however is making taxonomy (categorizing of organisms) more and more complicated. We will soon have information overload if we don't already.



The only thing these analyses demonstrate is that evolutionary predictions don't work. Body form and DNA sequence do not agree because the Creator was not bound to any such rules. He created according to His good pleasure, not our conception of what this should be. Meanwhile let's not rewrite the book on what constitutes an insect. Moxie says why tamper with something that works!

Continued from page 1

DNA structure. One thing she was quite sure about, the images did not suggest a helical structure in DNA.

It is traditional for scientists involved in research to occasionally give lectures to update colleagues on what they are doing. Rosalind Franklin delivered such a seminar in November 1951. Her colleague Maurice Wilkins invited James Watson from Cambridge. Francis Crick did not come because his interest in DNA was too well known. Watson listened carefully, but he did not take notes. That might look too eager. Watson's recall of what he had heard proved faulty however and progress on the issue was very slow. Then in January 1953, word came that American Linus Pauling was about to publish a proposed structure. Watson and Crick however were relieved to discover that Pauling had made a simple but significant error in the chemistry. They had a reprieve which might last a few weeks.

Two days later Watson visited Franklin. The exchange of views did not go well. Watson taunted her that she was inept at X-ray interpretation and she shouted at him to go away. He next encountered Wilkins who showed Watson the best image Franklin had ever taken. From it Watson was able to see clear indications of helical structure and even measurements of angles. Wilkins also showed Watson a Franklin research proposal which contained further crucial details. Based on these insights, Watson and Crick solved the DNA conundrum within four weeks and the rest is history. When they published, they failed to acknowledge any contribution of Rosalind Franklin. She died five years later, never having heard of her contribution to this story. In 1962 Crick, Watson and Wilkins were awarded the Nobel Prize in Physiology and Medicine.

The achievement of Watson and Crick reveals how important theoretical analysis is to the solving of many scientific problems. However they could not have done it without the experimental foundation of Rosalind Franklin. Theory and empirical research go hand in hand. Now fifty years later, Watson at age 75, and Crick at age 87, are both in the mood for reflection. Both have enjoyed long careers and both are happy to discuss the significance of their achievement. Interestingly, both attribute their success to their atheistic views.

Subsequent to the events of 1953, James Watson went on to a faculty position at Harvard University where he soon proved himself adept at fund raising and administration. Eventually he became director of the Human Genome Project. Francis Crick also has enjoyed a long career. During the early years at Cambridge, he and collaborators went on to describe how the information in DNA becomes translated into specific proteins. Later he turned his attention to the seemingly unrelated issue of human consciousness. In Crick's mind there was a connection between the human brain and the DNA helix. Because of his distaste for religion, Dr. Crick set out to research two topics often cited as support for religion: namely the gulf between life and nonlife, and the phenomenon of consciousness. Since he believed only in the material universe, it was Crick's objective to explain both these phenomena in chemical terms. His hope was to dispense with any excuse for attributing natural phenomena to the work of God.

A little reflection on our part however will show that Watson and Crick had in no way explained the gulf between living cells and mere organic compounds. Indeed while they did describe how information is stored in DNA, they did not explain how this molecule developed the capacity to store information in the first place. Nevertheless, under the mistaken assumption that their explanation did away with the need for a Creator of living cells, Dr. Crick turned his attention to the problem of consciousness. He has wrestled with the problem for twenty five years, but still the solution eludes him. One might imagine that after all this time, he might conclude that his program has no hope of success. He might even grow discouraged with his atheistic agenda. On the contrary however, Dr. Crick remains as firmly committed to his position as ever. In recent months and throughout his career, James Watson too has steadfastly declared his atheism.

It is apparent that from the start, the ultimate objective of these two men was to explain both life itself and consciousness in chemical terms which would completely exclude any supernatural involvement. It is indeed ironic that our understanding of DNA has led to a greater appreciation of the gulf between nonliving chemicals and the living cell. No spontaneous or natural process can ever explain how a code such as DNA came to be, or the astonishingly concentrated storage of its contained information. Thus this objective of atheists Watson and Crick has met with utter failure. Christians for their part, still celebrate the achievements of April 1953. The motives of Watson and Crick were all wrong, but the nature of their information does not depend on attitude whether good or bad.

Exploring Planet Earth

John Hudson Tiner

Follow the footsteps of early explorers as they discover trade winds, currents in the sea, tides, the magnetic field, glaciers, rock types and river systems. Thought provoking questions are designed to emphasize geographical and historical themes suitable for junior high grades.

Paperback / 160 pages

$19.95

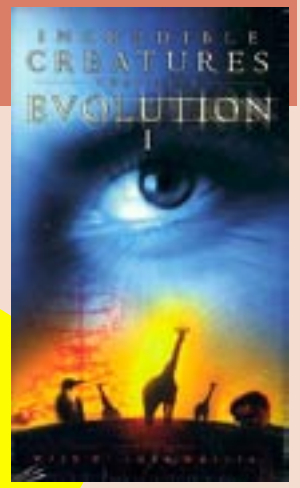
Incredible Creatures that defy Evolution (1)

with Job Martin

Powerful discussion that animal designs are the work of the Creator. Young viewers, ages 8 and up will love accounts of precision shooting by the bombardier beetle, as well as other activities of beavers, giraffe and other creatures.

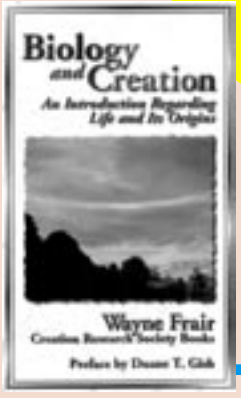
Video / Reel Productions /
60 min.

$24.00



All things come to him who waits, except a loaned book.

Get a new one Today!!!



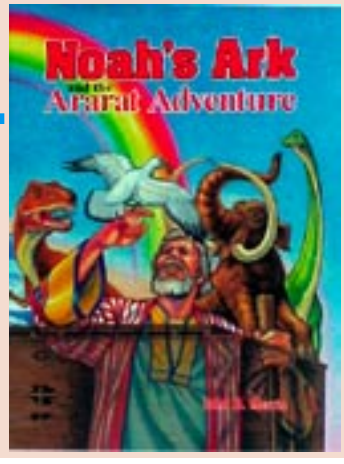
Biology and Creation

Wayne Frair

This excellent new book provides informed discussion on cell biology and related topics so important in high school biology courses.

Paperback
84 pages

$8.50



NOAH'S ARK AND THE ARARAT ADVENTURE

John Morris

Chock full of colour illustrations, this book for children in the elementary grades, describes a modern exploration story. Contrast the mountain as it is today with the Biblical account of the Flood. Are some artifacts from the mountain of doubtful relevance? Read the book along with your children to find out.

Hardcover
64 pages

$18.00

Please fill in order form and mail to: Creation Science Association of Alberta, 5328 Calgary Trail, Suite 1136 - Edmonton, Alberta, T6H 4J8

Name:

Address:

City: Postal Code/Zip:

Please state titles and quantity of books ordered:

Total order	$	.
Add 10% for S/H ($6.00 min.)	$	.
Subscription ($5.00)	$	.
Donation	$	.
Total enclosed	$	.
Free Catalogue	----------	
Total	$	

Make cheque or money order payable to:
Creation Science Association