



**New Mexico Academy
of Science**

Celebrating the World Year of Physics

Celebrating the Centennial of Einstein's "Miracle Year"

In celebration of the World Year of Physics and the one-hundredth anniversary of Einstein's major scientific publications, the New Mexico Academy of Science, is pleased to present a very special Annual Symposium...an acclaimed performance by actor...

Tom Schuch *in* Einstein: A Stage Portrait

Mark your calendars and plan now to attend this personal meeting with "Dr. Einstein." You'll walk away with an understanding of the character and thoughts of the amazing man who solved many of the world's most difficult puzzles.

November 19, 2005

DID YOU KNOW?

The year 2005 has been proclaimed the *World Year of Physics*, in recognition of the one-hundredth anniversary of Einstein's "miracle year" of scientific publications.

Academy Names Outstanding New Mexico Teachers for 2004

At the NMAS Annual Banquet in November 2004, these teachers were honored as NMAS Outstanding Teacher Awardees.

Mariann Patterson
Socorro NM
Outstanding Elementary Teacher
2004

Gilberto Lobo-Martinez
Albuquerque NM
Outstanding Secondary Teacher
2004

See Page 5 for more information on these outstanding teachers!

Don't Forget your NMAS Mem- bership Renewal for 2005

It's that time again....Fill in the membership form on page 7 and send it in with your membership dues. THANK YOU.

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NMAS Member News.....

Recent gifts to the NMAS

In the category "Under \$100"

Robert Amai
Angela Wandinger-Ness
Richard Nygren
Harry and Mona Pomeroy
Maureen Romine
Aija and Philip Thacher

Larry's Lookout, Mars

A feature on Mars has been named after NMAS member, Dr. Larry Crumpler. The informal name, Larry's Lookout, was given to a ridge in the Columbia Hills of Gusev Crater, the area currently being explored by the rover named Spirit.

The Mars Exploration Rover mission is on-going in one of the greatest natural history expeditions of all time. It is just past Spirit's 500th and Opportunity's 480th day on Mars. Spirit is steadily climbing the Columbia Hills and Opportunity is extricating itself from a sand dune on its journey to the south. Both rovers survived Martian winter. The spring winds have begun, just as in New Mexico, and Spirit has imaged multiple and large "dust devils." The rock of "Larry's Lookout" has turned out to be very soft and very interesting chemically.

Find out more about the ongoing mission at a lecture by Dr. Crumpler on August 16, 7pm, at the NM Museum of Natural History and Science in Albuquerque.

DID YOU KNOW?

In 1905, Einstein published the five major and fundamental scientific papers for which he is best known. These five papers forever changed the science of physics and our understanding of the physical world.

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NEW MEXICO ACADEMY OF SCIENCE

Founded in 1902 to foster scientific research and scientific cooperation, increase public awareness of the role of science in human progress and human welfare, and promote science education in New Mexico.

The Academy has been in continuous existence since 1915, and became formally associated with the New Mexico Museum of Natural History and Science in 1995.

Affiliated with the American Association for the Advancement of Science (AAAS)

Member of the National Association of the Academies of Science (NAAS)

President's Message - May 2005

Jayne Aubele

About twenty-five years ago, when I was a graduate student at the University of New Mexico, I attended a lecture by the last surviving expert scientific witness of the Scopes Trial. As I listened to Dr. Kirtley Mather (former Geology Department Chair at Harvard) discuss this historic court case, I would never have believed that we would still be fighting this fight in the schools and in the courtrooms of the 21st Century. Yet, here I am, writing my first official President's Message for the New Mexico Academy of Science, and I want to direct your attention to the Academy's efforts in support of the teaching of evolution. Please read the message from the President of the National Academy of Science (page 6) and you will find that the teaching of evolution is under increasing attack in many states. The NMAAS has recently offered scientific advice to KNME (see page 4) regarding a privately-funded program that was advertised as science but was not scientifically accurate. NMAAS is also one of the many science organizations from across the nation to have signed an Amicus brief for a court case in Cobb County, GA regarding required textbook stickers disclaiming the theory of evolution.

I am a geologist, not a biologist, but I have been doing my homework on the issue. Evolution is the cornerstone of modern biology. It unites all the fields of biology under one theoretical umbrella. The scientific consensus around evolution is overwhelming. Modern biologists and paleontologists may dispute some aspect of HOW evolution occurs, but not WHETHER evolution occurs. Evolution is the accepted scientific explanation for the diversity of life on Earth, and Life Science cannot be taught coherently without it.

Much of the current debate concerning evolution seems to center around the word "theory," which has a different meaning for non-scientists and scientists. For scientists, it does not mean a "guess" or "hunch" or "wild and unproven idea;" instead, it means a set of statements explaining a natural phenomenon that have been confirmed to such a degree, by observation, testing and experimentation, that knowledgeable experts (scientists working in that field) accept it as fact. In the case of evolution, the theory has been tested and observed so many times that there is no longer a compelling reason to keep testing or looking for examples. The occurrence of evolution in this sense is a FACT. *But, as scientists and science educators, we have clearly not done a good job in getting the fact of evolution to the general public.*

How can we get this message about evolution to the general public? As the fundamental first step, all science and science education organizations MUST support the teaching of evolution as part of the science curriculum in all schools and all grade levels. The New Mexico Academy of Science joins with the National Academy of Science and ALL of the other national science and science education organizations in supporting the teaching of evolution.

However, I believe that the debate concerning evolution is actually part of a larger problem. Science uses observation and inductive/deductive reasoning as a philosophical basis for studying the natural world and natural processes; and the technique of inductive/deductive reasoning is an important skill for all students to learn. I believe that we need to focus on teaching the techniques of logical thought, including cause and effect, deductive and inductive reasoning, and the differences between fact, assumption, observation and interpretation. In fact, teaching logical reasoning to all students may be even more important than teaching individual scientific disciplines. It is critical for the future of our nation that we produce a scientifically literate population. By scientifically literate I do not mean a population of scientists but a population of non-scientists who can understand how to assess evidence and make valid conclusions. The benefits would go beyond science and technology; the ability to weigh evidence would be helpful in many other arenas of decision-making.

New Mexicans can be proud of the fact that our new state science standards meet or exceed the National Academy of Science science standards and are well-grounded in the best scientific evidence and practices. New Mexico's standards include the teaching of evolution AND, as one of the three major "strands" or topics covered in all grade levels, the methods and techniques of scientific thought. With your support as members of the Academy, the New Mexico Academy of Science will continue to actively work to support our state science standards and to ensure that all New Mexico students are given the tools they need to become scientifically literate citizens.

Scientists in the Classroom: NMAAS Celebrates the 43rd Year of the Visiting Scientist Program

by *Dr. Maureen Romine*
Director, Visiting Scientist Program

The NMAAS Visiting Scientist Program provides presentations and/or demonstrations by some of the most distinguished scientists and mathematicians in New Mexico to all secondary schools throughout the state, at no expense to the schools. The 2004-2005 Academic year VSP included distinguished scientists and mathematicians from throughout New Mexico, and served 1102 students in over 50 school visits statewide.

The VSP is looking for additional scientists, mathematicians and engineers who would be interested in participating in this program. If you are interested in being listed with the VSP program, please contact Dr. Maureen Romine, Director, 505-454-3264, romine_m@nmhu.edu or Rosalie Torres-Martinez, Program Secretary, 505-454-3557

...or...log on to the web site:

<http://www.nmhu.edu/visitingscientist>

National Science Youth Camp: Summer Opportunity for Two New Mexico Seniors

by *Dr. Richard E. Nygren*
Director, NM-NYSC

Each year in the summer following their graduation, two New Mexico high schools seniors interested in science attend an intense month-long camp for young scientists, with all expenses paid, including air fare. The National Science Youth Camp is held in wilderness areas of the Monongahela National Forest in the eastern mountains of West Virginia. Students from around the country are challenged academically in exciting lectures and hands-on studies and have opportunities to increase their appreciation for the great outdoors and establish friendships that last a lifetime.

The 2004 New Mexico delegates were:

Kylea Odenbach
Rio Rancho High School
Melissa Emery
Rio Rancho High School

The New Mexico Academy of Science (NMAAS) administers this program in New Mexico. Getting the word out is a concern. This is a wonderful program and a unique opportunity for two students from New Mexico. Please help us to spread the word about this program.

NMAAS Partners with Coalition for Excellence in Science Education: Local Action Becomes National PBS Policy

by *Dr. Marshall Berman*
Past President, NMAAS

Current President, CESE

For the third time in the past three years, special interest groups have sought to have the Albuquerque PBS station, KNME, air a video entitled, "Unlocking the Mystery of Life." The documentary was privately funded by proponents of "intelligent design" and, although described as a "science program" is not accurate in its discussion of the scientific evidence for evolution. The New Mexico Academy of Science (NMAAS) partnered with the Coalition for Excellence in Science Education (CESE) in 2003 and 2004 to inform KNME that the program was not scientifically accurate. KNME agreed that the program was funded by a special interest group to support their agenda, and the show was not broadcast. In 2005, the video was suddenly placed on KNME's schedule of programs. Despite only a few days' notice, NMAAS and CESE contacted KNME, and the broadcast was cancelled, with the same rationale as before. This time, however, local proponents of "intelligent design" claimed censorship, and the issue was discussed on local TV stations and reported in the print media. A paid ad appeared in the Albuquerque Journal claiming "unprecedented censorship." The New Mexico Academy of Science, in partnership with CESE and New Mexicans for Science and Reason, responded with an Op Ed in the Albuquerque Journal strongly supporting KNME's right to make editorial decisions based on their own broadcast policies regarding programs. The Albuquerque Tribune published an editorial strongly supporting KNME's decision.

This local KNME decision had national ramifications; PBS withdrew the video from its online library. NMAAS and CESE can be proud of the fact that they acted in the best interests of science in New Mexico and that the New Mexico action worked in the best interests of viewers of all PBS stations nationwide.

DID YOU KNOW?

Albert Einstein was born March 14, 1879 in Ulm Germany. If you want to remember the month and day, just think of the mathematical constant pi, 3.14

The 2004 NMAS Outstanding Science Teacher Awards

by Harry F. Pomeroy, Jr.
Awards Chairman, NMAS

Mariann Patterson

My teaching career began in Las Cruces in January 1968 as a math-science teacher at a small Catholic school, Immaculate Heart of Mary. I taught there only a year and a half until my husband finished his education. We then moved to an isolated ranch north of Bingham, N.M. where we lived for over fourteen years. During that time I had three children and home-schooled them until we could move nearer to a school. At that same time I started work on my master's degree at New Mexico Tech and began teaching science at Carrizozo High School. My children graduated from that school and all three continued their educations in the science-agriculture field due to the interest they acquired from their mom being a science teacher and their father a rancher.

At Carrizozo, my students were very active in science fair. We had many winners at the regional level participating at Roswell and later at Portales. Each year five or six students moved on to the state science fair. The main goal I had as a teacher was to expose rural students to professional people and to show them areas they knew nothing about. Even though we never had a student move on to the internationals I felt we accomplished the major goal, which was exposure to science. During those years I received several awards including the 1987 Biology Teacher of the Year, New Mexico Biology Teacher Association, and 1003 Sponsor of the Year, Regional Science Fair, Portales, New Mexico. All were great honors.

In 1994 I accepted a teaching job in Socorro. The first year was at the alternative high school teaching science and math and then on to the high school to teach chemistry. The next year I proposed human anatomy be added to our science curriculum and the administration agreed, if I could encourage enough students to sign up. Over forty students signed up so we were able to have two classes. Since that time I have taught chemistry and human anatomy, the two areas I enjoy the most.

I continued to work with and encourage students in science fair. During 1998-2999, I had students win at the state level and participate in the International Science Fairs at Louisville, Kentucky, Fort Worth, Texas, and Detroit, Michigan. What an honor that was for my students and how fortunate I was to accompany them. Four years I worked with Science Olympiad as sponsor. That was exciting! The students had been second in the state several times and in 2002 won the state competition and competed at the National Science Olympiad. Science Olympiad is an outstanding program giving many students the opportunity to acquire knowledge in many interdisciplinary areas and much recognition.

This year I have accepted the position as head of our science department. As such I have turned over Science Fair and Science Olympiad to younger teachers. I hope they will get as much gratification from their participation as I have. Time moves on and we must try new experiences as our students will.

My greatest accomplishment in teaching is the accomplishments of my students. I have taught two doctors of medicine, two veterinarians, a pharmacist, a lawyer, a landscaper, several nurses, several teachers, several Ph.D's and several ranchers with Master's Degrees. How much greater can it be!

Gilberto Lobo-Martinez

Gilberto Lobo-Martinez was born in Mérida, Yucatán México. He became a veterinarian and a teacher. He was a professor and chairman of the Pig Production Department at the 'Universidad Nacional Autónoma de México' from 1975 to 1986 and was also a private consultant to different pig farms in Mexico. In 1982 Gilberto won a scholarship from the British Council to participate in a one month intense course involving pig production in Scotland. During his tenure as a professor he wrote, in collaboration with Dr. Olegario Garcia, a book about pig diseases "Enfermedades de los Cerdos" that was published by Editorial Trillas in 1989. He received a scholarship from the Organization of American States (OAS) to study for a Masters in Educational Administration at the University of New Mexico, in Albuquerque, New Mexico, USA. He received his master's diploma and started working full time at the Office of International Technical Cooperation (OITEC) at UNM.

But for the last eight years Mr. Lobo has enjoyed being a 6th grade teacher in the Dual Language Program at Truman Middle School in Albuquerque, New Mexico. Mr. Lobo's classroom is like living in a learning ecosystem. Students become caretakers of a real food chain by raising plants, different kinds of rodents and hatching insects that will nourish the larger animals, such as reptiles, mammals, birds, fish, and spiders. The environment serves as a focal point, often providing an application for the wide range of math and science concepts that students will encounter in their futures.

Mr. Lobo has also served on the board of directors for the "Asociación de Veterinarios Especialistas en Producción Porcina" and the "Dual Language Education of New Mexico". He received the Crystal Apple Award in 2002 for his unique approach to integrating subjects throughout his classroom.

Gilberto says, "The most important thing I do every day is I have the opportunity to find ways to motivate and challenge students, so we can learn from each other and at the same time enjoy our learning."

Mr. Lobo is married to Martha Briz. He has 4 daughters (Marthita, Maricarmen, Marisol and Ivonne), and two grandsons.

DID YOU KNOW?

Thirty-five years after Apollo astronauts placed special reflectors on the lunar surface, scientists have used these devices to test Einstein's general theory of relativity to unprecedented accuracy. The Lunar Laser Ranging Experiment results have confirmed that the Earth and the Moon both "fall toward" the sun at the same rate regardless of their different in mass. This confirms Einstein's equivalence principle of gravity.

A Message to the Members of All State Academies of Science

From the President, National Academy of Sciences

Subject: The Evolution Controversy in Our Schools

Dear Colleagues:

I write to alert you to efforts by the National Academies to confront the increasing challenges to the teaching of evolution in public schools.

I write to you now because of a growing threat to the teaching of science through the inclusion of non-scientifically based "alternatives" in science courses throughout the country. A recent article in the Washington Post pointed out that there are challenges to the teaching of evolution in 40 states or local school districts around the country today (for more details, visit the website of the National Center for Science Education, <http://ncseweb.org>). Major newspapers, magazines, and other media have featured major stories about the controversy during the past six months.

Recent tactics to cast doubt on the veracity or robustness of the theory of evolution have included placing disclaimer stickers in the front of high school biology textbooks (Cobb County, GA and Alabama; proposal before the Missouri House of Representatives), mandating or recommending the inclusion of Intelligent Design in high school biology courses (Dover, PA; Cecil County, MD, respectively); development of statewide lesson plans that encourage students to examine "weaknesses" in the theory of evolution (Ohio), and plans to revisit parts of state science standards that focus on evolution (Kansas State Board of Education). If these challenges have not yet reached where you live or work, they are likely to do so in time.

A federal judge recently ruled the Cobb County stickers to be unconstitutional and has ordered them removed from all textbooks; an appeal is pending. The courts will soon hear a lawsuit brought by the ACLU on behalf of parents in Dover County, PA about whether ID also is tantamount to promoting religion (for additional information about the various forms of "scientific creationism" and ID, see <http://www.ncseweb.org/article.asp?category=8>).

However, these challenges continue unabated across our nation, and the New York Times and Education Week report that **even where the controversy is not overt, teachers are quietly being urged to avoid teaching about evolution -- or have decided not to do so because it engenders so much rancor from a subgroup of students, parents, and members of the school board or local community. As a result, one of the foundations of modern science is being neglected or banished outright from science classrooms in many parts of the United States.**

If your discipline is not the life sciences, you may be wondering why I have chosen to write to all members of the National and State Academies of Sciences. Although the controversy focuses primarily on biology, some who challenge the teaching of evolution in our nation's schools have also focused their sights on the earth and physical sciences. For example, **when the Kansas Board of Education first removed portions of biological evolution from their science standards in 1998, they also eliminated statements mandating that Kansas students learn about the Big Bang, that there is overwhelming evidence that the earth is much older than 10,000 years, and the theory of plate tectonics.** All of these items were returned to the Kansas standards following extensive pressure from many organizations, including a joint letter signed by me and the Presidents of AAAS and the National Science Teachers Association (see <http://www4.nationalacademies.org/news.nsf/isbn/s09231999?OpenDocument>) and the removal of several Board members during a subsequent election. But, as noted earlier, the Kansas Board of Education plans to re-examine their science standards because the 2004 election has again resulted in a majority who favor the inclusion of "alternatives to evolution" in the state's science curriculum.

The National Academies have been involved for many years in helping scientific colleagues, teachers, and concerned citizens in individual states and school districts respond. While these challenges have national implications for science and science education, they are typically viewed as local issues, and "meddling" from organizations in Washington, DC is often viewed with skepticism. As a result, when asked to assist, I have contacted NAS members who live in the state where a specific challenge is presented, enlisting their assistance through the writing of op-ed pieces, speaking at school board meetings and related activities. The NAS also has published three reports, two of which are specifically directed to science teachers to help them understand both evolutionary theory and the social controversies that surround its teaching. Descriptions of these reports and our efforts to confront challenges to the teaching of evolution are summarized in a recent article published in Cell Biology Education (see <http://cellbioed.org/articles/vol3no2/article.cfm?articleID=98>).

We stand ready to help others in addressing the increasingly strident attempts to limit the teaching of evolution or to introduce non-scientific "alternatives" into science courses and curricula. I have asked Dr. Jay Labov, Senior Advisor for Education and Communications in the NRC and a former professor of biology, to oversee the Academies' efforts in this realm. Please address all of your comments, ideas, and requests for assistance directly to him (jlabov@nas.edu; Telephone: 202-334-1458).

Thank you very much. We look forward to hearing from you. With best regards,

Bruce Alberts, President, National Academy of Sciences

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NMAAS Journal v. 40, 2000	\$10 _____
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Or use the enclosed addressed envelope!

ALSO...consider making a donation to the NMAAS to help further its science education programs!

NMAS Newsletter
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Don't Forget your NMAS Membership Renewal for 2005

It's that time again....Fill in the membership
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membership dues. THANK YOU



**NEW MEXICO
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Newsletter

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