

The REALL News

The official newsletter of the Rational Examination Association of Lincoln Land

"It's a very dangerous thing to believe in nonsense." — James Randi

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Special Ninth Anniversary Edition!

Looking at *Evolution*

by Bob Ladendorf

"It is those who know little, and not those who know much, who so positively assert that this or that problem will never be solved by science."

— Charles Darwin, *The Descent of Man*

According to a 2001 Gallup Poll, nearly 60 percent of Americans accept the creationist belief system that denies evolution as the best explanation for how complex life forms exist. That should change because the sheer volume of multiple lines of scientific evidence is so impressive in the seven-part Public Broadcasting System series *Evolution* recently shown.

Alas, I doubt many creationists watched the series, except perhaps for the final hour that dealt directly with creationism and evolution and a follow-up panel discussion on the Central Illinois TV station. During that call-in show, most of the callers appeared to be creationists and seemed to be unmoved by the evidence for evolution.

This series is an extraordinary adventure through the myriad issues that evolution addresses. Each part deals with various topics, but the different parts featured similar elements: interviews with top scientists; outstanding photography of people and animals worldwide; scientists working in the field; movie clips illustrating some theme of evolution; and an overall narration by actor Liam Neeson. Only in the first, two-hour part was there a dramatization of Darwin's life intercut with narration and interviews with modern-day scientists.

The first two parts provide an extensive amount of information and evidence that should be watched by anyone interested the effect of evolution on life itself.

To briefly introduce each part, I am including the description found on the Web site for the show at www.pbs.org. The first part is a two-hour premiere called "**Darwin's Dangerous Idea.**"

Why does Charles Darwin's "dangerous idea" matter more today than ever, and how does it explain the past and predict the future of life on Earth? The first show interweaves the drama of Darwin's life with current documen-

tary sequences, introducing key concepts of evolution.

The dramatization of Darwin's life is indeed engrossing, demonstrating his research, hesitation to publish his theory of evolution, public speaking stage fright, close relationship to his brother/ manager Erasmus, love for his wife, Emma, and their family, and his despair at a daughter's death.

Punctuating the dramatic episodes are interviews with pro-evolution scientists such as Stephen Jay Gould and Daniel Dennett as well as voice-over narration by Neeson. At first, I found the show's technique of alternating the dramatization of Darwin's life using actors and a script with the interviews and narration to be a little irritating. Just as you are engrossed in Darwin's struggles with publicizing his theory, you see a scientist comment on Darwin's life or aspects of his theory, such as natural selection. However, the technique is so skillfully handled that the mixture of docudrama with documentary becomes effective part-way through the first hour.

For instance, there are many interesting documentary segments that illustrate medical research today that only add more credence to Darwin's original idea, including:

1. *AIDS research showing how HIV evolves in a short time* — Veronica Miller's research at Goethe University in Germany demonstrates that taking AIDS patients off all drugs allows non-resistant HIV to suppress resistant HIV that is followed by overwhelming the former with drugs. Some patients who have improved are also interviewed.
2. *Eye imperfections through retinal tears* — The "perfect" eye that could only be created by a creator is placed in dis-

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Purpose

The Rational Examination Association of Lincoln Land is a non-profit, tax-exempt 501(c)(3) educational and scientific organization. It is dedicated to the development of rational thinking and the application of the scientific method toward claims of the paranormal and fringe-science phenomena.

REALL shall conduct research, convene meetings, publish a newsletter, and disseminate information to its members and the general public. Its primary geographic region of coverage is central Illinois.

REALL subscribes to the premise that the scientific method is the most reliable and self-correcting system for obtaining knowledge about the world and universe. REALL does not reject paranormal claims on *a priori* grounds, but rather is committed to objective, though critical, inquiry.

The REALL News is its official newsletter.

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From the Chairman

David Bloomberg

At January's meeting, we discussed the serious topic of how we should and could combat the rise of creationist activism in Springfield. I'd like to start by thanking the 1st Presbyterian Church, where we held our meeting, and in particular Rev. Jake Young, who came to the meeting and participated in the discussion.

Some might find it odd that we would have a meeting about creationism in a church. But I thought it was completely appropriate. It shows that no matter how religious a person might be, that doesn't mean science has to be rejected. The two are not mutually exclusive, except for those extremists who would have us ignore science in favor of a literal reading of the Bible. And those extremists would like to force their views on everybody else, and will do anything they can – including deception – as a means to this end.

These are the types of people we discussed, and I was glad to see a pretty good turnout (though, of course, I'd always like to see more). Some of the topics of discussion included the thought that we could attempt to engage local creationists in debate, thus showing how scientifically bankrupt their opinions are. Unfortunately, the tactics of one local creationist have already shown that we should not expect a logical response to such an offer. As but one example, I refer back to Clark Olson's article of last month discussing the talk given by John Henry. He started by attacking REALL for not allowing him to speak at one of our meetings. Yet he did not mention that we had specifically offered him an opportunity to "speak" directly to our members by putting together an article for this very newsletter. He refused. Why? I cannot read his mind, of course, but I rather suspect it has to do with the reason that most creationists would rather "debate" or have a talk instead of putting pen to paper. By putting his arguments down in our newsletter, he knew we would analyze them (I told him so myself). And because it

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would be on paper, we could dissect his claims. By giving a lecture, he could say many things that we would not be able to counter (just as he did in the presentation discussed by Clark). Mind you, it's not because he is right that we would be unable to counter these, but because it's much easier to make a false claim than it is to point out all the evidence *showing* it to be false. Those of you who recall my article on the "shrinking sun" claims made in a letter to the editor a few years back will remember that it took only a couple paragraphs to make a completely bogus argument, but several newsletter pages to explain *why* it was wrong and what had led up to the claim.

There were other actions that Henry took in his presentation (and in other discussions with me) that indicate to me that he is not interested in a real scientific debate, but Clark's article pretty well went over those, so I don't see any reason to repeat it here. Instead, let's take a look at what we discussed that we *can* do.

The general feeling was that we need to be more proactive in our promotion of science at all levels. We should not wait for a creationist to make a speech and then try to point out all the flaws (in part because it would take too long to do all the pointing, as explained above). Instead, we should make the first step and attempt to introduce scientific concepts to the general public – this includes evolution.

To this end, we plan to try to hold more frequent public lectures focusing on evolution and all of the different areas of scientific evidence that support it. If you have any suggestions for qualified people to give such presentations (or if you would like to volunteer yourself), please let me know.

We want to have people send in more letters to the editor and guest opinion columns. Usually we only send in letters in response to something said in the paper or, more frequently, when somebody else sends a letter containing misinformation. Of course we want to continue this, but we also want to take it upon ourselves to make the first move. Heck, the paper publishes all sorts of letters from all sorts of crackpots – why not some rational ones once in a while? For example, February 12 is the anniversary of Darwin's birthday – somebody could write a letter or a guest column about Darwin and his extremely successful theory.

And when I say "somebody," I really don't know who that would be. Certainly I will be doing some of it, as will people like Bob Ladendorf (who already has been sending in such guest columns on a variety of topics). But we need more involvement from other members. If you want to volunteer but think you need some help, please feel free to contact me! We can't do it alone.

Even though we will be proactive, we still need to react when necessary. At the meeting I gave a prediction that the aforementioned John Henry would send a letter to the editor of the *State Journal-Register* in response to a book review of mine that was published the previous Sunday. The book was *The Secret Life of Dust*, and doesn't exactly sound like one that would get a creationist in a huff. But the author talks about a number of things that would upset creationists. For example, our solar system – our sun, our planet, ourselves – is made up of dust from previous stars that exploded. Of course a creationist doesn't want to hear this, "thinking" the world is only 6000 or so

years old and there were no stars before our sun.

But the topic that set off Henry was a brief mention that experiments have found that molecules of space dust can form "hollow, water-tight spheres" when dropped into water. I asked, "Could these be the origin of cellular membranes that protected the first life forms?"

Of course, Henry's answer was "no." Why? Because, he says, cell membranes are not hollow. Cell membranes are not water-tight. Cell membranes are not spheres. Instead, Henry would prefer readers look at Genesis 2:7 where it says, "Then the Lord God formed man from the dust of the ground..." Yes, that's right, look to the Bible instead of scientific knowledge.

So what about his claims? Well, Clark Olson rebutted several points in his response letter (and that's exactly the type of activity we're talking about people taking). But let's take a quick look. First, he claimed cell membranes are not hollow. Um, no, they're not. Why not? Because they have cellular material inside. So apparently Henry believes cell membranes appeared magically with cells already inside. Actually, of course that's what he believes, since he is a creationist. Second, he says cell membranes are not water-tight. No, they aren't. But being a creationist, he doesn't want to think about how things *evolve* over time. The first reproducing molecules needed some way to keep themselves safe from the rest of the environment. These dust spheres might have done the trick until they evolved a way to make them as permeable as necessary. And, of course, he says cells aren't spheres. Again, he thinks so literally that he apparently cannot fathom at all how evolution works. The specific shape of the potential origin doesn't matter compared to what they look like now.

Overall, his letter made no sense to anybody with an understanding of science. But, of course, people with an understanding of science aren't his targets. And I (along with the scientists I was discussing) are certainly not saying that space dust spheres are definitely the origins of the first membranes used by reproducing molecules. We are, however, saying it is a possibility and is being studied scientifically. But creationists have no use for such studies. They already know the answer. That is the antithesis of science.

And that is why we must do our best to help the public understand.

February Meeting

Keeping in line with our evolutionary topics, and because February 12 is, as mentioned earlier, Darwin's birthday, our meeting on Tuesday, February 5, will feature an episode of the *Evolution* series reviewed in this issue by Bob Ladendorf. I missed the series when it was airing, so I'm anxious to see more of it, especially after the rave reviews I've seen.

Also, if you have anything you want to talk about regarding our discussion last month or anything you've read in this newsletter, please feel free to bring it up. We're always looking for new ideas! ♡

Scientist Hawking Puts the Universe in a Nutshell

by David Bloomberg

It is widely claimed that Stephen Hawking's 1988 book, *A Brief History of Time*, was the least-read best-seller ever. People bought it because of the physicist's fame and his ability to convey complex equations in simpler terms, but then many were apparently unable to understand those explanations.

Hawking's newest book, *The Universe in a Nutshell* (Bantam Books, \$35), aims to improve the readability by filling the pages with pictures and graphics to help explain the complex topics. But make no mistake about it – even with pictures, this is not easy reading.

By its very nature, advanced physics is mind-boggling. Indeed, there is a dictum that circulates in academic circles saying essentially that if somebody claims to understand quantum physics, he doesn't. In the skeptic world we have seen this in all sorts of bogus claims that some people try to link to quantum physics. It has only become more complex since Hawking's earlier book.

But unlike that book, Hawking has organized this one so the reader can skip around (after reading the introductory chapters). If one area is mystifying, it doesn't mean the remaining chapters will be worse. This also allows Hawking to address different fields of current research, concentrating on those areas where he has actually been working.

The topics addressed are varied, as is their level of difficulty. Gravity pervades a number of these discussions, and certainly every reader will be familiar with the topic. But what about the quantum theory of gravity? Or the idea that we may feel only a fraction of the force of gravity because the rest of it seeps into other dimensions?

Similarly, everybody is familiar with time. But what about the universe's history in imaginary time? Looking at such a measure, Hawking finds that our universe is most likely to have an imaginary time model that is not quite spherical, but looks somewhat like a walnut due to rapid early expansion of the universe. It is difficult to do the image or explanation justice without graphical aid, but from this came the title of the book, *The Universe in a Nutshell*.

To examine that nutshell, Hawking wants to look back into the depths of time – when the universe was born. Some might wonder why it matters what went on in those first instants of time, or make excuses that science cannot really address that. Hawking disagrees, saying: "If the laws of science are suspended at the beginning of the universe, might not they fall at other times also? ... We must try to understand the beginning of the universe on the basis of science. It may be a task beyond our powers, but we should at least make the attempt."

Interestingly, a creationist organization that helped underwrite a Hawking speech in the U.S. has recently been claiming that he supported them. How anybody could say that with a straight face after reading this book is beyond me. He says plainly, in the above quote, that we must use science to understand the beginning of the universe. And believe me, he isn't talking about a 6-day creation some 6000 years ago!

In making his attempt to scientifically examine the uni-

verse's origins, he must address the Theory of Everything – a long-sought theory that will unite all of physics. Right now there are theories that can address parts, but nothing that can weave it all together. Or is there? Hawking suggests that something called M-theory may provide that underlying basis, or at least some approximation thereof.

What is M-theory? This is where the most complex thoughts come together: M-theory unites the five versions of what is known as string theory, plus supergravity, into a single framework. It uses "branes" – as in membranes, but with different numbers of spatial dimensions – to explain the universe, which appears to itself have 10 or 11 dimensions rather than only the four we are most familiar with (three dimensions of space plus a fourth for time).

Got all that? Probably not, but Hawking does a much more thorough job of explaining it – not that it becomes easy to understand even under his tutelage. Indeed, not even scientists completely understand M-theory, but they are making progress. Hawking says we may someday be able to use extremely high-energy particle accelerators to detect the six or seven other dimensions that are curled up into submicroscopic branes.

Despite the complex nature of such discussions, Hawking allows his humor to show through. When talking about the universe being a closed unit yet having no boundaries, he mentions that the surface of the Earth is similar – and adds, "There are no reliable reports of people falling off." In discussing his theory of black holes, he notes that it is a pity there don't seem to be many of a certain type around, for if one were discovered he would get a Nobel Prize.

In one particular chapter, Hawking discusses the possibility of time travel. He notes that scientists should be able to study this topic without being ostracized or being thought of as crackpots. I agree. We cannot ignore certain areas of study or we will become what the real crackpots accuse us of being: closed-minded. That said, it is not looking good for those who claim time travel is a reality. This, too, is a positive step if only so we can scientifically show why such things would not be possible.

As indicated earlier – and as one can certainly see even from the few points mentioned here – physics has not gotten any simpler since *A Brief History of Time*. However, Hawking has done everything he can to put it into simpler terms. The graphics in this book certainly help to do that – explaining 11-dimensional theories on a two-dimensional page – and he has also included a glossary of terms for easy reference.

A reader should not go into this book thinking it will be easy reading. But if you want to know where the leading edge of physics is today, this is likely the best place to start.

[A version of this article originally appeared in the *State Journal-Register*. It is printed here with permission of the author.]

(“Looking at Evolution” continued from page 1)

pute.

3. *Humans and chimpanzees share 98 percent of the same DNA* — This new fact shows how close different animals are to each other biologically.

The compelling evidence for evolution is persuasive. The background of evolutionary principles along with the fascinating facts of Darwin’s life prepares the viewer for subsequent episodes that will explain the theory of evolution in even deeper detail. Only the hardcore critics of evolution would be unmoved by the descriptions of how nature works.

In Show 2, *Evolution* features Neeson’s voice-overs with interviews of scientists in the field and in their labs. This one-hour 2nd part is titled “**Great Transformations.**”

What underlies the incredible diversity of life on Earth? How have complex forms evolved? The journey from water to land, the return of land mammals to the sea, and the emergence of humans all suggest that creatures past and present are members of a single tree of life.

The tree of life is, of course, is the symbol for the evolution of life forms. That symbol was dramatized in the first show as Darwin’s breakthrough sketch for showing how life forms branched into others, with some lines dying out at the end of some branches.

Here again, in this episode, the specific examples of evolution discussed are well-presented in great detail and persuasive. For example, Philip Gingerich tackles the mystery of whales as mammals, discovering a wolf-like mammal fossil with a peculiar ear protrusion that only whales appear to have among the mammals. This life form could be the missing link between a land animal and the water creature — the whale.

Another intriguing example involves the study of the movements of mammals, such as the dolphin, in the water. Their up and down motion contrasts with the sideways motion of fish.

Other examples further illustrate the process of evolution:

- 1 Fish with fingers that suggests a transformation into a land creature.
- 2 The Burgess Shale and Cambrian explosion of life.
- 3 Gene research on fruit flies in the last two decades demonstrating the interchangeability of genes between flies and mice.

As University of Wisconsin Professor Sean Carroll commented, “Evolution is a simpler process that we first thought.” He goes on to say that animals resemble each other because they use the same set of genes to build their bodies.

The “Great Transformations” show demonstrates one piece of evidence after another until the viewer nearly is numbed by the sequence. While the examples may seem like overkill, they serve as important arguments for the fact and theory of evolution.

In Show 3, *Evolution* again features Neeson’s voice-overs with interviews of scientists in the field and in their labs. This one-hour 3rd part is titled “**Extinction!**”

Local Views of Evolution & Creationism

A Panel Discussion after the Evolution TV Series

Following the final episode of *Evolution*, the Central Illinois PBS station WILL-TV hosted a panel discussion on the series hosted by John Paul. The panel members included Rev. Stuart Swetland, University of Illinois-Urbana Newman Foundation; Richard Aulie, science historian and Wheaton College graduate; Kevin Seymour, regional office of the State Board of Education; and George Kieffer, professor emeritus of the University of Illinois biology department and author of the science portion of a state scholastic achievement test.

After opening statements about the subject, in which all essentially supported evolution, the program featured answers to questions and comments from callers, who seemed to primarily be creationists with comments supporting “intelligent design” and calling evolution a religion. While all four members upheld evolution, I did get the feeling that the panel thought that God and evolution could co-exist, but that creation science was an oxymoron.

Ironically, Swetland actually came out the strongest in supporting evolution. Perhaps he had the most impact on the creationists in the listening audience. The panel, however, did miss a chance to criticize Biblical literalism in favor of evolution.

I was a little disappointed that very little comment was made about the *Evolution* series itself. A quick summary of evolution’s evidence by panel members might have familiarized viewers who had not seen all seven shows in the series and made them think beyond the final show, “What about God?,” which was probably the only one watched by the anti-evolutionists anyway.

Nevertheless, it was an enlightening discussion that encourages deeper thinking into one of the major issues that continues to divide science from some religions.

Five mass extinctions have occurred since life began on earth. Are humans causing the next mass extinction? And what does evolutionary theory predict for the world we will leave to our descendants?

Perhaps the most depressing show of the series actually ends on a hopeful note as we see that a national park in Thailand indeed still teems with wildlife from the endangered Siamese crocodile to elephants and tigers.

But before that, we hear about the mass extinctions of life on earth, including the one 65 million years ago that extinguished the dinosaurs while giving the mammals an opportunity to prosper over the next couple million years. The dinosaurs’ demise then allowed the expansion of the animals that eventually led to us through evolution.

This is the show that makes us understand the fossil record that demonstrates one of the major lines of evidence for evolution. As in previous and subsequent shows, the viewer follows scientists in their field studies, going down sinkholes or walk-

ing the Gobi Desert to find dozens of fossils of mammals.

The main analogy about the interconnection of life forms in this show is the house of cards. As each animal depends on other plants or animals for its survival in the food chain, the whole ecological structure can fall down like a house of cards as species disappear and drag down others with them.

The importance of avoiding the “empty forest” is well illustrated by following the research of Alan Rabinowitz of the Wildlife Conservation Fund. In researching the extent of animals in a particular Thailand national park, he and colleagues had left behind tied-down and locked cameras with sensors that would flash when wildlife passed in front. Upon their return a month later, they found 7 of 10 cameras stolen or vandalized by hunters and poachers. That fact only caused despair with the group and the viewers alike for the rest of the show until the end when the filmmakers revealed that all other cameras from several other research groups were intact. Looking at the photos of tigers, elephants, crocodiles and many other animals, Rabinowitz and others were shown as surprised and happy. As I was.

Another segment dealt with the top two causes of extinction: habitat destruction and biological invaders. The show then explored the effect of these causes on Hawaii and Guam. Many of Hawaii’s native species have become extinct following invasions by man and non-native species. As for the biological invaders, one of the best examples is the brown tree snake, which slithered into wheel wells of airplanes headed for Guam since World War II. The snake then crawled away into the trees and devastated bird populations by eating their eggs. Nine of 11 bird species have been wiped out there.

Another example, and a costly one at that for Americans, is the invasion of Zebra mussels since 1988. More than \$4 billion has been spent trying to control this biological invader.

Yet, as the show pointed out, humankind remains the current time’s biggest threat for extinction. Narrator Neeson comments that many scientists worry that we are “the new asteroid” bringing about the 6th mass extinction in earth’s history.

Despite that pessimistic fear, the program ends with hope by showing how humans can help control extinction by using their minds. Michael Novacek of the American Museum of Natural History terms the exterminators as the “weed species.” Like weeds that overtake the good plants, humans can become like weeds. Or they can help bring about change for the good, such as using flea beetles on leafy spurge areas in the United States. The beetles control the spurge, which allows the resurgence of other, more beneficial grasses or crops.

As Rabinowitz comments, “knowledge is our best tool against extinction.”

In Show 4, *Evolution* features ones of the most fascinating episodes. Using the similar technique as the others in the series, this one-hour 4th part is titled “**The Evolutionary Arms Race.**”

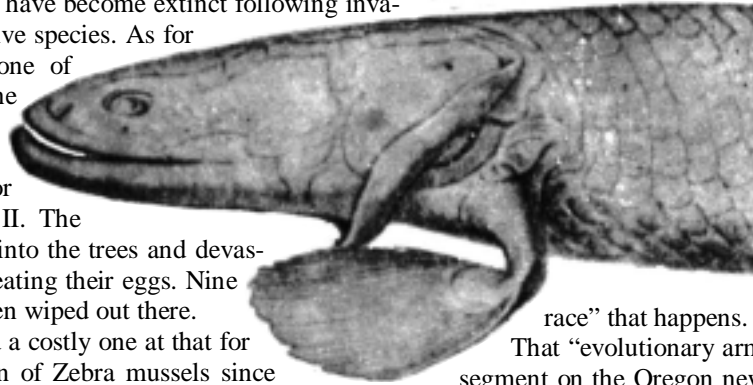
Survival of the fittest: Raw competition? Intense cooperation? Both are essential. Interactions between and within species are among the most powerful evolutionary forces on earth, and understanding them may be a key to our own survival.

From current prisoners crowding Russian prisons to the bacteria on leaf-cutter ants, this part looks primarily at the evolution of microbes and their effects on animal life. Among the pieces of evidence mentioned in this part, three examples stand out:

1. A Western Oregon newt using toxin to kill predators;
2. Feline immunodeficiency virus thwarted by natural selection; and
3. Leaf-cutter ants using bacteria to prevent parasitic fungi from devastating their food.

As E.O. Wilson said in this part, evolution is driven by biological forces. In addition, there is often cooperation among species, a symbiosis, that illustrates the impact of evolution on life.

In the opening of this part, a chilling scene of Russian prisoners cramped together demonstrates how the proximity of people with weakened bodies and immune systems allows for the rapid spread of infectious diseases. TB now stalks thousands of them, and some efforts are now being made to stop that dangerous epidemic. The power of the microbe is made clear and the efforts to counter them with more powerful drugs illustrates the “arms



race” that happens.

That “evolutionary arms race” is so well illustrated with a segment on the Oregon newt, whose only known predator is a garter snake. One newt produces enough toxin to kill 100 people. Scientist Edward Brodie studies the newt and, through field and lab tests, shows that the snake has evolved to counter the toxicity of the newt. As the two species vie to counteract each other, the interrelation is fascinating because the newt evolved with increasing toxicity to try to overcome the snake, which kept one step ahead.

Another segment pointed out that the feline immunodeficiency virus that infected domestic cats in the 1980s was thwarted by an evolving resistance to the virus among domestic and non-domestic cats. Following that, the point was then made that mutations that saved some people from the Black Death 700 years ago were passed on to save some European Caucasians from the ravishes of AIDS.

In perhaps the most compelling segment in the whole series, and one that even creationists could enjoy as fascinating animal behavior, young student-scientist Cameron Currie of the University of Kansas makes an astounding discovery that leaf cutter ants that farm mashed-up leaves with fungi for food actually use bacteria carried on their backs as antibiotics against a parasitic fungus! When ants are removed from nests containing the mashed-up food, the parasitic fungus quickly overtakes and destroys the food.

Currie's finding also illustrates how science is provisional, that it progresses and is revised as more evidence is published, evaluated and confirmed. As was mentioned, nature is much more complex than it appears.

From a close look at how small creatures affect larger species, the series continues with the small affecting the larger species with the dance of the sperm and the egg in "Why Sex?" Again, using the similar technique as the others in the series, this one-hour 5th part looks at the biological action that brings us to reality.

In evolutionary terms, sex is more important than life itself. Sex fuels evolutionary change by adding variation to the gene pool. The powerful urge to pass our genes on to the next generation has likely changed the face of human culture in ways we're only beginning to understand.

One of the best sections of this part deals with the advantages and disadvantages of sexual reproduction in contrast with asexual reproduction. An extensive example in the show concerns ponds of fish in Mexico. Certain hybrids of topminnows reproduce asexually but are seen afflicted with black spots that are parasites. In another pond of sexually reproducing topminnows, the fish are free of these parasites. The asexual fish eventually are decimated while the sexual-reproducing fish flourish.

The parasite-host dance of life and death is succinctly described in a passage in the companion book to the *Evolution* TV series called *Evolution: The Triumph of an Idea*:

Biologists call this model of evolution the Red Queen hypothesis. The name refers to the character in Lewis Carroll's *Through the Looking Glass* who takes Alice on a long run that actually brings them nowhere. "Now, here, you see, it takes all the running you can do, to keep in the same place," the Red Queen declared. Hosts and parasites experience a huge amount of evolution, but it doesn't produce any long-term change in either of them. It's as if they're evolving in place. [Zimmer, p. 231]

Later, following a drought, the sexually-reproducing fish left were besieged with parasites, creating a puzzling situation until biologists figured out that the pond had been repopulated by only a few fish that produced inferior, inbred offspring. After introducing new fish to increase the diversity of DNA, the sexual topminnows became immune to the parasites which then turned back to attack the asexual clones.

"Sex generates variability among offspring," the program indicates. "When you take that away from a sexual producer by inbreeding them, cloning them, you've lost the benefits of sex."

Sex thus increases the chance of species survival. The program also pointed out that Darwin was the first to realize that the evolutionary significance of sex dealt with sexual selection. What then follows is a long sequence about the various strategies that males and females use to attract the opposite sex, such as the ornamental displays of peacocks. Why indeed are there spectacular displays of color, body parts and dances, mostly by male animals? The answer, of course, is competition to be picked by the female, to be sexually selected.

In one of the funniest displays of bird behavior, the male

Beyond "Inherit the Wind" A Fresh Documentary Look at the Scopes Trial

Prior to one of the episodes of *Evolution* on PBS, the network showed a recent documentary about the 1925 Scopes evolution-teaching trial. Called *12 Days in Dayton: The Scopes Monkey Trial*, the engrossing, and sometimes surprising, hour-long documentary separates the myths from reality. For those whose view of the trial was formed by the wonderfully-acted 1960 *Inherit the Wind* film starring Spencer Tracy as defense lawyer Clarence Darrow and Frederic March as the blustery William Jennings Bryan, this documentary will fill out the whole picture.

Here are a few examples in the documentary that puncture myths surrounding the trial:

- 1 John T. Scopes never actually taught evolution in the Dayton, Tennessee, school.
- 2 Town leaders initially sought a trial to test the new anti-evolution teaching law in Tennessee as a publicity stunt to lure business to the community.
- 3 William Jennings Bryan was actually a progressive, supporting women's suffrage, better labor hours, and public parks, and was actually seeking equal time for the teaching of evolution and creationism in the schools.
- 4 Clarence Darrow wanted to *lose* the case so he could argue ideology in the higher courts.
- 5 Bryan actually died five days after the trial. He was a diabetic who was in poor health, although the stress and heat of testifying at the trial may have further weakened him.

In addition to examining the myths of the trial, filmmaker Kip Cole did a fine job of assembling trial photos, a television interview with Scopes in 1970, present-day interviews with Dayton townspeople and Edward J. Larson, who won the Pulitzer Prize for his book about the trial, *Summer of the Gods*. Tracing the history of the trial from the American Civil Liberties Union initiation of the lawsuit to present-day controversies such as the recent Kansas school board move against teaching evolution, Cole assembles an impressive amount of material that tells the fascinating story of the sound and fury surrounding a trial lasting over a span of 12 days that produced a fine of \$100 for Scopes that was paid for by the Baltimore newspaper for which trial and Dayton critic H.L. Mencken wrote.

Other than a sometimes annoying film technique of employing numerous fade-ins and fade-outs that are self-consciously artsy, the documentary is a must-see for those fascinated by both evolution and history.

spreads his wings on a fence post in front of the female and hops from side-to-side while the female looks on. After all that effort, the female flies away. Some single human males certainly can identify with that!

In other sections of this part, there are descriptions of the mix of monogamous and non-monogamous animal behavior,

role reversals in nesting behavior, and the divergence of social behavior between chimpanzees and bonobos, also known as pygmy chimps. The latter provides fascinating insights into the evolution of social behavior. Through the studies of primatologist Richard Wrangham, the differences between the two are shown. Diverging from each other some two to three million years ago, the chimpanzees have evolved different social lives. Chimps live in male-dominated, more violent societies while the bonobos live in female-controlled groups that are generally more peaceful with playful sexual relations, as described by USC researcher Amy Parish.

Wrangham traces the differences to feeding behavior. Chimpanzees feed in areas populated by gorillas, and the male chimps have to find food in the fruit trees. They travel faster than the females, who are slower as they bring along the young. On the other hand, the bonobos dwell in areas that have herbs on the ground and the males and females thus travel together. Wrangham also theorizes that the bonobos became ground creatures two million years ago during a drought that drove out gorillas, allowing them to get to the ground.

Another part deals with evolutionary psychology and the evolution of the brain. Through experiments in smell and facial appearances, females were shown to be selective in certain traits that would make potentially stronger offspring. It was also theorized that our ancestors through sexual selection preferred males with larger brains, thus helping to propel human evolution, the subject of the next part.

In show 6, **“The Mind’s Big Bang,”** we gain insights into the development of the brain.

Fifty thousand years ago, something happened in the modern human mind emerged, triggering a creative, technological, and social explosion. What forces contributed to that breakthrough? Where might our power of mind ultimately lead us?

This part explores that expansion of the brain and its capabilities. From the painting in caves to the development of language that allows humans to hold big groups together, this part features explanations for the prominence of humans. It is shown, for example, that archaeological evidence demonstrates that early humans treated death with dignity while Neanderthals showed little signs of symbolic life.

In interviews with scientists and authors Richard Dawkins, Stephen Pinker, and Susan Blackmore — aka the “skeptical-for-rent” as she described herself at a recent conference on science and religion I attended in Atlanta — we get a sense that the development of traits that make us human, such as language, art and social relationships went hand-in-hand with the increase in the size of the brain.

While this part seems to cover ground well-trodden before,

it does point out an interesting factor in human social relationships — gossiping. Robin Dunbar of the University of Liverpool studied everyday language of people and surprisingly discovered that two-thirds of conversations deal with gossiping. The importance of social relationships is thus indicated by that finding.

The last part is perhaps of most interest to those examining the creationist-evolution controversy. In this 7th show, **“What about God?”** the filmmakers concentrate on the two views by exploring the actions of students in a college and a high school.

Of all species, we alone attempt to explain who we are and how we came to be. This final show explores the struggle between science and religion. Through the personal stories of students and teachers, it offers the view that they are compatible.

After an opening highlighting some creationists arguments by Ken Hamm, the show explores the attitudes of Christianity at Wheaton College in Illinois. At that college, the faculty must still sign a statement that they believe that Adam and Eve were real. In this sequence, students are shown being exposed to a talk on evolution by a Kansas State professor Keith Miller who is also a Christian. Credit the show with not being arrogant about either creationism or evolution but an honest exploration of the underlying reasons for the ongoing controversy.

The other main sequence deals with the efforts by some students at an Indianapolis high school to have the school board allow creationism to be taught in the public school. They didn’t succeed. In an extensive interview with one of the science teachers, Clare McKinney, pro-evolutionists should be heartened by the commitment of such a teacher to ensure that evolution is taught in the public school or she would leave.

The remarkable series then ends on a somewhat conciliatory note. Narrator Liam Neeson quotes from Darwin in his final edition of *The Origin of Species*: “There is grandeur in this view of life with its several powers having been originally breathed by a creator into a few forms or only one. From so simple a beginning, endless forms most beautiful have been, and are being, evolved.”

Perhaps a better ending might have included this quote from sociobiologist E.O. Wilson:

The true evolutionary epic, retold as poetry, is as intrinsically ennobling as any religious epic. Material reality discovered by science already possesses more content and grandeur than all religious cosmologies combined. The continuity of the human line has been traced through a pe-

(“Looking at Evolution” continued on page 11)



The (Lack of a) Face on Mars

Fighting Ignorance with *The Straight Dope*

by David Bloomberg

As I've mentioned before, I write for the Staff Reports portion of *The Straight Dope* by Cecil Adams. The column is of the question-and-answer variety and runs mostly in alternative independent newspapers across the country. It does not run here in Springfield, but you can still read it on the web at www.straightdope.com and buy collections in book form at pretty much any book store.

A number of the Staff Reports I have written are also related to REALL, so we reprint them here from time to time. This month, we feature the face on Mars.

As before, Ed Zotti, Cecil's editor, did some editing on these answers.

Dear Straight Dope:

Is there a "face on mars"? —Roger Alperin

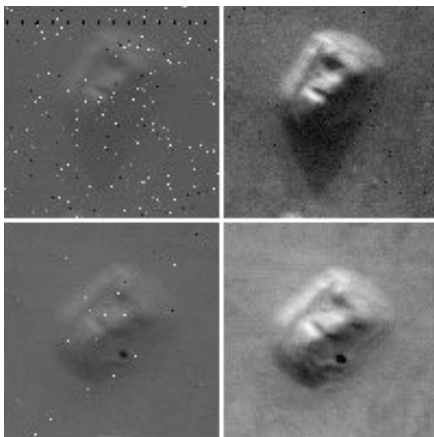
No.

But what the heck, let's go into a little more detail.

Luckily, I didn't have to search too hard to find that added detail. The November/December 2000 issue of *Skeptical Inquirer* magazine featured a cover story on this very topic. You can also read the article about the Face at members.aol.com/garypos2/Hoagland.html. Much of it deals specifically with Face promoter Richard Hoagland, who discussed the Face and related topics in his 1987 book *The Monuments of Mars: A City on the Edge of Forever*.

If your question had asked if there is an old photo of Mars that, when run through a computer for digital enhancement, has something that looks like a face on it, then the answer would be "yes." In fact, here is that enhancement, which you can also find on the Australian Skeptics website:

Looks interesting, yes? Well, hold on a second. The late Carl Sagan noted in *The Demon-Haunted World* (a book that should be required reading in all of our high schools, incidentally), "If we study the original image more carefully, we find that a strategically placed 'nostril'—one that adds much to the im-



pression of a face—is in fact a black dot corresponding to lost data in the radio transmission from Mars to Earth. The best picture of the Face shows one side lit by the Sun, the other in deep shadow. Using the original data, we can severely enhance the contrasts in the shadows. When we do, we find something rather unfacelike there. The Face is at best half a face. Despite our shortness of breath and the beating of our hearts, the Mar-

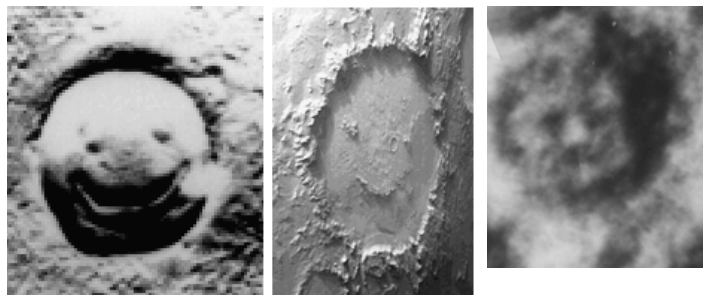
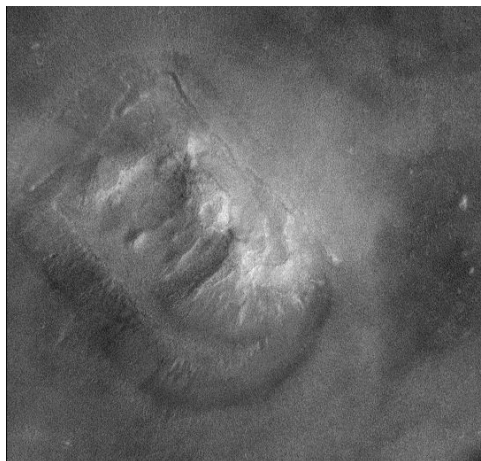
tian sphinx looks natural—not artificial, not a dead ringer for a human face. It was probably sculpted by slow geological processes over millions of years."

So is the appearance just caused by the computer enhancement? Well, not entirely. Sagan also noted that there is a tendency for people to see faces in tortillas, clouds, cinnamon buns, etc., which he thought was an evolutionary trait. He might have mentioned the moon, too. Heck, don't forget the case here in Springfield where people thought they saw a face in a tree! ("Facing Silliness in Springfield," October 1999, Vol. 7, #10)

OK, you're saying, maybe we do have a tendency to find faces where none exist, but that doesn't prove *this* isn't a real face. Right, but the photo here does.

This photo, which was taken in 1998 by the Mars Global Surveyor, shows the same geological formation seen in the Face photos. The resolution obviously is much better, and guess what? No face.

In case you still doubt that humans tend to find patterns where there are none, take a look at some of these other photos from Mars:



Clearly, aliens are trying to tell us something with the happy face, Ted Kennedy, and Kermit the Frog. I leave it to you to sort out those mysteries, though. I can only tackle one per article. 🐼

REALLity Checklist — 2001 in Review

by David Bloomberg

“News is a consumer product, like sausage. Be careful what you swallow.” — Author Unknown

As I was sitting down to go over these, I looked back through the “Reality Check” articles I’d done in the past year. I hadn’t remembered some of the stories, and others I was quite sure were two or three or more years old. How can a year go by so quickly yet some things seem like they happened so long ago?

In any event, like any other year, 2001 had its ups and downs. Sometimes the media did a great job, and sometimes they needed to go back to the basics. Obviously September 11 was a huge factor, and I have included it as the first point here. Here are some of the highlights and lowlights.

✓Biggest Parasites Award

Let’s face it, I’ve gone over this several times since September 11. This award is a tie between **John Edward**, **Sylvia Browne**, the **Psychic Twins**, etc. There is no need to repeat myself yet again for the readers of this newsletter. However, I have to say that I am disappointed that the national media did not pick up on the way “psychics” have used the terrorist attacks to further line their own wallets. There were a few articles when Edward wanted to do a show involving the families of those who were killed, but that was about it. As we’ve seen time and time again, “psychics” are only interesting to the media when they claim to have made a correct prediction, not when they failed miserably.

The runner up in this category are all of the bogus websites selling homeopathic treatments for anthrax and other similar baloney. They, too, are parasites of the worst kind.

✓Best Local Story Award

Last year this award went to the *State Journal-Register* for reporting that Sangamon County Sheriff’s Deputy **Tony Sacco** believed a hoax e-mail claiming that people were putting HIV-infected needles on gas pump handles so as to infect innocent people who were just filling up their tanks. They pointed out that this was an urban legend.

This year the same newspaper also receives the award for yet another article on yet another urban legend involving yet another group of police officers here in town! **Sean Dailey**, a staff writer for the paper, wrote about Springfield police spreading the legend about con men calling people, pretending to work for the phone company, and asking people to dial 9-0-# and hang up. The police, ever alert, said they got their informa-

tion from “an e-mail that had been forwarded several times.” Dailey, for some reason, didn’t want to simply take these e-mails at face value. Yes, I know it’s hard to believe. He did what the cops should have done: investigated. In particular, he did “a little research of urban-legend Web pages” and quickly found that “this rumor has been making the rounds for at least three years.” Too bad the police didn’t think doing some investigation of their own.

✓Worst Local Story Award

I must be psychic – I predicted when I first saw this article back in February that it would be a good candidate for the worst local story of 2001. Thankfully, I didn’t see any that could beat it.

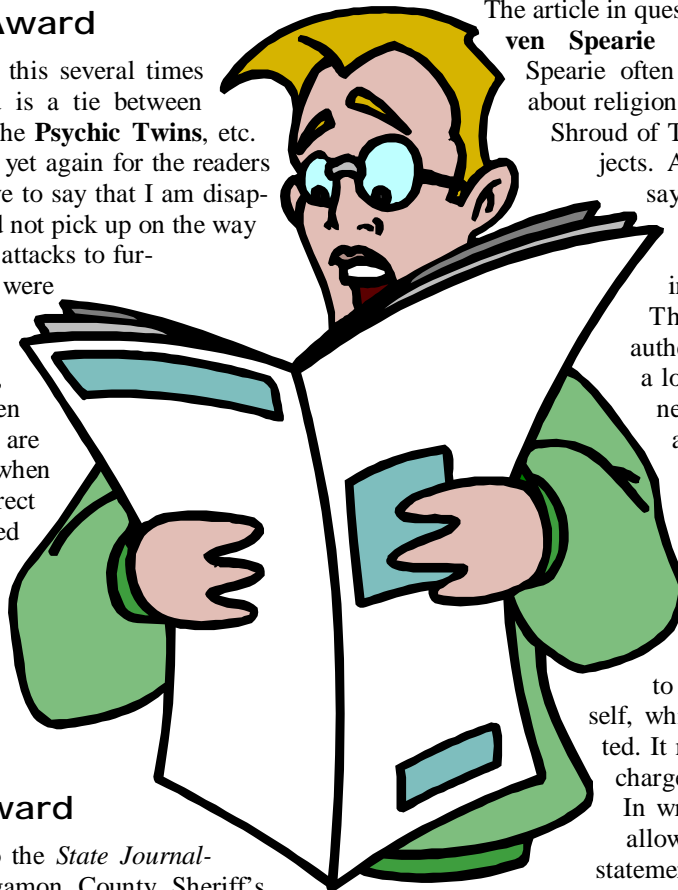
The article in question was written by freelancer **Steven Spearie** for the *State Journal-Register*.

Spearie often writes non-controversial features about religion and apparently decided to treat the Shroud of Turin as if it was one of these subjects. Alas, I don’t think anybody could say the Shroud is non-controversial (although it should be, but for exactly the opposite reasons cited in Spearie’s article).

The article discussed a pro-authenticity book by **Mark Antonacci**, a local guy. The amount of pure baloney contained in this article was amazing to me. Spearie did not appear to have contacted anybody for a skeptical look at these claims (certainly nobody was quoted) – thus my remark above about how he treated it as a non-controversial subject. Instead, he seems to have allowed Antonacci to frame the critics’ statements himself, which Antonacci himself then rebutted. It must be nice to be allowed to take charge of *both* sides of a debate.

In writing the article this way, Spearie allowed Antonacci to simply make statements like, “Critics who denounce the shroud as a fraud have not only been unable to agree on a method of forgery, they also have never agreed on a plausible, documentable place or ‘artist’ of a forged shroud.” I’m sorry, but that is utter BS. As I pointed out in my letter to the editor (printed a week later), we have a letter from the Bishop in the area to the pope pointing out that this is a forgery! And the method was – get this – painting. Wow, that was a tough one. It would not have taken a whole lot of research on Spearie’s part to find this out – had he been so inclined to do some instead of just running a puff piece.

Antonacci further criticized the carbon dating (which, again, was written into the article without a hint of rebuttal) and



claimed that the Shroud of Turin Research Project “found that the features on the shroud literally defied the laws of chemistry and physics.” Wow! That’s big news. Too bad Spearie didn’t actually write about any evidence for these claims. Why would that be? Oh, yes, because it’s completely false. But readers of the article weren’t told this.

There were a number of other similar instances, but all led down the same path. That path led directly *away* from a proper journalistic investigation.

✓Best Political Move Award

After the Kansas Board of Education made their state into a laughingstock by endorsing creationism in the schools and trying to get evolution out, a number of those Board members were voted out. In February, the Board voted 7-3 to restore evolution and related matters to their proper place in the state science standards.

Of course, the three remaining creationists on the Board fought against the horrible idea of having science taught in science classes, but they were outvoted by the newly-elected replacements to some of their former cohorts. One of the creationist members, John Bacon, said, “These standards are too restrictive in allowing only one view of man’s origin to be taught.” Yeah. Damn those scientists for wanting to teach science instead of religion in science class. Next thing you know they’ll want to teach math in math class!

Congratulations to the voters of Kansas and to the new Board of Education (well, at least seven of ‘em, anyway).

✓Worst National Story Award

I’m not sure this can really be considered a “story,” but this award has to go to Fox for running a “special” in February claiming the moon landing was a hoax. It was horrible. Even worse than usual. Even worse than usual for *Fox*! They basically gave a soapbox to every paranoid nutball and said, “Goferit!”

It really makes you wonder who the heck at Fox thought a show like this would be a good idea. Maybe their next special will be on how we all actually live on a flat Earth...

✓Best Research Award

We’ll close this article on a topic very similar to the one that opened it, with a psychic parasite. Normally these awards go by calendar year, but since I didn’t address this particular one until 2001 and since the focus of it made such a name for herself in my “parasite” articles, I thought I’d extend the date just a bit.

Sylvia Browne was the focus of *Brill’s Content*, a media review magazine, which took a look at this particular “psychic” in an online article. Browne is frequently promoted on daytime TV talk shows like **Montel Williams**, and has had several best-selling books about her great powers. *Brill’s* writer **Joseph Gomes** examined some of the claims she’s made and compared them with available evidence.

In the article, Gomes noted that “her claims that she has solved crimes, assisted enforcement, and directed victims to missing loved ones are something else entirely [not simply entertainment]. They concern real people and real tragedies, and

(“Looking at Evolution” continued from page 8)

riod of deep history a thousand times as old as that conceived by the Western religions. Its study has brought new revelations of great moral importance. It has made us realize that *Homo Sapiens* is far more than an assortment of tribes and races. We are a single gene pool from which individuals are drawn in each generation and into which they are dissolved the next generation, forever united as a species by heritage and a common future. Such are the conceptions, based on fact, from which new intimations of immortality can be drawn and a new mythos evolved. [Zimmer, 339-40]

References

- “Evolution.” 2001. PBS television show.
- Zimmer, Carl. 2001. *Evolution: The Triumph of an Idea*. Japan: HarperCollins Publishers.

[Bob Ladendorf is a free-lance writer, co-founder of RE-ALL, and currently its Secretary-Treasurer. He recently wrote a two-part article about the meaning of dreams titled “Why Nightmares are Good” for The REALL News. He co-wrote an article on the mad gasser of Mattoon that is being published in the March/April 2002 issue of Skeptical Inquirer.] ♡

exploit misfortune for lively programming. What’s more, talk-show hosts such as King and Williams fail their audiences by accepting Browne’s claims without question or, in Williams’s case, enthusiastically endorsing them.” She’s exploiting people? Why, that sounds almost... parasitic.

On one Montel Williams show Gomes looked at, Williams said, “You looked exactly where [Browne] said and bingo-bango, he was found.” As we so often see with these cases, this was not at all what happened. Gomes quoted the detective in charge of the case as saying, “[Browne] said it was buried in a hillside about 12 miles northwest of the new house, but we found him floating in the water...We didn’t find any evidence to suggest [Browne] was accurate.” Gosh, imagine that – the “psychic” was of no help but she claims to have been and certain media personalities endorse that myth.

Despite Williams claiming that Browne has found three bodies on his show, Gomes says, “There’s no evidence that Browne’s ‘clues’ on Williams’s show have ever led to the discovery of a body or missing person.”

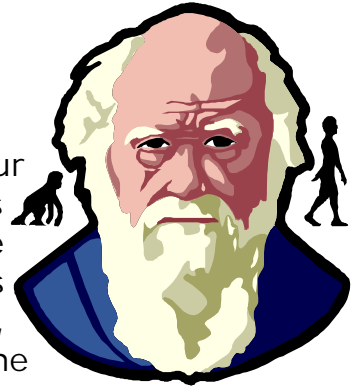
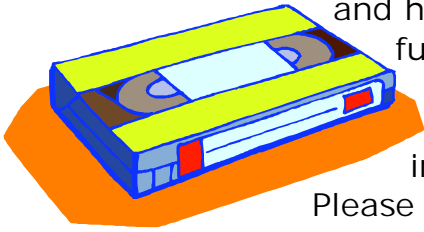
In addition to these specific cases, Gomes took a look at ten recent Williams shows where Browne’s testable predictions were featured. This encompassed 35 different cases. According to Gomes, “In 21, the details were too vague to be verified. Of the remaining 14, law-enforcement officials or family members involved in the investigations say that Browne had played no useful role.”

Well, I guess that’s not quite the record she’d like us to believe she has. Even a producer from *Inside Edition* said, “These guys don’t solve cases, and the media consistently gets it wrong.” Somebody from *Inside Edition* said this?! Why can’t we get the **real** media to focus on it more closely? ♡

Our Next Meeting

Evolution: "Darwin's Dangerous Idea"

February 12 is Charles Darwin's birthday! Our February meeting will feature "Darwin's Dangerous Idea," the first episode of the *Evolution* series. "Why does Charles Darwin's 'dangerous idea' matter more today than ever, and how does it explain the past and predict the future of life on Earth? The first show interweaves the drama of Darwin's life with current documentary sequences, introducing key concepts of evolution." Please join us to view and discuss this videotape presentation.



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