Kentucky Academy of Science

NEWSLETTER

http://www.kyscience.org Susan Templeton, Editor January 2010

The Voice of Science in Kentucky

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Editor's Note: When viewing the Newsletter in Acrobat Reader the Table of Contents (TOC) contains live links to each article; at the bottom right of each page is a link back to the TOC!

The KAS Newsletter is published in January, May and August. Current and archived issues are available at http://www.kyscience.org. You may contact the KAS Newsletter Editor at susan.templeton@kysu.edu.

From the President...

I am honored to represent the Kentucky Academy of Science as President this year. With 1,829 members, we are the largest organization in the Commonwealth serving social, behavioral, biological and physical scientists, engineers and mathematicians. I thought I would take this opportunity to share with you some of the things that are going on in the state that I think are important to the future of science in the Commonwealth and therefore, important to the future of the Academy. I apologize to those who are already involved in one or more of these initiatives and thus may be bored reading this but I will take that risk because I suspect there are many members who do not know but who will want to make their voices heard to help shape and support these initiatives. Academy members play an important role in strengthening science technology, engineering and mathematics (STEM) education and workforce development in the Commonwealth. Many of us are academics, directly involved in didactic and laboratory classroom teaching, others of us mentor in the workplace and participate in outreach to schools and community organizations. Our organization provided the opportunity for 120 high school students to present their work at the Junior Academy of Sciences last spring and for 213 undergraduates and 44 graduate students to present their work at our annual state wide meeting this fall. Our annual meeting at NKU this year was spectacular and I can't pass up the opportunity to thank K. C. Russell and his local organizing committee for seamlessly hosting 773 of us on November 13 and 14.

The Kentucky STEM taskforce, made up of educators, government representatives and those from private enterprise, made a series of recommendations designed to increase the number of children choosing an education path resulting in a STEM degree. One important outcome is the revision of educational standards required by Senate Bill 1. Senate Bill 1 calls for a revision of standards to be based on national and international benchmarks to increase the rigor and focus of K-12 content. The standards for mathematics are well on their way to completion, the process for revising the science standards is just beginning. Postsecondary introductory course standard reviews are occurring simultaneously to ensure alignment. The Council on Post Secondary Education (CPE) is overseeing the process and there is information on their web site and a time line that includes opportunities for stakeholder input. Academy members who are employed by post secondary educational institutions can also provide input through their chief academic officers.

One way to increase the number of Kentuckians who choose STEM fields is to actively educate and encourage children about the opportunities they will have if they follow a STEM pathway. The STEM task force recognized that it will be important to expand hands-on, real life examples of STEM utility in the curriculum. While the Academy provides support and encouragement to high school and college students who are already interested in STEM, I hope to communicate through the year about other ways academy members are already involved and/or can become involved in working on the pipeline. If you have a story to share, please submit it for inclusion in the next newsletter. Women continue to be underrepresented in most STEM fields. Academy members who are interested in this problem can get involved with the Kentucky Girls STEM collaborative, an organization that seeks to convince girls, their parents and teachers that STEM careers are desirable, attainable and fun.

In addition to our members' educational activities, our member scientists, mathematicians, and engineers improve the quality of life in the Commonwealth through their research and development activities. Ten

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Inside this issue

2009 Annual Meeting

The 95th meeting of the Kentucky Academy of Science was held at Northern Kentucky University on November 13-14, 2009. The meeting was very well attended with a total of 773 registered, including 492 students; the largest number in both categories ever at an Academy meeting.

The meeting started on Friday evening with Dr. Margaret Hanson, Professor of Physics from the University of Cincinnati, presenting an interesting talk on open star custers in our galaxy. Prior to and following the Symposium, the Haile Digital Planetarium provided planetarium shows.

Saturday had a full day of presentations, both power point and poster, with the well-attended afternoon Plenary Session being the final presentation. Dr. Graham Cooks, Distinguished Professor of Chemistry from Purdue University, presented a talk entitled on trace analysis by mass spectrometry. The Kentucky Society of Professional Geologists held their 13th Annual Fall Conference in conjunction with the Academy.

The meeting concluded with the Awards Banquet. Dr. Len Peters, Secretary of the Energy and Environment Cabinet, Commonwealth of Kentucky, was the featured speaker;his presentation was on opportunities for engineers. The winners of the Superlative Awards, the URCs and GRCs are provided elsewhere in this Newsletter.

There were 203 oral presentations including 88 URC and 44 GRC entries. There were 189 posters with 125 entered in the URC. The total breakdown by section is as follows:

	Oral			Poster	
Section	#	URC	GRC	#	URC
Agricultural Sciences	23	6	4	14	8
Anthropology & Sociology	6	0	1	0	0
Botany	7	1	0	4	3
Cellular & Molecular Biology	17	15	2	16	14
Chemistry	22	10	12	44	30
Computer & Information Sciences	6	4	0	4	3
Ecology & Environmental Sciences	16	3	6	18	9
Engineering	5	2	2	2	1
Geography	8	0	0	0	0
Geology	6	3	0	6	3
Health Sciences	5	4	0	9	7
Mathematics	12	3	0	1	0
Microbiology	7	5	2	10	7
Physics & Astronomy	15	7	0	9	6
Physiology & Biochem.	12	10	1	13	9
Psychology	16	11	5	19	14
Science Education	6	1	0	5	2
Zoology	14	3	9	15	9

From Dr. Robert Creek, KAS Program Director

2009 Undergraduate Research Competition

Congratulations to the students who won awards. Congratulations also to their mentors and a special thanks to those who devoted their time to judge the presentations.

Agricultural Sciences
Oral 1st: Jarred Earnest - Asbury
Oral 2nd: Stephanie Kortyka - Bellarmine
Oral 3rd: Latoyah Elliott - KSU
Poster 1st : Crystal Walker - U. K.
Poster 2nd: Cecilia Albers - Berea
Poster 3rd: Claice Esch - WKU

Anthropology & Sociology
Oral 1st: Samantha Gambill - NKU
Oral 2nd: Jamie Cupp - NKU

Botany
Oral 1st: La'Quida Bowie - KSU
Poster 1st: Sarah Roebker - Bellarmine
Poster 2nd: Catherine Brumm - Bellarmine

Cellular & Molecular Biology
Oral 1st: Kayla Kinker - Berea
Oral 2nd: Kikshya Bastakoty - Berea
Oral 3rd: Bonnie McCullagh - WKU
Poster 1st: Aric Johnson - WKU & Justin Penticuff - Transylvania
Poster 2nd: Osniel Gonzalez Ramos - NKU
Poster 3rd: Alisha Holmberg - Berea
Poster Hon. mention: Devin Rogers - U. K.

Chemistry
Oral 1st: Anthony Haskamp - NKU
Oral 2nd: Dennis Ashford - NKU
Oral 3rd: Adam McCalllum - NKU
Poster 1st: Aaron Swomley - NKU
Poster 2nd: Eric Vanover - WKU
Poster 3rd: Carmen Dibaya - Berea

Computer & Information Sciences
Oral 1st: Joshua Bradley - Morehead
Oral 2nd: Kimberly Hatcher - NKU
Oral 3rd: Christopher Estes - Morehead
Poster 1st: Malika Ahmed - WKU
Poster 2nd: Alan Simmons - WKU
Poster 3rd: Alexander Hare - WKU

Ecology & Environmental Science
Oral 1st: Tanner Yess - NKU
Oral 2nd: Kelly Thayer - U. of L.
Poster 1st: Susan Brown - Morehead
Poster 2nd: Maranda Elswick - Pikeville
Poster 3rd: Aaron Hulsey - WKU

Engineering
Oral 1st: Anthony Karam - U. K.
Oral 2nd: Brian Jennings - Murray
Poster: Deborah Hickman - Transylvania

Geology
Oral 1st: Tie - Christopher Robard & Tin Nguyen - Murray; Kristin Leftwich - WKU
Poster 1st: Zach Mergenthal - NKU
Poster 2nd: Katybeth Coode - NKU
Poster 3rd: Tie - Michael Glassmeyer - NKU; Jesse Amundsen - NKU

Health Sciences
Oral 1st: Kenton Sena - Asbury
Oral 2nd: Shakeeb Ahmad -Bellarmine
Oral 3rd: De'Andra Robertson - KSU
Poster 1st: Daniel Eschenbach - Bellarmine
Poster 2nd: M. Elizabeth Deel - U. K.
Poster 3rd: Daniel Schucter - NKU

Mathematics
Oral 1st: Meredith Stevenson - Murray
Oral 2nd: Amir Ahmadi - Morehead
Oral 3rd: Tichaona Chiwandamira & Sara Evans - Berea
Poster 1st: Bradley Schneider - Morehead

Microbiology
Oral 1st: Tyler Elam - Morehead
Oral 2nd: Crystal Thomas - Berea
Oral 3rd: Sarah Lance - Asbury
Poster 1st: Elizabeth Shelley - NKU
Poster 2nd: Emmanuel Davis - Berea
Poster 3rd: Alexis Henry - NKU

Physics & Astronomy
Oral 1st: Benjamin Draper - Bellarmine
Oral 2nd: Jimmy Rop - Berea
Oral 3rd: Mohammed Yusuf - Berea
Poster 1st: Richard Jelsma - Bellarmine
Poster 2nd: Tabitha Aldridge - Morehead
Poster 3rd: Mark Hageman - Thomas More

Physiology & Biochemistry
Oral 1st: Emily Green - Centre
Oral 2nd: Andrew Crisologo - Asbury
Oral 3rd: Tie - Jordan Feigerie - Centre; Leah Frazier - WKU
Poster 1st: Jeff Marschall - U. of L.
Poster 2nd: Cellestine Kamau-Cheggeh -NKU
Poster 3rd: Stephanie Hayes - NKU

Psychology
Oral 1st: Emily Sither - Centre
Oral 2nd: Meredith Blankenship - NKU
Oral 3rd: Catherine Moonan - Centre
Poster 1st: Tommy Carroll - Asbury
Poster 2nd: Lauren May - Morehead
Poster 3rd: Tie - Bozhidar Bashkov - Berea; Jeffrey Dobson - Morehead

Science Education
Oral 1st: Stuart Kenderes - WKU
Oral 2nd: Jessica Carnes, Amy Jones, Chris Yaluma - Berea
Poster 1st: Laura Rihm - NKU
Poster 2nd: Sarah Hamilton - NKU

Zoology
Oral 1st: Joseph Marquardt - WKU
Oral 2nd: Jason Hall - WKU
Oral 3rd: Bethany Coffey - WKU
Poster 1st: Patrick Stewart - WKU
Poster 2nd: Ann Cooper - U. K.
Poster 3rd: Tie - Amy Etherington - Campbellsville; Adam Meador, Njine Mouapi, Krystina Sandefur, Lee Ware - Berea

Messages from the Executive Director

Thank you to the 2009 KAS Annual Meeting Sponsors.

Gold Level
American Synthetic Rubber Company
Eastern Kentucky University Graduate School
Kentucky Society of Professional Geologists
Sud-Chemie, Inc.

Bronze Level
Morehead State University Graduate Programs
Marry State University Graduate Programs

In-Kind
Northern Kentucky University
Northern Kentucky Convention & Visitor Bureau

I enjoyed seeing everyone at the 2009 Annual Meeting. Photo galleries of the meeting are now available on the KAS webpage. KAS continues to grow with our membership nearing the 2000 mark thanks in part to our Enhanced Affiliate Program. If you ever have a questions regarding KAS or would like to share your talents with KAS and become more active in our nearly century old organization please contact myself or any KAS Governing Board member.

Throughout the year I receive questions regarding KAS Enhanced Memberships and have composed a list of the most common questions.

How do I renew my enhanced KAS membership for 2010? If you are currently an enhanced member, you do NOT need to update your membership for the new year as this is completed automatically when your institution renews their affiliation for 2010. Please encourage your affiliation to continue their support of KAS as an Enhanced Affiliate.

Why am I not receiving a hard copy of the JKAS? KAS Enhanced members receive an electronic subscription to the JKAS as part of their membership package. To access your electronic copy of the Journal log in as a member at the KAS website (http://www.kyscience.org). Click on Journal.

How do I receive a hard copy of the Journal? If you are a current Enhanced KAS Member and would like to receive a hard copy of Volume 71 Numbers 1 and 2 please send your name, e-mail address, phone, and full mailing address with a $20 payment to:

Kentucky Academy of Science
PO Box 22579
Lexington, KY 40522-2579

Can I update my membership profile information? Yes, Log into your KAS membership account and click "Update Your Profile" on your profile page.

How do I join KAS as an enhanced member? Visit www.kyscience.org, select Join, select Join and Pay Online (you will not be asked to pay for membership), Select Yes to Enhanced and click submit, provide your school affiliated email address, and complete the registration process.

Who should I contact if I have questions regarding my membership? Please contact Jeanne Harris, KAS Executive Director at executivedirector@kyscience.org, 859-227-283.

Jeanne Harris, Executive Director

A Letter to the Editor

State Representative Jim Gooch Jr., who co-chairs the Kentucky House Committee on Natural Resources and Environment, is a longstanding and vocal denier of human contributions to global climate change. In defense of legislation he recently introduced to forbid state or local governments from enacting or enforcing limits on CO2 emissions, Mr. Gooch was quoted in a Jan. 7 Courier Journal article as saying, "I do not think our scientists understand the science of our planet."

As Kentucky scientists, it is tempting to dismiss Mr. Gooch with the same lack of regard he has shown the scientific community. This would be a mistake. Past experience with science deniers in the Commonwealth has taught us that disinformation left unchallenged becomes ingrained in the public consciousness, with disastrous consequences for our state and nation.

Instead, we should invite Mr. Gooch to share with us the source of his superior grasp of geophysics, and to show us where we went wrong. This should be simple. Mr. Gooch need not resort to trolling for gossip among hacked personal e-mails of a few researchers at an East Anglia laboratory. All the relevant evidence on climate change is freely available to him in the published scientific literature.

Mindful of our mission as "The Voice of Science in Kentucky," KAS's public response should emphasize that unlike politics, the scientific process is entirely transparent. In each of the thousands of climate studies that Mr. Gooch so casually dismisses, all the methods, experimental designs, instrumentation, data, and modes of analysis are written out in detail and presented for review and replication by anyone who wants to take the time to master the discipline and check the facts.

Though there is still much to learn, after extensive and critical examination of the wealth of available data, the international scientific community has reached a firm consensus that our current rate of fossil fuel consumption is changing the world's climate. If Mr. Gooch would like to second-guess these findings, he is welcome to read through all these research reports and to formulate a responsible counterclaim.

If this is his intent, Mr. Gooch has an obligation to identify which of the vast body of published observations he can prove to be mistaken, which statistical analyses contain mathematical errors, which of the established principles of physics and chemistry need to be overturned. If Mr. Gooch has access to contradictory atmospheric data, then he should publish his discoveries in a peer-reviewed journal. No one would be happier to examine his revolutionary findings than the career professionals who are dedicated to the pursuit of objective scientific truth.

However, if Mr. Gooch cannot provide sufficient physical evidence to contradict these conclusions, then he needs to apologize to all the men and women of science who have spent decades in technical training and long hours on the job taking measurements, confirming their accuracy, publishing their results, subjecting their conclusions to rigorous review, and constantly improving our collective understanding of the world as it is.

Dr. Robert Kingsolver, Dean and Director
Center for Regional Environmental Studies
Bellarmine University
Louisville, KY

2009 Superlative Awards

DISTINGUISHED COLLEGE/UNIVERSITY SCIENTIST

KAS President Robin Cooper (right) presented the award to Dr. Zijiang He of the University of Louisville.

Dr. Zijiang He, Professor in the Department of Psychological and Brain Sciences at the University of Louisville, received a B.S. in Biophysics from the University of Science and Technology of China, an M.S. in Neurobiology from Shanghai Institute of Physiology and a Ph.D. in Physiological Optics & Neuroscience 1990 from the University of Alabama at Birmingham. Dr. He also spent four years in post-doctoral training in the Department of Psychology at Harvard University. He joined the faculty of the University of Louisville in 1994. His research has focused on how visual surface information is processed and how it impacts binocular vision and space perception, has garnered over $3 million in extramural funding, and has resulted in the publication of 30 peer-reviewed journal articles, three book chapters, and a book on Vision Science in press. His papers have been published in the top journals in his field, and, among visual researchers, he has had an unprecedented five papers published in Nature. A colleague from Boston University stated that "His research has been extremely innovative. He has made groundbreaking findings in his field…has created trends that are followed by many others." Dr. He has received many honors and awards including a Sloan Research Fellow Award (1995-1999) and the most prestigious Chinese National Award of Natural Sciences (silver) for research on Complex Image Transmission and Feature Integration in the Visual System (1997) with C-Y Li, X Pei, and X-Z Xue. Dr. He has given more than 30 invited lectures at academic institutes and scholarly workshops both nationally and internationally. Dr. He's Department Chair stated "He is a renowned scholar and scientist, a respected and popular professor, and a generous and caring colleague."

DISTINGUISHED PROFESSIONAL SCIENTIST

KAS President Robin Cooper (right) presented the award to Dr. Wimberly Royster.

Dr. Wimberly Royster received his B.A. from Murray State University, M.A. and Ph.D. from the University of Kentucky. He joined the faculty in the Department of Mathematics at UK in 1956, rose through the ranks, and moved into administration, serving as Dean of Graduate School, Coordinator for Research, Vice Chancellor for Research, and Vice President for Research and Graduate Studies before his retirement. He has been significantly involved in several state-wide initiatives, including serving as Principal Investigator, Appalachian Rural Systemic Initiative; Director, Kentucky Statewide EPSCoR Program; and Chair, Kentucky Statewide EPSCoR Committee. The current Kentucky EPSCoR director commented that Dr. Royster: "…was instrumental in laying the foundation and has been a strong leader for Kentucky's EPSCoR program which has been the channel for over $350 million in research funding to the Commonwealth's universities…During his tenure the Kentucky EPSCoR program grew dramatically and gained national recognition as a model EPSCoR state." During this period, EPSCoR funding rose sevenfold and the Research Start-Up, Research Enhancement, and Collaborative Research Development programs were initiated. Dr. Royster has demonstrated strong commitment to STEM-related initiatives and enhancements to P-16 education in the Commonwealth, especially in the Appalachian region. He recently received a $22 million NSF (AMSP) award to promote student performance in mathematics and science for K-12 students in the states of Kentucky, Tennessee and Virginia. One of his letters of support commented, "Wimberly has established a reputation as being an outstanding leader through his actions as an advocate for STEM education and his motivation to implement change in the teaching and learning of mathematics and science in our classrooms…." Dr. Royster also is Vice President for Scientific Research and Policy at the Kentucky Science and Technology Corporation and he serves on Kentucky's Council on Postsecondary Education STEM Taskforce.

OUTSTANDING COLLEGE/UNIVERSITY TEACHER

Mr. Charles E. Mason, Professor of Geology in the Department of Physical Sciences at Morehead State University, received B.S. degrees in Geology and Biology from Morehead in 1975 and a M.S. degree in Geology from The George Washington University. Since joining the Morehead faculty in 1982, he has had 75 publications, many with students as co-authors, and was awarded the Distinguished Researcher Award in 2003. He was recognized by the NASA Haughton-Mars Project in 2006 by the naming of "Charlie Mason's Rock", a large ejecta block in Haughton Crater on Devon Island in the High Arctic of Canada, in recognition of his continued commitment to Arctic research and his mentoring work with undergraduate students. His contributions to the understanding of the Mississippian ammonoid succession of Kentucky resulted in the naming of the genus Masonoceras in his honor. He routinely involves students in his research, and "his students have been regular presenters at the annual meeting… often winning awards for their work." His letters of nomination indicated that "Mason has directed dozens of undergraduate students on their senior theses since it became a requirement for the B. S. degree in Geology at MSU. Additionally, almost every semester he works with several seniors on special-problems projects-both without teaching-load reductions" and "Nearly every year…he has planned and directed travel-study trips…to most of the lower 48 states and four foreign countries." He has served as advisor to the Morehead State University Geological Society for the past 27 years. Comments about his teaching and research include "talented", "extremely productive", "highly effective", and "committed to excellence". His colleague described him as "equally dedicated to both science and education, and extremely talented in both. He serves as an outstanding role model of a 'teacher-scholar' for our students and junior faculty alike".

KAS President Robin Cooper (right) presented the award to Mr. Charles E. Mason of Morehead State University.

OUTSTANDING ACADEMY SERVICE

KAS President Robin Cooper (right) presented the award to Dr. Kenneth Crawford of Western Kentucky University.

Dr. Kenneth Crawford received his bachelor's and master's degree in Biology from the State University of New York at Buffalo, and his Ph.D. in Biology from the University of Michigan. He joined the faculty at Western Kentucky University in 1996, where he conducted research in the physiological adaptations of reptiles, especially turtle, leading to several grants, publications, and presentations. He has guided the research of numerous masters' students, advised many undergraduates, and last year served as Interim-Chair of the Department of Biology. Dr. Crawford has contributed to the Kentucky Academy of Science by serving as Secretary and Chairperson of the Biochemistry and Physiology Section and Chair of the Local Arrangements Committee in 2003 and 2010. Although these efforts are noteworthy, what truly distinguishes Ken is his role as Treasurer of the Academy since 2001. When Ken took over the reins as Treasurer, the newly established Richard Athey Fund was presenting something of a challenge. With Ken's insistence and help, a financial advisor was employed to help keep the Academy within the laws governing non-profit organizations, while establishing a fiscal plan that would allow for the financial growth of the assets. As stated in one of the letters of nomination, "because of the fiscally sound strategy implemented under Ken's watch, the academy has weathered the economic downturn well and is poised to take advantage of the recovery". Dr. Crawford has stood for reelection twice since becoming Treasurer because "he knows the importance of continuity in the position of treasurer". The time he takes to reconcile the various accounts, pay the bills, prepare reports for the Governing Board, and deal with the IRS is time that has cost him both personally and professionally. However, he has done this work for the betterment of the Academy.

OUTSTANDING EARLY CAREER IN POST SECONDARY EDUCATION

KAS President Robin Cooper (right) presented the award to Dr. Mark Watson of the University of Kentucky.

Dr. Mark Watson, Associate Professor of Chemistry at the University of Kentucky, received his B.S. in Polymer Science from University of Southern Mississippi, and his Ph.D. in Organic Chemistry from the University of Florida. He also completed a post-doc at Max-Planck Institute for Polymer Research Materials Chemistry. He joined the Department of Chemistry at UK in 2003, and has over 60 peer-reviewed publications, numerous presentations, several patents, and substantial grant support to his credit. His area of research includes macromolecular, supramolecular, organofluorine, microwave-enhanced and environmental chemistry, organic semiconductors, and solar energy. The Chair of his Department found "…Prof. Watson's academic achievements to be truly exceptional. At this early stage in his career, he has created a world-renowned research program on solar electronic devices, developed a new paradigm for effective teaching, and has been actively engaged in community educational activities." A colleague from the University of Illinois indicates that he also tries "…to find the best ways to reach his students. Mark holds very high standards, and the students that come out of his classes are very well prepared for their subsequent studies." Prof. Watson incorporates active learning into his courses with a focus on training students to develop problem-solving skills through course-specific content and examples taken from the many uses of organic chemistry in real-world applications. His educational outreach involves working with the Explorium in Lexington, where he and his students lead interactive experiments one week each month with K-12 students. Again from his Chair: "Prof. Watson has recognized that young children are very excited by the opportunity to work with real laboratory equipment and to carry out the experiments themselves, rather than just idly watching a demonstration. Prof. Watson is trying to address the problem that children need to be encouraged to pursue science at an early age…"

OUTSTANDING SECONDARY SCHOOL SCIENCE TEACHER

Gallatin County High School teacher Ms. Sharon Parker received her B.S. degree in Biology with a minor in Chemistry from Georgetown College, and earned a M.S. degree in Animal Science from the University of Kentucky and has achieved her Rank I standing. She has been teaching biology, chemistry, and animal diversity at Gallatin County High School since 1986, and also teaches dual credit courses through the Community College in Carrollton. In letters from the Gallatin County Superintendent and Assistant Superintendent of Schools, Ms. Parker was described as "…an exceptional educator who reaches every student and goes above and beyond to insure his or her success". Ms Parker received the the Radio Shack National Teachers Award in 2002 and the Woodrow Wilson National Foundation Institute for Environmental Science Teachers Award in 2001. She was named Upward Bound Teacher of the Year and received the Golden Apple Award in 1996. A fellow teacher described her classroom achievements as follows: "To watch her interact with students is truly inspiring. She doesn't just teach, she makes students WANT to be taught." As an example of her extra effort, "over the past eleven years she has taken her Advanced Biology students on a Marine Biology trip to the Florida Keys. During their week-long visit they attend a Marine Biology sea camp, visit the Everglades National Park, take several snorkel trips to local coral reefs, and visit the Dry Tortugas/Fort Jefferson National Park". One letter-writer said: "Her contributions to the youth of Gallatin County have been innumerable and the effects will last a lifetime." The summary comment from the Superintendent of Schools sums up Sharon Parker's qualifications for this was when she said: "She is the total package and definition of what it truly means to have the title 'Teacher'."

KAS President Robin Cooper (left) presented the award to Ms. Sharon Parker of Gallitin County High School.

KAS Research Funds Awarded

Dr. George Antonious, Chair of the KAS Committee on the Distribution of Research Funds, presented the committee's grant recommendations at the January KAS Board Meeting. The Committee members (Dr. Antonious, Ky State University; Dr. Nathan Tice, Eastern Ky University; Dr. David Thompson, Northern Ky University; Dr. Rebekah Waikel, Eastern Ky University; Dr. Gary Ritchison, Eastern Ky University; Dr. Ricky Cox, Murray State University; and Dr. Ilson White, Morehead State University) reviewed eighteen grant proposals between the November 15th submision deadline and December 20th, so that their recommendations could be finalized by the January Board meeting. Their efforts are deeply appreciated. The Board approved the following grants.

Special Research Program

Grantee: Melissa Burns-Cusato, Centre College
Amount: $5,000
Project Title: The aging process: Analyses of aging from a cellular, systemic, and behavioral perspective

Undergraduate/Graduate Research Program

Grantee: Nina Marijanovic, Centre College
Amount: $500
Project Title: The effects of touch and note on tipping behavior in restaurants

Grantee: La'Quida Bowie, Kentucky State University
Amount: $3,000
Project Title: Somatic embryogenesis induction of needle palm (*Rhapidophyllum hystrix*)

Grantee: Emily Gregory, Centre College
Amount: $500
Project Title: Parent-offspring recognition in Japanese quail

Marcia Athey Fund

Grantee: David Brown, Eastern Ky University
Amount: $1,527.95
Project Title: Land snail species diversity among different forest disturbance regimes in central and eastern Kentucky forests

Grantee: Andrea Drayer & Robert Bragg/Stephen Richter, Eastern Ky University
Amount: $1,200
Project Title: Amphibian use of artificial ponds: Success measured by fitness and community composition over time

Botany Fund

Grantee: Robert Scheff/Tyler Smith, Eastern Ky University
Amount: $920.99
Project Title: Assessing the development of late-successional structural heterogeneity in older second-growth forests of the Cumberland plateau of Eastern Kentucky, U.S. A.

Call for Nominations for Superlative Awards

The Kentucky Academy of Science seeks nominations of individuals who have made outstanding contributions to scientific research and education in the Commonwealth in the six areas designated below.

- **Outstanding Academy Service:** The recipient shall have been a long-time member of the Kentucky Academy of Science and shall have made a significant contribution to the growth and development of the Academy.
- **Distinguished College/University Scientist:** The recipient shall have made some significant contribution to academic research in Kentucky.
- **Outstanding College/University Teacher:** The recipient shall have made some significant contribution primarily to science teaching but also to research at the college/university level in Kentucky.
- **Outstanding Early Career in Post Secondary Education:** The recipient shall have made some significant contributions in teaching and research and hold the rank of Assistant or Associate Professor on the faculty of a Kentucky Post Secondary Education Institution.
- **Outstanding Secondary School Science Teacher:** The recipient shall have made some significant contribution to the teaching of science at the middle and high school level in Kentucky.
- **Distinguished Professional Scientist (in a non-academic position):** The recipient shall have made some significant contribution to science in Kentucky.

Nomination packets for all awards should include an abbreviated curriculum vitae (5 pages or less) containing information pertinent to the award, a list of publications, and letters of recommendation from at least three but not more than five professional colleagues well acquainted with the candidate's qualifications for the award. In addition:

- *Outstanding Academy Service Award* nomination packets should include documentation of special contribution to the Academy.
- *Outstanding Secondary School* and *College/University Teacher* awards nomination packets should include documentation of special accomplishment as a teacher of science, especially measures of student success, participation in student development beyond the classroom, and science curriculum development. Letters of recommendation for secondary school teachers may also come from an administrator or supervisor, a teaching colleague, a student, or a parent.

April 15, 2010, is the deadline for nominations. All nominations and supporting materials should be sent in electronic format; e-mail attachments must be in MS Word format. Send to:

Dr. Dawn J. Anderson
Department of Biology
Berea College
CPO 1683
Berea, KY 40404
dawn_anderson@berea.edu

KAS Governing Board Updates

The Nominations and Elections Committee, chaired by Sean Reilley, congratulates those who were elected to office and expresses sincere appreciation to all those willing to serve the Academy by allowing their names to be placed into nomination.

Newly-elected Board Members:
- Vice President Dawn Anderson (Berea College)
- Biological Sciences Rep. Ronald Jones (Eastern)
- At-Large Rep. Mary Janssen (Madisonville Community and Technical College)

Continuing Board Members:
- President Nancy Martin (Uof L)
- President Elect Barbara Ramey (Eastern)
- Past President Robin Cooper (UK)
- Secretary Robert Kingsolver (Bellarmine)
- Treasurer Ken Crawford (Western)
- Biological Sciences Rep. Richard Durtsche (Northern)
- Physical Sciences Rep. Eric Jerde (Morehead)
- Physical Sciences Rep. KC Russell (Northern)
- Social & Behavioral Sci. Rep. Judy Voelker (Northern)
- Social & Behavioral Sci. Rep. Sean Reilley (Morehead)
- At-Large Rep. Cheryl Davis (Western)

Ex-officio Board Members:
- Executive Director Jeanne Harris
- Junior Academy of Science Director Ruth Beattie (UK)
- Program Coordinator Robert Creek (Eastern)
- Journal Editor David White (Murray)
- Webpage Editor Claire Rinehart (Western)
- Newsletter Editor Susan Templeton (Kentucky State)
- Executive Secretary Emeritus Don Frasier (UK)

Retiring Board Members:
- Past President John Mateja (Murray)
- At-Large Rep. George Antonious (Kentucky State)
- Biological Sciences Rep. Sean O'Keefe (Morehead)

The retiring board members were recognized for their service to KAS by President Robin Cooper at the Kentucky Academy of Science Annual Business Meeting on November 14, 2009.

2009 Graduate Research Competition

Agricultural Sciences
1st: Diana Edlin - WKU
2nd: Jahnavir Kanchala - WKU
3rd: Robert Tokosh - Murray State

Anthropology & Sociology
Cheryl Pan - U.K.

Cellular & Molecular Biology
1st: Jivan Yewle - U.K.
2nd: Shravya Maddi - WKU

Chemistry
1st: Marsh Loth - U.K.
2nd: Meng Zhong - U.K.
3rd: Mahendra Kumar - U.K

Ecology & Environmental Science
1st: Mark Penick - WKU
2nd: Danielle Racke - WKU
3rd: Margaret Mahan - WKU

Engineering
1st: Twyman Clements - U.K.
2nd: Marc Beck - U.of L.
3rd: Sanjeev Adhikari - Morehead State

Microbiology
1st: Ali Wright - WKU

Physiology & Biochemistry
1st: Chia-Hui Lin - WKU

Psychology
1st: Jacquelyn Lile - Morehead State
2nd: Nicolette Lowe - Morehead State
3rd: Nicholas Rudd - Morehead State

Zoology
1st: Bethany Westrick - EKU
2nd: Piyumika Suriyampola - U.of L
3rd: Grayson Patton - EKU

Griffith Memorial Graduate Award in Psychology
1st: Jacquelyn Lile - Morehead State
2nd: Nicolette Lowe - Morehead State
3rd: Nicholas Rudd - Morehead State

Congratulations to the students who won award, and to their mentors. A special thanks to those who devoted their time to judge the presentations.

From the President... *continued*

years ago a collaborative effort involving 14 state, private, and federal organizations created a State Strategy for Science and Technology (S&T). Development of the plan was funded by the KY Experimental Program to Stimulate Competitive Research (EPSCoR) and the plan was published by the Kentucky Science and Technology Corporation. This plan led to the passage of House Bill 572 which established the 2000 Kentucky Innovation Act (KIA) that led to investments in new research initiatives, economic development, and technology transfer programs. It created the Kentucky Science and Engineering Foundation (KSEF) and the Kentucky Enterprise Fund (KEF) that in turn have increased Kentucky's infrastructure for scientific advancement, the quality of Kentucky's research, and Kentucky's financial support to technology-based start-up companies. It is time to update that plan and as the process unfolds KAS members should be involved in the effort. Some may say that in these economic times there are few resources and this is not the time for updating a plan calling for investment in S&T. I think that tough economic times make it more important to have a sound S&T plan for Kentucky because a strong S&T infrastructure is the way to create a strong economy in the future. And so I end where I began, as the largest organization in the Commonwealth serving scientists, mathematicians and engineers, the Academy is an important part of the S&T infrastructure and what we do to strengthen S&T in Kentucky will, in turn, strengthen the Academy.

Nancy Martin

2010 Sectional Officers

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Agricultural Sciences	Karen Friley karen.friley@kysu.edu	Stephen A. King Stephen.king2@wku.edu
Anthropology & Sociology	Cheryl Pan cherylpan@hotmail.com	Changzheng Wang changzheng.wang@kysu.edu
Botany	Lawrence Alice lawrence.alice@wku.edu	Nilesh Sharma nilesh.sharma@wku.edu
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Zoology	Sherry Harrell sherry.harrel@eku.edu	Jose P. do Amaral pedro.amaral@wku.edu

Call For Papers

The *Journal of the Kentucky Academy of Science*, now in its 71st year, is published through Allen Press each spring and fall and is abstracted through BioOne. The *Journal* publishes peer reviewed articles from all disciplines within the Academy. Turnaround time usually is six months or less, and page charges ($35/page) are very reasonable. The Journal accepts regular articles (12-20 manuscript pages), scientific notes (2-5 pages), and will accept Letters to the Editor. The Journal also seeks series of manuscripts that result from special workshops or conferences. In these cases, a special editor may be appointed. All manuscripts should be sent to:

David White, Editor J-KAS
Hancock Biological Station
561 Emma Drive
Murray KY 42072

Instructions for authors can be found at the KAS website http://www.kyscience.org. Please call 270-474-2272 or e-mail the editor (david.white@murraystate.edu) for more information.

The View from CPE: CREATING KENTUCKY'S FUTURE IN SPACE

Contributing authors: Kris Kimel, President Kentucky Science and Technology Corporation; Wayne Hall, Kentucky Space Director of Communications /Social Media

Thanks in part to Kentucky investments in the knowledge-based economy, the Kentucky Science and Technology Corporation is mastering the collaborative environment for innovation through science and engineering. By engaging engineering faculty and students in Kentucky's postsecondary institutions during the past few years, the Kentucky Space initiative has launched rockets and balloons, all with architecture developed by Kentucky students with faculty advisors who are creating Kentucky's future in space.

Pictured at right is the 21-meter tracking antenna as viewed from the ground control room at the brand new Morehead State University Space Sciences Center; the inset shows a close up of the dish. One of only a handful of undergraduate centers devoted solely to the space sciences, the Center is a remarkable investment in the future of Kentucky.

The new facilities host an enormous anechoic chamber and several large clean rooms that are nearing completion, a digital star theater providing tours of the universe that incorporate the latest astronomical data (a must see), classroom, meeting and fabricating facilities too numerous to mention, and ample room for all to grow.

A wide range of astronautical engineering and instruction can be accomplished here, and indeed, The Center has already attracted visitors needing specialized solutions for small spacecraft.

The Center is also part of Kentucky Space an exciting initiative begun in Kentucky just four years ago. Kentucky Space is a non-profit enterprise involving a consortium of universities* and public and private organizations to design and lead entrepreneurial and educational projects through near space, sub-orbital and orbital missions and most recently through work on the International Space Station (ISS).

Beginning with an effort to build and fly a standardized 10-centimeter picosatellite called a CubeSat, Kentucky Space has since expanded rapidly in its brief existence.

Recently, it has taken advantage of the Congressional designation of a portion of the International Space Station as a "national laboratory" to embark on an effort that will involve conducting R&D on the ISS. Working in cooperation with its partner, NanoRacks, LLC, based in Houston, Kentucky Space has helped engineer and fabricate a new research platform that will host up-to 16 micro-sized research R&D environments that it calls "CubeLabs."

The NanoRack-CubeLab tandem will provide scarce real estate indeed - bench space on the ISS - so that a variety of scientific pursuits might be conducted, and at affordable prices that smaller organizations and companies can afford.

The first NanoRack has been shipped to Cape Kennedy in Florida, and, along with the first two CubeLabs, is currently listed on the manifest for STS-131, a March 2010 Shuttle flight to the ISS. Once everything has checked-out, this modular laboratory will be placed into service. By the time you read this, the second Nanorack will have been built and delivered to Florida. Alone, this would be wonderful achievement. But the program has been aggressively building human capital and growing. In addition to the bright young minds who have worked to build CubeSats and CubeLabs the program has enticed the inventor of the CubeSat system, former Stanford Professor Bob Twiggs to Morehead State University. It's fair to say that few people in a similar circumstance would make a similar move, but Professor Twiggs has repeatedly cited the vision and educational focus of Kentucky Space as a motivator. And for a "satellite guy," a nimble 21-meter dish located on a nearby mountain within view of the control center of the Space Sciences Center doesn't hurt either. From his office in Morehead, Professor Twiggs will undoubtedly contribute much to the Consortium.

The moment is right.

Since it burst on the scene with the orbiting of the first crude satellites, space exploration has proved beneficial, spinning-off laboratory and consumer technologies that are able to withstand extreme heat, small sensors now used in airbags and video game controllers, and air purification technologies that can kill pathogens and preserve food. Each of these, and many other spin-off technologies, are directly attributable to basic scientific research needed in order to survive in the harsh vacuum of space.

Space exploration is no longer the exclusive domain of nations and governments. It's entrepreneurs and private enterprise working in cooperation with NASA that will help chart the future course of space exploration.

It's new terrain, but not one without precedent in Kentucky's history. Thanks to the vision, commitment andthe business skill of a handful of people, an entirely new Kentucky-based entrepreneurial industry might be emerging. One that can design, fabricate, test and fly the technologies that will bring tangible results on Earth, and train the young people that will be a credit to the commonwealth, wherever they may wander.

In the waning days of the 18th century, explorers sent word over the Cumberland Gap and up and down the Ohio river about the frontier we call Kentucky,

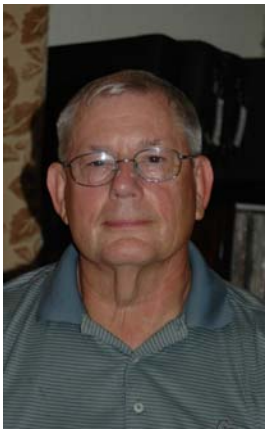
In the 21st century, Kentucky is again home to those exploring a new land.

**Kentucky Space Consortium members include: University of Kentucky/Morehead State University/University of Louisville/ Murray State University/Western Kentucky University/Kentucky Community and Technical College System/Kentucky Space Grant Consortium/Kentucky Council on Postsecondary Education/ Kentucky Science and Engineering Foundation/Belcan/Kentucky Science and Technology Corporation (Managing Partner).*

Kentucky Space Recognized

In the December 1, 2009, Congressional Record, Congressman Ben Chandler congratulated Kentucky Space on opening doors to "... endless opportunities for research in technologies ranging from new medical treatments and equipment to alternative clean energy." He noted "These technologies will create jobs and can improve quality of life as well as save lives."

KAS Member Honored



In 2009, Dr. Charles Covell, Professor Emeritus of Biology at the University of Louisville, was voted an Honorary Life Member of the Lepidopterists Society, an organization for those who study butterflies and moths. Covell has been a member of this organization since 1951, and has held several offices over the years, including the office of President in 1983.

At present Dr. Covell is Curator of Lepidoptera at the McGuire Center for Lepidoptera & Biodiversity at the University of Florida, Gainesville, where he moved in 2004.

2010 Posters-at-the-Capitol

Posters-at-the-Capitol 2010 will be held on Thursday, January 28, 2010, 9:00 a.m. through 3:30 p.m. at the Capitol Building in Frankfort. Posters-at-the-Capitol, an event hosted collaboratively by the Commonwealth's public institutions, is intended to help members of Kentucky's legislature and the Governor better understand the importance of involving undergraduates in research, scholarly, and creative work. More information regarding Posters-at-the-Capitol, an activity schedule, and abstracts of the 120 submitted posters are included in the 2010 Program Booklet that can be found at this website:

http://campus.murraystate.edu/services/URSA/Posters_2010.html.

From John Mateja, Director, Undergraduate Research and Scholarly Activity Office, Murray State University

The Kentucky Legislature convened in regular session January 5 and will be in session for 60 days. You can have access to timely information concerning the 2010 Kentucky Legislature by visiting the Kentucky Legislature Home Page.

http://www.lrc.state.ky.us/

2009 Kentucky Society of Professional Geologists Fall Conference

The 2009 Kentucky Society of Professional Geologists (KSPG) Fall Conference was held in conjunction with the 95th Annual Meeting of the Kentucky Academy of Science (KAS) hosted by Northern Kentucky University. The organization's founding year was 1997 and its purpose is to support and promote the Kentucky's program of professional registration for geologists. The conference began on Friday evening with a selection of events and the annual KSPG Business Meeting. Talks and posters were given by geology professionals and students Saturday morning. The Saturday afternoon field trip emphasized aspects of engineering geology and geohazards associated with the area's Upper Ordovician bedrock and overlying Pleistocene deposits. At the combined KAS/KSPG banquet Saturday evening, the Society's Distinguished Career Award was presented for only the second time ever. The recipient was Dr. John D. Kiefer.

Dr Kiefer retired in June 2009 from the position of Assistant State Geologist at the Kentucky Geological Survey (KGS) after a 30-year career with them. KGS is an independent state agency housed on the UK Campus in Lexington. Prior to joining the KGS, Dr. Kiefer had worked for the Geological Survey of Alabama and had teaching experience at two universities. His area of expertise is engineering geology and geohazards.Over the course of his career, he has dealt with landslide issues across Kentucky, helped develop the solid waste management plan for the Commonwealth, was a member of the State's water management task force, and worked extensively with state legislators in the shaping of public policy.In fact, Dr. Kiefer was honored earlier this year by a special proclamation approved by the Kentucky Senate and delivered by Lexington, KY Mayor Jim Newberry in recognition of his service to the citizens of the Commonwealth. Dr. Kiefer is a member of numerous professional societies including the Geological Society of America where he helped create a new division for Geology and Public Publicy, the Association of Engineering Geologists, the National Society of Professional Engineers, the KY Society of Professional Engineers, and, of course, the KSPG.

KSPG Executive Committee Member Dr. Ken Kuehn (left) presented the Distinguished Career Award to Dr. John Kiefer.

2010 Kentucky Science and Engineering Fair (KY-SEF)

Eastern Kentucky University will host the eighth annual Kentucky Science and Engineering Fair (KY-SEF) for middle school and high school students Saturday, April 3, 2010. This event will feature the work of more than 200 students who have advanced through local and regional competitions across the Commonwealth. They will compete for trophies, ribbons, university and private scholarships, and special awards from corporations and organizations. The high school students will compete for the chance to represent the Commonwealth at the Intel International Science and Engineering Fair in San Jose, CA, in May.

Competition is held in 18 categories:

- Animal Sciences
- Behavioral and Social Sciences
- Biochemistry
- Cellular & Molecular Biology
- Chemistry
- Computer Science
- Earth Science
- Engineering (Materials & Bioengineering)
- Engineering (Electrical & Mechanical)
- Energy and Transportation
- Environmental Management
- Environmental Sciences
- Mathematical Sciences
- Medicine and Health Sciences
- Microbiology
- Physics and Astronomy
- Plant Sciences
- Team Projects

This event represents an exciting milestone for the science and technical education community in Kentucky. The Fair's mission is to expand educational opportunities for all middle and high school students and to enhance the visibility and importance of science and engineering in Kentucky by providing annual statewide competitions that support, encourage and recognize student excellence in science and engineering research. The Fair also gives the public a chance to see the quality of science being done in Kentucky middle and high schools and to showcase what the students are capable of doing.

The Kentucky Academy of Science has been a loyal supporter of KY-SEF by providing both financial support and judges each year. The commitment of KAS members to this event is very important and the organizers of the fair hope that they can rely on your continued support. A call for judges will be sent by e-mail near the end of January. Please consider judging and playing a very rewarding role in the academic development of our next generation of scientists.

So put Saturday, April 3, on your calendar and sign up to be a judge when notification comes your way! As with all non-profit endeavors this year, KY-SEF is looking for financial sponsors. If any KAS member knows of a corporation or other group that would like to become involved with this worthy activity, please contact Barbara Ramey or Bob Creek (barbara.ramey@eku.edu or robertcreek@bellsouth.net).

Kentucky Junior Academy of Science

The 2010 Annual Meeting of the Kentucky Junior Academy of Science will be held on Saturday 17th April (8.30am - 5pm), 2010 in the T. H. Morgan Building on the campus of the University of Kentucky, Lexington, KY.

Any Kentucky high school or middle school student may present his or her research findings at the Kentucky Junior Academy of Sciences Annual Meeting. To register for the meeting, a teacher, supervisor or principal from your school must return to the Director of KJAS, the requisite membership form and fee, abstracts (instructions attached), and papers for all students entering from your school. All forms, abstracts, papers and checks from the school must be submitted to KJAS by March 26th, 2010. Late submissions WILL NOT be accepted.

The Junior Academy was begun over fifty years ago to foster an interest in science for high school students in Kentucky. KJAS has expanded over the years to include middle school students. Members of the Junior Academy present the results of their projects each spring at the KJAS annual meeting. Preliminary oral presentations (10 minutes) are conducted during the morning sessions. The winners of the morning sessions make presentations in the afternoon finalist sessions. Four overall winners are selected and these students represent Kentucky at the National American Junior Academies of Sciences (AmJAS) meeting held in February the following year. The Kentucky Academy of Science will provide needs-based funding for these students to attend this meeting, up to a limit of $1000.00 per person. Needs-based funding will also be available for chaperones, up to a limit of $1000/person.

The AmJAS convention meets in conjunction with AAAS, the American Association for the Advancement of Science. As the world's largest general science organization and publisher of Science, AAAS has more than 138,000 members and 275 affiliated societies. One very important aim and purpose of the AAAS is to reach out to young scientists in middle school and high school. It recognizes that these young people are its future.

Checklist for presenting at the meeting:

- ☐ Paper Submission Form
- ☐ Membership Form and fee
- ☐ Abstract (hard copy only)
- ☐ 2 hard copies of word-processed Research Paper

Additional information and parking directions will be mailed on receipt of above materials. All forms and instructions can be downloaded from the KJAS webpage.

http://www.kyacademyofscience.org/members/jkas.html

Mail to: Dr. Ruth E. Beattie, Director, KJAS, Dept. of Biology, University of Kentucky, Lexington, KY 40506, rebeat1@uky.edu, 859-257-7647 by March 26, 2010.

Attention KAS Members: Judges are needed for the KJAS Spring Symposium. Please contact rebeat1@email.uky.edu to volunteer. Thanks.