
Celebrating the Franklin Tricentennial Year

**Mark Your Calendar
for a Special Event
“KNME-TV - NMAS
SCIENCE CAFÉ”**

It's an event for the entire family! Celebrate the 300-year anniversary of Benjamin Franklin's birth with KNME and the New Mexico Academy of Science. Listen to one of only thirteen “armonica” players in the world.

Mayling García
**performing on the
Glass Armonica**

**(an instrument invented
by Benjamin Franklin)**

**Followed by a discussion about the
science of sound and glass**

***Saturday, December 2, 2006
10 a.m. to noon***

**This special Family Science Cafe
is FREE**

*sponsored by Sandia National Labs
and hosted by the New Mexico Museum of
Natural History and Science*

DID YOU KNOW?

In 1761, while living in England, Benjamin Franklin heard a performer playing musical glasses. Convinced that there was a better way, Franklin had a glassmaker create 37 glass hemispheres of different sizes, linked them to a foot treadle and spinning wheel, and played the instrument by holding his fingers against the rims as they rotated. The instrument became so popular that thousands were built and sold during the late 1700s. Both Mozart and Beethoven composed music for the glass armonica.

**A Special New Mexico
Journal of Science
for 2006**

We are pleased to announce publication of a special thematic NM Journal of Science that will highlight current applied research along the border between the U.S. and Mexico by research scientists from both sides of the border.

Special Editor for this Journal is Professor Kurt Anderson of NMSU, a member of the NMAS Board. Associate Editors are Edgar Barrantes and Leticia De Lara. The Journal has been produced with the support of Erin Martin Ward, Director, U.S.-Mexico Border Outreach & Coordination and Vice Provost for Research, NMSU. The volume contains about a dozen scientific papers dealing with border issues such as water resources and treatment, medicine and health, chemistry, agriculture, geography, geology, and wildlife and ecology. Funding for publication, printing, and distribution is provided by the Southwest Consortium for Environmental Research and Policy (SCERP) at NMSU.

NMAS Members who have paid for 2006 will receive the Journal as part of their membership.

*“When the wells dry, we know the worth
of water”.....Benjamin Franklin*

**Don't Forget Your
2006 Membership Dues
and
Become a Founding Contributor
to the NMAS Endowment Fund**

Read about this new opportunity to support science and science education in New Mexico on page 6.



**New Mexico Academy
of Science**

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Recent gifts to the NMAAS.....

In the category "Under \$100"
Warren Brown

In the category "Under \$250"
William Chambers
Leonard Sugerman

"Be slow in choosing a friend, slower in changing"....Benjamin Franklin

To All NMAAS Members:

The Awards Committee of the NMAAS will be seeking nominations for the...

2006

Annual NMAAS Awards to Outstanding New Mexico Science Teachers

Teachers can be nominated from the secondary level or the elementary level from any school throughout the state.

The deadline for nominations is

October 13, 2006

The nomination form is posted on the NMAAS website, or contact Awards Chairman, Harry Pomeroy, at 505-762-0878 or cathryn@plateautel.net

NMAAS Newsletter
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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)

DID YOU KNOW?

Benjamin Franklin believed that the lightning rod was his most important invention. Before this invention, lightning destroyed or damaged many buildings. Franklin's understanding of electricity allowed him to design a metal rod attached to the high point of a building. A metal wire or cable ran from the rod, down the side of the building, and into the ground. When lightning struck, the electricity ran down the rod and cable and into the ground, preventing damage to the building. Franklin came up with the idea of the lightning rod in 1750, and spent three years perfecting it.

President's Message - August 2006

Dave Thomas

As the summer draws to a close, I have been pondering the increasing need for scientists to get involved in making public policy decisions. Even in America in the 21st century, informed public deliberations on the issues of the day are often eclipsed by the manipulations of those with a political or religious agenda. While there are a few signs of hope on some horizons, by and large the fundamental precept of science -- honesty in data collection and analysis -- is far from universally accepted in public discourse.

One need look no farther than the current obsession with the Bird Flu as the "Next Great Pandemic" for an example of media and political hype trumping science. Physicist/physician Al Zelicoff recently told a New Mexican audience that while Bird Flu is indeed a problem for chickens, it's simply not the dire threat to humanity that we've seen portrayed on television. Indeed, recent studies have confirmed that a human Bird Flu pandemic is unlikely. Many humans are already immune to H5N1 (the Bird Flu virus), even if they have never encountered it, by virtue of having experienced earlier flu viruses like H1N1 (1918's Spanish Flu and 1977's Russian Flu). If the virus can't escape its host cell (because of existing immunity to the flu virus's N1 protein), it can't spread from that host. Additionally, immunity to H5N1 itself is beginning to spread, especially among chicken farmers in Asia.

While we've been pre-occupied with several other non-starter "pandemics" (SARS, monkeypox), we're not worried enough about the diseases of true concern, like hantavirus. It was only with lots of luck (and some key observations by Dr. Bruce Tempest in Northwest New Mexico) that a serious outbreak of Hantavirus was averted.

Zelicoff's prescription for handling pandemics is simple, but it's not what's being pushed nationally. We need data, and lots of it, and quickly. Doctors should be encouraged to report unusual cases or symptoms immediately. Such reports should require only a few minutes of the doctors' time, and must be made available in a timely fashion to health professionals and analysts. Since so many diseases get started in animal populations, veterinarians should be involved from the ground up in such a monitoring system. While this ideal monitoring system sounds like a fantasy, Zelicoff has helped develop just such a system, and it is in use in Texas. What we need are more systems like this, and less hype, locally, nationally and internationally.

The recent presidential veto of a bi-partisan bill that would have allowed more stem cell research is another example of disinformation overtaking science. One conservative radio talk show host defended the veto by claiming that stem cell research was being pushed by the pro-abortion crowd, because it would require and legitimize more abortions. (Of course, the embryonic stem cells in question are obtained from eggs fertilized *in vitro*, i.e., "within glass" such as a test tube.) The president's own political advisor also claimed that adult stem cells provided "far more promise from adult stem cells than from embryonic stem cells." But Dr. Michael Clarke, associate director of the stem cell institute at Stanford University, strongly disagrees. While Clarke respects those morally opposed to embryonic stem cell research, he is simply "not willing to live with statements that are misleading."

There are some rays of hope, however. Commercials are starting to appear on television informing the public that cervical cancers in women are often caused by viruses. And Dr. Cosette Wheeler of UNM Health Sciences helped develop a new vaccine for human papillomavirus (HPV), which has recently won FDA approval. While some religious conservatives are opposed to the HPV vaccine because they fear it will cause an increase in pre-marital sex, Dr. Wheeler simply asks "Now that we have the *means* to prevent cancer, *will we?*"

Now, more than at any time in American history, the values of science -- honesty, thoroughness, and the willingness to consider new solutions (and drop failed ones) are desperately needed in the public square. As members of the New Mexico Academy of Science, I'm hoping you will help communicate these values to government officials, the media, and your neighbors.

2006 State New Mexico Junior Academy of Science Paper Competition Winners

Cash awards were provided by a grant from Sandia-Lockheed Martin.

Senior Division

First Place

Anna Trugman

*Environmental Engineering of Pogonomyrex Harvester
Ant Mounds*
Los Alamos High School
Los Alamos, NM

Second Place

Samantha Stutz

Post-Fire Hydrology
Los Alamos High School
Los Alamos, NM

Third Place

Bennet Grill

*Limitations of Cottrell's Equation: Plotting Electro-
chemical Coefficients of Potassium Ferricyanide
and Potassium Ferrocyanide as Functions of
Temperature and Concentration*
Rio Rancho High School
Rio Rancho, NM

Junior Division

First Place

Emily TenCate

Achoo! Modeling the Spread of the Flu
Los Alamos Middle School
Los Alamos, NM

Second Place

Ryan Erickson

Voracious Vortices
Los Alamos Middle School
Los Alamos, NM

Third Place

Laura Lane

*Grey Water Backwash: Filtering Household Waste
Water for Everyday Use*
Koogler Middle School
Aztec, NM

"If you would not be forgotten, As soon as you are dead and rot-
ten, Either write things worthy of reading. Or do things worth
the writing." - *Poor Richard's Almanack, 1738*

Environmental Engineering of Pogonomyrex Harvester Ant Mounds

Anna Trugman

Los Alamos High School,
Los Alamos, NM

Abstract

In the area around White Rock Canyon, New Mexico, harvester ants cover their mounds with small quartz crystals. This project addresses the effects of these actions on the temperature and humidity inside the mounds, in an attempt to understand the cause of this behavior. My hypothesis is that the ants cover their mounds with quartz rocks to regulate the temperature and humidity within the mounds. My procedure for studying the effects of covering ant mounds with quartz crystals includes the following. I observe ant behavior outside mound as a function of time during the day, while simultaneously measuring the air temperature, the surface ground temperature, the temperature beneath the ground, and the temperature within the mound for several neighboring mounds. I also directly measure the temperature as a function of time during the day and night of two model mounds, one covered with quartz crystals and one made without quartz crystals. I make simultaneous measurements of the air and ground temperatures. I also studied the retention of water within the two model ant hills, with and without quartz, as a function of time. I find that ant activity (both number of ants and distance from mound) correlates with surface temperature, with activity peaking around $T=95$ F and no activity for $T>115$ F. Ant mounds consist of small rocks to dirt in a 2:1 ratio and ants actively carry small rocks to mounds. The ants carry rocks to their mounds from as far away as 50 feet. These rocks make it easier for the ants to rearrange tunnels within their mound. The presence of quartz rocks increases the temperature in the mound by an average of 2.5 ± 0.5 F compared to the mound without quartz, a small but consistent effect. The quartz rocks also increase the amount of moisture retained by -50% and increase the time that moisture is retained by -66%. In summary, harvester ants have successfully controlled their environment by simple quartz engineering.

DID YOU KNOW?

Benjamin Franklin lived most of his life in the city, yet he had an extensive interest in agriculture and farming. He introduced native American plants to Europe and some European plants to America, advocated a silk industry for the British colonies, printed a number of books on agriculture and botany, suggested implementing crop insurance, and helped educate people in the use of gypsum as a fertilizer.

AVS Science & Technology Society 2006 NMJAS Winners

The AVS Science & Technology Society, formerly the New Mexico Chapter of the American Vacuum Society, sends judges and selects its own winners in the NMJAS paper competition and awards prizes to these winners and to their teachers/sponsors.

The New Mexico Academy of Science is very grateful for the support of the AVS Science & Technology Society.

Senior Division

First Place

Kendra Valdez

Grants High School

Sponsor: Shelby Alexander

Second Place

Isaac Ketcham

Farmington High School

Sponsor: Donna Schmidt

Junior Division

First Place

Ryan Erickson

Los Alamos Middle School

Sponsor: Barbara Jo Mullis

Second Place

Alex Caldwell

Our Lady of Fatima

Sponsor: Kathy Arnold

DID YOU KNOW?

Benjamin Franklin was instrumental in founding the Pennsylvania Hospital, considered to be the first public hospital in the U.S. (founded in 1751). The hospital's mission was to serve the mentally ill, along with providing medical care to poor citizens who could not afford a private physician. While raising money for the hospital, Franklin came up with a new idea for combining public (government) money with private donations, which created the first matching grant.

Editor's Note: The NMAAS recently approved and issued a formal position statement in support of the teaching of evolution. The NMAAS was one of several organizations filing this statement in support of recent court cases in other states.

The New Mexico Academy of Science Statement Concerning Evolution

For more than 100 years the New Mexico Academy of Science has been a strong voice for the teaching of sound science, both in New Mexico's schools and to the general public. This specifically includes the understanding of what science is, and how science is used to learn about the natural world using natural causality. In this spirit, the Academy adopts the following resolution:

Whereas the Theory of Evolution is one of the most thoroughly tested and confirmed scientific theories in existence, and

Whereas the Theory of Evolution has been derived from sound experimental methods and discovery of natural data and is based on natural laws of causality, and

Whereas the process of science requires that only natural causality be considered in science, and

Whereas the natural mechanistic explanations incorporated into the Theory of Evolution are sufficient to explain the presence of the diversity of life on earth, both past and present, and

Whereas the Theory of Evolution has proven to be predictive and evolution, itself, is observed in both nature and in the laboratory, and

Whereas other explanations of the diversity of life known by such names as creationism, intelligent design, and further expressions such as evidence against evolution, alternate interpretations of the data, and so forth, are based not in science but rather in a belief in supernatural causality, unsupported by scientific data, and in opposition to the use of established scientific methods,

Therefore be it resolved that the New Mexico Academy of Science supports all state and national leaders and public officials in their efforts to stop any attempt at replacing or supplementing the teaching of the Theory of Evolution in public education science class venues with any of the above named unscientific beliefs of how life on earth has come to be as it is over several billions of years.

Furthermore be it known that the New Mexico Academy of Science does not present this resolution so as to oppose the practice or beliefs in any religion; the intent of this resolution is to assure that science teaching remains independent of religious, social, and political pressures.

Approved by the NMAAS Board on 7 June 2006

Join the NMAAS Endowment Campaign and Support Science and Science Education in New Mexico

The NMAAS has instituted an endowment for the long-term support of the many science education programs of the Academy. If you have wanted to provide enduring aid to the important work of the Academy in supporting science and science education throughout New Mexico, this is the perfect opportunity. The NMAAS is a 501(c)(3) non-profit and all donations to the endowment are tax deductible. We ask all NMAAS members to remember the NMAAS Endowment Fund when planning their charitable giving. We especially encourage our Life Members to contribute now as Founding Contributors to the NMAAS Endowment in order to help build the endowment rapidly, and to remember the NMAAS in your long-range financial planning. THANK YOU.

New Mexico Academy of Science Endowment

To form an endowment for the purpose of creating a permanent, separate revenue generating source for supporting the many programs undertaken by the New Mexico Academy of Science (NMAAS) Board. The rules of the endowment are:

1. The funds donated to this endowment shall become part of the principal of the fund. The principal shall be invested, and shall remain invested, unless the entire endowment is dissolved by a legal vote of the NMAAS Board. The income from the investment of the principal may be used by the NMAAS as described in rule number 4, below.
2. The Treasurer shall manage the endowment. The Treasurer shall report on the endowment to the NMAAS Board as a restricted fund.* Management and investment strategy of the endowment shall be approved by the NMAAS Board.
3. In the event of a dissolution of the NMAAS, the endowment funds shall be donated as an endowment named the "New Mexico Academy of Science Endowment," to another science-related or science education-related non-profit corporation within the state of New Mexico, upon approval of such organization by the NMAAS Board. If no such organization can be approved by the NMAAS Board, the endowment shall be dissolved and the funds donated to another science-related or science education-related non-profit corporation within the state of New Mexico, upon approval of such organization by the NMAAS Board.
4. All or part of the income generated from the endowment fund may be transferred yearly to the NMAAS unrestricted fund, to coincide with the beginning of the NMAAS fiscal year, if the NMAAS Board so directs. Any income not moved to the unrestricted fund at the beginning of the fiscal year shall become automatically part of the principal of the endowment.
5. An eighty percent (80%) portion of any life membership, paid after the formation of the endowment fund, shall be deposited into the endowment fund.
6. Non-cash donations to the endowment shall either be held by the endowment or sold by the endowment, as determined by the NMAAS Board. Any proceeds from the sale of noncash donations shall be deposited in the endowment and become part of the principal of the fund.
7. The rules governing this endowment may be changed by a two-thirds majority of the voting members of the NMAAS Board.

*Restricted Fund – A fund whose use is restricted to a specific purpose by the donors to that fund or by decree by the organization holding the fund. An example of a restricted fund would be a grant given to the New Mexico Junior Academy of Science (NMJAS) for use by the NMJAS as prize money for science fair participants. An example of an unrestricted fund would be the general fund of the NMAAS.

Approved by the Board August 17, 2006

Founding Contributors to the New Mexico Academy of Science Endowment as of August 2006

<i>Marshall Berman</i>	<i>Maureen Romine</i>	<i>Dave Thomas</i>
<i>Mona Pomeroy</i>	<i>Harry Pomeroy</i>	<i>Marvin Moss</i>
<i>Jayne Aubele</i>	<i>Larry Crumpler</i>	<i>Glenn Kuswa</i>

Please add your name here - send a contribution to the NMAAS Endowment - see page 7

Membership Form New Mexico Academy of Science

New Membership[] Renewal[] For Membership Year other than 06[] Publications[] Donation[]

Date _____ Name _____

Employer/Firm/Affiliation _____ Title _____

Primary Interest (geology, biology, chemistry, physics, science education, etc.)_____

Mailing Address: _____

Phone _____ FAX _____ email _____

Check if your address is different from that on the mailing label of this newsletter []

NMAAS PUBLICATIONS	
<i>New Mexico Journal of Science</i> Set of all available pre-1992 back issues	\$10 _____
<i>From Sundaggers to Space Exploration</i> (NMAAS/Sigma Xi, 1986)	\$4 _____
<i>Dinosaurs of New Mexico</i> (NMAAS Journal v. 32, 1992)	\$10 _____
<i>The Importance of Agricultural Science in New Mexico's Economy</i> (NMAAS Journal v. 34, 1994)	\$10 _____
<i>Astronomy in New Mexico: Past, Present and Future</i> (NMAAS Journal v. 35, 1995)	\$10 _____
<i>New Mexico's Natural Heritage: Biological Diversity in the Land of Enchantment</i> (NMAAS Journal v. 36, 1996)	\$10 _____
<i>Environmental Management: Current and Future Needs</i> (NMAAS Journal v. 37, 1997)	\$10 _____
<i>Water Resource Issues in New Mexico</i> (NMAAS Journal v. 38, 1998)	\$10 _____
<i>Ensuring Sustainable Development of Arid Lands Through Time</i> (NMAAS Journal v. 39, 1999)	\$10 _____
<i>NMAAS Journal v. 40, 2000</i>	\$10 _____
<i>NMAAS Journal v. 41, 2001</i>	\$10 _____
<i>NMAAS Journal v. 42, 2002 (Centennial CD)</i>	\$10 _____
<i>NMAAS Journal v. 43, 2003</i>	\$10 _____
Subtotal:	\$ _____
+ Handling:	\$ 2.00
TOTAL:	\$ _____

Membership Class (check one)

[] Member \$20/year

[] Student \$15/year

[] Subscription \$30/year
(Libraries only)

[] Contribution to the \$ _____
NMAAS Endowment

Membership Subtotal: \$ _____

Donation Subtotal: \$ _____

Publication subtotal: \$ _____

Total: \$ _____

Membership includes 3 newsletters. and occasional special Journal of Science volumes (sent to life members and members who have paid their annual dues during the volume's year of publication).

Send check for membership and/or publications and donations, payable to NMAAS, to:

**New Mexico Academy of Science
1801 Mountain Rd. NW
Albuquerque, NM 87104**

Please...consider making a donation to the NMAAS Endowment to support our science education programs!

NMAS Newsletter
Volume 92 no. 2
August, 2006

**Last chance to renew your
NMAS Membership for 2006
(and receive this year's Journal of Science)**

and

**Become a Founding Contributor to the
New Mexico Academy of Science
Endowment fund!**



**NEW MEXICO
ACADEMY
OF SCIENCE**

Newsletter

1801 Mountain Rd NW
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