Iowa Academy of Science
The New Bulletin

Volume 10 Number 1Winter 2013

The Iowa Academy of Science is established to further scientific research and its dissemination, education in the sciences, public understanding of science, and recognition of excellence in these endeavors.

Message from the Executive Director

Dear IAS Members,

In the midst of this cold winter I hope you had an opportunity to enjoy the holiday season. During the time leading up to and during the break the Academy was preparing to make a move. The move is now complete. After many years in Baker Hall on the University of Northern Iowa campus the Iowa Academy of Science is now located in Room 50 of the Biology Research Complex at UNI. Baker Hall is scheduled to be demolished this year. We have taken over the 500 square feet that was the reception area located in the front of the building. The BRC, as the building is called, is located near the southwest corner of University Avenue and Campus Street. While our address has changed our other contact information has not. Phone numbers and email addresses are the same.

Some of our members may not realize the importance of our location at UNI. The University provides office space and other office amenities that would otherwise be a significant expense to the Academy. Heat, lights, air-conditioning, internet, computer services, furniture, and the opportunity make purchases of supplies at University discount are a few of the benefits. We would like to thank the University administration and IAS members on the faculty for their help in securing the new space. UNI staff in facilities, IT Services, transportation, and the mail center have been very helpful in getting us settled.

I hope you take a few minutes to read this issue of the Bulletin and make plans to attend the IAS Annual Meeting at Iowa Central Community College in Fort Dodge.

- Craig Johnson, Executive Director

Journal of the
Iowa Academy of Science

JIAS is currently soliciting papers for Volume 120. The Journal considers several types of contributions from disciplines represented by sections of the Academy including formal research with no minimum or maximum length; reviews or annotated bibliographies; and papers on science teaching. Previously copyrighted material will not be considered.

A checklist and submission form is available on the IAS website: **www.iacad.org**

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2013 ICTM-ISTS Fall Conference
Photo Album

Time for relaxed conversation

One of over 90 learning opportunities

Eric Hall, ISTS Chair

Conference Chair De Anna Tibben with ISTS Chair-Elect Kelen Panec

60 exhibitors displayed teaching resources

De Anna with Outstanding Service Award winners Jeff Weld and Carl Bollwinkel

The Iowa Science Teaching Section of the Academy held a joint Fall Conference with the Iowa Council of Teachers of Mathematics on October 22nd and 23rd at the Scheman Center in Ames. The meeting attracted 600 science and mathematics teachers and exhibitors to the combined event. Thanks to the leadership of ISTS and ICTM for working to bring math and science teachers together at one conference for the benefit of STEM education in Iowa. They will meet together again in October. Watch for the dates.

126th Annual Meeting

Iowa Academy of Science

April 11 – 12, 2014

Iowa Central Community College

Fort Dodge, Iowa

The 126th Annual Meeting of the Iowa Academy of Science will be held on Friday and Saturday, April 11th and 12th in Fort Dodge. Iowa Central Community College has graciously opened their campus to Iowa's scientists, science educators, and students for what promises to be another informative meeting.

This year featured speakers will discuss Iowa-based research on precision agriculture, the Voyager mission milestone, the rocky water-ice world of Saturn's largest moon Titan, and the work of the Asteroid Deflection Research Center. There will also be presentations on the effect of agriculture on the hydrology of Iowa, obstructive sleep apnea, and an after dinner discussion about the peopling of the Americas. A few of the invited speakers are shown below. Information on additional speakers and events will be available soon online and in the Advance Program.

Amy Kaleita-Forbes
Precision Agriculture

Mathew Hill
Peopling the Americas

Andrew Kitchen
Peopling the Americas

Donald Gurnett
Voyager

For more information watch the IAS website for updates.
Schedule—Conference Hotel— Awards
More about Speakers and Events
Maps
Online Registration
www.iacad.org

Iowa Central Community College

New Facilitators

Dive into Project WET

Lilly Jensen and Laura Semken preparing to peer teach a Project WET activity.

As of September, Iowa has seven new Project WET facilitators. The new facilitators became certified during a workshop on September 13 & 14, 2013 at the University of Northern Iowa. An EPA mini-grant from the Region 7 EPA state EE collaborative, including the Iowa Conservation Education Coalition provided the funding for the workshop. Workshop activities included modeled and peer teaching experiences with about a dozen Project WET activities, discussions of classroom teaching and learning strategies and of important water issues in Iowa, and experience using the Project WET Curriculum & Activity Guide.

New Minnesota state Project WET Coordinator, Janine Kohn, joined the workshop to gather ideas for professional development in her state. All of the new facilitators received a Project WET workshop starter kit.

Ken Carroll attempts to 'hit the mark' while Kelen Panec records the accuracy and precision of successive drops.

Kirkwood Community College Faculty member, Ken Carroll, is the first of the new facilitators to lead a Project WET workshop. Thanks to Ken, 30 KCC Parks students will begin their careers prepared to teach about water resources as a part of their outreach programs.

The Iowa Academy of Science has sponsored Project WET (Water Education for Teachers) in Iowa since 1999 and through the support of REAP-CEP, the Academy has provided preservice Project WET workshops for thousands of soon to be Iowa educators. The new facilitators will increase the Academy's capacity to reach pre-service educators across the state with Project WET professional development experiences. Learn more about Project WET in Iowa at: http://www.iacad.org/projectwet.html.

- Marcy Seavey, IAS Program Director

Attention Teachers: New Environmental Education Opportunities

Environmental Issues Instruction (eii) and Upper Iowa University are offering a professional development opportunity for teachers. The theme is Preserving and Protecting Our Water Resources. Teachers will experience a plethora of instructional activities to assist them in teaching an interdisciplinary unit to their students.

All activities are aligned with standards in the Common Core and Iowa Core, Next Generation Science Standards, 7 Cross-Cutting Concepts of the Framework for K-12 Science Education and STEM-Science, Technology, Engineering, and Math. Teachers from Pre-K-12 in all content areas are invited to participate in this graduate level course.

For a registration fee of $198 the teachers will receive: two graduate credits from UIU, a myriad of materials to teach the unit, plus lodging and food. Grants from REAP-CEP and LRTF make these workshops possible. The dates and location are: Mt. Vernon Sleep Inn Feb. 21-23, 2014 and April 25-26, 2014. You may register on our website: http://www.uiu.edu/eii

For more information contact:

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REAP TURNS 25!

- Marcy Seavey, IAS Program Director

Conservation of Iowa's Natural Resources for future Iowans is a core value of the Iowa Academy of Science. For example, the Academy and our members were fundamental in the establishment of Iowa Lakeside Laboratory and the State Geology Survey. Since the Academy's founding in 1875, our members have contributed much to what is known about Iowa's resources, ecology, and geology and the Journal of the Iowa Academy of Science/Proceedings of the Iowa Academy of Science serves as a historical record of the science of our state. This year we celebrate, with the rest of Iowa, the anniversary of legislation which puts to use the science contributions of Iowa Academy of Science members by providing the means for cities, counties, and the state to protect natural, historic, and recreational spaces; prepare our educators to include Iowa specific environmental education activities to our students and the public; and implement projects that preserve our soil and water resources.

Twenty-five years go our state's legislators passed the landmark Resource Enhancement And Protection Act – "*a long-term integrated effort to wisely use and protect Iowa's natural resources through the acquisition and management of public lands, the upgrading of public park and preserve facilities; environmental education, monitoring, and research; and other environmentally sound means*". REAP provides up to $20 million annually, which is divided up via the REAP formula and distributed at the city, county and state level, primarily via competitive grant processes. In recognition of the importance of an informed citizenry, the first $350,000 of each annual REAP allocation is directed to the REAP-CEP (Conservation Education Program) for development of Iowa specific educational materials and professional development for Iowa's EE providers. The Academy has taken advantage of REAP-CEP funding to support Project WET and the Leading Place-based Student Investigations – Water workshops and partnered with other REAP-CEP funded entities like the University of Northern Iowa Tallgrass Prairie Center to support EE in Iowa.

Experiencing REAP.

The first I learned about REAP was while studying Iowa's conservation movement for the University course Conserving Iowa's Natural Resources. At that time REAP was in its 8th or 9th year and by coincidence this was also the first year I directly benefited from REAP by attending a local Project WILD workshop. That isn't the only benefit I have personally received from REAP. When I'm not already busy leading an IAS program, I attend REAP sponsored professional conferences such as Winter Solstice and the Midwest Environmental Educators Conference. Often I present at these events, always I network and learn new strategies and skills that I can bring into IAS programming. Similarly, I adopted a dog last January. At least once a week my dog and I pass a REAP trail sign indicating that the trail or the land the trail is through has been obtained, improved, or managed using REAP funding. Whether you know it or not, if you've spent any time in Iowa's wild spaces, at events that teach about our wild spaces or viewing museum exhibited about Iowa's natural history, then you've probably benefited from REAP. And of course the Iowa Academy of Science's Iowa Project WET Program has received over a dozen REAP-CEP grants to provide professional development to Iowa preservice and in-service teachers.

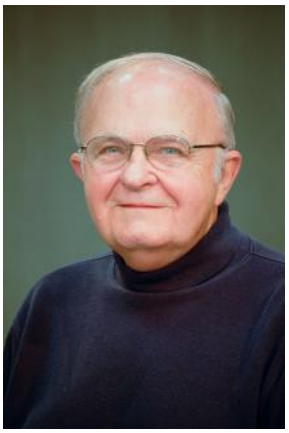
REAP is a unique piece of legislation not only because it sets aside money for our natural resources, but also because the law depends upon citizen engagement. Every two years Iowa holds a series of 18 REAP Assemblies where citizens are invited to attend to learn more about REAP and more importantly help decide the future direction of REAP. Each assembly nominates local citizens to the REAP Congress. The REAP Congress meets in January of the following year, at the Capitol, and makes recommendations to the Iowa Legisla-

REAP continued on page 7...

Musings by REY

Students as Part of School Leadership for Promoting Reforms in Science

Connecting Learning Assures Successful Students (CLASS) is a Professional Development (PD) effort for teachers which operates throughout Indiana and several other States, including Iowa. One of the innovations tried was the use of students as part of school leadership teams; students at varying grade levels were called "Ambassadors" who met regularly with teachers and administrators to establish rules, work on problem resolutions, and outline efforts to improve learning in the school. The work began in elementary schools where principals and a set of elementary teachers conceived the power of student views and voices which could improve the school and enhance student learning for all. Student leaders were to work with CLASS teachers, school administrators, and parents to illustrate this new and important addition to "Distributed Leadership".



Robert E. Yager

Specific CLASS efforts have also been tied to Iowa Chautauqua PD efforts in Iowa. These have focused on success of school principals as critical players in accomplishing school reforms. The plan to include students as part of school leadership was added to the idea of "Distributed Leadership" with several PD efforts in Iowa. The Student Ambassadors in the Iowa Chautauqua arose from teacher needs to make all students more central to science projects -- both individual and group efforts. Students were invited to be part of the leadership planned for schools where teachers have worked as collaborators with the Iowa Chautauqua learning teams for over three decades. Results in several Chautauqua sites have been most positive!

Great advantages can be observed when school principals are major partners in accomplishing the reform efforts. Significantly more successes have been continually observed when the ideas were tried in schools where principals were important and active partners. Many principals were quick to support the idea of adding students to leadership teams! In the Chautauqua Leadership Conferences each summer the Iowa Chautauqua PD Leadership was enlarged to include the involvement of teachers, administrators, counselors, school board members, and students selected in a few specific middle schools (Grades 6-8) in Iowa.

One of the earliest schools involved with Iowa Chautauqua was most successful in getting all science teachers involved with other teachers across all the disciplines. Such a teacher team worked with a specific group of students and used projects and issues that became the organizers for learning which were not tied to each major discipline for typical 50 minute class sessions each day. The principals of three middle level schools were impressed with the results when told of the CLASS Student Ambassador program. They were interested in the specific results and wanted to see what could happen in their buildings. The teachers were already on board and knew of the features that define constructivist learning. The most impressive aspect was involving students first in all aspects of learning; students, teachers, and administrators were ready to try the CLASS Student Ambassador effort!

When the Ambassador program was tried successfully in Iowa with middle level students, results were collected by graduate student assistants who were research leaders anxious to report on actions regarding the inclusion of students in leadership roles. Results from one year included: 1) over half of the students reported science as being their most interesting class; 2) 70% of the 6-8 students reported that the Ambassadors performed as needed "partners"; 3) 60% of the students liked that Ambassadors worked together across the grade levels and sought out examples from other Ambassadors; 4) 60% were anxious to help students in other schools and share with them the advantages of students included in leadership efforts; 5) more were anxious to add their own personal views after the Ambassador Program had been tried and used.

All principals involved with the inclusion of students in school leadership were excited; they were anxious to share the experiences with others. All teachers were positive about the effectiveness of

having Student Ambassadors as part of school leadership; they noted that the whole school and in many instances the whole community benefited. Learning was enhanced!

Musings by Robert E. Yager
Professor of Science Education
University of Iowa

Starr
Student Research Grants

As part of the Iowa Junior Academy of Science program the IAS provides $1,000-$2,000 in small grants to individual middle and high school students to support their science fair projects. A student may receive up to $200 toward specified expenses for their research projects. The student proposals explain the rationale for methods and include a budget. The proposals are reviewed by the Student Programs Committee and other volunteer reviewers. The committee provides additional support to the students through grant proposal feedback and by matching students to scientist mentors.

The Starr Student Research Grant program provides a unique opportunity for students exploring science to experience what it is like to develop a research project, apply for funding, receive feedback and present at regional or statewide science fairs and with Iowa Junior Academy of Science students at the Iowa Academy of Science Annual Meeting.

If you are interested in contributing funds to the program or would like to become involved as a reviewer or mentor please contact the IAS office.

The New Bulletin is a publication of the Iowa Academy of Science and is distributed to current IAS members 3-4 times per year.

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Editor: Craig Johnson

Article Submission: The deadline for submission of articles for Vol. 10 #1 is February 17, 2014. Articles must be pre-approved. For more information contact Craig Johnson, IAS Executive Director, at craig.johnson@uni.edu

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ture and the Governor about REAP. This year I was honored to have served as one of our regional delegates. What an experience!

The congress meets in the Iowa House Chambers. The name and county of each delegate is printed on their desk and *big board*. The meeting begins with election of a Chair and the Pledge of Elegance. The session begins with REAP Alliance members and DNR staff presenting about the history of REAP and the accomplishment of the last two years. Then the action begins, the floor is opened to delegates to bring up motions for discussion and consideration. The first substantial motion of the 2014 REAP Congress was to keep the general funding formula for dividing up REAP funding, although there was some disagreement about whether the 'formula' is the REAP pie or the CEP funding, the DNR 1% and the pie (see http://www.iowadnr.gov/Environment/REAP.aspx). The second motion was to request that the legislature increase REAP's allocation to 25 Million for the 25th year. This motion passed unanimously. Another motion was made to increase the CEP allocation from $350,000 to $500,000 to recognize that this funding does not go as far as it did 25 years ago. Although no one in the chambers had anything but good comments about REAP-CEP, this motion was narrowly turned down on the argument that asking for more money for education would be an invitation to the legislature to change the entire funding pie. Several other motions were brought up and discussed. It was exhilarating and frightening to stand up and speak on the issues. I gained an appreciation of the dedication it must take to be a member of the regular legislature and do this every day for weeks. It was especially exciting to bring up a motion to ask the Governor to proclaim this the Year of REAP in honor of 25 successful years of natural resources protection. I plan to attend my next REAP Assembly in 2015 and volunteer to go back and serve as a delegate again. I encourage IAS members to become active in REAP as well, either by attending the next assemblies or becoming active on local REAP boards. We've inherited the most changed landscape on the planet and it's up to all of use as scientists and engineers and as citizens to do our part to protect those wild spaces that we have left.

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