



# INDIANA ACADEMY OF SCIENCE NEWSLETTER

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## Note from the President's Corner

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How quickly time flies! By the time you read this note my term as IAS President will be nearly half over. But it has been a wonderful half year, affording me the opportunity to learn more about the Academy, you as members and officers, and the vitality of science in Indiana.

At the spring meeting some important decisions were made. We are moving towards on-line voting for officers and a secure on-line Membership Directory. We anticipate that soon you will be able to update your own contact information quickly and efficiently. Webmaster **Marcia Moore** has made wonderful improvements in the functionality of our website [please take a moment to explore it]. The next step requires a professional web Developer to provide the finesse, look, and more complex web functions familiar to the savvy young scientist. At the spring meeting the Academy Council indicated their support of the website improvements and I will try to implement them as quickly as possible.

During the past six months I have learned more about the youth programs of the Academy and their significant success in supporting the future scientists of our state. This is a record that we in the Senior Academy should look at with deep pride. It is also an area where our volunteer manpower can be very much appreciated – just ask **Tina Gilliland, Marcia Gillette** or **Patty Zeck**.

An important function of the President is to seek talented Committee leadership. In this area, my thanks to **Tom Dolan, Blake Janutolo**, and **Terry West** for agreeing to serve on Finance, Programs & Invitations, and Nominations. Over the next month I will seek additional helpers.

At the spring meeting we enjoyed the hospitality of **Mike Finkler** at Indiana University – Kokomo. My thanks to Mike for organizing the meeting, excellent speaker, and fine field trip. We look forward to our return to Kokomo this fall.



*Paul Rothrock  
2009 IAS President*

That brings me to a final observation from the past half year – the life blood of the Academy is your Section Chair! [That is a shout!]. I did not understand their importance during my first stint about 20 years ago. My meager efforts and attendance at Council meetings

seemed minor. But if the Academy is to grow and thrive, the work of section leaders is essential. They can encourage (maybe I should say “badger”) current and “fallen” IAS members to present their work at the fall meeting. They likely know peers in related organizations that are interested in the work of the IAS. They can initiate a special program at the fall meeting that will attract more people to attend. As important members of the Academy Council, the Section Chairs provide vital input into policies and the direction of the Academy. And finally it is this cadre of people who will soon become officers. If you have never served as a Section Chair, please consider doing so. It is a worthwhile experience. In the meantime, feel free to contact your current Chair and encourage their efforts.

Be in touch. Best wishes.

-- **Paul Rothrock**  
plrothroc@taylor.edu

## Books for Sale

One of the perks of being an IAS member is a discounted rate on all of the outstanding IAS publications (if purchased directly from the Academy). We also purchase limited quantities of books written by IAS members but published by other organizations and offer them to IAS members at a reduce rate (much like a coop). Any of the books from the list of titles we maintain would make an excellent addition to your personal collection, local library, or as a gift. We encourage you to take advantage of this special perk. Contact **Bill McKnight** at [iaspublications@indy.rr.com](mailto:iaspublications@indy.rr.com) to make a purchase or visit the special publications link on our web site to learn more about the available pubs. The revised *Mammals of Indiana* and *Natural Heritage of Indiana* are now both available to IAS members for less than you can get them anywhere else, and *Sedges of Indiana: The Non-Carex Species* (by Paul Rothrock) is on schedule to be released later this summer or early fall.

-- *Bill McKnight, Chair*  
Publication Committee

### Changing the BIG Meeting from Fall to Spring?

Yes, I keep repeating my request for information from you, our members. Please let me know your thoughts, for or against, and comments on possible meeting times if we were to switch. I envision our BIG meeting to be a forum for students to present their work and just maybe get bitten by the IAS bug and start on a lifelong association with the Academy. As mentors or major professors, are we getting our students "fired up" about their work and wanting to share the results with all of us?

(On a personal note, the IAS bug bit me at the Hanover College meeting in 1969.)

So, please e-mail your thoughts (or stories about being bitten by the IAS bug) to me over the summer, [johansen@usi.edu](mailto:johansen@usi.edu) or my home e-mail [jjohansen@insightbb.com](mailto:jjohansen@insightbb.com).

-- *Nils I. Johansen, P.E.*  
Immediate Past President

### Marcia Moore, IAS WebMaster, is Stepping Down

Due to personal and professional responsibilities, Marcia Moore, current IAS WebMaster, will resign her position effective July 1, 2009.

On behalf of the Academy, I would like to extend our appreciation to Marcia for a job well done. We are all aware of the many, many hours you have spent on-line at the site. We will miss your help and effort.

Thank you for doing such a wonderful job!

-- *Don Ruch, Editor*  
IAS Newsletter

### Call for WebMaster Volunteers

Anyone interested in becoming  
WebMaster or working on the new  
WebMaster team, should contact  
President Paul Rothrock at  
[plrothroc@tayloru.edu](mailto:plrothroc@tayloru.edu) or  
765.998.5152.

## Indiana Academy of Science 2009 Senior Academy Spring Grants

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**Heather Bruns**, Ball State University, \$2,984.00  
Examination of the immune response in *Staphylococcus aureus*-infected mice treated with simvastatin.

**David C. LeBlanc**, Ball State University, \$2,168.00  
Monitoring associations between avian and plant communities on the Mary Gray Bird Sanctuary, Indiana.

**Tykhon Zubkov**, Ball State University, \$3,000.00  
Photocatalytic degradation of organic compounds using layered transition metal sulfides.

**John McKillip**, Ball State University, \$2,720.00  
Recovery of Sublethally-injected *Escherichia coli* using selective agar overlays.

**Ranjith Wijesinghe**, Ball State University, \$2,788.00  
Magnetic Measurements of nerve signals.

**Nicholas Gikas**, Indiana State University, \$1,905.00  
Ectoparasites of bats in Indiana: effects on nocturnal behavior and roost switching.

**Marisa Korody**, Indiana State University, \$1,388.00  
Evidence of multiple mechanisms of segregation distortion in the white-throated sparrow.

**Jason P. Damm**, Indiana State University, \$1,211.00  
The effects of enclosure size on the agonistic behaviors of two species of vole, *Microtus pennsylvanicus* and *Microtus ochrogaster*.

**Vanessa S. Quinn**, Purdue University, \$2,819.00  
Implications of recreational disturbance on oviposition of Karner blue butterflies.

**Lauren Brierley**, Purdue University, \$2,991.00  
Impacts of habitat fragmentation of social behavior, vocal communication and physiological stress.

**Eran Raizman**, Purdue University, \$2,500.00  
Climate change and tick borne disease - the use of remote sensing, GIS and spatial epidemiology to monitor the spread of Lyme disease causative agent.

**Diana Oviedo Vargas**, Indiana University, \$2,500.00  
Whole-stream metabolism and characterization of dissolved organic carbon sources in agricultural streams in central Indiana

**Hitesh Kathuria**, Indiana University East, \$2,645.00  
The down syndrome cell adhesion molecule and its role in connection respecification in drosophila brain.

**Evin Timothy Carter**, Indiana University Southeast, \$2,000.00. Impact of invasive plants on thermoregulatory behavior and habitat use by the northern copperhead (*Agkistrodon contortrix mokasen*).

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## Indiana Academy of Science 2008 High School Student Grant Awards

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**Emily Schubert**, Northwestern High School, \$247.00  
Probiotic bacteria: medical applications of *Lactobacillus acidophilus*.

**Zachary Schmidt**, Northwestern High School, \$300.00  
Effects of stimulants on muscle tissue augmented with bodybuilding supplements.

**Stephen Chou**, Northwestern High School, \$291.00  
Ecological factors affecting bioremediation.

**Abby Cline**, Northwestern High School, \$300.00  
Implications of remediation materials on algae growth in a simulated pond

**John Tyler Barnes**, Northwestern High School, \$300.00  
Comparative treatments of acid mine drainage by chitin and *Thiobacillus ferrooxidans*.

**Marijke Wijnen**, John Adams High School, \$98.00  
Improving the efficiency of the bioremediation process in xylene contaminated soil.

**David Kern**, John Adams High School, \$160.00  
Developing prototype models to increase the effectiveness of using wind energy to provide electrical power.

**Jeffrey Martin**, John Adams High School, \$149.00  
Experimental validation of an equation for carbon dioxide venting efficiency for a direct methanol fuel cell.

**Jay Carmichael**, John Adams High School, \$160.00  
Measuring the antioxidant potential of flavonoids and other compounds using the FRAP assay.

*continued on the next page*

**Andrew Norris**, John Adams High School, \$118.00  
Examining factors to increase the energy output for aluminum/air batteries.

**Lauren Jessup**, Marian High School, \$300.00  
Synthesis of Thiazoline agents as potential antibacterials.

**Bridget Liddell**, Marian High School, \$300.00  
How is protein crystallization affected by a combination of AC applied electric field and a nanochannel environment?

**Katie Mischler**, Marian High School, \$250.00  
The adsorption of uranium onto bacteria.

**Lauren Zmirski**, Marian High School, \$300.00  
Engineering a single pixel passive imaging system prototype.

**Adam Berthold**, Marian High School, \$176.00  
A comparison of coarse particulate organic matter retention in meandering and straightened sections of Juday Creek.

**Colin Leader**, Marian High School, \$95.00  
XRF on art analysis.

**Andrew Verwilt**, Marian High School, \$300.00  
Characterization and documentation of the QuarkNet DAQ and DAQ II cosmic ray detectors.

**Shauna Barry**, Marian High School, \$145.00  
An investigation on the thermal properties of a proprietary product based upon NASA's ceramic research.

**Aaron Bulger**, Marian High School, \$78.00  
Effects precipitation and temperature change take on a river system's water quality index rating.

**Claire Sieradzki**, Marian High School, \$300.00  
An oxygen-supplied biocathode microbial fuel cell using hollow fiber membranes.

**In Young Park**, Marian High School, \$189.00  
The study of temperature dependence of acoustic sensors for two dark matter experiments.

**Brianna Morris**, Eastern High School, \$232.00  
Determining how temperature affects the phenology of *Vanessa cardui*.

**Sara Feeler**, Eastern High School, \$105.00  
Determining the effect of St. John's wort and valerian on different ages of *Daphnia pulex*.

**Paige Kirkland**, Eastern High School, \$118.00  
Observing tardigrade reactions when exposed to dead trees.

#### Sponsors:

Northwestern HS, Kokomo – **Patricia Zeck**

John Adams HS, South Bend – **Nevin Longenecker**

Marian HS, Mishawaka — **Ken Andrzejewski**

Eastern HS, Pekin – **Sharon McElroy**

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## Junior Academy of Science 2008 Winners

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The Indiana Academy of Science through the Youth Activities Committee and the Grants Committee sponsors three main activities for youth: the Science Talent Search, Research Grants, and the Junior Academy of Science (IJAS). The latter is held in Bloomington in November through the direction of Mrs. **Tina Gilliland**. Several IAS members assist her in reviewing abstracts and in judging the day of the competition.

The following seven activities comprise the major portion of the Junior Academy meeting.

**1. The Problem Solving Exam:** This exam provides students with a fun and meaningful exercise in scientific knowledge and problem solving skills. Two students from each school take the exam. Plaques are awarded to the top two individual winners and certificates are given to the students who placed 3rd & 4th.

This year's winners were:

#### Individual Students:

1st Place – **Samuel Leung**, Marian HS

2nd Place – **Blane Lawyer**, North Davies HS

3rd Place – **Zachary Schmidt**, Northwestern HS

4th Place – **Ashley Nagel**, Indiana Academy

Top Schools: [from each school, their two students' scores are combined and the top school is recognized]

1st Place – Marian High School

2nd Place – North Daviess High School

3rd Place – Northwestern High School

**2. The Issues Presentation Competition:** This competition encourages students to learn about the political, social, and scientific issues surrounding the selected topic. This year, the topic was "Global Warming: Real or Not?" Each competitor gives a five minute presentation on the topic without the use of visual aids. The students are judged by a panel of peers, and the finalists are then

judged by a panel of undergraduate students. A plaque is awarded to the top two students and all finalists receive a certificate.

This year's finalists were

**Rachel Dalton**, Eastern HS, who won the event  
**Nicholas Heshelman**, North Daviess HS  
**Chase Kootz**, Indiana Academy  
**Emily Schubert**, Northwestern HS

**3. Science Olympiad Competition:** This year we held a Science Olympiad competition called "Science Word." Team members took turns giving verbal clues to scientific terms and concepts from all across science disciplines while their partner tried to identify them.

The winners were:

1st Place – **Andrew Townsend & Siyun Xie**,  
Indiana Academy  
2nd Place – **Grant Manon & Gabe Stephens**,  
East Noble High School  
3rd Place – **Matt Miller & Stephen Chou**,  
Northwestern High School  
4th Place – **Hillary Kaub & Jenn Weinschenk**,  
Noblesville High School  
5th Place – **Shannon Sacksteder & Paige Kirkland**,  
Eastern High School

**4. The Research Paper Competition:** This competition allows students who have carried out an original scientific investigation the opportunity to present their work publicly. Students who wish to compete in this event submit an abstract of their work for view by a panel of impartial judges and twelve student finalists are selected. At the IJAS meeting, these students give a 10-minute poster presentation to a panel of judges who evaluate them on originality, research procedures, and presentation skill. The second and third place winners receive a plaque. The first place winner receives a plaque and a \$1,000 scholarship from the Hoosier Association of Science Teachers to attend any Indiana College or University.

The top five students winners were:

1st Place – **Kyla Garrett**, Noblesville HS  
2nd Place – **Janelle Thixton**, Eastern HS  
3rd Place – **Karson Merrell**, Northwestern HS  
4th Place – **Emily Schubert**, Northwestern HS  
5th Place – **Ryan Newlon**, Northwestern HS

### **5. The Outstanding Junior Scientist Competition**

**(OJS):** This event recognizes those students who are exemplary in overall scholarship as well as scientific ability and achievement. Each school may nominate two students for this competition. The top ten nominees are then selected to compete at the IJAS meeting where they are interviewed by a panel of judges. The Outstanding Junior Scientist is selected based upon his/her academic record, involvement in original research and extracurricular scientific activities, and the interview. The second and third place winners receive plaques and the Most Outstanding Junior Scientist receives a plaque and a \$1,000 scholarship from the Indiana Academy of Science to attend any Indiana College or University.

The top five students were

1st Place – **Janelle Thixton**, Eastern HS  
2nd Place – **Emily Schubert**, Northwestern HS  
3rd Place – **Sean Hendricks**, Marian HS  
4th Place – **Brianna Morris**, Eastern HS  
5th Place – **Meelyn Pandit**, Noblesville HS

**6. The Outstanding School Award:** The Outstanding School Award is given to the school with the most participation points. To calculate this score, credit is given for every abstract submitted, more credit for those abstracts accepted for the Research and for Outstanding Junior Scientist competitions, and finally for rank scores for the top presentations. Each school received credit for entering students in the Issues Competition, for having a judge at the Issues presentations, and for entering students in the Problem Solving Exam. More credit was given to the winners. The top three schools and the teachers representing them were

1st Place – Northwestern HS, Mrs. **Patricia Zeck**  
2nd Place – Eastern HS, Ms. **Sharon McElroy**  
3rd Place – Noblesville HS, Mr. **Charles Emmert**

**7. Tours and presentations:** Students also participated in educational tours of labs and facilities throughout the university to see research and other opportunities at IU Bloomington. Faculty and Staff provided an exciting chemistry demonstration in the afternoon. In the morning previous IJAS Research and OJAS winner Kaleb Naegeli presented in research through the undergraduate research program provided by the university. Some schools left home at 3 or 5 in the morning in order to be able to compete in this popular scientific event. The Youth Activities Committee thanks the senior Academy, the members who have volunteered, and Indiana University for the opportunity to participate.

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**IAS Member Obituaries**

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**John Pelton**

Professor Emeritus of the Butler University Botany Department, John Pelton, died February 14<sup>th</sup> after a short illness. John had been retired since 1985, first to his beloved property in Brown County, then to a retirement community in Franklin. He was an active member and supporter of The Nature Conservancy and the Central Indiana Land Trust and a generous benefactor of the Biology Department at Butler. John started at Butler in 1953 and was Botany Department chair from 1955 until his retirement. He earned his undergraduate degree from UCLA and masters and doctorate from the University of Minnesota with a specialization in ecology.

*obituaries continued on the next page*

## Donald Jack Cook

On August 16<sup>th</sup>, 2005 Donald J. Cook passed away. Dr. Cook received his B.A. from Augustana College in 1937. After earning a Master's degree at the University of Illinois in 1938, he spent several years as an industrial chemist. In 1942 he began his doctoral studies at Indiana University and obtained a Ph.D. degree in 1944. After a one year appointment with the Lubrizol Corporation in Cleveland, Ohio, Dr. Cook joined the chemistry department faculty at DePauw University. He stayed at DePauw for the rest of his academic career until 1985. He served as chair of the chemistry department for 13 years and participated in many faculty studies which led to the improvement in liberal arts requirements and the maintenance of a quality science program. He taught courses for students in general chemistry, organic chemistry, and applied chemistry for nurses, teachers, and liberal arts majors. His experience in conducting research in organic chemistry with senior majors and graduate students resulted in a number of articles in chemical journals.

In 1958 he initiated an NSF-funded summer program, *The Improvement of Teaching Science and Mathematics in the Elementary Schools*. He also initiated a summer research program for chemistry majors (1963-71), which

was supported by the NSF. Additionally, he served the American Chemical Society as a Visiting Associate for its Committee on Professional Training. He served as a member and then chairman of the Visiting Scientist Committee for the American Chemical Society's Division of Chemical Education (1959-1964). During these years he made over 30 visits to liberal arts colleges as a Visiting Scientist. In 1961-62 he was a member of the NSF staff in Washington, D.C. as an associate program director in their course content improvement section.

Among his other professional activities was a summer research appointment at the National Laboratory in Oak Ridge, Tennessee (1951); postdoctoral research as a Naval Research Fellow at Purdue University (1952-53); and a Visiting Professorship at Indiana University (summer, 1963). He was a member and Fellow of the Indiana Academy of Science since 1945. He served as President of the Academy in 1976. In 1974 he authored a textbook, *Elements of Chemistry*, published by the D. Van Nostrand Company. This textbook reflected his lifelong interest in scientific teaching within a humanistic context.

*-- Dr. Christine Shriner, Daughter*

## Images from the 2009 Spring Meeting Field Trip

(Images by Paul Rothrock)



*David Daniell, Jim Berry, and Jim Plew at Engineering Aggregates Quarry, Logansport. Silurian age Kokomo Formation.*



*An oil ooze was one of the "treats" found in this particular rock formation.*

**2009 Fall Meeting of the IAS  
will be held at  
Indiana University Kokomo  
October 22<sup>nd</sup> - 23<sup>rd</sup>**

**Deadline for submission of material for the August issue of the IAS Newsletter is July 27, 2009.  
Send copy to Donald G. Ruch at [druch@bsu.edu](mailto:druch@bsu.edu)  
For IAS information, go to: [www.indianaacademyofscience.org](http://www.indianaacademyofscience.org)**

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