Iowa Academy of Science
The New Bulletin

Volume 2 Number 4 Autumn 2006

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.

Your Iowa Academy of Science Fall Bulletin has arrived. This year promises to be an exciting one for the Academy as new ideas and programs take shape. If you did not see the Summer Bulletin it is available online at www.iacad.org. It was published in electronic format this year. In the future we plan to continue printing and mailing the fall, winter and spring issues while the summer issue will be available only online.

This issue contains information about the election to be held by the Science Teaching Section. This summer the Academy held section elections to reorganize our existing sections to better reflect our membership and future developments. The outcomes of those elections are posted on our website.

The Academy is working on an exciting new project that will invite Iowans of all ages to learn more about science. One goal of the program is to provide first-hand science experiences for residents anywhere in the state. It will promote scientific exploration and learning. A major goal is to encourage Iowa's youth to enroll in science and mathematics courses and consider science-related careers. It will include educational and entertainment opportunities for families. We are happy to announce that this program has been accepted as the marketing project for the Ad Pros Student Event to be held at Iowa State University in March 2007.

The Academy is embarking on a new membership campaign this fall. A new membership brochure and poster is being designed for placement at institutions, schools, and businesses across Iowa. We will be asking your assistance in contacting prospective new members and placing posters and brochures where they will be most effective.

During the past year we have reorganized the Academy's accounting system, moved our membership directory online, purchased new computers and software for the office, and started the member's only website. The new ISTS Journal is successfully online, the Academy is continuing with educational programs such as GLOBE and Project WET, and new programs are being planned. We hope this is leading us toward a more active and innovative Academy for members and potential new members.

On behalf of Marcy Seavey, Toni Arends, and our student workers Abby, Jason, and Kelsie, we hope you have a great fall season.

—Craig Johnson, Executive Director

Science Teaching Section Name Election

Ballot open from September 25th to October 10th
Attention all Science Teaching Section Members—Please Vote!

The Science Teaching Section membership will hold a second election by *electronic ballot* prior to the 2006 ISTS Fall Conference to select a permanent name for the section. Results will be announced at the ISTS Fall Conference.
Members will choose between the following names:

- Science Teaching
- Iowa Science Teachers
- Iowa Science Educators

Section members please vote by logging into the Member's Only portion of the website and clicking on the "Science Teaching Section Name Ballot" link on the yellow menu bar.

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Changes to IAS Sections

Over the summer, IAS members voted on the section changes proposed at the 2006 Annual Meeting. The voter turnout was high and the results are in and approved by the Board of Directors. The Iowa Academy of Science now consists of twelve sections:

- Anthropology
- Cellular, Molecular & Microbiology
- Chemistry
- Community College Biologist
- Ecology & Conservation
- Engineering
- Environmental Science & Health
- Geology
- Organismal Biology
- Physics, Atmospheric & Space Sciences
- Physiology & Health Sciences
- Science Teaching

The letter designations have also been dropped. Instead each section will always be referred to by its full name. Science Teaching Section Members vote will the permanent name of this section by electronic ballot this month (see story page 1).

Every section of the Academy will be creating section profiles over the next 8 months. The profiles will make it easier to communicate the organization of the Academy to the public and non-member science professionals. Each profile will include a description for the public, a description of the research the section is interested in, and a list of the activities of the section. Sections may add additional information such as national associations, recommended websites, iconic images that represent the section's science, or Iowa events/industries/institutions that would be of interest to section members.

The public description of each section should include a list of the science disciplines involved in that section and the greatest accomplishments and contributions of these sciences. The profile is an opportunity for the Academy to brag about our long and rich history of bringing together and supporting Iowa scientists and science teachers, to draw attention to the science that is happening in Iowa now, and to rise to the challenge of remaining relevant in a changing world. Most people have no idea who we are and what we do, as an Academy or as individuals. To us science is exciting, challenging, exploration, solving problems, making the world a better place… Our mission charges us with improving the general understanding of science in Iowa. I believe that in order to do that we must be able to communicate who we are and why we are science teachers and scientists. Please play your part by participating in the creation of the section profiles for the sections you belong to. Start by contributing to the discussion boards on the Members' Only website.

-Marcy Seavey

Iowa Junior Academy of Science Supporting Student Inquiry

Every year the Academy gives away $1000-2000 in Starr Student Research Grants. Students in grades 7-12 who are members of the Iowa Junior Academy of Science or whose school is a member of the Iowa Junior Academy of Science are eligible to submit a grant proposal. The grant proposals are read by the Student Programs Committee and every student receives feedback on the merits of the proposal and ways to improve the science project. Awards range from $20-$200.

By participating in the Starr Research Grants program, students gain experience communicating the purpose and process of their science and building a budget. They gain an opportunity to improve their research through the comments they receive and they gain flexibility in the topics they can address and methods they can use through the financial support.

Teachers, give your students the opportunity to participate in this program. Visit http://www.iacad.org/ijasmembership.html for membership forms and more information. The deadline for 2006-2007 IJAS membership dues is Friday, November 3rd. The deadline for Starr Student Research Grant Proposals is Friday, December 1st.

Scientists, do your part to support IJAS by volunteering for the Student Programs Committee, to be a judge at a science fair or at the IAS Annual Meeting, or simply by attending the IJAS presentations at the Annual Meeting. The question you ask or the attention you give could be the encouragement that sets a young students on the path to a science career.

ISTS President's Message

AN INVITATION

Please join us Tuesday evening, October 17, from 6-8 PM in Cedar Rapids at the Crowne Plaza Hotel for the President's Reception. Consider this an opportunity to relax and connect with you colleagues from across the state as we prepare to launch the 2006 ISTS Fall Conference the next day.

Additionally, as Tony Heiting has retired as the Science Consultant for the Iowa Department of Education, the President's Reception will offer an informal opportunity to recognize Tony for all he has done for the state of Iowa.

Refreshments (including my homemade Dutch letters, warm homemade salsa dip with chips), and beverages will be served.

All ISTS members are welcome!

Teaching as a Sacred Activity!

Iowa Science Teachers Section Fall Conference
Wednesday, October 18th, 2006
Crown Plaza Hotel, Cedar Rapids

Special Thanks to Our Sponsors

- AEGON Graphics
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Schedule

7:30-11:00	Registration
8:00-3:45	Exhibit Hall Open
9:00-9:45	Session I
10:00-10:30	Session II
10:45-11:30	Session III
11:45-1:30	Lunch & Speaker: Dr. Jim Colbert
1:30-2:15	Exclusive Exhibit Hall
2:15-3:00	Session IV
3:15-4:00	Session V
4:00-4:15	Door Prizes Announced

Keynote Speaker: Dr. Jim Colbert

Using Local Biodiversity and Service-Learning to Engage Students in Learning Science

Dr. Jim Colbert grew up in Cedar Rapids, Iowa, spending much of his childhood along a small stream called Prairie Creek. After completing his B.S. in Biology at Iowa State University, he went on to earn both an M.S. and a Ph.D. in Botany at the University of Wisconsin, Madison. After completing three years on the faculty at Colorado State University, Dr. Colbert returned to Iowa State. He is currently an Associate Professor in the Department of Ecology, Evolution, and Organismal Biology and is Coordinator of the Undergraduate Biology Program at Iowa State. Dr. Colbert has been recognized with nine teaching awards for his instructional efforts. Dr. Colbert helped start the BETAL (Biology Education Teaching And Learning) Community at ISU. This learning community focuses on assisting pre-service secondary education life science teachers at ISU in integrating biology content within educational pedagogy to aid in their development into excellent teachers. Dr. Colbert's lunch keynote address is one of more than 75 presentations at this year's ISTS Fall Conference.

All of our life is about choice. I want to thank you, in advance, for choosing to further your professional development by attending our Fall 2006 ISTS science conference to be held Wednesday, October 18, 2006 at The Crowne Plaza Hotel in Cedar Rapids, Iowa.

Each year, and culminating with the fall conference, your ISTS leadership team expends a huge amount of effort to assure that the conference will fuel your professional development. We do not take our responsibility lightly. We believe our members and guests deserve a conference devoted to helping them teach children.

Time still exists to pre-register at http:/ists.pls.uni.edu/ or, if you make a last minute decision to attend, you can register the day of the meeting. Also, please notice the savings by joining the Iowa Academy of Science at the same time you register for the conference.

Since every presenter will be showcasing their best, we each have a wonderful opportunity to augment our teaching techniques and content knowledge. I know all of us who chooses to come to this conference has a real desire to help our students learn, and I know each of us will be richly rewarded for having been here.

Thank you for choosing to come!!

Sincerely,

Gale Vermeulen, ISTS President '06-07

If you have questions, please contact Aaron Spurr at 319-273-7897 or at aaron.spurr@uni.edu.
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Iowa Science Teachers Section of the Iowa Academy of Science 2006 FALL CONFERENCE

Wednesday, October 18, 2006

"Teaching as a Sacred Activity"

Mail-In Pre-Registration Fees must be received by Oct. 13 Late and Onsite Registration Fees are $15 Higher.

Register in one of the following categories (check one):

- ❑ Current IAS Member ····· $55.00
- ❑ Nonmember ····· $80.00
- ❑ Full-Time Student/Non-Teaching Spouse ····· $25.00
- ❑ Conference Presenter ····· $45.00
  (Primary & Secondary Presenters Only - Session# __ Presentation# _)

❑ Conference Registration & New IAS Membership ····· $105.00
($55 registration + $50 new membership (a $10 discount),
membership October 2006-December 2007)

❑ Full-Time Student Conference Reg.
& New IAS Student Membership ····· $45.00
($25 registration + $20 new student membership)

Optional Breakfast Meeting Registration (check one):

- ❑Chemistry Section Breakfast & Business Mtg ····· $10.00
- ❑Earth Science Section Breakfast & Bus. Mtg ····· $10.00
- ❑Elementary Section Breakfast & Bus. Mtg ····· $10.00
- ❑Biology Section Breakfast & Bus. Mtg ····· $10.00

Total Conference Fee ····· _____

_____ I prefer a vegetarian lunch
(please inform your server at luncheon)

Please Print Clearly

Mail-In Registration Form

- Registration Includes Lunch
- The last day for advance mail registration is Oct. 13
- Refunds requested after October 10 are minus $15
- Payment must be by check or money order
- We cannot accept Purchase Orders
- Registration forms mailed just before the conference may not arrive in time to be processed. Please allow several days for mail delivery.
- A receipt will be given to you when you arrive at the conference.

Mail registration form and payment to:
Aaron Spurr
Malcolm Price Laboratory School
1901 Campus Street
Cedar Falls, IA 50613-3593

Name_____ Title _____
School Name_____
School Address _____
State _____ Zip _____
School Phone _____
Email _____
Please double check. Confirmation of your registration will only be sent via email.
AEA # _____ Grade level(s) taught _____
Make All Checks Payable to
Iowa Academy of Science
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http://ists.pls.uni.edu/

In Memoriam: James A. Van Allen

By Donald A. Gurnett
James A. Van Allen/ Roy J. Carver Professor of Physics
University of Iowa, Iowa City, IA

James A. Van Allen, a native of Iowa, and the world renowned space scientist who discovered Earth=s radiation belts, died in Iowa City, Iowa, on August 9, 2006. Born in the small town of Mt. Pleasant on September 7, 1914, he received a Bachelor of Science degree from Iowa Wesleyan College in 1935, and a Ph.D. degree in Physics from the University of Iowa in 1939. He then moved to the Carnegie Institute in Washington D.C., where he planned to do research on cosmic rays. However, before he could make much progress, World War II intervened, and his work was shifted to the development of radio-proximity fuses for antiaircraft shells. In 1942 the proximity fuse project was moved to the Johns Hopkins Applied Physics Laboratory. When the development phase was completed, he was commissioned as a lieutenant in the U.S. Navy and sent into the Pacific to test the shells under combat conditions. For this service he received four combat stars. After the war, he returned to Johns Hopkins where he rekindled his interests in cosmic rays and pioneered the development of Geiger tube instrumentation for flight on captured German V-2 rockets. These flights resulted in the first measurements of cosmic rays at high altitudes above Earth=s atmosphere, as well as other measurements of atmospheric ozone, solar ultra-violet light, and the geomagnetic field. He also supervised the development of a smaller U.S. rocket, called the Aerobee, that had capabilities similar to the V-2s.

In 1951 he moved back to Iowa to accept a position as Professor and Head of the Department of Physics at the University of Iowa. There he developed a low-cost balloon-borne rocket, called a rockoon, that could reach altitudes comparable to those achieved by the V-2 and Aerobee rockets. This work led to the first latitudinal survey of the cosmic ray intensity above Earth=s atmosphere using a series of rockets launched from ships as part of the International Geophysical Year, 1957-58. During this same period he started studying the feasibility of launching an artificial satellite, and was funded to develop a Geiger-tube cosmic ray detector for the Vanguard program, which was designed to launch a spacecraft into a low Earth orbit. However, before these plans came to fruition, the Soviet Union launched Sputnik 1, the world=s first satellite. In the resulting frantic effort to catch up with the Soviet Union, Van Allen was asked to install his instrumentation on a spacecraft to be launched by a rocket under development by Werner von Braun at the U.S. Army=s Redstone Arsenal. The spacecraft, Explorer 1, was successfully launched on February 1, 1958. Expecting to see a relatively steady cosmic ray counting rate, Van Allen and his colleagues were surprised to obtain data from some ground receiving stations in which there were no counts at all. Not wanting to believe that the instrument had failed, he postulated that the satellite was flying through regions with exceedingly high radiation intensities, so high that they saturated the Geiger tube, rendering it inoperative. After a launch failure with Explorer 2, a similar instrument was launched on Explorer 3, which carried a tape recorder that allowed data to be obtained for an entire orbit. These data confirmed the saturation hypothesis and showed that Earth is encircled by two very intense donut-shaped belts of energetic charged particle radiation, now known as the Van Allen radiation belts.

The totally unexpected discovery of very intense and highly energetic belts of radiation encircling Earth immediately attracted worldwide attention. Van Allen and his colleagues soon showed that the radiation belt particles were trapped in stable, long-lived orbits by Earth=s magnetic field. In the next few years, this area of space research expanded rapidly and developed into the field now known as magnetospheric physics. Over the course of his career Van Allen provided similar energetic charged particle detectors for twenty spacecraft projects, including the first flights to the planets Venus, Mars, Jupiter and Saturn. Although Venus and Mars proved to have no internally generated magnetic fields, and no radiation belts, with the Pioneer 10 and 11 spacecraft he was the first to show that Jupiter and Saturn had intense radiation belts and large extended magnetospheres. Even after retirement in 1985 he remained active in his research. As the Pioneer 10 and 11 spacecraft proceeded outward toward interstellar space after their encounters with Jupiter and Saturn, he made the first measurements of the radial variation in the cosmic ray intensity with the distance from the Sun. These measurements provided a crucial insight into the entry of cosmic rays into the solar system, a topic that he continued to study up to the time of his death at age 91.

From his earliest days at the University of Iowa, Van Allen made a practice of involving students in his research, thereby contributing to the education of an entire generation of space scientists, many of whom went on to be leaders in space research at government, industry and university institutions. He was also a very popular lecturer, and for seventeen years before his retirement taught a large undergraduate course in astronomy. Even today, more than twenty years after he last taught this course, it is not uncommon to run across people from all walks of life who say that one of their most memorable experiences at the University of Iowa was taking AVan Allen=s Astronomy Course.@ For his research and teaching he received many awards, including memberships in the Iowa Academy of Science and the National Academy of Sciences, the National Medal of Science from President Ronald Reagan in 1987, and the Crafoord Prize from the King of Sweden in 1989, just to mention a few. He was not only a gifted researcher and educator, but was also a very kind caring person who loved to help people. He will be greatly missed by all who knew and worked with him.

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Article Submission: The deadline for submission of articles for Vol. 1 #1 is January 1, 2007. Articles must be pre-approved. For more information contact Craig Johnson, IAS Executive Director, at ias@uni.edu

Advertising Rates: Full page, single issue $160; Half page, single issue $60, two consecutive issues $100; Business Card (3.5"x 2.0"), single issue $30, two consecutive issues $50. For more information or to submit an advertisement, contact iascience@uni.edu

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