

NOVA

ILLINOIS MATHEMATICS AND SCIENCE ACADEMY



A Pioneering Educational Community

Volume 7 No. 1 • Fall 1992

Renowned Nuclear Physicist Gives Series of Lectures at IMSA

Dr. Edward Teller Shares His Views on Science, Politics and History

For two weeks in November, IMSA students, faculty and staff, and invited guests came face to face with a major figure in world history.

Dr. Edward Teller, one of the most celebrated physicists of this century, visited the campus October 28-November 12 to present a series of lectures, including the second annual James R. Thompson Leadership Lecture.

Teller, director emeritus of Lawrence Livermore National Laboratory and senior research fellow at the Hoover Institution, has received worldwide acclaim for his research in chemical, molecular and nuclear physics; quantum mechanics; and thermonuclear reactions.

The 84-year-old physicist is perhaps best known for his work with the Manhattan Project at Los Alamos Scientific Laboratory. His research on releasing energy through nuclear fusion eventually led to the first test of the hydrogen bomb in 1952.

During the Thompson Leadership

Lecture, entitled "Science From a Political and Historical Point of View," Teller lauded the Academy for its role in improving mathematics, science and technology education in Illinois. "What you are trying to do at the Academy is incredibly important," he said. "We need young people who recognize that technology is the human future, who understand that technology is an absolutely necessary component."

He also argued that research should continue to play an important part in policy making. "I believe that knowledge and technology are always desirable," Teller said. "To stop research is not right."

Teller, whose views have sparked considerable debate among leaders in the political and scientific arenas, met with numerous student groups during his two-week visit, including several classes and clubs.

In addition, approximately 400 guests from throughout Illinois attended one or more of Teller's public lectures on the structure of matter, science teaching and relativity.



DGC/H Photographs

Dr. Edward Teller

IMSA senior Elizabeth Pine of Chicago called Teller's visit "one of the most memorable experiences" of her three years at the Academy. "It was amazing to be able to talk with him," Pine said. "We discussed about every-

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From the Executive Director



Dear Members of the IMSA Community,

The Illinois Mathematics and Science Academy has enjoyed a most productive and eventful fall semester. The debut of the *IMSA Math Journal*, a resource for students and teachers throughout Illinois, and the historic two-week visit by Dr. Edward Teller are but two of the highlights. Videotapes of Dr. Teller's physics lectures are being produced and will be shared with other schools.

In the area of private sector support, we are most grateful to Illinois Bell for helping to underwrite the cost of our 1992 Miss Saigon Gala and for installing fiber optic cable into our Toyota Video Production Laboratory. This is a critical step in building the infrastructure for IMSA to provide distance learning opportunities via the telephone system to other schools in Illinois.

In addition, we are testing a new system for designing integrative curriculum (to be featured in a future issue of *NOVA*), and we continue to expand the scope of our work in problem-based learning.

As we begin to see more and more concrete examples of how the R & D work at IMSA benefits other schools and teachers, I would like to share with you some recent comments by Dr. Donald Kussmaul, superintendent of the East Dubuque Unit District No. 119:

You have taken a dream for education in Illinois and made it reality. The East Dubuque School District is located 20 minutes from the "Field of Dreams" and I do feel that the statement "build it and they will come" applies to IMSA. Build the programs and the students will come. Provide the mindware for the growth of the state and business will come.

The Illinois Math and Science Academy should be recognized as the research base for education in Illinois and the Academy lead for quality should be mandated. A vision whose time has come.

We are heartened by Dr. Kussmaul's comments, and we appreciate and share his commitment to quality education for all children in Illinois.

Best wishes for the holiday season.

Sincerely,

Stephanie Pace Marshall, Ph.D.
Executive Director

Students Collaborate on Bioethics Problem

Students attending the 5th annual National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology (NCSSSMST) student conference spent a day traveling into the worlds of medicine, science, law, ethics and economics to solve a real-world problem.

During the Nov. 12-14 conference at IMSA, students worked together in small groups to develop solutions to a problem of "Jane's Baby." In the case, a pregnant woman is told that her fetus has encephaly, a condition where part of the brain is missing. Playing the role of Jane's pediatric specialist, students debated possible solutions based on their research.

Founded in 1988, NCSSSMST consists of specialized high schools throughout the country that serve talented mathematics and science students. The annual student conferences are designed to acquaint students of similar interests and abilities and to encourage them to work together to solve scientific and technological problems.

A total of 200 students from 30 consortium schools attended. Each school, including IMSA, could send up to 10 delegates.

IMSA delegate Dave Knol of Princeton said the most rewarding part of the conference was being able to interact with other students from similar schools and learn how other schools operate. "A lot of times people think we live in a bubble and to get outside and talk with other students in similar situations is very meaningful," Knol said.

Delegate Sandra S. Park of Wheaton added, "It was interesting to work with people from all over the country who brought in their own backgrounds, ideas and values."

Other conference activities included:

- trips to the University of Chicago, Northwestern University, Lake Forest College, Shedd Aquarium and Field Museum of Natural History in Chicago; and



Cathy Veal

Student delegates discuss possible solutions to "Jane's Baby," a complex medical and ethical problem.

- a workshop by Evelyn Delori, the national chapter coordinator for Student Pugwash USA. Student Pugwash USA is a national, non-profit, educational organization designed to

help students better understand the social and ethical implications of science and technology. IMSA established the first high school chapter of Student Pugwash USA in 1988.

1992-93 Admissions Information

To help prospective students and parents learn more about the Academy's admissions, academic and residential life programs, the following activities are scheduled this fall and winter:

- Statewide Informational Meetings (50). Sites include Bradley, Carlinsville, Chicago (7), Collinsville, Crystal Lake, Danville, Decatur, Deerfield, DeKalb, Dixon, East St. Louis, Effingham, Elgin, Elmhurst, Evanston, Freeport, Galesburg, Grayslake, Harvey, Hazel Crest, Hoffman Estates, Homewood, Jacksonville, Joliet, Lincolnwood, Macomb, Marion, Mattoon, Maywood, Moline, Mt. Vernon,

Normal, Oglesby, Palos Heights, Peoria, Pontiac, Quincy, Robinson, Rockford, Springfield, Urbana, Vernon Hills, Waukegan and West Chicago.

- Visitor Information Program Days (2). These will be held at IMSA at 1:00 p.m. on January 9 and 24.
- Application Deadline. The deadline for application to IMSA's eighth sophomore class—the Class of 1996—is March 1, 1993.

For more information about the admissions process, statewide informational meetings or VIP Days, call (708) 801-6027 or in Illinois 1-800-526-1239.

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Ted Parge

Edward Teller *(continued from page 1)*

thing from free will to the Strategic Defense Initiative."

Sangeeth Peruri of Lake Forest added, "I don't know if I agree with all of his convictions, but I liked the way he believes in his convictions."

*IMSA student writer
Sandra S. Park
contributed to this story.*



DIG-IT Photographs

Board of Trustees President James D. Pearson (left) and IMSA Fund Board President James R. Thompson (right) join Dr. Stephanie Pace Marshall in welcoming Dr. Edward Teller to IMSA's campus.

VIDEOTAPES: To order videotapes of Dr. Teller's lectures, contact IMSA's alliance office at (708) 801-6989.

Miss Saigon

*Executive Director
Dr. Stephanie Pace
Marshall (right)
presents a plaque
to Helen Shumate
of Illinois Bell
in recognition of the
company's support of
IMSA's 1992 Gala.
The Miss Saigon
event raised \$25,000
for the IMSA Fund.*



Cathy Veal

Music Concerts Benefit Hurricane Victims

Patrons of IMSA's annual fall music concerts (October 24 and 25) not only enjoyed some wonderful music—they also helped the victims of Hurricanes Andrew and Iniki. Through voluntary donations made at the door, approximately \$600 was raised for the American Red Cross' hurricane relief fund.

Under the direction of music teachers Dalia Bach and Mark Running, the concerts featured the IMSA symphonic wind

ensemble, symphonic band, and chamber and concert choirs. In addition, student artwork was sold during the intermissions, with proceeds also going to the Red Cross.

"The music and art teachers and students felt these benefit concerts would provide an opportunity for students to share their talents in a tangible way by contributing to the needs of others," Bach said.



IMSA seniors, IMSA Fund Board President James R. Thompson, former Governor of Illinois, and his daughter, Samantha, were among the guests for the second annual Thompson Leadership Lecture. (DIG-IT Photographs)

IMSA Charter Class graduates Lonnie Kowalko and Ron Kerner listen to Teller's lecture on Relativity. (Photo by Cathy Veal)



Patrick LaMaster, IMSA physics teacher, and Dr. Edward Teller share ideas about science education. (Photo by Cathy Veal)

Sophomore Erik Nelson of Barrington discusses physics theories with Dr. Teller. (Photo by Cathy Veal)

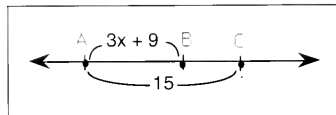
IMSA Launches Math Journal for Illinois Teachers and Students

IMSA mathematics teachers Titu Andreescu, Charles Hamberg and George Milauskas say "there is something for everyone" in the first issue of the IMSA Math Journal, distributed to secondary schools throughout Illinois this fall.

The purpose of the journal, the first issue of which was developed, edited and written by Andreescu, Hamberg and Milauskas, is to share mathematical ideas, observations and approaches with students and math educators. The journal may be duplicated for use both in and outside the classroom.

Teachers and students from other schools are invited to submit articles.

problems and solutions for publication in future issues. "Our intent is to appeal to a diverse audience," Milauskas said. "so we welcome interesting items of varying degrees of complexity and difficulty."



Concepts in the journal emphasize connections among different areas of mathematics. For example, in one section, *Connections Involving Geometry and*

Inequalities, students are asked to think of and solve algebra and precalculus problems in geometrical contexts (see graphic).

Several of the articles were generated from ideas developed by IMSA students. "In some cases, student work served as a springboard for our articles," Hamberg said.

Andreescu added that the journal may enable teachers to identify math talent in students through their submissions.

The goal of the journal, according to all three teachers, is "to open the door to new ideas for exploration and discovery." Work on the second issue of the journal, which will be distributed in the spring, is under way.

Survey Shows Uniqueness of IMSA Graduates

A survey of the Illinois Mathematics and Science Academy's (IMSA) third graduating class, the Class of 1991, indicates the Academy is producing a different kind of learner—one who sees the connections among mathematics, science, the arts and humanities, and who values ethical considerations in making decisions.

Results of the survey, part of IMSA's ongoing longitudinal research program, were reported by Dr. Diann Musial, coordinator of research, at a recent IMSA board of trustees meeting.

For previous studies (Classes of 1989 and 1990), IMSA had used a comparison group of 76 academically talented students identified by the Talent Identification Program at Duke University and the Center for the Advancement of Academically Talented Youth at Johns Hopkins University. This year, the comparison group was expanded to include 72 graduates of Illinois school districts with histories of academic excellence and strong honors programs.

Interviews were conducted by the Public Opinion Laboratory based at Northern Illinois University. A total of 105 of the 115-member Class of 1991

responded to the survey. The survey consisted of 41 forced-choice and open-ended questions. Answers were coded by independent readers knowledgeable in the area of gifted education.

While there were similarities between the two groups' responses, there also were important differences. Some of these included:

- IMSA graduates identified the total residential/academic experience and the interaction with other gifted students as the most significant factors in their academic growth. The comparison group graduates identified individual courses and extracurricular activities as the most significant factors in their academic growth.
- IMSA graduates described "good courses" and "effective teaching" somewhat differently than did the comparison group, more often defining the first in terms of authenticity (relation to real-life issues) and the second in terms of the encouragement of individual thought.
- When giving examples of how high school improved their critical thinking and research skills, the comparison group cited specific classes while the

IMSA graduates cited problem-solving and experimental opportunities across the curriculum.

- IMSA graduates provided many examples describing how IMSA improved their ethical decision-making skills. The comparison group offered only a few examples in this regard.
- Both groups reported satisfaction with their high school preparation, although IMSA graduates cited more mathematics and science courses.
- When asked to identify their biggest problems in college, the comparison group most often cited time management and being away from home as their key concerns. The IMSA graduates most often cited concerns about aspects of their college academic environments which they view as inflexible or impersonal.

Dr. Stephanie Pace Marshall, IMSA executive director, said the Academy is pleased with the findings. "We believe they validate the unusual and often high-risk educational pathway IMSA has chosen, a pathway that focuses on integrative thinking, intellectual exploration, creative problem-solving, leadership development and harmonious living," she said.

State and National Leadership

Executive Director **Dr. Stephanie Pace Marshall** recently gave the keynote addresses at the Illinois Association of Supervision and Curriculum Development (IASCD) annual conference and the Illinois State Board of Education's Accelerated Schools Network fall conference.

Several staff members presented workshops at the IASCD conference, including **Dr. Diann Musial**, coordinator of research, **Dr. Marcelline Barron**, director of academic programs; and teachers **John Stark**, German; **Willa Shultz**, French; **John Thompson**, biology; and **Margaret Park**, physics.

Dr. Marcelline Barron gave a workshop Oct. 24 at a symposium presented by the Illinois Prairie Girl Scout Council, William Rainey Harper College and the American Association of University Women. The symposium examined the impact of gender equity on achievement levels of girls and women.

Biology teacher **Dr. Bobby Hattaway** presented a workshop at the Illinois Science Teachers Association annual convention Oct. 2. The workshop was designed to help high school teachers plan and implement a low-cost field biology program.

Mathematics teacher **Susan Eddins** is serving on the editorial panel of *NCTM Student Math Notes*, published by the National Council of Teachers of Mathematics.

Cathy Veal, director of communications, and **Barbara Wilson**, residential program coordinator, were invited panelists at a recent state conference on service learning. The conference, sponsored by the Office of the Lieutenant Governor, was designed to help others learn more about youth community service activities. Community service is an IMSA graduation requirement.

Harry Davis, head of instructional technology, presented a session at the International Visual Literacy Association conference Oct. 1. **Davis** also was elected to the association's board of directors.

Student and Staff Achievements

IMSA students **Jenny Deller** of Carbondale, **Rachel Kopay** of New Lenox, **Maggie Lilly** of Country Club Hills and **Abbey Scott** of Metamora were invited to present their award-winning History Fair project at the Chicago Area Women's History Conference on Dec. 12. Their project depicts the impact 20th century American wars had on women.

Eighteen IMSA students and three staff members raised more than \$1,000 by participating in AIDS Walk Chicago. The event, held Sept. 20, raised more than one million dollars for various Chicago AIDS charities.

Recipients of this year's innovations and initiatives mini-grants, cash awards from the IMSA Fund for Advancement of Education, include: **Mary Beth Esquibel**, secretary; **Bernard Hollister** and **Dr. Jim Victory**, social science teachers; **Steve Gutierrez**, **Chantel Schnering** and **Michelle Sharp**, resident counselors; and **Christopher Jocius**, reference librarian. This program enables Academy employees to develop and implement creative ideas that support IMSA's mission.

On Sept. 11, the *Chicago Tribune* reported that members of IMSA's Class of 1992 led the nation with an average American College Test exam score of 30.9.

A total of 131 IMSA seniors (61% of the class) qualified as semifinalists or received letters of commendation in this year's National Merit Scholarship Corporation competition. In addition, three seniors qualified as semifinalists in the National Hispanic Scholar Awards Program and one senior qualified as a semifinalist in the National Achievement Scholarship Program for Outstanding Negro Students.

Student **Michael Hsu** of Olympia Fields was appointed Concert Master of the Chicago Youth Symphony Orchestra. Hsu plays the violin.



IMSA senior Elizabeth Pine is congratulated by Dr. James S. Kahn, president of the Museum of Science and Industry, as the winner of the Museum's 1992 Outstanding Young Scientist competition. For her achievements, she was awarded a trip to the Nobel Prize ceremonies in Sweden in December. (Photo courtesy of the Museum of Science and Industry).

Alumni Achievements

G. Allen Mayer, '90, University of Chicago, was elected Democratic Committeeman in the March primary and was a delegate to the 1992 Illinois Democratic State Convention.

Sean Pritchard, '90, West Point, was awarded the Distinguished Cadet Award for ranking in the top 5% academically in his class. He also received the Superintendent's Award for excellence in academic, military and physical development.

Erin Lott, '92, Denison University, was named one of 55 winners nationally of Denison's Heritage Scholarship.

Wellness Program Promotes Healthy Living

Eighteenth century English author Samuel Johnson once said, "Life is very short, and very uncertain; let us spend it as well as we can." Although the definition of wellness has evolved over time, the goal has remained the same.

"We want students to make positive decisions today and throughout their lives about maintaining their good health and well-being," said John Martin, wellness team leader.

Beginning this fall, all sophomores are taking IMSA's new wellness course, which was piloted for one semester in 1991. The course addresses the physical, emotional and psychological development of students through the integration of health and physical education courses.

In addition, juniors and seniors participate in one structured exercise program each semester.

Principal John Court calls the program an "exciting initiative with far-reaching implications," adding "we want to provide our students with the lifetime skills needed to take on leadership roles, be productive and compete in the global community in the future."

In the course, students meet two days for classroom activities and two days for physical activity. Wellness teachers John Martin, Nancy Todnem and Barbara Baber use the cooperative learning approach which de-emphasizes competition. Although a textbook is not used, students are required to maintain a journal and notebook, develop a personal



Brenda Binschbacher

Dr. Greg Mucci leads a class in Tai Chi, a Chinese martial art emphasizing relaxation techniques.

wellness plan and fitness assessments, and take several exams and quizzes.

The curriculum focuses on the whole person including five dimensions—physical, emotional, mental/intellectual, social and spiritual/philosophical.

In addition to personal physical fitness, topics include values, ethics, decision-making, stress management, human sexuality and relationships, consumer and environmental health, nutrition, first aid and substance abuse.

IMSA sophomore Elizabeth Liu of Chicago said the program is especially valuable at IMSA, where students need healthy outlets. "Personally, I found the relaxation techniques to be very helpful," she said. "Before taking the class, I never really thought about ways to relieve stress and tension."

Social worker Cheryl McGuirk said the program also is designed to help IMSA students make the emotional and social adjustment to being away from home. "Since we're asking students to deal with things we didn't have to deal with until 18 or so, we have a special responsibility to help them develop the skills to succeed in a residential setting," she said.

Illinois educators who would like to learn more about IMSA's wellness program are invited to attend one of three "Wellness Visitation Days." These will be held March 1, 3 and 8. To make reservations, contact Jerre Henriksen at 708-801-6058.



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UPDATE: School District Partners Report Progress

Two years ago, we reported on the new IMSA/Motorola University initiative to help school districts improve their mathematics and science programs. Recently, we asked three of the districts—Alton, Pekin and Mt. Vernon—to reflect on what they have accomplished so far and what they hope to accomplish in the future.

Michele Maki, Dr. Nick Osborne and Dr. Peter McFarlane have a lot in common—they love public education, are dedicated to their local school districts, value teamwork and welcome change. They also agree that participating in the IMSA/Motorola University District Learning Leadership Teams (DLLT) initiative has benefitted their districts.

The DLLT initiative, which seeks to improve mathematics, science and technology education through a systemwide restructuring and change process, is being piloted in 29 Illinois school districts and Northeastern Illinois University. Each team has 10-12

members or “stakeholders” representing all areas of the school district including the board of education, superintendents, teachers, principals, parents, business leaders and community members.

Pekin: Decision-Making, Strategic Plan Improve

In a recent interview, Maki, director of special programs in Pekin Public School District #108, said participating in the DLLT initiative since October of 1990 has impacted the way decisions are made at all levels in her district.

“People on the team have learned new ways of interacting with others, running meetings and making decisions,” Maki said. “Virtually everything in the district has changed as a result of this.

In addition, Maki said the district’s strategic plan is more “far-reaching” because of knowledge gained by participating in the DLLT initiative.

Mt. Vernon: School-Community Ties Strengthened

Osborne, assistant superintendent of Mt. Vernon City School District #80, said

his district has learned a lot by involving community members in the decision-making process. “It’s an excellent way to link the community to the schools,” Osborne said. “Plus, input from this cross-section of community representatives lends credibility to our decisions.”

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Mary Lou DiGloia, a teacher in Mt. Prospect District #57, leads discussion during a recent District Learning Leadership Team meeting at IMSA.

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Carly Veeal



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From the Executive Director



Dear Members of the IMSA Community,

This continues to be an eventful year for the Illinois Mathematics and Science Academy. In the area of institutional advancement, we recently were honored to receive a major grant from the Neison Harris Family Foundation along with significant support from other first-time and repeat donors. 1992-93 already has been a record fundraising year, and we still have several months to go!

In admissions, we welcomed 1,500 guests to two Visitor Information Program Days in January. It is always a pleasure to introduce prospective students and parents from throughout Illinois to our campus. The deadline for student applications was March 1.

External programs serving educators and students throughout Illinois continue to expand. We have invited students for IMSA Summer 'AD' Ventures and have awarded another group of IMPACT II teaching grants.

The Center for Problem-Based Learning is engaged in teacher training, and we continue to work closely with a number of District Learning Leadership Teams from throughout Illinois (see cover article). In addition, we have produced videotapes of Dr. Edward Teller's physics lectures at IMSA last fall to share with other schools' science programs.

Recently, we also enjoyed hosting the fifth annual conference of the Midwest Consortium of Suburban and Independent Schools and serving as the distance learning classroom for Ameritech's SuperSchool Project demonstration.

Internally, as we look ahead to the spring, I am pleased to announce that NASA astronaut Dr. Mae Jemison will be the speaker at the June 5 Commencement of the Class of 1993. We also are preparing for the annual meeting to update our strategic plan. Much has been accomplished as a result of the plan, and we look forward to our continuing journey.

Sincerely,

Stephanie Pace Marshall, Ph.D.
Executive Director

PREVIEW: IMSA To Unveil Innovative Curriculum System at National Education Conference

The national education community once again will have its eyes on the Illinois Mathematics and Science Academy as it unveils its new integrative learning system (ILS) at the 48th annual conference of the Association for Supervision and Curriculum Development (ASCD) March 27-30 in Washington, D.C.

ASCD is the nation's largest education leadership organization. IMSA Executive Director Dr. Stephanie Pace Marshall serves as its president and will preside at the conference. Thousands of educators from Illinois, the nation and several foreign countries will attend.

The ILS provides the framework for the creation of new curriculum for IMSA's school program and external programs like *Summer 'AD' Ventures*. Core courses such as sophomore physics,

chemistry, English and mathematical investigations are being revised using the ILS this school year. The system supports curricula that foster the development of integrative thinkers who see interrelationships across disciplines instead of in isolation.

In addition to the ILS, which will be presented by Dr. Michael Palmisano, director of assessment and research, and Dr. Marcelline Barron, director of academic programs, IMSA staff will present:

- *Understanding the Vision, Meaning and Language of Educational Transformation*, Dr. Marshall
- *Creating a Community for Discovery: Scientists, Scholars and Students*, Dr. Peggy Connolly, mentorship coordinator

- *An Integrated Curriculum Development Project*, Susan Eddins, mathematics teacher; John Thompson, biology teacher

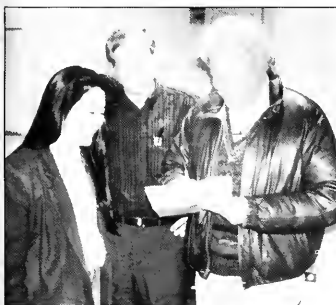
- *A Study of Gender Differences in Mathematics and Science Interest Among Gifted Students*, Dr. Diann Musial, coordinator of research; Dr. Barron

- *Using Students' Ratings of Courses for Improving Curriculum and Instruction*, Dr. Palmisano; Dr. Connie Hatcher, director of personnel and planning.

In addition, IMSA trustee G. Carl Ball, chairman of the board of George J. Ball, Inc. in West Chicago, has been named an ASCD Distinguished Lecturer and will speak on the topic of life-long alliances and partnerships.

Good Morning America and BBC-TV Showcase IMSA

Reporters and film crews from ABC-TV's *Good Morning America* and BBC-TV's *The Money Programme* recently roamed IMSA's corridors and classrooms as part of nationwide features on Dr. Leon Lederman and the U.S. economy.



IMSA physics teacher Patrick LaMaster looks on as Dr. Lederman signs an autograph for IMSA junior Elise Sivilya.

In December, *The Money Programme* visited the campus and several businesses in Aurora as part of a documentary on the U.S. economy examining cooperation between the public and private sector. The show aired in Britain Jan. 17 and was sent four times via satellite to Continental Europe, Asia, Africa and Australia.

The program featured IMSA physics teacher Patrick LaMaster instructing students at IMSA and off-site at Oswego High School through the two-way, audio-visual Telecommunications Instructional Consortium system.

On Feb. 1, *Good Morning America* aired a human interest story on the life and work of Dr. Leon Lederman, vice-president of IMSA's board of trustees. In the segment, Lederman was shown guest lecturing in IMSA's topics in modern physics class.



Good Morning America films Dr. Leon Lederman guest lecturing at IMSA.

Lederman, director emeritus of Fermi National Accelerator Laboratory in Batavia, is a professor at the Illinois Institute of Technology. In 1988, he was awarded the Nobel Prize for Physics. His new book, *The God Particle: If the Universe is the Answer, What is the Question?*, now is available in bookstores nationwide.

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ADVANCEMENT OF EDUCATION**

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IMSA Fund Receives Largest Private Grant In History

Tops One Million Mark for 1992-93

The Illinois Mathematics and Science Academy has received a \$750,000 challenge grant from Neison Harris of The Harris Family Foundation to support its national Center for Problem-Based Learning.

Harris is chairman of the board and director of the Pittway Corporation in Chicago.

This is the Academy's largest private gift, and it marks the first time the IMSA Fund has exceeded the \$1 million mark in fundraising in a given fiscal year.

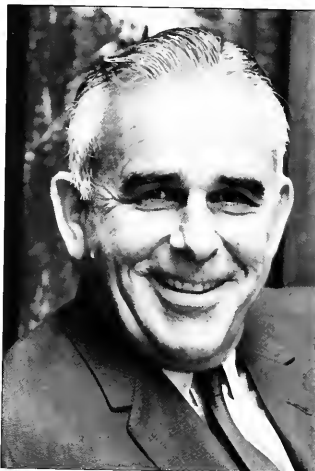
Established in 1992, the Center coordinates research, teacher training, curriculum development, evaluation and information exchange in this emerging field of innovation for K-12 classrooms. William Stepien, social science teacher, serves as its director.

The Neison and Bette Harris Institute within the Center will provide staffing to develop and distribute problem-based learning materials.

This is the Academy's largest private gift, and it marks the first time the IMSA Fund has exceeded the \$1 million mark in fundraising in a given fiscal year.

Problem-based learning first was used in IMSA's award-winning *Science, Society and the Future* course, taught by Stepien and Dr. David Workman, physics teacher, and funded by the Hitachi Foundation. This approach organizes the curriculum around "ill structured" problems that require students to use knowledge and skills from many subjects in developing solutions.

Last year, IMSA's work was featured at a national Wingspread Conference and in several education publications, prompting more than 1,000 inquiries



Neison Harris

from the U.S. and abroad. The Center now is working with teachers in Illinois and several other states.

Harris said he is happy to provide venture capital for the Center. "I am captivated by this highly promising teaching strategy, and I hope my challenge grant will leverage an additional \$750,000 for IMSA and the Center from other corporations, foundations and individuals," he said.

Former Illinois governor James R. Thompson, president of the IMSA Fund board of directors, thanked Harris for his contribution and commitment to educational reform. "Not only does his gift represent the largest donation in IMSA's history, it also represents a strong commitment to changing the way teaching and learning are done in our schools," he said.

IMSA Fund Strengthens Base

In addition to the Neison Harris grant (see page 4), the IMSA Fund for Advancement of Education continues to build on previous successes. Among the recent highlights:

New corporate and foundation donors of \$500 or more (August 1, 1992-February 15, 1993) include:

Alberto-Culver Company
Andrew Foundation
Archer Daniels Midland Company
Helen M. Galvin Charitable Trust
The Harris Family Foundation
Industrial Bank of Japan Ltd.
The Interlake Corporation
Lindberg Corporation
Montgomery Ward and Company, Inc.
Novell, Inc.
Scott Foresman & Company

Sears Roebuck Foundation
Washington National Foundation

Caterpillar, Novell, Illinois Bell Support. A \$75,000 grant from the Caterpillar Foundation will support unique professional development opportunities for IMSA teachers—opportunities to help them develop innovative approaches to teaching and learning for use at IMSA and in other Illinois schools.

Novell donated approximately \$56,000 worth of computer software to enable IMSA to upgrade its networking capabilities, and Illinois Bell installed fiber optic cable valued at \$25,000 in several areas. This increases IMSA's capacity for broadcasting classes, lectures, special events, etc.

School District Partners

(continued from page 1)

The team is exploring ways to increase hands-on applications of technology in the classroom. "One of our action plans calls for establishing computer networks in schools so all classrooms will have access to a file server containing programs to assist instruction in math and science," Osborne said. "Also, we hope to enhance applied math and physics skills in our middle schools using computer-assisted programs for technical drafting and drawing."

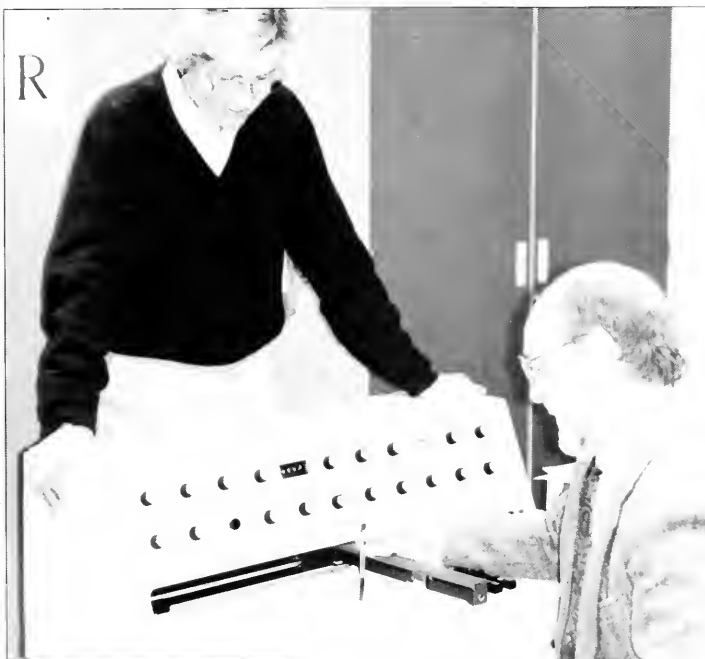
Alton: Technology Plan Takes Shape

Technology also is an important issue for Alton Community Unit School District #11. Assistant Superintendent Dr. Peter McFarlane said the team's involvement in the DLLT initiative has led to the development of a five-year technology plan. "The plan involves a systemwide upgrading of technology that will focus on telecommunications, technology-assisted learning, interactive technology and a technology media center," he said.

Dinah Simmen, IMSA coordinator for the DLLT initiative, said she is impressed by the progress made by these and other teams in such a short amount of time. "The process for systemic change is by nature slow," Simmen said. "It takes time for people to move through the pain of change to a sustainable vision."

Maki agreed. "It's a constant process of re-evaluation and renewal," she said. "We're never going to be there but we always need to strive to get there and redefine what 'there' is."

Osborne, McFarlane and Maki said that working with IMSA and Motorola University has served their districts and communities well. "IMSA has made it very clear that they have a commitment to improve instruction across the state," Osborne said. "We appreciate their commitment and look forward to continuing our partnership in the future."



Amoco Corporation Senior Research Associate Dr. G. Joseph Ray and Mary Van Verst, IMSA chemistry teacher, discuss nuclear magnetic resonance instrumentation. This and other state-of-the-art equipment are available to students in IMSA's Amoco Organic Chemistry Laboratory.

Recycling Program Revisited, Refined, Revitalized

By Sandra S. Park,
Student Writer

Moving from consideration to commitment, campuswide recycling now seems alive and well at IMSA.

The idea for campuswide recycling came from two former students who were members of IMSA Student Pugwash. Student Pugwash USA is a national organization designed to help students better understand the social and ethical implications of science and technology. IMSA established the first high school chapter of Student Pugwash USA in 1988.

Today, the IMSA recycling program is picking up steam with more manpower, more resources and more efficient service. This year, the number of recycling work service students increased by a third, with one student responsible for each residence hall and 14 students responsible for the academic building. Their duties include transporting materials from indoor recycling bins to outdoor bins which are collected free of charge by Able Disposal and Recycling Services in West Chicago.

Recycling bins are located at numerous locations campuswide. Last year, only aluminum cans, cardboard and high-grade paper could be recycled. However, this year the Wal-Mart Foundation donated permanent recycling bins that hold glass, metal, plastic and aluminum cans. (Other businesses or individuals interested in donating bins should call Ted Parge, director of institutional advancement at 708-801-6040.)

Noah Rosenberg, a recycling work service student, said there is a heightened awareness of recycling and a change in attitude among students and staff. "Now, if people see a recycling bin, they will usually walk over to it instead of throwing something away in the garbage can next to them," he said.

Currently, IMSA is required to include 25% recycled paper in its paper purchases. By the year 1996, this figure will increase to 40% of the total paper bought.

Resident Counselor Andrea Swenson, who supervises the recycling work service students, noted that such laws present a challenge for society. "We need to continue to find more markets for recycled goods," she said. "Otherwise, we will be recycling materials that won't be used for anything later."

Sandra S. Park, a senior from Wheaton, is a work service student in the IMSA communications office.

Why recycle?

Just consider a few statistics...

- Only 10% of all trash is recycled.
- Each ton of high-grade paper recycled saves 7000 gallons of water.
- 25-32% of the energy utilized to make glass is saved by recycling glass
- \$1 of every \$11 Americans spend on food is for the packaging.

Source: *The Recyclers' Handbook, 1990.*



Chanel Schuering

Up, Up and Away...

Randy Clark of Adventures Aloft in Woodstock demonstrates an application of thermodynamics for IMSA students and staff.

State and National Leadership

Executive Director **Dr. Stephanie Pace Marshall** gave two presentations, *The Paradigm Change Required in Education and Learning Communities* and a case study of IMSA, at the Singapore Annual General Meeting and Mini-Conference of the Association for Supervision and Curriculum Development Feb. 8-14. **William Stepien**, director of the Center for Problem-Based Learning, also presented a session.

Dr. LuAnn Smith, director of admissions, and **Ogden Spruill**, head academic advisor, presented *Programs for Enhancement and Achievement of Academic Goals Among Minority Youth* at the second annual national conference of the Quality Education for Minorities in Mathematics, Science and Engineering Network Feb. 12-14 in Washington, D.C.

Deborah Guffy, dean of student services, gave the keynote address at the Dec. graduation ceremony of the College of Health, Physical Education, Recreation and Athletics at Eastern Kentucky University.

Recent presentations by mathematics teachers included: **Chuck Hamberg**, *Integrating Discrete Mathematics into the Secondary Math Curriculum* (National Council of Teachers of Mathematics, Las Vegas); and **Sue Eddins**, *From Attributes to Insights*, **George Milauskas**, *Learning Through Problems*, and **Titu Andreescu**, *Mathematical Induction: An Elegant and Powerful Method* (fourth annual Metropolitan Mathematics Club Conference, Flossmoor, IL).

Mark Running, music teacher, was inaugurated as president of District VII of the Illinois Music Educators Association during the recent all-state music festival in Peoria.

Social worker **Cheryl McGuirk** and biology teacher **Dr. Susan Styer** presented *Girls and Self-Esteem and Trends in Math and Science* Feb. 6 at a conference co-sponsored by the American Association of University Women and St. Charles C.U.S.D. #303.

Student Achievements

A total of 65 IMSA seniors have qualified as finalists in this year's National Merit Corporation Scholarship competition.

Kani Ilangovan of Palos Heights was chosen from 6,400 artists nationwide to participate in ARTS Week '93 in Miami Jan. 6-10. There, she was awarded 3rd place and a scholarship in the writing competition by the National Foundation for Advancement in the Arts.

Sixteen students were named to this year's all-state band, orchestra and chorus by the Illinois Music Educators Association.

A computer games program, *BeamWars*, written by senior **Steve Crutchfield** of Chicago, is featured in the book *MacArcade: Don Rittner's Top Shareware Game Picks* published this year by Ventana Press. The book and accompanying floppy disk feature the top ten games nationally. Crutchfield's game received the third place award.

Two days after his 16th birthday, IMSA student **Niccolo Della Penna** of Mokena received a student pilot certificate to operate a powered airplane in solo flight.

A team of six students finished first in the third annual Greater Decatur Invitational Scholastic Bowl Tournament held in Dec. against 54 other high schools. IMSA student **Noah Rosenberg** of Chicago was the top scorer in the tournament.

A team of 15 students finished first in Illinois in the Knowledge Master Open competition held in December. The team placed 10th out of 1,614 schools in the nation.

Adam Duston of Palatine, **Genevieve Lakier** of Deerfield, **Toshio Kimura** of Des Plaines and **Abbey Scott** of Metamora, were named outstanding delegates at Model United Nations at the University of Chicago Jan. 28-31. Only 48 students out of 1800 nationwide were so named.



Cathy Veal

Gregg Worrell (right), IMSA director of business and finance, is "arrested" for "overworking his office staff." His bail raised money for the March of Dimes.

Alumni Achievements

Deborah Shepard, '91, University of Illinois-Urbana, was appointed as Region 4 Student Representative for the Institute of Electrical and Electronics Engineers (IEEE) representing 59 universities and colleges in the world.

Walter Lee, '92, George Washington University, was one of four student representatives elected to serve on the 14-member Student Pugwash USA Board of Directors.

Anthony Tosi, '90, Beloit College, was awarded a 1992 PICAS Student Language Fellowship for Japanese and is attending Kansai Gaidai University in Osaka, Japan, this semester.

Nancy Young, '89, University of Illinois-Urbana, received the Outstanding Graduate in East Asian Studies Award.

Mr. Pritchard Goes to Washington

MSA senior Matt Pritchard said he wasn't the only person in Washington, D.C., who enjoyed mixing politics with music. "Surprisingly, there were a lot of other student delegates who also played the tenor sax," he joked.

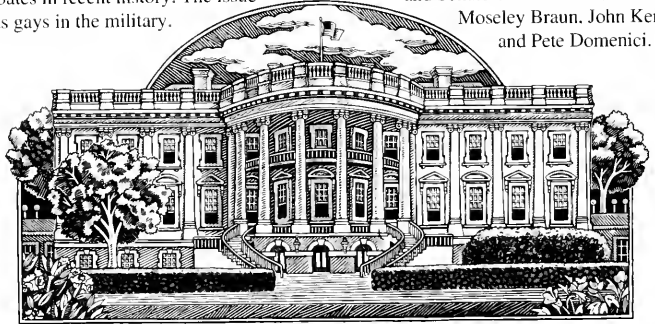
Pritchard, a Hinckley resident, recently returned from a weeklong trip to Washington as one of two Illinois delegates to the 31st Annual United States Senate Youth Program Jan. 30-Feb. 6.

Pritchard was chosen based on his academic record and involvement in student government. This year he is IMSA's student council president.

During his trip, Pritchard visited numerous Washington landmarks including the White House, the Lincoln

Memorial and the Capitol. However, he said his most memorable experience was watching politics in its truest form during one of the most heated Senate floor debates in recent history. The issue was gays in the military.

In addition to sightseeing and intensive sessions on the federal government, Pritchard met First Lady Hilary Clinton, Supreme Court Justice Anthony Kennedy, and Senators Paul Simon, Carol Moseley Braun, John Kerry and Pete Domenici.



IMSA

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IMSA Senior Wins Prestigious Westinghouse Science Talent Search Competition

IMSA senior Elizabeth Pine appeared "cool as a cucumber" speaking about mushrooms to a nationwide audience during an interview with CBS anchor Paula Zahn the morning of March 9.

At an awards banquet the night before, however, Pine was anything but "cool" after winning first place and a \$40,000 scholarship in the 52nd Westinghouse Science Talent Search competition. "This is past exciting," she said. "This is shock!"

That evening, Pine became the eighth female to win first prize in the nation's oldest science competition for high school students. In her award-winning research project, "A Mushrooming Exposé," Pine used DNA sequencing technologies to demonstrate that two kinds of fungi which now are classified separately and appear very different are in fact each other's closest relatives.

As one of 40 national finalists, Pine attended a five-day Science Talent Institute in Washington, D.C. March 4-9 where she was judged by a board of eight distinguished scientists. One was Nobel Laureate Glenn Seaborg who said the competition looks to recognize outstand-

ing research and predict future success.

"We are looking for the person's potential as a scientist," he said. "I look for the ability to think: a certain minimal amount of knowledge, of course, but more important, creativity, if I can discern it." (Phares, 1990)

Many previous winners have gone on to positions of national and international leadership in their respective fields. Pine now joins the ranks of previous Westinghouse winners who have won five Nobel prizes, two Fields Medals in mathematics, eight MacArthur Fellowships and two National Medals of Science. In addition, 28 Westinghouse winners are members of the National Academy of Sciences, three are members of the National Academy of Engineering and 51 are Sloan Research Fellows.

The days following the competition proved to be a "mushrooming" experience for Pine as she was interviewed by state, national and international media. Since then the public attention has subsided, but the effects of being a Westinghouse winner may very well last a lifetime.

"Winning the Westinghouse Scholarship made all the difference in my life," said Dr. Paul Teschan, the first winner, 1942. "Even more important, however, winning gave me an absolutely tremendous sense that it was

possible for me to achieve success in science," he said. (Phares, 1990)

Pine, who will attend Harvard University, plans to major in biological research.



Westinghouse Science Talent Search

Elizabeth Pine demonstrates some of her award-winning research techniques.

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Phares, T. (1990). *Seeking and Finding Science Talent: A 50-year History of the Westinghouse Science Talent Search*. Pittsburgh: Westinghouse Electric Corporation.



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From the Executive Director



Dear Members of the IMSA Community,

As we prepare to complete the Academy's seventh school year, I would like to report on several recent highlights.

This spring, the Academy's strategic planning team reconvened to complete another annual review and update of our strategic plan. The new plan, which is now in draft form, strengthens the institution's commitment to the transformation of mathematics and science teaching and learning. Faculty, staff, parents, students and community members will work this summer and fall to develop action plans; afterwards, the entire strategic plan will be presented to the board of trustees for consideration and approval. After that, more information on the new plan, which proposes several significant changes, will be shared in NOVA.

In terms of private sector support, I am delighted to report that this has been a record year for the IMSA Fund for Advancement of Education. With several weeks remaining in this fiscal year, the IMSA Fund already has raised approximately \$1.2 million, surpassing the previous record (last year) of \$964,000. More information on the IMSA Fund's success will be reported in the next issue of NOVA.

We enjoyed hosting CNN Science and Technology News May 5. CNN filmed several labs and classes for a feature on IMSA and science education.

On a personal note, as we bid a fond farewell to the Class of 1993, I would like to thank our seniors and their parents for their support and commitment during the past three years. Members of the Class of 1993 have distinguished themselves in many ways, and we wish them happiness and success in all their future endeavors.

Sincerely,

Stephanie Pace Marshall, Ph.D.
Executive Director

IMPACT II Teaching Network Expands; IMSA Sponsors Network Conference

In addition to serving Illinois students and teachers through *Summer 'AD' Ventures*, the IMSA-administered IMPACT II network has awarded adaptor and disseminator teaching awards to another 248 Illinois teachers. For the first time, many IMPACT II teachers presented their award-winning projects at a statewide Teacher's Network Conference May 22.

IMPACT II, a national program, began in 1979 and now operates in 26 sites throughout the country. Its purpose is to promote excellence in elementary and secondary education by networking teachers and their innovative ideas. Nearly 800 teachers are members of Illinois' IMPACT II program which focuses on mathematics and science education and is funded primarily by the State Board of Education.

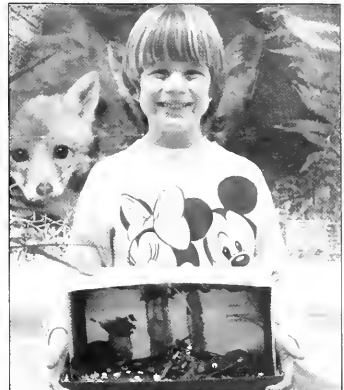
IMSA also receives support for additional grants from the private sector.

Donors include Continental Bank (Chicago), Central Illinois Public Service Company (Springfield), Gary-Wheaton Bank (Aurora), Household International, Inc. (Prospect Heights) and Washington National Insurance (Evanston).

This spring, 57 disseminator awards were given to 110 teachers and 65 adaptor awards were given to 138 teachers. Some of the awards went to individual teachers, while others were given to teams of teachers.

Disseminator awards enable public school elementary and secondary teachers to share their successful programs with colleagues through annual catalogs, workshops, conferences, and interschool visits. Adaptor awards support other teachers who want to use these programs in their classrooms.

For more information on IMPACT II, contact Martha Taylor at (708) 907-5100.



Second graders from Hall School in Aurora learn about Illinois mammals from an award-winning IMPACT II program developed by their teacher, Lenore Nier.

IMSA Invites Students to Summer 'AD' Ventures; Adds Teacher Training Workshop

This summer IMSA once again will welcome 180 Illinois students to its *Summer 'AD' Ventures in Mathematics, Science and Technology* program. The first session, for 80 students entering grades 7-8, will be held at IMSA July 7-16. The second, for 100 students entering grades 9-10, will be held at Eastern Illinois University in Charleston July 6-18. Eastern, which first was used as a test site last year, is part of IMSA's ongoing study of the potential for off-campus programming.

Summer also will be an "adventure" for teachers and administrators as IMSA holds its first *Summer 'AD' Ventures Teacher's Workshop*. The workshop will feature a five-day seminar and a five-day field experience.

In the seminar, June 28-July 2, participants will study the design and development of *Summer 'AD' Ventures*

curriculum and learn how thinking logs can be used for instruction and assessment purposes. In the field experience, July 6-July 10, participants will observe

Summer 'AD' Ventures in action and practice an instructional task assignment which they designed during the seminar.

IMSA Invites 8th Sophomore Class

A total of 230 students from throughout Illinois have been invited to enroll this fall as members of the Illinois Mathematics and Science Academy's (IMSA) eighth sophomore class. Chosen from a total of 714 applicants from 399 schools, the invited Class of 1996 represents 170 schools and 132 communities throughout the state.

Students offered admission include 110 girls and 120 boys. The ethnic distribution of the invited class is Hispanic 7%, black 13%, Asian 26% and white 54%. This reflects continued progress in recruiting and admitting a greater number of underrepresented minorities.

The average SAT mathematics and verbal scores for the invited class are 635 and 535 respectively. This compares to the national average for college-bound seniors of 476 and 423.

IMS A FUND FOR ADVANCEMENT OF EDUCATION

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Hundreds Attend Special Events

(See photos on page 5)

Friends and supporters of the Illinois Mathematics and Science Academy enjoyed several special events this spring. Examples included:

- On April 20, IMSA welcomed donors and members of the local business and civic community to the dedication of the Grainger Inventors' Workshop. The workshop, funded by a grant of \$325,000 from The Grainger Foundation of Skokie, provides an area for students to "tinker" and build equipment needed for their research.
- On May 3, IMSA hosted a State-of-the-Academy reception in Springfield for Illinois legislators, legislative staff members and other government officials. The reception, supported by the IMSA Fund, was held in the Illinois State Library Atrium.

- On May 4, Dr. Richard Garwin, IBM Fellow at the Thomas J. Watson Research Center in New York, gave the second annual Richard L. Horwitz Lecture on Ethics for IMSA seniors, staff members and alumni, and friends and family of Rich Horwitz. The lecture series is held in memory of Auran Rich Horwitz, IMSA's first legal counsel, who died in August 1990. Garwin is a consultant to the U.S. government on military and health care technologies, arms control, and science and public policy.
- On May 14, Nobel Prize-winning physicist Dr. Leon Lederman held a book-signing for IMSA students, staff members, parents and alumni. He autographed copies of his new book, *The God Particle: If the Universe is the Answer, What is the Question?*

IMS A Fund Board Annual Meeting

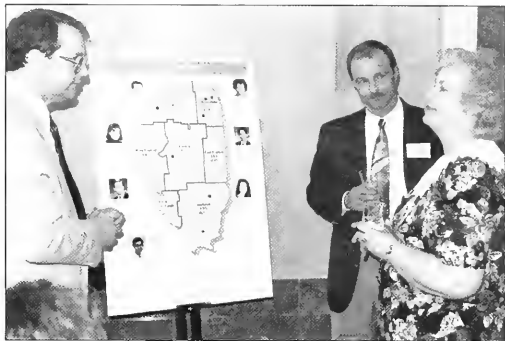


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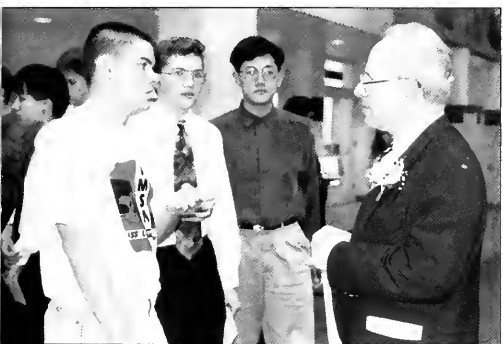
IMS A Executive Director Dr. Stephanie Pace Marshall (center) thanks retiring IMSA Fund board members Linda and Roger Anderson for their years of leadership and service.



Dr. Stephanie Pace Marshall, IMSA executive director, greets Sen. Kenneth Hall (left) and attorney Vaughn Barber at a recent IMSA reception for Illinois legislators and other government officials.



Mathematics teacher Sinsan Eddins discusses the accomplishments of IMSA's diverse student body with Illinois legislators.



Dr. Richard Garwin chats with IMSA seniors following his lecture "Ethics in Action (or Ethics Inaction)."



Dr. Leon Lederman signs copies of his new book for admiring IMSA fans.

*Grainger
Inventors'
Workshop
Dedication*



Mentorship Students Dazzle University Researchers and Undergraduates

MSA's mentorship program has turned out to be a match made in heaven...the ideal marriage between classroom learning and real-world research. For the second year in a row, students involved in IMSA's mentorship program were the only high school students in the country invited to participate in the National Conference on Undergraduate Research, held March 25-27 at the University of Utah.

This year, 12 students presented their research at the conference (see right). These and 107 other students conducted their research in IMSA's mentorship program, an optional cocurricular activity. In this program, students work on site every sixth school day with scientists and scholars in corporations, educational institutions and laboratories in the Chicagoland area.

Mentorship coordinator Dr. Peggy Connolly said it is an honor for IMSA students to present their work alongside students from major research universities. "It is very gratifying to see students recognized for their work by authorities in the research field," Connolly said. "What better way to top off the year than with a celebration before fellow students and researchers who value their dedication, tenacity, curiosity and contributions to the field of research."

The National Conference on Undergraduate Research brings together more than 1,000 undergraduates and faculty advisors who are involved in scholarly and scientific research. Representatives from more than 200 colleges and universities attended the conference. Students introduced their research in oral and poster presentations and artistic performances.

The IMSA students' projects covered topics in ecology and evolution, physics, astronomy, computer technology, immunology and other fields.

IMSA Mentorship Program Grows

Over the past few years, the number of mentorship sites, students and mentors has increased significantly. When the



Joseph Arias
West Brooklyn



Rachel Burrell
Rockford



Beth Guerra
Vernon Hills



Apinya Lertratanakul
Darien



Otmar Princevac
Chicago



Matt Pritchard
Hinckley



Tanya Reddick
Justice



Rebecca Reichert
Crystal Lake



Elise Sivilay
Elgin



Eric Stuckey
Montrose



Sophia Williams
Chicago



Jim Young
Bourbonnais

program began in 1989-90, 28 students participated. This year, 119 students participated in 38 sites.

Some of the new sites this school year included Aurora University, Central DuPage Rehabilitation Center, Telllabs, Chicago College of Pharmacy, Numerical Algorithms Group, Wyler's Children's Hospital and the Dial Corporation.

At several mentorship sites, research opportunities continue during the summer months. Loyola University, which piloted the six-week summer mentorship in 1990, expanded its program to support six students this summer in various research positions. In addition, Southern Illinois University Medical School and Argonne Labs will support IMSA students in summer research positions.

Students Reap Rewards of Research

Sophia Williams, a senior from Chicago, participated in mentorship

under the guidance of mentor Dr. Jeffrey Doering, biology department, Loyola University. Williams worked on genetic mapping studies of chromosome 21 in hopes of better understanding why Down Syndrome occurs.

Williams said working on site with researchers differs from classroom learning because the effects are more far-reaching.

"You feel like you have a responsibility and that what you do effects other people and not just yourself," Williams said. "Your work has to be quality and your experiments can not be rushed."

She also said that working with a mentor really makes her feel part of a team. "The mentor doesn't know what's going to happen or what kind of results should be produced," Williams said. "So in a sense you're both working through it together."

State and National Leadership

Dr. Stephanie Pace Marshall, executive director, was one of six international experts interviewed by *The Wall Street Journal* for a special section on "nurturing high-tech genius," published May 24.

Mathematics teacher **Titu Andreescu** has been appointed a staff member at the four-week training session of the United States Mathematical Olympiad. Training will be held at the United States Military Academy at West Point, NY, June 8-July 6.

Biology teacher **Dr. Susan Styer** co-presented a workshop entitled *Can You Make Sense of This?* for middle-school girls March 13 at Waubesa Community College in Sugar Grove, IL.

Mike Fraga, social science teacher, was a panelist on the *Work-In-Progress Roundtable On American Indian History* at the annual conference of the Organization of American Historians April 15-16 in Anaheim, CA.

John Thompson, biology teacher, presented *Alternate Assessments in Science Instruction* at a Burbank School District #111 professional development program April 27.

Physics teacher **Dr. Mark Horrell** presented *Tropical and High Latitude Climates and Vegetation Patterns of the Late Cretaceous: Examples From a Globally Warmer Earth* at a special session of the American Geophysical Union May 24-28 in Baltimore, Md.

Latin teacher **Rose Moore** conducted several immersion classes for first-year high school Latin students at Globalfest '93 in Bloomington, IL, March 20. Globalfest is designed to expose students to various languages and the cultures of their countries.

Rick Bryant, coordinator of the office of college counseling/career development, recently was elected to a three-year term on the board of directors of the National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology.

Mathematics teacher **Charles Hamberg** has been appointed to the COMAP (Consortium for Mathematics and Its Applications) Advisory Board. He will serve as the NCTM (National Council of Teachers of Mathematics) representative to the board which publishes many mathematics materials at the secondary and college level.

Dr. Raymond Dagenais, coordinator for professional development, recently was installed as president of the Delta Epsilon Chapter of Kappa Delta Pi, an honor society in education.

Student and Staff Achievements

For the third year in a row, a team of 15 IMSA students won the 1993 Illinois Science Olympiad state championship held April 3.

Dr. Stephanie Pace Marshall, executive director, received the VanMiller Distinguished Scholar Practitioner Award April 15 in Springfield. She is the first woman to receive the award named in honor of Dr. Perry Evander (Van) Miller, a leading scholar in the field of school administration.

A team of four IMSA students—**Kurt Gimbel** of Sparland, **Ashley Morgan** of Carpentersville, **Ryan Pierce** of Aurora and **Russell Simmons** of Barrington—is one of 16 national winners in the 1993 SuperQuest supercomputing competition.

English teachers **Martha Regalis** and **Soon-Heng Lim** both were awarded six-week summer fellowships from the National Endowment for the Humanities (NEH).

IMSA students received the highest team score in the nation on the American High School Mathematics Exam. In addition, eight students were among the 150 nationally who qualified to take the USA Mathematical Olympiad (USAMO); two of these—**Chris Jeris** of Naperville and **Stephen Wang** of St. Charles—are among the final 24 nationwide chosen for summer training for the USAMO.

On April 24, a team of 27 students captured first place in the 1993 Illinois Council of Teachers of Mathematics (ICTM) State Math Contest.

IMSA junior **Jenny Deller** of Carbondale was one of only 75 high school students nationwide to receive a 1993 Younger Scholars award sponsored by the National Endowment for the Humanities. The award will support nine weeks of full-time research this summer at Southern Illinois University in Carbondale.

IMSA junior **Kristina Cook** of Vernon Hills was awarded a Mazda National Scholarship to live as an exchange student in Japan for eight weeks this summer.

Alumni Achievements

Michael Peil, '90, Wake Forest University, was appointed to a one-year term as editor-in-chief of the *Old Gold and Black*, the WFU student newspaper. In addition, he received a research grant to study "Urban Societies in Transition" in Beijing, Moscow, Warsaw, Prague, Berlin, Amsterdam and London this summer.

Amanda Kabak, '92, Boston University, was selected to head a study to find the best medium in which to grind ceramics that will be used in space-based applications. Kabak is working under a grant awarded to BU's Precision Engineering Laboratory.

IMSA Senior Crowned Miss Illinois American Coed

By Sandra S. Park,
Student Writer

Senior Joy Peters of Decatur said it was so unlike her to compete in any type of beauty pageant. Then why do it? Her response: "I just decided to try it."

As it turns out this was a good decision, for on May 1 Peters was crowned Miss Illinois American Coed.

"I would encourage anybody who was interested in this kind of opportunity to compete, it's an incredible feeling,"

Peters said. She won a \$1000 scholarship and an all-expense paid trip to Hawaii to compete this summer in the national pageant. Peters also won the Academic Achievement award.

Miss American Coed is not an ordinary beauty pageant. Contestants are judged on their poise and modeling of evening gowns, while one half of their overall score is based on a personal interview and an application that includes an academic transcript. Peters was first runner-up in last year's pageant.

Her interviewers asked a variety of questions, including three words that best describe her ("intelligent, athletic, outgoing"), the most influential person in her life ("my mother") and her goals if

she were to win the crown. "I told them that I would like to speak out on issues like education," Peters said. "When I wear the crown, people take notice and listen to what I have to say."

This year at IMSA, Peters was named Female Athlete of the Year for her outstanding contributions to the softball, volleyball and basketball teams. She will continue to play softball at the University of Kansas in Lawrence, where she has been accepted to the honors program.

Although she characterizes herself as a self-assured woman, she notes, "The whole competition gave me even more confidence in talking to other people. Communication and articulation are so important."

Sandra S. Park, a senior from Wheaton, is a work service student in the IMSA communications office.



Cathy Veal

Joy Peters, Miss Illinois American Coed, sports a winning smile for IMSA Trustee Dr. Leon Lederman.



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Volume 7 No. 4 • Summer 1993

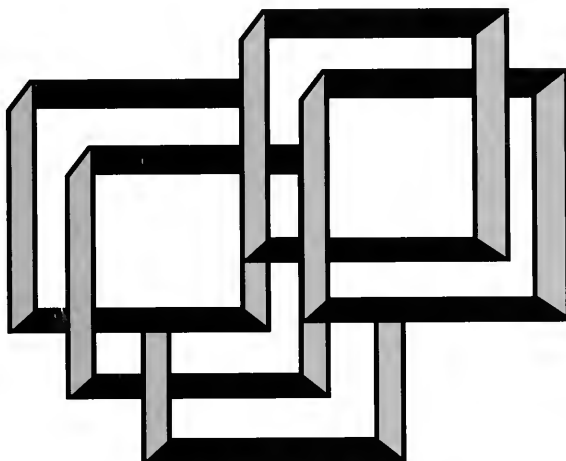
IMSA Student On USA Mathematical Olympiad Team Wins Silver Medal in International Competition

It was the icing on the cake for the Illinois Mathematics and Science Academy's math team when this summer Stephen Wang of St. Charles was one of six students in the nation to make the USA Mathematical Olympiad team.

As a result, Wang participated in the International Mathematical Olympiad in Istanbul, Turkey, July 13-24. The U.S. team competed against 71 other countries, placing 7th overall with two gold, two silver and two bronze medals. Wang, who was the first IMSA student selected for the USA IMO team and the only Illinois representative this year, received one of the silver medals.

In addition to Wang, another IMSA student, Chris Jeris, was among the 24 finalists nationwide chosen to train for the team this summer at the United States Military Academy in West Point, New York. In addition, IMSA math teacher TiTu Andreescu was appointed a staff member at the four-week training session and traveled with the U.S. team to Turkey.

"It was a great experience to see such young students deal with advanced problems that even would challenge a professional mathematician," Andreescu



34. ULUSLARARASI MATEMATİK OLİMPİYATI • İSTANBUL, 17.7.1993

said. "They are all very talented so I expected such results."

This latest achievement capped the most remarkable year yet for IMSA 'mathletes' in local, state and national competitions (see box on page 6).

What made the 1992-93 school year so successful? Mathematics teacher Susan Eddins said much of the credit belongs with the home schools across the state that provide IMSA students with a strong math background. "In Stephen's case, St. Charles was very supportive and gave him a sound foundation. When he entered IMSA he already was at a high math level," Eddins said.

Andreescu agreed, adding that in addition to background preparation, this year's mathletes demonstrated an unusually strong desire to do well.

A third factor, according to Eddins, relates to IMSA teachers' experience coaching at the national and international levels. Andreescu, for example, is a former coach of the Romanian Mathematical Olympiad team. "We've been very fortunate to hire people who have been especially geared toward coaching math contests at the higher level," Eddins said. "They have complimented the coaches we already have and brought

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From the Executive Director



Dear Members of the IMSA Community,

As we complete our seventh year and begin our eighth, I would like to review some of the summer highlights at the Illinois Mathematics and Science Academy.

We enjoyed hosting students in grades 7-10 from throughout Illinois for our Summer 'AD' Ventures in Mathematics, Science and Technology program. For the second year, this program was held in two sites--at IMSA and at Eastern Illinois University. In addition to Summer 'AD' Ventures students, we enjoyed hosting students from Chicago, East St. Louis and Joliet, participants in our Challenge programs for talented minority students.

In August, the Center for Problem-Based Learning sponsored the week-long Neison and Bette Harris Institute on problem-based learning. We are deeply grateful for the support from The Harris Family Foundation which has enabled the Center to expand teacher training and research.

Internally, as we welcome our new sophomores, the Class of 1996, we also are engaged in a search for a new principal. This summer, Mr. John Court, who served with great distinction as IMSA's principal from 1987-1993, accepted a new position at Glenbrook South High School. Mr. Court's leadership and service will be greatly missed by our community. While our search for a new principal is under way, we are delighted that Mr. Harold Burshtan, former principal of Wheaton North High School, has joined our staff as interim principal.

This fall, members of the IMSA community will develop new action plans to address changes in the strategic plan proposed last spring by the strategic planning team. Most significantly, the new strategic plan strengthens IMSA's commitment to the transformation of teaching and learning in mathematics and science. We welcome the challenges that lie ahead and look forward to working in partnership with others throughout our state and nation who share the dream.

Sincerely,

Stephanie Pace Marshall, Ph.D.
Executive Director

Class of 1993 Celebrates Commencement

Proud parents, relatives and friends packed Aurora's Paramount Arts Centre June 5 to see members of the Illinois Mathematics and Science Academy's (IMSA) largest graduating class receive their diplomas.

Nobel Laureate and IMSA trustee Dr. Leon Lederman gave the commencement address to the 213-member Class of 1993. Lederman, one of IMSA's founding fathers, spoke of his hopes for the future through his comments from the past, made during the ground-breaking ceremony for the first IMSA residence hall in 1986.

"If we do things right, they will be aware of what we really expect of them: to be creative scientists--yes; to be superb engineers--of course; to be brilliant neurosurgeons and research the origins of life and aging, to advance the technology of Artificial Intelligence and Robotics, to help our industries compete in an ever more challenging environment--all this.

But we expect more--we want to cultivate an awareness of the social and political deeds required of them," Lederman said.

In addition, Lederman advised graduates to be selective when choosing their college courses. "Look for scientists who teach science in the light of the history of human thought. Look for humanities teachers who have the broader view-- who recognize that Faraday was at least as influential in human history as Wordsworth or Napoleon--but that we cannot come to grips with our heritage without having an appreciation of all the intellectual currents that shape our world," he said.

Reflecting on the past three years at IMSA, Executive Director Dr. Stephanie Pace Marshall noted some of the special opportunities the Class of 1993 enjoyed. "This senior class benefitted greatly from

new and expanded resources and programs made possible by state and private sector support--resources such as the ProQuest computer system, the Toyota Video Production Laboratory, the Grainger Inventors' Workshop, the Strategies for Success Center, the Natural Helpers program, and yes, a new cafeteria," she said.

Student speakers Liv Gjestvang of Rockford and Andrew Pitcher of Morrison credited IMSA for creating an environment that enabled them to learn from their fellow classmates.

"At IMSA I learned to sit back and listen, not because I should but because I wanted to, and I was amazed by the voices of my peers: voices from all over Illinois; cultures from all over the world, of all colors and styles and beliefs," Gjestvang said.

Pitcher added, "The cultural perspectives they (my classmates) brought to the

(Continued on page 8)

IMSA graduates Jasmine Huang of Joliet and Jennifer Soriano of Palos Park.



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IMSA Fund Tops \$5 Million; Exceeds \$1 Million in 1992-93

The Illinois Mathematics and Science Academy Fund for Advancement of Education raised a record \$1,365,762 from the private sector in 1992-93, a 41% increase over last year's total. This included the Academy's largest private sector grant to date, \$750,000 for the Center for Problem-Based Learning from The Harris Family Foundation of Northbrook.

The record fundraising year pushed the Fund over the \$5 million mark for its history.

Among other Fund-related highlights in 1992-93, Ted Parge, director of institutional advancement, cited the following:

- Public lectures given by world-renowned physicist Dr. Edward Teller attended by some 1000 Illinoisians.
- Dedication of the Grainger Inventors' Workshop attended by donors and members of the local business and civic community.
- State-of-the-Academy reception held in Springfield for Illinois legislators,
- legislative staff members and other government officials.
- Mini-grants totaling \$7,000 for IMSA employees to implement their creative ideas that support IMSA's mission.
- Contributions (\$8,000) from five Illinois corporations to fund IMPACT II teaching grants for educators in their service areas.
- Pre-curtain reception and benefit performance of *Miss Saigon* attended by 400 guests.
- \$75,000 grant from the Caterpillar Foundation to support unique professional development opportunities for IMSA teachers
- \$60,000 in computer software from Novell, Inc., to upgrade IMSA networks
- \$25,000 in fiber optic cable from Illinois Bell to increase IMSA's capacity to broadcast classes and special lectures



Susan Tambllyn

Supported by The Harris Family Foundation, the Center for Problem-Based Learning sponsored a teacher training institute in Chicago this summer attended by educators from Illinois and other states.

Ameritech Foundation Awards \$30,000 to IMSA Golf Tournament Contribution to Enhance School Technology

The Illinois Mathematics and Science Academy was one of three not-for-profit organizations named to share a \$90,000 contribution awarded by the Ameritech Foundation in connection with the 1993 Ameritech Senior Open golf tournament.

The tournament, held the week of July 12 at Stonebridge Country Club in Aurora, featured golfing legends Arnold Palmer and Chi Chi Rodriguez. In addition, Chicago Bulls superstar Michael Jordan teamed up with Palmer to play in the pro-am event.

IMSA, the Chicago Child Care Society and the Jane Addams Hull House Association each received \$30,000 from the Ameritech Foundation, which has made contributions during the golf tournament for the past five years.

"Ameritech shares with these groups a commitment to make the Chicago area a better place by strengthening families and educating the young," said Richard H. Brown, president of the Ameritech Foundation and board member of the IMSA Fund for Advancement of Education.

"We are focusing our philanthropic support entirely in the Chicago area so we can make a more profound and dramatic impact on the quality of life in the community," he said.

Ted Parge, IMSA director of institutional advancement, thanked Ameritech for recognizing IMSA as a leader in



Cathy Veal

Basketball superstar Michael Jordan drew record crowds to the 1993 Ameritech Senior Open pro-am event. IMSA was one of three Chicago area organizations to benefit from this year's tournament.

piloting the use of telecommunications technology.

"Our goal is to use telecommunications technology as a tool to transform teaching and learning in mathematics and science," Parge said. "By using this technology, IMSA's academic and external programs could reach more students and

teachers across the state, thereby making a greater impact on mathematics and science education."

Ameritech, founding sponsor and organizer of the Senior PGA Tour event, this year increased the first-place prize from \$75,000 to \$90,000, thereby increasing its charitable contribution.

IMSA Fund Welcomes New Donors

The IMSA Fund welcomes the following first-time corporate and foundation donors of \$500 or more (February 15-July 30, 1993) to the Council for Educational Distinction in Illinois:

- Ameritech Corporation
- Computer Associates International, Inc.
- Consolidated Communications, Inc.
- Helene Curtis Industries, Inc.
- Lachman Technology
- RJR Nabisco Foundation
- The NutraSweet Company Charitable Trust

Olympiad Team

(continued from page 1)

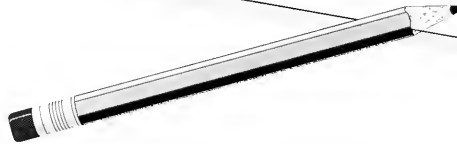
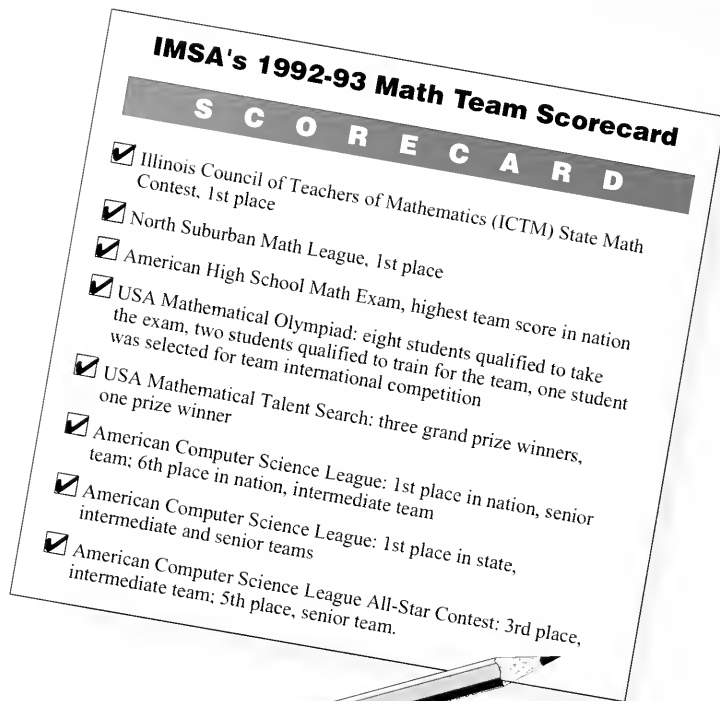
additional strength at the higher level."

The winning combination of home school preparation, student desire and talent, and IMSA faculty support paid off in big ways in 1992-93. Led by Wang, Jeris and Patrick Keenan of McHenry, IMSA had the highest team score in the nation on the American High School Math Exam.

Although competitions are not the primary focus of IMSA's math program, Eddins said they are good opportunities for growth. "There is a lot of learning that goes on in an interesting and fun way during competitions," Eddins said. "We have students who are the strong leaders but also have students who are very supportive of one another during competitions."

Andrescu believes the future is bright. He said he hopes Wang and Jeris will use their firsthand experience to help coach IMSA students for international competition next year. He predicts they will do as well or better, but says they need to work on a few areas first.

"We need to work on our geometry," he said. "The Eastern Europeans and Chinese excel in this area and we do not stress it as much in the United States."



270 Educators Attend IMSA Leadership Conference

Organizational change, personnel motivation, integrative teaching and learning, quality review and parenting were just some of the topics explored by 270 Illinois educators during IMSA's 1993 Leadership Conference June 23-24 in Naperville.

Teachers, principals, superintendents, board members, parents and other participants in the IMSA/Motorola University District Learning Leadership Team (DLLT) initiative came from all areas of Illinois to attend the conference entitled "Expanding Capacity for Continuous Improvement."

The DLLT initiative seeks to improve mathematics, science and technology education through a systemwide restructuring and change process.

During the conference, topics were

presented in many different formats including group workshops, concurrent sessions, issue sessions and team sessions. In addition, four general sessions were held by prominent educators from throughout the country. Other speakers during the conference included educators from various Illinois school districts and representatives from Motorola and the American Association of School Administrators.

Following the conference, participants were asked to evaluate the sessions and speakers. In addition, they were asked to provide recommendations on how to improve future conferences.

As a follow-up to the conference, a proceedings document will be mailed to all participating district teams.

State and National Leadership

Dr. Stephanie Pace Marshall, executive director, traveled to Russia July 12-25 to investigate possible collaborations among the Association for Supervision and Curriculum Development, Russian educators and IMSA. In addition, a possible partnership between IMSA and a similar residential school for mathematics and science in Novosibirsk, Siberia, was explored.

In August, the Center for Problem-Based Learning, IMSA, sponsored a five-day workshop at the Chicago Hilton and Towers Hotel. Approximately 80 educators from across the country attended the summer workshop to learn how to design and implement problem-based learning activities for K-12 classrooms.

Social science teacher Bernard Hollister received the Oliver S. Foster Award from the Illinois State Historical Society for outstanding contributions to the study and teaching of state and local history in Illinois. He is congratulated by Carolyn Kelly, last year's recipient.



Physics teacher **Margaret Park** gave a presentation entitled *Biophysics an Aesthetic Experience: Breaking Conventional Discipline Boundaries in the Sciences* at the 1993 International Faculty Development Conference June 28- July 7 in Colorado.

Dr. Christian Nokkentved, social science teacher, is serving on the World History Curriculum Development Project at the University of Illinois - Chicago.

Student and Staff Achievements

Physics teacher **Patrick LaMaster** was one of ten teachers to receive the Illinois Science Teachers Association Award of Excellence in Secondary Science Teaching. He was selected by a committee of science teachers, professors and professionals based on his teaching achievements in 1993.

A team of 15 students captured fifth place in the 1993 National Science Olympiad held May 21-22 in Pueblo, Colorado. One student received 2nd place in the nation in the qualitative analysis category and another received 3rd place in the designer genes category.

The IMSA Titan Dance Squad received three trophies at the Universal Dance Association competition held August 3-6 at Augustana College. As a result, the team qualified for the national championships at SeaWorld in Orlando, Florida, in February.

Joseph Arias of West Brooklyn was one of only 60 juniors nationwide chosen to attend a 1993 Telluride Association summer program at Cornell University.

Alumni Achievements

Jennifer Mawdsley, '90, University of Illinois, was awarded a summer internship at the Solid State Technology Center in Pennsylvania through the Summer Research Program at AT & T Bell Laboratories.

Sendhil Revuluri, '90, University of Chicago, was appointed a staff member at the training session of the United States Physics Olympics, held at the College of William and Mary, July 6-18.

Laura Kozlevcar, '89, graduated from Purdue University and received a fellowship from the Howard Hughes Medical Institute to pursue graduate work in microbiology at the University of California-San Diego. She was one of only 25 students to receive the fellowship.

Commencement *(continued from page 3)*

conversations we had were so different from my own, that they forced me to examine my own beliefs. Learning from the great diversity of people here made me a better person, a much more complete person."

Following certification by Principal John D. Court that members of the Class of 1993 had met graduation requirements, students received diplomas from IMSA Trustee Jack McEachern and commencement medallions from Dr. Marshall.



*This issue of NOVA
is dedicated
in loving memory of
DANIELLE J. MCTEE,
IMSA Class of 1993
July 7, 1975-August 10, 1993*



Cathy Veal

IMSA students enjoy the Rachel E. Szech Memorial Playground. Szech, who died in 1992, was a member of IMSA's Class of 1993. The playground, funded by her family and friends, was dedicated in the spring.



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