

# The New Mexico Academy of Science Begins the Darwin Celebration this Fall

Charles Robert Darwin was born on February 12, 1809 in Shrewsbury, England. In 2009, the scientific world will celebrate the 200th anniversary of his birth. The New Mexico Academy of Science will begin the celebration (a little early) this November...

With a free stage performance by noted Darwin actor Brian "Fox" Ellis of Fox TalesInternational (www.foxtalesint.com).

## Charles Darwin And The Voyage Of The Beagle

Imagine an evening at London's Royal Geological Society, with the affable, young Charles Darwin, among friends, telling the stories of his amazing adventure sailing around the world on HMS Beagle.

Storyteller and science teacher, Brian "Fox" Ellis steps into Darwin's shoes to model the scientific process, and engage listeners in a discussion of the facts. Equal parts dramatic storytelling, standup comedy, and show and tell, the audience is immersed in the intellectual world of one of history's greatest scientific minds.

# A free and fun event for the entire family.....

November 15, 2008
2:00 - 4:00 PM

@Domenici Education Center
Auditorium,
University of New Mexico
Health Sciences Center.

Event Sponsored by University of New Mexico Health Sciences Center and School of Medicine Office of Research.

#### THANK YOU!

Sandia/Lockheed Martin for funding the 2008 NMJAS awards Intel

for travel support for the 2007 NMJAS winner American Chemical Society for cash awards for the 2007 Outstanding NM Science Teachers.

### NMAS Names 2007 Outstanding NM Teachers

Karen Greigo-Kraig
Pojoaque Valley M.S.
Outstanding Secondary Science Teacher

Chasity Montes
Smith Elemntary
Deming NM

Outstanding Elementary Science Teacher

# Call for Papers New Mexico Journal of Science

The New Mexico Academy of Science is accepting scientific articles for its special journal publication tentatively entitled "Energy in the Southwest." Articles should be based on research from the New Mexico-Mexico border area or relevant to these regions. All articles will be subject to peer review. The Journal's thematic emphasis will be on matters related to the production, distribution, and consumption of energy. Other suitable topic areas are border resources, new technologies, conservation, and health and environmental matters.

Contact NM Journal of Science Editor, Dr. Kurt Anderson, at kurt@nmsu.edu for more information.

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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

Member of the National Association of the Academies of Science

### Monetary Gifts to the Academy:

Angela Wandinger-Ness Harry Pomerov Glenn Kuswa

Thank You!

#### NMAS MEMBER NEWS...

### REMEMBERING B.K. GRAHAM 1923-2007

Nationally-recognized NM Educator Past-President, NMAS.

Beverley Keith (Bev or B.K.) Graham was born in Lamy, NM and grew up in Las Vegas, NM. He graduated from high school at the age of 15 and a few weeks later enlisted in the Navy to serve in WWII. He earned an M.A. in Chemistry from Highlands University and taught math, chemistry and physics in NM and Oregon. In 1955 he was named NMHU Teacher of the Year.

He served as NMAS President twice -- in 1957 and in 1972. He continued to be active in, and very supportive of, NMAS... He donated money each year for membership dues for the Outstanding Science Teachers of the Year and for other teachers and students as well.

Bev. was, for 26 years, the statewide science consultant for the NM Department of Education. He served on the Textbook Adoption Committee, and also worked on standards for teaching science. For several years, he wrote and published "The Spectrum." a newsletter sent to New Mexico science teachers. He has contributed greatly to science education in New Mexico.

On February 5, 2008, the NM Department of Public Education and the House of Representatives, officially read a memorial in his honor.

The New Mexico Academy of Science is so proud of what he accomplished for science education in New Mexico; he will be greatly missed

Contributed by Harry Pomeroy

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### President's Message – May 2008 Angela Wandinger-Ness

Did you know: a week's worth of the **New York Times** contains more information than a person was likely to come across in a **lifetime** in the 18th century....**1.5 exabytes** (1.5 x 1018) of unique new information will be generated worldwide this year....more than in the previous **5,000** years'? These and more astonishing facts about change in science and technology in the 21st century are highlighted in the YouTube video Shift Happens... (www.albinoblacksheep.com/video/shifthappens) by Karl Fisch1. New Mexicans and resident scientists must be up to the challenge of keeping abreast of new developments in science and technology and maximizing the benefit of discovery for future generations.

Today we have access to vast amounts of information at our fingertips with over '2.7 billion GoogleTM searches performed each month'1. For most of us it is hard to imagine life and times before GoogleTM, let alone two hundred years ago. It was a time when deeply impressed by his discoveries while traveling aboard the HMS Beagle, Darwin labored for over 20 years to craft his 'natural selection' theory and publication On the Origin of Species2-4. More than 70 years elapsed before the 'synthesis' of multiple fields enabled full realization of the importance of Darwin's discoveries. It was only when the new field of population biology recognized the enormous genetic diversity within populations and how ecological factors shaped these that a mechanistic explanation for natural selection was forged. Today Darwin and the concept of 'natural selection' are mainstream knowledge and remain an important foundation for modern biology; true testimonies to the magnitude of Darwin's accomplishments.

2009 marks the 200th anniversary of Darwin's birth and the 150th anniversary of his landmark publication. The New Mexico Academy of Science (NMAS) will pay tribute to Darwin's contributions to science with a number of special events. A special, free public performance depicting Darwin's life and times will take place on November 15, 2008, the documentary film A Flock of Dodos will be aired, a 2009 Darwin edition of the New Mexico Journal of Science is planned and the annual banquet will feature a speaker on evolution.

We are again at a crossroads in biology, a time when genomics, nanotechnology and bioinformatics discoveries promise to revolutionize medicine. Personalized medicine is on the horizon and will require a well-educated youth and public to make rationale choices regarding their healthcare. Engineers, biologists, chemists, computer scientists, physicians, pharmacists, nurses, social workers, among others will be needed to work together in interdisciplinary teams and aid the discoveries for yet another new field—clinical translational science. Globalized economies, managing our energy resources and minimizing our carbon footprint present challenges that necessitate creative new technologies and harnessing of biological discoveries. Through its commitment to science and science education, the NMAS invites New Mexico youths to become active participants in the Junior Academy of Science and Youth Camp, recognition of outstanding teachers for awards and a close collaboration between educators and visiting scientists.

If you are a current NMAS member, we thank you for your support. If you have not yet seen what the NMAS has to offer, we invite you to join and become a part of the science community that has been a vibrant part of New Mexico's tradition since 1902.

1Video by Karl Fisch, Director of Technology at Arapahoe High School in Littleton, CO and generalized by Scott McLeod, Professor, Univ. of Minnesota. 2http://en.wikipedia.org/wiki/Charles\_Darwin

3http://en.wikipedia.org/wiki/Natural\_selection

4http://en.wikipedia.org/wiki/The\_Origin\_of\_Species

Special thanks to K. Ness for critical reading and insightful comments.

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# Report on the Annual meeting of the AAAS/NAAS/AJAS

byLynn Brandvold,Director, NMJAS

This year's annual meeting of the American Junior Academy of Science (AJAS) was held in Boston on Feb 13-17. This meeting for young scientists from across the U.S. is sponsored and arranged by some very dedicated members of the National Association of Academies of Science (NAAS) of which New Mexico is a member. The senior division winner of the 2007 NMJAS Scientific Paper Composition, Shandiin Copeland of Fruitland, NM, attended the meeting with Lynn Brandvold, a NAAS and AAAS delegate. A grant from Intel provided travel support.

The opening lecture was given by Dr. Eric Lander, Director of the Broad Institute at MIT, entitled "Genomics and the Future of Medicine". Dr. Landers is an outstanding lecturer who can make a complicated subject easily understandable. The lecture was followed by tours of MIT research laboratories and the MIT Science Museum. The ever popular "Breakfast with Scientists" with over 30 scientists including 3 Nobel laureates joining the students for one-on-one discussions was held Friday morning. Friday afternoon the students presented their projects in poster format to scientists attending the NAAS/AAAS meetings.

Saturday morning L'Oréal sponsored a breakfast which featured a panel composed of three young women scientists, all recipients of the prestigious L'Oréal USA Fellowship for Women in Science, who discussed their pathways to science, their careers—the obstacles and challenges faced—and answered questions from the students.

Students were also able to attend AAAS meetings, and gave oral presentations of their research. The meeting was filled with highlights and excitement.

### 2008 National Association of Academies of Science Assembly of Delegates Meeting

The delegates heard reports and attended to the regular business of the association. Plans were discussed for next year's AJAS meeting in Chicago. Even more importantly, the assembly approved a policy resolution introduced by Lynn Elfner and previously approved by the NAAS Board. The resolution advocates the establishment of state level coalitions for Science and Technology (S&T) policy advice to local and state governments. Specifically the resolution urges academies to establish state level coalitions or other mechanisms for S&T policy advice to local and state governments including governors, cabinet agencies and legislatures and to reach out, cooperate with, and support existing policy mechanisms and organizations. The NMAS Board has been working in this direction for many years and it is gratifying to see it now as national policy.

### Sandia sponsored successful AAAS regional meeting April 10-12, 2008

Contributed by Gretchen Jordan, Sandia Nat. Labs.

The 83rd annual meeting of the Southwestern and Rocky Mountain (SWARM) region of the American Association for the Advancement of Science (AAAS) was held in Albuquerque April 10-12, 2008. The meeting was organized by Sandia National Laboratories and the University of New Mexico and hosted by UNM. The conference's theme — Meeting Today's Challenges through Collaborative Science, Engineering, and Technology — emphasized the importance of collaboration across disciplinary boundaries.

Sessions included energy, sustainability, health, nanotechnology, collaboration, and science education. More information and many of the presentations can be found at the SWARM website: <a href="http://www.sandia.gov/AAAS-SWARM">http://www.sandia.gov/AAAS-SWARM</a>.

The SWARM region of AAAS includes New Mexico, Arizona, Texas, Oklahoma, Kansas, Colorado, Nebraska, Wyoming, South Dakota, North Dakota, and Montana, as well as Saskatchewan and Manitoba, Canada; and Sonora, Chihuahua, and Couahuilla, Mexico.

### Spotlight on Health Research at 2008 AAAS-SWARM meeting

Infectious diseases and global health and security, which are major challenges for our future, were the topics of interest at the 2008 AAAS-SWARM meeting. Many diseases have been re-emerging as a result of drug resistance. Amongst these are the increased incident rates of tuberculosis in first world countries. While this disease has been ravaging poorer nations for decades, with approximately one third of the worlds population affected, the emergence of drug resistant stains is a major concern. In light of this observation, a novel and temperature stable vaccination strategy is the only true alternative, as presented by Graham Timmins from the University of New Mexico.

On the other hand some diseases are just emerging. SARS hit the world and the headlines out of the blue, proving to be a truly emerging disease. As Kevin Harrod from the Lovelace Respiratory Research Institute outlined, the pathogenesis of this disease is not fully understood and the risk of another out break is looming over us. Another area of emerging disease discussed by Mike Holbrook from the University of Texas Medical Branch (UTMB) in Galveston was tick borne viral infections. Like the plague, these infections rely on vector borne transmission. The importance and risk of these diseases are highlighted in the current problems seen in Brazil. Given the ever expanding area in which we humans are living, it is only a question of when and not if, -we will discover novel infectious diseases.

Classic bacterial diseases such as the plaque (plague?) and tularemia have been with us for centuries. These two diseases are of local southwestern interest, since pets and humans get regularly infected by them. As Elizabeth Carles from Jens Poschet's laboratory and Roberto Rebeil, all at Sandia National Laboratories outlined, Y. pestis has adapted to survive in both its vector (the flea) and mammalian hosts by manipulating its environment. One of the striking features of these diseases is that they are able to avert or subvert the immune response and can therefore rapidly grow inside the host, often with lethal consequences. In addition, both have been used as biological warfare agents.

Obviously, infectious diseases may constitute a major threat to global health. Since much of the research conducted in these fields is based on dangerous pathogens, a session was dedicated to biosecurity. Malynda Aragon from Sandia presented carvershock, a defense software which has been developed to assess the risk of contamination of food supplies. Lisa Astudo-Gribble presented the efforts of the bio-threat reduction group at Sandia on how to reduce the risk of having biothreat agents removed from research laboratories worldwide. In the sprit of the collaborative efforts, Mike Holbrook, UTMB detailed the potential for collaborations with the new Biosafety Level 4 (BSL4) National Laboratory at the University of Texas Medical Branch in Galveston. Biosafety Level 4 is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening disease.

To cope with the prevention of pandemic outbreaks, many organizations, including the US military, are involved in modeling to understand the spread of disease and how to handle an ever increasing risk. This was presented by physician and General Annette Sobel, also from Sandia, in Saturday's plenary session on global health.

Last but not least we had a session on how to assess the potential health risk posed by the development of Nanomaterials. Kirsten Kulinovski, of Rice University and the International Council on Nanotechnology, presented the results of two workshops, which were designed to develop policies for nanotoxicology research on an international level. This presentation showed clearly that the effort has been stepped-up and that international guidelines are required to avoid a negative perception of nanotechnology similar to what has happened for genetically modified food.

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### The 2007 NMAS Outstanding Science Teacher Awards

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

### Karen Griego-Kraig

I am honored to receive the Academy's distinguished award and am grateful to those who nominated me.

I have been fortunate to have always been among inspirational individuals. I am the daughter of educators who turned questions I had into an opportunity for exploration, the student of a junior high science teacher who made learning a fascinating journey, and the wife of a scientist who shares my passion for science.

This year I began my 25th year in education, my 23rd at Pojoaque Valley Middle School, and my final year in the field, with a continued determination to make science friendly, meaningful, and tangible. I initiated single-gender classes in Math and Science and have witnessed a marked improvement in young women's interest in pursuing careers in science. Additionally, this year marks the tenth year that I have coordinated a Math and Science Olympics: every student in every classroom, a participant. The final competition in a capacity-filled gym places academic endeavor in the limelight.

This year, as in my first year in the classroom, I will continue to lead by example. I am not a science authority and often learn along with my students. They see that learning is lifelong and enriches us in all aspects of our lives. My fondest hope is that I will continue to inspire my students to question, to become lifelong learners, and to appreciate and protect the wonders of our imperiled world.

### DID YOU KNOW?

From 1831 to 1836 Darwin served as naturalist aboard the H.M.S. Beagle on a British science expedition around the world. He later wrote about the experience:

"As far as I can judge of myself I worked to the utmost during the voyage from the mere pleasure of investigation, and from my strong desire to add a few facts to the great mass of facts in natural science."

#### -- Charles Darwin

### Chasity Montes

It has been a great honor to receive this award for being an Outstanding Elementary Science Teacher for 2007.

The results of my hard work have been validated by our NM Standards Based Assessment results in Science. In 2006, my 3rd grade students achieved an 80% proficiency rate and in 2007, they achieved an 89% proficiency rate, exceeding the district (80%) and state (83%) average.

I would like to thank New Mexico Academy of Science for the recognition of my outstanding scores and my dedication to science and my students.

This really opens the door for me knowing that over the years of teaching I am in my prime when it comes to science. This lets me know not to change my teaching techniques because what I'm doing in the classroom it's working!

### DID YOU KNOW?

Darwin was not inspired much by his formal child-hood schooling, and found his only pleasures there in reading Shakespeare's historical plays, the poems of Byron, Scott, Thomson, and the Odes of Horace.

His interest in natural science was spurred on by events outside his formal education. These events were: (1) the many hikes he went on in Northern Wales, (2) books he read during this period, and (3) helping his brother, Erasmus, in his chemistry lab in the backyard.

Darwin continued to develope his interest in natural history while studying first medicine at Edinburgh University, then theology at Cambridge.

His five-year voyage on the Beagle established him as a scientist, and publication of his journal of the voyage made him famous during his lifetime as a popular author.

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### <>>>Member in the News >>>> Dr. David Hsi

Contributed by Lynn Brandvold with additional information from Angela Wandinger-Ness

In September the Chinese American Citizens Alliance presented its highest honor, the Spirit of America Award, to Dr. David Hsi for a lifetime of dedicated service. This is the latest in a long series of well deserved honors for Dr. Hsi, past-President of the NMAS. In 2004, he was inducted into the Asian Academy Hall of Fame by the Asian Leaders Association.

David Hsi was born in Shanghai and emigrated from China with his family to escape the Japanese invasion of China prior to WWII. He became a U.S. citizen in 1961. He earned a Masters Degree from the University of Georgia and a Ph. D. in Agronomy from the University of Minnesota, where he met his wife-to-be, Kathy Shen Wen Chiang, a former neighbor in Shanghai, who was attending graduate school in music and mathematics. They married and raised their family in Clovis, NM. He worked for New Mexico State University for many years and retired as Professor Emeritus in 1992; he has been an adjunct Professor of Biology with the University of New Mexico since 1986. He is a Senior Olympics multi gold medalist in badminton.

Dr. David Hsi is a past President of the NM Academy of Science, the National Association of Academies of Science, and the Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science. He is a founding member and president of the New Mexico Chinese Association, president of the Albuquerque Sister Cities Foundation, co-chair of New Advocate for children and Families, and has served as a member of the APS School Board.

Dr. Hsi says that volunteerism is uniquely American and it "has rubbed off" on him; he currently volunteers as a member on the Albuquerque Biological Park Advisory Board and the Albuquerque Public Schools' Superintendent Community Council on Equity. He is also currently president of the Friendship Force of New Mexico, a Hixon Fellow and Legion of Honor member of the Kiwanis Club, a board member of the Explora Science Center and Children's Museum, trustee of the All Faiths Receiving Home, a trustee of Sandia Preparatory School, and he prepares Sunday School lessons and coordinates Bible studies while being a deacon at the First Presbyterian Church. He has been honored by the City of Albuquerque who have hung his picture in the Albuquerque Convention Center's "Senior Hall of Fame" for his outstanding service to the community. The NM Academy of Science is proud to claim him as a member.

### NMAS 2007 Symposium was Energizing!

Contributed by Glenn Kuswa

The New Mexico Academy of Sciences 2007 Annual Symposium featured an Electricity Portfolio Simulation Model, developed and demonstrated by Tom Drennan (Senior Economist, Sandia National Labs (SNL)) and Richard Klotz (Systems Modeler, Hobart and William Smith Colleges). This ingenious model effectively simulates the cost, environmental impact, sustainability and health and safety of various combinations of nuclear, solar and wind and coal power plants (http://www.prod.sandia.gov/cgi-bin/techlib/accesscontrol.pl/2005/056090.pdf); and is a boon to lawmakers, public interest groups and power companies in predicting the consequences of energy portfolio choices and balancing competing needs with respect to cost and environmental considerations. Following the demonstration, a panel discussion on nuclear energy, solar energy, conservation and utility management was presented by: Dr. Thomas Mancini, Solar Power Program Manager, SNL; Dr. George W. Rhodes, Chief Scientist, PNM Resources; Dr. Marshall Berman, Technical Dept Mgr, SNL (retired), Dr. Arnold B. Baker, Chief Economist, SNL; and Dr. Robb Thomson, NIST (retired).

The symposium was followed by the NMAS annual banquet, Outstanding Science Teacher Awards, and Distinguished Lecture celebrating the International Polar Year, also a focus of educational events held at the NM Museum of Natural History for the month of October. Dr. Cristina Takacs-Vesbach (Biology, University of New Mexico) discussed the Antarctic McMurdo Dry Valley ecosystem and the wealth of microbial diversity and adaptation she has discovered there.

(http://www.engr.psu.edu/mgooseff/antarctic proj.html).

# Support Science and Science Education in New Mexico through the NMAS Endowment

Contributors to the New Mexico Academy of Science Endowment as of February, 2008

Marshall Berman Maureen Romine **Dave Thomas** Mona & Harry Pomeroy Marvin Moss Glenn Kuswa Jayne Aubele Larry Crumpler Stirling Colgate Robert Amai Arthur Guenther Debra Thrall David Hsi Barry Clark Malva Knoll **David Steinhaus** 

Malva Knoll David Steinhaus
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William Moffatt Aija and Philip Thacher
David Steinhaus Leonard and Patricia Duda
David Sharp David and Ruth Duggan
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Donivan Porterfield Warren Brown John Tyson Beulah Woodfin

We thank those listed above who have made multiple contributions, and we thank the several anonymous donors who have given contributions to NMAS through the United Way!

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### Membership Form New Mexico Academy of Science

New Membership [	] Renewal 08 [ ] Membersh	nip Year other than 08 [ ] Publication	ons [ ] Donation [ ]
Date	Name		
Employer/Firm/Affil	iation	Title	
Primary Interest (ge	ology, biology, chemistry, phy	ysics, science education, etc.)	
		email	
Check if your addres	ss is different from that on th	e mailing label of this newsletter [ ]	]

NMAS PUBLICATION	IS
New Mexico Journal of Science Set of all available pre-1992 back issues	\$10
From Sundaggers to Space Exploration (NMAS/Sigma Xi, 1986)	\$4
Dinosaurs of New Mexico (NMAS Journal v. 32, 1992)	\$10
The Importance of Agricultural Science in New Mexico's Economy (NMAS Journal v. 34, 1994	\$10
Astronomy in New Mexico: Past, Present and Future (NMAS Journal v. 35, 1995)	\$10
New Mexico's Natural Heritage: Biological Diversity in the Land of Enchantment (NMAS Journal v. 36, 1996)	\$10
Environmental Management: Current and Future Needs (NMAS Journal v. 37, 1997)	\$10
Water Resource Issues in New Mexico (NMAS Journal v. 38, 1998)	\$10
Ensuring Sustainable Development of Arid Lands Through Time (NMAS Journal v. 39, 1999)	\$10
NMAS Journal v. 40, 2000 NMAS Journal v. 41, 2001 NMAS Journal v. 42, 2002 (Centennial CD) NMAS Journal v. 43, 2003	\$10 \$10 \$10
Science on the Border  (NMAS Journal v. 44, 2006) Subtotal: + Handling: TOTAL:	\$10 \$ \$ 2.00 \$

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Membership	Class	(cneck	one

[ ]	Member	\$25/year
[]	Student	\$15/year
[]	Subscription (Libraries only)	\$30/year
[]	Contribution to the NMAS 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 NMAS, to:

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

Please...consider making a donation to the NMAS Endowment to support our science education programs! Page 8 NMAS Newsletter

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# Please Renew your NMAS Membership for 2008

It's that time again....If you have not yet paid your 2008 dues, please fill in the membership form on page 7 and send it with your membership dues in the amount of \$25 (it is still just \$15 for students). THANK YOU

### 2008 NMAS Slate of Officers

The following slate of officers has been nominated to fill unforseen vacancies in the NMAS Board.

Please indicate your choice below and return this to the Academy, with your membership dues/renewal.

President: Angela Wandinger-Ness

President-Elect: Linda Fey Vice President: Laura Crossey Secretary: Mona Pomeroy Treasurer: Glenn Kuswa

I approve the 2008 slate of officers \_\_\_\_\_

I do not approve the 2008 slate of officers \_\_\_\_\_

Write-in candidate(s) \_\_\_\_\_

For the office(s) of:

