

# 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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## Skeptical Songs by David Bloomberg

*"Do you believe everything that you read  
Everything that you see on the set?"*

This quote could be the opening line from one of my "REALLity Check" columns (and indeed I might adopt it), however, it is not. It is actually from the song "Holiday in My Head," by Smash Mouth.

We often discuss the role of skepticism (or lack thereof) in the media. Usually we focus on newspapers, magazines, TV, movies, books, and the like. Rarely – if ever – do we discuss what we might hear in music.

I recently purchased the album *Smash Mouth*, on which "Holiday in My Head" is the first song. It otherwise has no other particular skeptical content, but later that appears a song called "Sister Psychic." I was a little apprehensive about it, but I'd been fooled before by song titles (such as in college when I bought an album with a song called "Jesus He Knows Me" – see below for more on that). Smash mouth is a pop/rock band whose music you may have heard; they have had hits like "Walking on the Sun," "All Star" (which appeared in several movies), a remake of "I'm a Believer" (which appeared at the end of *Shrek*), and the song "Can't Get Enough of You Baby" (which was turned into "Can't get enough WB" for our local channel 23). The self-titled album was their third.

When I heard the song, which I'll discuss in more detail below, I found that my concerns were unjustified and, indeed, the song has a decidedly skeptical bent. This, along with a recent song on the newest Rush album, got me to thinking about other songs I've heard over the years that tend to promote skepticism if you listen closely enough to the lyrics (which I suspect most people do not do). Below is a discussion of several of these from my own CD collection – there are almost certainly others, and if you know of any, I'd be

interested in learning about them.

We'll start with the aforementioned song, "Sister Psychic." At first listen, it is not immediately clear that this is a skeptical song. Some of the early lines in the song are a bit iffy on whether the writer was being skeptical or not, but tend to lead the listener towards the questioning side:

*"Sister psychic can you tell me does it ever get better  
Can you really see the future or just predict the weather?"*

Other lines as it gets into the heart of the song could be read as being written by a true believer, but once you get further in, it seems pretty obvious that they are meant in a more sarcastic vein:

*"If you really wanna see where it's all goin'  
Switch on your T.V. she's all tellin', all knowin'"*

After the writer asks if the psychic can help find a bunch of things (like children on the missing posters or his car keys), he moves on to the part that makes it clear he doesn't exactly believe in her by asking:

*"Are those tarot or dialogue cards that you're  
reading?"*

From there he moves on to end the song on a good note by pointing out (at least in my opinion) that the psychic is just using cold reading and repeating back what she is told:

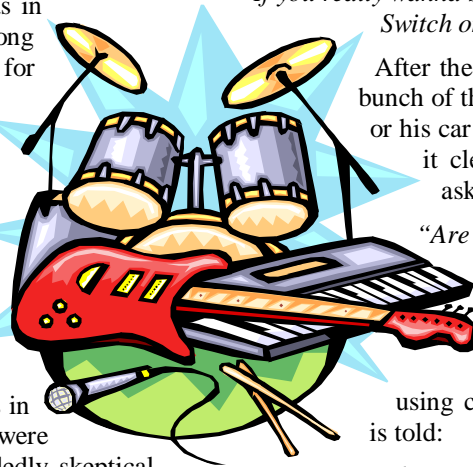
*"Sister why would I tell you my deepest, dark secrets  
So you could take my diary and rip it all to pieces"*

It is then capped off with:

*"Just \$6.95 for the very first minute  
I think you've won the lottery that's my prediction"*

Now, whether listeners will come away with a real understanding of what the songwriter was saying here, I'm not sure. I think it depends a lot on how much they actually listen to the lyrics and try to grasp the meaning. The song itself was not, as far as I know, released as a single, and so did not get radio play. Only those who buy the full CD get it – but I don't know how many of them "get it."

*("Skeptical Songs" continued on page 4)*



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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

### November Meeting: Evolution and Intelligent Design

Our November meeting will be held on Election Day, Tuesday, November 5, at our usual 7:00 at the Lincoln Library's Carnegie Room South. (The timing with Election Day happens every two years – they had a lot of nerve putting elections on the first Tuesday of the month and thus coinciding with our meeting!) Last time the two coincided, we had a roundtable discussion and watched the election updates as we heard that Florida went to Bush, no Gore, no Bush, no Gore, no... Good thing we didn't decide to wait until that was decided before going home.

Anyway, this time the meeting will feature *Evolution and Intelligent Design*. Join us to in viewing a new video featuring the lively debate from the 4th World Skeptics Congress in June in Burbank, California, between evolution defenders Kenneth Miller and Wesley Elsberry and ID proponents William Dembski and Paul Nelson. Moderator Massimo Pigliucci developed the format that included short presentations by the speakers, discussion among the speakers, and a question-and-answer session. From all accounts, it was a very good session.

### Notes from the October Meeting

I'd like to thank the McMasters once again for their hospitality in hosting the REALL picnic last month. The turnout was not as good as I had hoped, but the dozen of us who were there had a good time. We'll definitely try it again next year.

(“Chairman” continued on page 7)

## A Nod to Our Patrons

REALL would like to thank our patron members. Through their extra generosity, REALL is able to continue to grow as a force for critical thinking in Central Illinois. To become a patron member of REALL, please use the membership form insert. Patron members are:

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# Wolfram Aims to Turn Science Upside-Down

by Rob Hardy

Imagine your computer screen shows a grid of tiny white squares. There is one black square, in the middle of the top row. You want a program to assign colors to the squares in the second row, with each square in that row turning black or white based on the pattern of colors assigned to its immediate northwest, north, and northeast neighbors. Then it uses the same rules to color the squares on the third row, and, in the way computers have of doing the same dumb task over and over again with prodigious speed, it colors in the whole screen, top to bottom. The rules can be changed, so that the different black/white patterns of the three squares above result in black or white to the one below, but each particular run uses the same rules. Using particular settings of rules, you find that you can create a black screen, or stripes, or a checkerboard. And then there is a setting that produces a screen full of triangles within triangles within triangles, which is pretty complicated. But it is nothing compared to another setting which creates a screen full of irregularities and randomness that you can't make any sense of.

That last screen is what Stephen Wolfram calls "the single most surprising discovery I have ever made." He had invented a "cellular automaton" (or CA; it builds itself up from the colors of the cells of the grid) from simple rules, in a very short computer program, producing a result as complex as anything a computer can do, or, he says, that any system can do. In the long-awaited *A New Kind of Science* (Wolfram Media, Inc.), that particular cellular automaton is the foundation for an astonishingly wide-ranging tour of what CAs can do. Wolfram thinks that if we had had computers to show us the power of CAs centuries ago, science and mathematics would not have grown up along the lines of equations and calculations which all of us associate with scientific endeavors. We would have been examining complexity that inherently can come from simple systems,



*"We go out in the world and take our chances  
Fate is just the weight of circumstances  
That's the way that lady luck dances"*

— Neil Peart, Rush, "Roll the Bones"

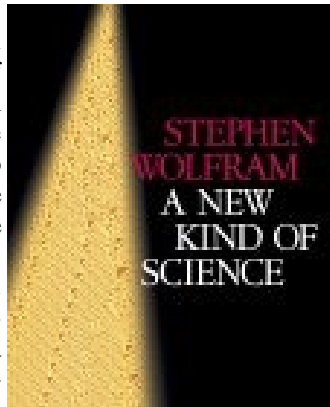
and we would have been a lot further along by now. He has put out his enormous book so that we can now start doing things right.

That is the sort of audacity that shines through the book and through Wolfram's life, and he may well have earned a right to every bit of it. After all, he published his first scientific paper (on subatomic particles) when he was fifteen and got his doctorate in theoretical physics at age twenty. Abandoning academia, he invented the software for Mathematica, which millions of researchers use daily to do difficult calculations and graphics. He has continued to be the CEO for Mathematica, and that part of his work has enabled him to spend the last decade or so working on the ideas in this book without publicity, without seeking grants, and without the usual scientific pattern of publishing part by part as the work goes on. He has earned some umbrage from scientists who do things the more traditional way, and my guess is that he will earn

more for making speculations in fields in which he is not an expert.

It is the case that he has spread his understanding of CAs into a scattershot sweep of intellectual concerns. There is a saying that if you don't have anything but a hammer, everything starts looking like a nail, and Wolfram insists that his discovery that simple programs can produce immense complexity requires a new look into scientific intuition in all areas. Sometimes it is not always clear how physically this is true. Perhaps the sweep of the planets around the sun is not the result of a CA program, but might be accurately modeled in one; after all, the planets do not actually trace out literal gravitational equations, either. Other examples, like the triangular marking on a particular seashell, seem to be molecular CAs at work. But the scope of Wolfram's applications is amazing. He shows that the randomness in physical phenomena, like fluid turbulence or how materials crack, can be better explained by simple programs rather than chaos or complexity theory. He explains why the Second Law of Thermodynamics (the one that says entropy is always increasing) works. He shows that while evolution may control comparatively coarse features of plants and animals, the complex ones such as leaf or stem shape, or pigmentation markings, are better explained by simple programs. Simple programs might underlie the random fluctuations in the stock market. They show how apparent human free will does not contradict deterministic underlying physical laws. Networks of simple

*("Wolfram" continued on page 7)*



(*"Skeptical Songs"* continued from page 1)

Another song I mentioned above is "Jesus He Knows Me," by Genesis, on their *We Can't Dance* album. When I saw the song title, I thought to myself, "What the heck is that?!" But then I listened and found out exactly what the heck it is – a parody. The song is about televangelists – the type who promote faith healing and creationism in between begging for money. While the song itself just deals with the hypocrisy and fraud we have so often seen in televangelists, I have included it here because of that direct relationship between these folks and the related claims. Here are some selected lyrics:

*"I believe in the family  
with my ever loving wife beside me  
but she don't know about my girlfriend  
or the man I met last night"*

This, of course, references a number of sex scandals related to various faith healers and other evangelists who proclaim their holiness while obviously not quite living up to the standards they give for others. The money aspect is addressed in a couple other portions:

*"I'm counting my blessings,  
I've found true happiness  
cos I'm getting richer, day by day*

*There'll be no doubt in your mind  
you'll believe everything I'm saying  
if you wanna get closer to him  
get on your knees and start paying"*

Sure, it would be nice if the song had addressed faith healing and creationism and stuff like that as well, but it's a song, not a book by James Randi, so I'll take what I can get.

The Rush song I mentioned earlier as being on their most recent album is another one that is not specifically about skeptical topics, but definitely has some lines that could apply. In fact, the song in question, "Peaceable Kingdom," is more a commentary on terrorism than anything else. But it begins with the lines:

*"All this time we're talking and sharing our Rational View  
A billion other voices are spreading other news."*

I don't know about anybody else, but I've certainly felt this way when trying to provide a rational view on psychics, creationism, and the many other topics we cover here. Another part of the way I feel is echoed in a couple later lines:

*"The ones we wish would listen  
Are never going to hear."*

Still, of course, we keep trying. Just as the song talks about dreaming of a peaceable kingdom, I dream of a time when organizations like REALL are unnecessary. Unfortunately, a dream is all that is for right now. Ironically, the song uses imagery from the Tarot in other lyrics. I have no reason to think the writer believes in special powers for such things, though. Why? Because he has written in his recent book, *Ghost Rider* (a story of his travels after the deaths of his wife and daughter)

that he is a "rational-scientific-skeptic at heart." Even before this, I always suspected as much, as he has had a number of songs that address issues of belief. For example, he is the writer of the song "Free Will," which has numerous wholly skeptical lyrics that speak directly to many issues we tackle here:

*"There are those who think that life has nothing left to chance,  
A host of holy horrors to direct our aimless dance.*

*A planet of playthings,  
We dance on the strings  
Of powers we cannot perceive*



*"The stars aren't aligned -  
Or the gods are malign'  
Blame is better to give than  
receive."*

That verse alone covers predestination, fate, astrology, and more. I especially like the last line, because we see it so often – it's not *my* fault, blame something we cannot see. The song continues with lyrics such as these:

*"You can choose a ready guide in  
some celestial voice.  
If you choose not to decide, you still  
have made a choice.  
You can choose from phantom fears  
and kindness that can kill;*

*I will choose a path that's clear  
I will choose Free Will."*

Now there is a skeptic speaking out.

He discusses other beliefs (or, rather, lack thereof) in "Ghost of a Chance," where he says things like:

*"I don't believe in destiny  
Or the guiding hand of fate  
I don't believe in forever  
Or love as a mystical state  
I don't believe in the stars or the planets  
Or angels watching from above"*

He also wrote "Roll the Bones," which asks the questions, "Why are we here" and "Why does it happen." It answers the questions simply, "Because we're here" and "Because it happens." No mystical meanings for Mr. Peart.

You can find other skeptic-related thoughts in songs like "Presto," which begins:

*"I am made from the dust of the stars  
And the oceans flow in my veins"*

That song is probably not a favorite for most creationists. There are other Rush songs that show similar views, but most of the rest are more subtle.

Yes, I realize that all of these are just pop/rock songs – they aren't exactly scholarly dialogues. After all, there is only so much you can put into a three-minute-or-so song. But to refer-

(*"Skeptical Songs"* continued on page 7)



# Finding the Story Behind the Missing Link

## by Rob Hardy

Everyone knows that there is still religious (not scientific) opposition to the Theory of Evolution. When Darwin and Wallace unveiled the theory, there was not only religious opposition, but strong scientific opposition as well, which only decreased as more (and younger) scientists grew to accept the powerful explicatory capacities of the theory. The most unacceptable part of the theory was that humans themselves had evolved from some previous ape-like form. Scientific opposition to this idea started crumbling when the "Missing Link" between humans and their obviously non-human forebears was found. It is true that there are countless missing links; the creationists exploit this idea not just in the human chain of descent but in others as well. When anthropologists show that any form is descended from another, the creationists then ask where the linking forms between them are; this game can be infinitely played. In a true sense, there is no one specific missing link, but there was a first fossil hominid forebear found, and it could (by priority) be thought of as the missing link, now no longer missing.

Eugene Dubois was the man who found it, and his story has never been fully told. Now, in *The Man Who Found the Missing Link: Eugene Dubois and His Lifelong Quest to Prove Darwin Right* (Simon and Schuster), Pat Shipman has written an exciting biography of a neglected genius, and has given a narrative that tells how paleontology was done in his times, as well as how his ideas eventually became accepted within the scientific world.

The word "lifelong" in the subtitle of the book is almost literally true. Dubois's family intended him to be an apothecary like his father, but Dubois caught a stronger interest in science. He was excited, when he was ten years old in 1868, by a famous German biologist who came to lecture in his town in south Holland. This was nine years after *The Origin of Species* had been published, and the lecturer was bringing the word about the new science; his lectures were the talk of the apothecary shop. Dubois also read the highly influential *History of Creation* by Haeckel, which persuaded him that accepting ideas without evidence is a sin greater than any in the Bible. Reading Haeckel, the young Dubois learned that transitional forms between ape-like creatures and humans were hypothesized but had not yet been found. The boy realized that finding such a specimen would be possibly the greatest scientific discovery ever, and astonishingly, he was convinced that he was going to be the one to do it.

To enter science, anthropology, and paleontology, the gateway was through medical school. He had to face the opposition of his father, who realized that not only was Dubois abandoning a dependable career as an apothecary, but also that as a young scientist he was abandoning the Catholic Church of his ancestors. Dubois took to his studies with brilliance, but always studied his general biology and evolution texts as well. He started writing his first scientific paper, on the derivation of the larynx in mammals. Dubois was shocked that his advisor in the work insisted on taking partial credit for it; ever afterwards, he was

suspicious to the point of paranoia regarding others who encroached upon his work.

Dubois's father was also extremely pessimistic over his son's intent to follow through on his youthful quest for the missing link. Dubois had meticulous plans on how to succeed in finding his specimen. The bones of the Neanderthals were too advanced, too near human; he wanted to find something closer to the ape-like forebears. Darwin had proposed that humans originated in Africa, but a study of recently found fossils convinced Dubois that the Dutch East Indies was where to look. The fossils already returned from the area were of the right period. He could do nothing but go right there.

He went as a military doctor, but as his government began to appreciate his fossil finds, his commission was only to seek out fossils from the areas around Java. Shipman's account of these years is exciting. Dubois took his family to the islands, he survived cave-ins, malaria, and government neglect, and he identified thousands of mammalian fossils, including in 1891 a molar, skull, and thigh-bone of the missing link. His Java Man (which he classified as *Pithecanthropus erectus*) had a small brain, a flat forehead, and a leg made for upright walking.

The story is exhilarating thus far, but to Shipman's credit, she illuminates well the sadder aspects of the man and his subsequent story with equal detail. Dubois was brilliant and tenacious, but he experienced real betrayals in his scientific life that consumed him. While on a jaunt to find fossils in India, he became obsessed with the idea that his best friend (and the book details a magnificent friendship) was philandering with his wife; his unfounded obsession contributed to remaining decades of estrangement from his wife and almost to an end of the friendship. His wife could not share his scientific enthusiasms, and in a near-shipwreck as the family went back to Holland, was shocked that Dubois charged her with the care of all their children while he took care only of the suitcase with his precious specimens. Dubois was constitutionally unable to collaborate with his fellow scientists, and his overbearing and easily offended manner meant that at times he did his own researches a disservice.

He had a lifetime that was hard enough. His beloved father died while Dubois was prospecting in Java, and never learned of Dubois's spectacular success. When Dubois brought the specimens home, the reaction of his mother was, "But, boy, what use is it?" As the finder of the first link between humans and non-human ancestors, Dubois was necessarily the lightning rod for attacks from the clergy and the public. Also, the old-guard scientists who had not accepted evolution found or imagined reasons to disagree with Dubois' discoveries. He felt himself so ill-treated that he locked up his fabulous specimens for decades, provoking an international scientific protest when he would let no one else examine them.

Shipman has written about evolutionary subjects before, most notably *Taking Wing*, an excellent book about the evolution of bird flight. She has had access to Dubois's personal archives which no one previously had examined. She has pro-

*("Missing Link" continued on page 7)*

# UFOs, Ghosts, and Misunderstood Perceptions

## by Bill Hahm

In my life I have had quite a few experiences that had "supernatural" written all over them, and I assume most people can say the same. I'd like to share a few of these experiences with you and then share some thoughts about them:

**Event 1:** I was leaving work at noon for lunch – walking out the door and into the parking lot – it was a beautiful, warm, cloudless day. I heard an airplane overhead moving to the west (my right) which is very common because Bloomington airport is about a mile from where I work. I looked up about 45 degrees and didn't see the airplane but I saw something apparently falling from where I assumed the plane had been – it was bright white in the sun and fluttered back and forth just like a sheet of paper, but it seemed to be a few thousand feet away so I thought it could be a large sheet of aluminum or a baggage door that had fallen off the airplane. As it fell I predicted where it would hit and felt helpless that I couldn't warn anyone in that area to avoid it – but its descent slowed until it appeared to stop falling and then (UFO music please) it appeared to accelerate away from me rapidly and disappeared in the distance... So there I was, standing in the parking lot in the middle of the day rapidly realizing that reality had just pulled a fast one on me, when I heard someone say, "What are you looking at?" (I was still staring at the sky trying to remember exactly what I had just seen.) I think I said something like, "A UFO, I don't suppose you saw it too?"

**Event 2:** I suspect this is an extremely common phenomenon, but I wouldn't believe it if it didn't happen to me – quite a few times. Our dog (Ollie) died a few years ago and for the first few weeks after he died, I thought I was hearing him in the house. (It didn't help that our house was over 100 years old.) The first few times this happened it really got me because I wasn't used to him not being there, so when I thought I heard him walk in the room, my first reflex was to naturally expect him to be standing there and WHAM – nothing there, just me thinking I had just heard my dead dog walk in to the room.

I have a weak theory as to what the "UFO" was, and I'm positive I know what the "ghost" was, but first a few observations:

1. These experiences were very exciting. I consider myself to be about as rational and skeptical as they come and still I had to laugh at the little boy inside that really wanted these events to be supernatural.
2. It isn't hard to see how experiences like this would tip most people in favor of supernatural beliefs, and if most people have at least a few of these experiences in their lives, the skeptical community is up against insurmountable forces.
3. These events were quite short and sudden. By the time I realized something unusual was occurring, they were history and I found myself straining to accurately remember what had happened just seconds before (and telling that

little boy inside to calm down for a minute while I think). This is also why I'm sure I know what the ghost was, and not sure what the UFO was – the ghost happened often enough that I could refine my observations, the UFO only happened once.

**The UFO:** My best guess is that it was a sheet of ice (in the summer?) that fell from the plane and as it melted it shrank and fell slower. The shrinking gave the appearance that it was receding. I don't know if there were icing conditions in the area (scattered thunderstorms?), I don't know if the plane was coming or going, I don't know if it had anything to do with the plane...

**The ghost:** I realized that I wasn't able to discern for certain that I had really heard something, or that I just thought I heard something, and I realized the sounds were always associated with another event that, when Ollie was alive, would have caused him to make that noise. For example, when I would walk in the door, Ollie would always come through the kitchen and greet me, so for a few weeks after his death when I walked in the door I seemed to reflexively hear him coming to greet me – claws clicking on the floor and collar clinking. Or at night if I opened the closet door he would come trotting in assuming I was getting my shoes to take him for a walk, so sure enough, after he died, when I went to the closet I would think I heard him coming. After a few days I was able to focus on the event as soon as it happened and it became clear to me that it was a conditioned effect, like flinching when your big brother raises his hand, but in this case the effect was a perceived sound. I have since noticed the effect in subtler situations. For example, when my wife comes home from school she usually has my sons with her and they all come in the door with their own personalized "sound signatures." But sometimes I think I hear one of them walk in even if they didn't come home with her – my brain misinterprets the various noises of doors, footsteps, books dropping on tables, etc. This all causes me to wonder how much of our perceived reality is actually the reality that our mind is conditioned to expect based on experience? Is 2% of our reality imagined? 5%? Could this effect cause someone to think they saw a ghost?

*[Chairman's Note: The UFO in question has another possible explanation. A number of years ago, I read an article by a pilot who was watching planes take off and saw a UFO. It looked like it was very far out and making all sorts of strange zigzags that should be impossible. Then, when it looked like the object was going to go behind a tree in the distance, it instead went in front of the tree – and became obvious that it was not a large object far away, but a small object nearby. It was something like dandelion fluff, and even this trained pilot, looking out into the clear sky, misinterpreted its small size for being large and far away. The zigzag movements were simply the wind blowing it around. This, too, falls into the area of misperceptions discussed here.]* 🍀

(*"Skeptical Songs" continued from page 4*)

ence another Smash Mouth song, "Walking on the Sun":

*"Hey I know it's just a song but it's spice for the recipe"*

In other words, having skeptical songs just shows that some – a very few, perhaps, but some – of our ideas have made it into the mainstream. This is something we should strive to see more of, though I have to admit I rather doubt any of us will be heading up the pop charts soon; it's likely that almost all of us are too old to go on "American Idol 2," after all. But just as we would like to see skeptical topics properly addresses in movies, on TV, and in books, we should also applaud when they can be found in pop songs.

As noted earlier, I'm sure there are more like this. If you know of any, please feel free to e-mail me at [chairman@reall.org](mailto:chairman@reall.org) to let me know!

### Songs that were quoted in this article:

*"Holiday in My Head," written by Greg Camp, performed by Smash Mouth*

*"Sister Psychic," written by Greg Camp, performed by Smash Mouth*

*"Jesus He Knows Me," written by Tony Banks/Phil Collins/Mike Rutherford, performed by Genesis*

*"Peaceable Kingdom," written by Neil Peart, performed by Rush*

*"Free Will," written by Neil Peart, performed by Rush*

*"Ghost of a Chance," written by Neil Peart, performed by Rush*

*"Roll the Bones," written by Neil Peart, performed by Rush*

*"Presto," written by Neil Peart, performed by Rush*

*"Walking on the Sun," written by Smash Mouth, performed by Smash Mouth* ☹

(*"Chairman" continued from page 2*)

### Articles

As you no doubt noticed last month, we had a couple of very subtle hints that **we need articles** for the newsletter. I'd like to thank Bill Hahm, who stepped up and sent us one that you will find in this issue. Also, we have a couple book reviews by Rob Hardy. His name is probably new to pretty much all of you, but he is a Top 50 Reviewer on Amazon and contributes quite a few articles to one of my websites, NonfictionReviews.com. I asked him recently if we could reprint some of his skeptic-related reviews here in this newsletter and he gladly agreed. So this month we feature two reviews.

But Rob only has so many reviews to pick from, so this doesn't get anybody else off the hook. If you're thinking about writing an article, please go ahead and write it! ☹

(*"Wolfram" continued from page 3*)

connections might be the foundation of space, time, and relativity. In fact, the whole universe may be governed by a simple program, and finding it would be a more worthy goal than trying to find a mathematical representation of some Theory of Everything.

Wolfram builds up to the Principle of Computational Equivalence (which perhaps will become known as Wolfram's Law). Processes that look complicated almost always are a result of simple computation, and such simple computation is equally powerful no matter where you find it. We are used to the idea that only complex explanations suffice for complex phenomena, and that there are degrees of complexity so that one explanation is more powerful than another, but these intuitions are wrong. A simple CA can be programmed to work out anything a complicated computer program can do, universal computation, and the programs that run, say, snowflake shape can do so, too. What's more, your own thinking is no more powerful than such systems, and no more complicated at bottom.

*A New Kind of Science* is not light reading. The book is massive, at over 1,200 pages. Wolfram knows he is writing about a wealth of new ideas, and has deliberately tried to write so that any interested reader, not just a scientist or computer scientist, can understand him. To a large part he has succeeded, although I despair of anyone making plain to me the inner workings of relativity or quantum theory. He has not leavened these pages with humor or with anecdotes, but it is clear that this is a very personal work showing the deepest interests of its creator. His audacity is everywhere apparent; it is very seldom that he will admit, for instance, that in explaining the fundamental laws of physics "there is still some distance to go." Anyone who reads the whole book will get very used to his slightly tempered observations that "I very strongly suspect" or "I very strongly doubt." This is one of the best-looking books I have read in years. There is no use of color, but the diagrams (all produced by Wolfram's Mathematica) are frequent, perfectly integrated into the text, and often starkly beautiful in their own right. It could be that Wolfram will rightly be hailed as the Isaac Newton of the twenty-first century, and only time will tell. It is certain, however, that in a bold stroke Wolfram has laid down a challenge that scientists everywhere will have to face.

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(*"Missing Link" continued from page 5*)

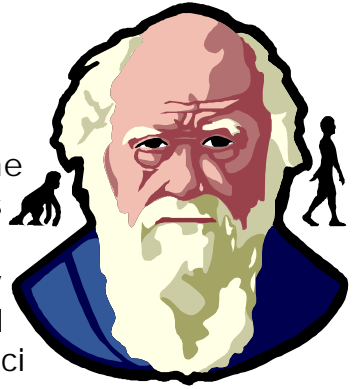
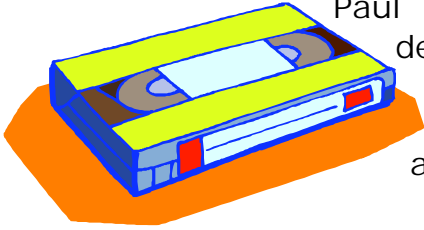
duced a remarkably interesting volume about an extraordinary individual with huge flaws and huge capabilities. He was, after all, the father of paleoanthropology. The story of Dubois's boldly making good on a boyhood promise to himself to find the missing link is inspiring, and if he continues to be an underestimated figure in evolutionary histories, it will be despite this dramatic biography.

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## Our Next Meeting

### *Evolution and Intelligent Design*

Join us to in viewing a new video featuring the lively debate from the 4th World Skeptics Congress in June in Burbank, California, between evolution defenders Kenneth Miller and Wesley Elsberry and ID proponents William Dembski and Paul Nelson. Moderator Massimo Pigliucci developed the format that included short presentations by the speakers, discussion among the speakers, and a question-and-answer session.



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