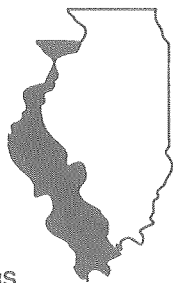


SPECTRUM

THE JOURNAL OF THE ILLINOIS SCIENCE TEACHERS ASSOCIATION



WINTER 1995



STATE OFFICERS

Bernard Bradley, President
Newberry Math and Sci. Acad.
700 W. Willow
Chicago, IL 60610
(312)534-8007

Douglas Dirks
West 40 ESC #5
Isst Avenue & Ridgewood
Riverside, IL 60546
(708)513-5391
FAX (708)447-6732

David Winnett, Past-President
Department of C&I, Box 1122
SIU-Edwardsville
Edwardsville, IL 62026
(618) 692-3065
dwinnett@enlac.ac.siue.edu

Don Nelson, Vice President
Western Illinois University
49 A Horrabin Hall
Macomb, IL 61455
(309)298-1411
dnelson@ccmail.wiu.bgu.edu

Wayne Green, Treasurer
Knox College
Galesburg, IL 61401
(309) 344-1404

Maureen Jamrock, Secretary
Coolidge Middel School
155th Street and 7th Avenue
Phoenix, IL 60426
(708)339-5300

Spectrum Editor
Kevin D. Finson
58 Horrabin Hall
Western Illinois University
Macomb, IL 61455-1396
(309)298-2101
FAX (309)298-2222
finsonk@ccmail.wiu.bgu.edu

Diana Dummitt, Associate Editor
and Executive Secretary
1995 Registration and Exhibit Chair
College of Education, UIUC
Champaign, IL 61820
(217) 244-0173
FAX (217)244-3711
ddummitt@ux1.cso.uiuc.edu

Gwen Pollock, Awards Chair
Ill. State Board of Ed.
100 N. First Street
Springfield, IL 62777-0001
(217) 782-5341

1996 CONVENTION CHAIR
Bernie Bradley
88 W. Schiller #2806
Chicago, IL 60610

SPECTRUM

JOURNAL OF THE ILLINOIS SCIENCE TEACHERS ASSOCIATION
Volume 21, Number 4, 1995

SPECTRUM is mailed from the University of Illinois, Champaign.

Submissions and inquiries regarding the journal should be sent to:

Diana Dummitt, Associate Editor

ISTA SPECTRUM

University of Illinois
College of Education
1310 South Sixth St.
Champaign, IL 61820
(217) 244-0173

e-mail: ddummitt@ux1.cso.uiuc.edu

Subscription requests or changes should be sent to:

George Zahrobsky, Membership Chair
P.O. Box 2800
Glen Ellyn, IL 60138

The Illinois Science Teachers Association (ISTA) is a state chapter of the National Science Teachers Association, 1742 Connecticut Ave. NW, Washington, DC 20009.

ISTA NEWS	1
COMPUTER SPECTRUM	14
SPECIAL INTERESTS	17
MINI IDEAS	23
OPPORTUNITIES	27
FIELD TRIPS AND WORKSHOPS	34
AWARDS AND RECOGNITION	38
REVIEWS	40
EDUCATIONAL MATERIALS	42

Typist:

University of Illinois
College of Education
Word Processing Center

Printer:

East Central Communications, Inc.

Cover Photo:

Tom Peters

ISTA NEWS

Bernie Bradley
Home Phone: 312/943-6535
Home Fax: 312/943-3419
Lab Phone: 312/534-8007



PRESIDENT'S WINTER LETTER

As the books are closed on the 1995 ISTA Convention, I want to express my appreciation to Gary Butler for his efforts in coordinating this year's program. Gary, kudos for a fine job. Likewise, Diana Dummitt, ISTA's Executive Secretary, is now a veteran of coordinating the commercial exhibits at the convention. Diana's talents resulted in a record number of vendors exhibiting at the convention. Congratulations, Diana.

Preparations for next year's convention in Chicago have already begun. As we strive to improve each year's convention, a number of changes are planned for this year. Registration materials will be mailed to all members by May 1, 1996. This will provide ample time for members to plan their fall schedules and to submit required documentation for Eisenhower funding to support their attendance at the convention. Teams of volunteers are going to be created to solicit presentations that will benefit members from all of ISTA's constituencies. ISTA's membership is now almost evenly divided between elementary, middle school, and high school teachers.

Program offerings at the convention should reflect the needs of our membership. Many other smaller improvements are going to be evident at next October's meeting. Mark your calendars for October 10, 11, and 12, 1996. The convention at the Merchandise Mart Expo Center promises to be the biggest and the best ever held by ISTA.

Don't forget NSTA's Convention in St. Louis March 28 - 31, 1996. All you need to preregister is included on the following pages. Future sites for NSTA conventions are New Orleans in 1997, Las Vegas in 1998, and Boston in 1999. Since it will be quite some time before the NSTA Convention is held at a site this close to Illinois, this year is the perfect time to attend your first national science convention.

The ISTA Board has enacted a change in policy to address current needs. It had been the policy of ISTA not to take positions of endorsement on matters brought before the Board. By a unanimous vote of the ISTA Board, that policy has now been changed. If an initiative is brought to the Board for endorsement, a procedure is now in place for the Board members to consider the matter and vote on an endorsement. The first initiative endorse under this new policy is the Environmental Literacy for Illinois 2000: A Strategic Plan for Environmental Education in Illinois. This plan outlines a systemic approach for implementing environmental education in Illinois. As additional initiatives are brought before the ISTA Board, each will be considered on its merits and its alignment with the mission and goals of the Illinois Science Teachers Association.

One of my goals as President of ISTA is to increase the services offered to members. At the Fall ISTA Board meeting I formed a Future Directions task force to study this question. During the next five months a number of current and former ISTA Board members will meet periodically to investigate the possibilities for expanding the services that ISTA offers to its members. The task force is charged with preparing recommendations for future actions at the Spring ISTA Board meeting. I will keep you informed of the progress of the task force.

I wish all of you a joyful holiday season, and may we all enjoy a peaceful, successful 1996!

Kevin D. Finson, Editor

EDITOR'S LETTER: WRITING FOR THE SPECTRUM

In my first editorial to you, I noted that the *Spectrum* is one of a number of communications tools for ISTA members to use. Indeed, it may be the predominant mode for ISTA to get information and ideas out to its members. This would seem to place a great deal of importance on what is included in the *Spectrum*. And just who writes all that important stuff? Most of the time, the writers are your colleagues. Some are at the college level, but many are at elementary and secondary levels.

Many of you probably have good ideas to share about your teaching, but perhaps you haven't pictured yourself as someone with such ideas to offer. You may think that your teaching is simply of the good old tried and true variety, and little about it is really exciting enough to share with others. Let me help you put that kind of thinking into perspective. One thing that stands out to me as I attend conferences such as NSTA is that there are inevitably a number of sessions (presentations) dealing with activities and ideas that have been around for decades. My first thought when I see such sessions is, "Wow, is that old hat!" But then I rethink, realizing that what may be old hat to me is new and exciting to others. I find it difficult to make myself think that I could propose to present something "old hat," have it accepted by the conference, and then have a large attendance at my session. But this sort of thing happens all the time. There are many colleagues out there who are hungry to learn about anything that is new to them, regardless of whether or not it is new to me. They actively seek anything that will spice up their science teaching and excite them even more about science.

The same is true about writing for journals like the *Spectrum*. You may think that all you could write about would be "old hat" stuff. Even so, I encourage you to write about what works well for you — both in terms of what you do and how you do it. We'd love to have you share your ideas with us.

Near the back of this issue, as for all issues of the *Spectrum*, there is a page titled, "YES, I WOULD LIKE TO CONTRIBUTE TO THE ISTA SPECTRUM." On that page are listed categories of items we will consider publishing. To help you, here are some brief descriptions of each category. ARTICLES typically run two to three pages and illustrate, describe, or discuss some application of science in the real world for teachers and students, or deal with some science education issue. IN FOCUS pieces usually run one to two pages and attempt to introduce and/or clarify specific issues in science education, teaching strategies, and so forth.

SPECIAL INTERESTS are one page topics limited to single topics that may only hold interest for a specific segment of the ISTA membership, such as genetics or environmental concerns. MINI IDEAS are pieces sharing teaching tips: how to teach something a certain way or how to construct/ compile/ put together something in a different, unique way. You may feel most comfortable submitting a mini idea to get started. REVIEWS, as the name implies, are authors' evaluations of anything from books to software. Reviews discuss the ease with which a piece of software can be used, the quality of the writing and clarity of ideas in a book, etc. POTPOURRI often includes single paragraphs (or two) which provide interesting tidbits about science or science teaching. OPPORTUNITIES are again short pieces running the gamut from courses for teachers to grants available to teachers to internships, etc. MEETINGS are brief announcements or descriptions (one or two paragraphs) of events of interest to ISTA members. Such announcements may be local, state, regional, national, or international in scope. AWARDS/RECOGNITIONS typically provides information about the

specific awards/recognitions, including award criteria, and — if possible — background information about those individuals who receive these awards/recognitions. These pieces typically range from one-half to one page in length. FIELD TRIPS/ WORKSHOPS are much like meetings except that their focus is on field work opportunities, trips, and workshops of interest to ISTA members. EDUCATIONAL MATERIALS are listings and brief (half-page or less) descriptions of science and related materials of potential use to science teachers. Often, costs for the materials are provided, as is information regarding where and how to obtain the materials. You don't have to use the form near the back of the *Spectrum* to submit manuscripts, but all materials should be submitted to Diana Dummitt at the address listed on the back of the form.

If you decide to submit material for the *Spectrum*, we recommend you follow these guidelines. First, try to target your submission to science teachers and their interests. We try to publish items which are, we believe, of interest to the majority of our readership. Unfortunately, we sometimes receive items which we think would be of very limited interest to ISTA members, and decline to publish them. Typically, this occurs following a review of the submission by the editorial board. Second, try to write in an easy-to-read style. We sometimes receive submissions that appear to be pages taken directly out of someone's thesis or dissertation. More

often than not, such submissions do not read easily, and some are too esoteric for our use. Check for sentence structure, proper paragraph structure, and that one paragraph flows into the next. Provide headings and subheadings where appropriate. Write clearly and concisely, and organize your material logically. Try to avoid highly technical or abstract terminology, and define those sorts of terms when you do use them.

Third, carefully check for proper grammar, punctuation, and spelling prior to submitting material to the *Spectrum*. When we read submissions, we do look for proper usage of these elements. When possible, we correct them. The time required to proofread and correct these elements is very time consuming, and we certainly appreciate authors who are careful in this regard. For those who are not careful, we may either return the manuscript for corrections or delay its publication until we have time to rework it. Fourth, if you are submitting an article which includes references and citations of others' works, please be sure to provide a reference section or bibliography. We would prefer to have references and citations provided to us in the style established by the American Psychological Association (APA) publication manual, 4th edition, but this is not a requirement. You may find it helpful to have a colleague read your manuscript and offer suggestions for revisions before you send it to us.

ISTA CONVENTION LOST AND FOUND

**If you found a watch at the convention please contact
Kerry Trueblood, 494 Juniper, Petersburg, IL 62675
(217) 632-3174.**

**Also a silver pierced earring with an amethyst drop was
found in the exhibition hall. Please call Diana Dummitt
217-244-0173 and I will be happy to send it to you.**

In any event, we will make final editing changes as needed prior to publication. Please do not submit manuscripts which you have submitted to other journals and for which you are awaiting notification of publication. We cannot consider manuscripts which have been published or are going to be published elsewhere unless we obtain written permission to reprint them from the original publisher.

When you prepare to send your manuscript, please double-space and limit the length of your work. Use standard one-inch margins on all sides. Print all material on white paper of standard letter size (11 x 8.5 inches), and please do not use fonts smaller than 10-point. If your work includes tables, graphs, drawings, or photographs, please provide black and white copies (if possible) on separate pages. Tape identifying labels on the backs of photographs. Do not ink stamp or write directly on them. We suggest you protect photographs by inserting stiff cardboard behind them. We cannot guarantee the return of any photographs submitted. If someone other than you is responsible for the artwork or

photography, please give that information so proper credit can be given when your manuscript is published. Be sure you note in your manuscript where you prefer to have your graphs, drawings, photographs, etc. located. Attach a cover page which includes the title of your work and the submission category (article, mini-idea, etc.). Also, on the cover page please be sure to include your name, address (including zip code), and contact numbers (including area code) — work telephone, home telephone, FAX number, e-mail, etc. — for us to use. Send one copy to Diana Dummitt. Some authors also include a cover letter which briefly summarizes what the submission is about and how they believe it will be of interest to ISTA readers.

So crank up your printers, dig into your repertoire of ideas, and share with your colleagues in ISTA. We're ready to hear from you!

Gwen Pollock
ISBE
100 S. First Street
Springfield, IL



DID YOU KNOW...

There are so many great things going on now for sciencing in Illinois, it is hard to know where to begin sharing. Many of you participated in the November safety teleconference. I do know that there are many advocates who are working for the fulfillment of legislation, signed by the governor this summer, requiring EPA to coordinate the pickup of hazardous wastes from all high schools within a three year period. It will probably become necessary for teachers to wear their 'civics' hat and their 'chemistry' hats simultaneously. Your legislators would probably want to know about the needs of your local schools. I am also working to be able to distribute CHEMIS, a project from the U.S. Fire Administration, which offers the details for developing a district's chemical management plan, as well as the software for inventory, storage and disposal.

As for the Illinois Academic Standards Project, much more will be coming very shortly for the open review of the products. As of this writing, the review will be from January through March and then revisions will be made, hoping for a September, 1996 release. As I know more, I will share with you through your Regional Offices of Education and Intermediate Service Centers. I will be sharing information, as well through the ROE/ISC staff, the materials that have been generated from the efforts for the National Science Education Standards. I am very optimistic about the impact these standards will have for our careers and our students. Much more about this will be sent to you after the formal release of the standards in December.

I have been invited to participate in preparing a proposal, on a national scale, for the dissemination of these materials using the Presidential Awards of Excellence winners. Of course...more information will follow.

Our plans for the PLAN-IT ILLINOIS, our earth systems interagency project using the Critical Trends Assessment Project for the Illinois ecosystems is progressing beautifully. I have asked for an in-depth explanation of it for the next issue of the *Spectrum*. Secondary teachers will benefit enormously from this project. As a former high school teacher, this would be the 'funnest' thing in the world to do for my kids for science!!

The Environmental Literacy for Illinois 2000, strategic plan for environmental education, is progressing in garnering support throughout the state. Directors of the natural resource agencies are being asked to support this plan to provide a clear direction for environmental education for our citizens. If all goes well (as of this writing), we will be planning the kick-off extravaganza for Earth Week, 1996. Of course,...more to come later.

The Presidential Awards for Excellence in Science Teaching nomination phase now complete. By the time you read this, I will have sent out the application forms which will be due February 28. I haven't heard yet who the winners are for 1995, but for your information, those special winners will be going to Washington in the spring, for a royal week of festivities. I will close for now—since it seems that I better start writing my next article now so that I can get in for the next issue. Things have been very busy here for me, as I am sure they are for you. Please contact me, if I can help—I will try my best to help you. Thank you for taking care of our kids.

REGIONAL DIRECTOR REPORTS

REGION 2

Fifteen ISTA members from Region 2 met at the Discovery Center in Rockford on Tuesday, October 24th. A tour of the center was given, including the Big Bugs exhibit. A brief meeting followed. The members decided that getting together as a region twice a year would be beneficial. The next get together will be at Northern IL University in April. Invitations will be sent to each Region 2 member. Looking forward to seeing you in April!

Linda Duncan and Cathy Flannery, Region 2 Directors

REGION 3

I hope those of you who were able to attend the ISTA State Conference in Springfield found it worthwhile. For me, it is always a way to "recharge my batteries." If you have any suggestions for future meetings, let me know and I will share your ideas with the Board of Directors. In 1996 we meet in Chicago on October 11-12th.

Whether you were able to attend the state conference or not, I encourage you to attend the National Science Teachers Association annual convention in St. Louis in the spring. This is really a "must" for anyone with or without an interest in science. From March 28-31, 1996, St. Louis will be overrun with science educators. The convention schedule includes sessions covering all topics, so there is something for everyone. The NSTA exhibit area is unbelievable. Just doing the exhibits can take a full day. My suggestion is you register early and if you are not a NSTA member, I also suggest you join now so that you will be informed promptly of all upcoming happenings. On a more local nature, the annual K-8 Science Update Conference will be held at Western Illinois University on April 19, 1996. If you have an idea or activity you do with your class and would like to share it, or if you wish to discover new ideas, let me know and I will see that you get all the needed registration information.

For those with an interest in the environment, the new Project WET (Water Education for Teachers) Curriculum and Activity Guide came off the presses this summer and the material looks excellent. The guide is similar to Projects Wild, Learning Tree. The guide correlating the state goals to the Project WET manual is being developed. I have been told that training of WET facilitators will begin in the spring with workshops for teachers occurring shortly after that time. I suggest you watch for further announcements about this program in The Spectrum.

I want to wish you the best as the holiday season and new year approaches. If you have any concerns related to ISTA, NSTA, or other happenings, or if you know of something happening which you feel other educators would like to know about, please contact me.

Don Powers, Region 3 Director

REGION 5

After talking with several teachers in the region, I reached the conclusion that science teachers that are not ISTA members may want to get together along with ISTA members and share and exchange ideas, discuss concerns, and meet colleagues in neighboring schools. As an agriscience teacher, I met almost once per month with neighboring agriculture teachers. It was very helpful to me both as a beginning teacher and later as an experienced teacher to hear some of the same concerns that I was having and to gain ideas that worked in the classroom.

I always borrowed ideas from various teachers as we met at their schools for FFA contests, meetings, and workshops. I hope to work with Ann Scates (Region 5 Director) and David Winnett to organize a regional meeting early in 1996 for this purpose.

I know that it is just the beginning of winter, but I wanted you to know of a unique opportunity that is taken by teachers very rapidly. Five week long, SUMMER AGRICULTURAL INSTITUTES will be conducted by Illinois State University, Southern Illinois University, and Western Illinois University. These unique institutes are designed to help you learn about agriculture and how to integrate its science concepts into your curriculum. The week long course will be exciting and filled with classroom instruction, field trips, lab experiences, and curriculum development of aid in the teaching of your students about the food and fiber system and the many roles of agriculture in our lives.

Each week long course will be limited to 18 educators. Three hours of graduate credit can be earned. Many county Farm Bureaus have pledged scholarships to some participants to help defray housing, meals, and tuition costs. For more information, contact: Stacy Shane, Education Manager, Illinois Farm Bureau, at (309)-557-3334.

Dean Dittmar, Region 5 Director

REGION 6

Hello from Region 6!! Our region is the furthest south and a very large region. As your region director, I am working on a possible summer workshop similar to the annual convention. Teachers from our region could present the sessions and vendors could market their products. Write or e-mail me (SUZA10@AOL.com) with suggestions for this workshop. We are also interested in having a region 6 science teacher's group. Any suggestions on how to make this successful and useful?

In our region many exciting programs are in progress. The IJAS science fair will be held at Southern Illinois University next spring April 9, 1996. Thousands of dollars worth of awards are given to students 7-12. SIUC also sponsors the Junior Science and Humanities Symposium (JSJS) March 24-26, 1996. High School students are invited to attend and present their research project. **Papers due January 26, 1996.**

Also the Expanding your Horizons (EYH) will be held February 17, 1996. This is a science workshop for girls 7-9 grades. If you have any news for our region, please contact me. Thank you

Suzanne Asaturian and Wes Heyduck, Region 6 Directors

DEADLINE FOR SUBMISSION: APRIL 15, 1996

o either day

Tear out, fold in thirds, tape closed, stamp, and use label on back of this sheet.

ISTA BOARD MINUTES FALL 1995 MEETING

The fall meeting of the ISTA Board was convened at 7:35 PM in the Governor Bond Room at the Springfield Renaissance Hotel on September 28, 1995. The minutes of the June 24, 1995 meeting were read and approved.

MEMBERSHIP REPORT

Current membership is at 3,928. Of this number, approximately 4% are college teachers, 20% middle school teachers, and 170 are students. The remainder is comprised of elementary and secondary teachers. The membership year runs from September 1 to August 31 each year. Fisher Scientific will award \$100 for high school science teaching tips to be printed in their catalogs. Tips should be submitted to Fisher, and teachers may receive up to three awards.

TREASURER'S REPORT

ISTA lost money during the past year, primarily due to the 1994 convention. The 1995-96 operating budget was set to be covered by dues revenue, with the budget established at the July 27, 1995 meeting of the Executive Board.

CONVENTIONS

1995 Convention: The preconference had 150 people registered. Lunch was provided by the Optical Data Corporation. Convention revenues as of the time of the Board meeting were \$29,000 from preregistration and dues. The convention featured 157 workshop sessions and 128 exhibit booths. **1996 Convention:** Bernie Bradley will chair the convention in 1996, and Jim Cowden will work with the local arrangements committee. The convention will be held in the Merchandise Mart in Chicago on October 10-12, 1996. Hotel rooms will cost approximately \$95 per night.

1997 Convention and Beyond: The 1997 ISTA convention will be at the Pere Marquette Hotel in Peoria on October 9-11, 1997. The Peoria Civic Center will also be used for the conference, with the Holiday Inn as the back-up hotel.

NSTA Convention in St. Louis: NSTA will rebate some money to ISTA for each ISTA member who attends. Also, ISTA will check into having ISTA pins made for members to wear in time for the NSTA convention.

SPECTRUM

The *Spectrum* is now being printed by ECC in Rantoul. Advertisement rates have been increased, and the number of advertisers has increased. The fall advertisement revenues paid for the entire cost of printing the fall issue. The goal is to make the *Spectrum* pay for itself.

AWARDS

A brochure with the names of the Presidential Award winners and ISTA award winners will be distributed at the awards presentation. Nominations for Presidential Awards are due by December 1st of this year.

ISBE

The Board discussed supporting the Environmental Education Strategic Plan Initiative. During the discussion, the need surfaced for a policy to be in place for providing such support between Board meetings. A committee was formed

to develop such a policy. The Safety Teleconference will be held on November 1, 1995, with preregistration beginning October 20th and held at the regional offices of education. A total of 15 down link sites will be available for this teleconference. The national standards are expected to be released by December, and state science standards are still in the development stage.

ISTA WEB PAGE

A rough draft of a web page for ISTA is being developed. The web page will include ISTA information, a roster of the names and addresses of Board members and regional directors, etc. The web page will be available through Argonne's server account. Jim Zimmerman is putting together the web page.

PRESIDENT'S REPORT

Bernie reported that the printing of 5,000 copies of a new two-colored ISTA brochure would be \$650. The Board approved having the brochures printed. Bernie, Gwen, and Barb attended a session of the Cray Academy during July in Chippewa Falls, WI. The summer institute was for one week and is a staff development project. NSF grants are available to replicate the model at ten sites around the state.

NOMINATIONS FOR 1996 ELECTION

Names for nominees for regional directors need to be submitted to Dave Winnett in order for ballot information to be assembled. Six regional directors will be elected in 1996.

ISTA INITIATIVES

A committee was established to investigate future offerings to ISTA members. Possibilities include summer institutes, changed vision, and a needs assessment for members.

FUTURE MEETINGS

The next Executive Board meeting will be held on January 20, 1996 at the University of Illinois, and the Spring Board meeting will be held on March 23, 1996.

The meeting was adjourned at 10:24 PM.

Respectfully Submitted,

Maureen Jamrock

ISTA Secretary

**ISTA extends a special
thank you to
OPTICAL DATA
for sponsoring the preconference
luncheon at the 1995 convention.
Optical Data also held a drawing
for a "Minorities in Science"
videodisc program and
"Windows on Science" update.**

THANK YOU!

THANK YOU TO OUR VENDORS WHO PARTICIPATED IN THE 1995 ISTA CONFERENCE IN SPRINGFIELD

Commercial

Addison-Wesley
All-American Associates
Associated Microscope
Bob's Big Pencils
Carolina Biological Supply
Cuisenaire Company of America
Cynmar
Dearborn Resources
Delta Education
Discovery Toys
Educational Aids, Inc.
Educational Design/IGAP Coach
Encyclopedia Britannica
Flinn Scientific, Inc.
Forestry Suppliers, Inc.
GPN
Glencoe/McGraw-Hill
Grolier Publishing
Harcourt Brace Jovanovich
D.C. Heath & Company
Holt, Rinehart & Winston, Inc.
Hubbard Scientific
Idea Factory
Ken-A-Vision
Kendall/Hunt Publishers
J.M. Le Bel Enterprises
LEGO Dacta
Leica Inc.
Macmillan/McGraw-Hill

Majeco
Midwest Model Supply
Midwest Products
Nasco
Nebraska Scientific
Ohaus Corporation
Optical Data
Pasco Scientific
Pencils & Play, Ltd.
Playfold-Kaulfuss
Prentice Hall
Quantum Technology
Ray-O-Vac
Sargent-Welch
Scholastic, Inc.
Science Kit & Boreal Laboratories
Scope Shoppe, Inc.
Scott, Foresman & Company
Silver Burdett Ginn
Showboard, Inc.
SRA/McGraw-Hill
Swift Instruments
Tri-Ed Enterprises
USBORNE Books at Home
VALIC
Ward's Natural Science
Wild Goose Inc.
Wm. C. Brown
World Book

Noncommercial

Bronx Zoo/Wildlife Conservation Park
Chicago Academy of Sciences
Earth Foundation
EEAI
Facilitating Coordination in
Agricultural Education
Forest Park Nature Center
Hult Health Education Center
Ill. Association of Biology Teachers
Ill. Clinical Laboratory Science Assoc.
ICE-University of Wisconsin
Illinois Corn Marketing
Ill. Dept. of Commerce & Community
Affairs
Ill. Dept. of Energy & Natural Resources
Institute of Food Technologists
Illinois JETS
Illinois Science Olympiad
Materials World Modules
Museum of Science & Industry
NSTA
Rainforest Preservation Foundation
REALL
SciTech
Shedd Aquarium
St. Louis Science Center
Wildlife Prairie Park
Young Entomologists' Society

THANKS ALSO TO THE VENDORS WHO DONATED THESE ITEMS FOR THE DRAWING HELD DURING ISTA GENERAL MEMBERSHIP MEETING: HERE ARE THE PRIZES AND LUCKY WINNERS!

3 Autographed copies of *Science Fun in Chicagoland* by Thomas W. Sills

Anna Zuccarini
Lea Brulic
Wes Heyduck

2 Ray-O-Vac Renewal Power Station and battery sets

Maureen Jamrock
Sylvia Gilbert

1 Standard Student Microscope (A-13) from the Scope Shoppe, Inc.

Leanne S. Clark

1 Vertebrate Study Kit from Nasco

Shara Fata

1 CD Rom *Explorations in Human Biology*, W.C. Brown Co.

Stephen Bonomo

1 Videodisc and Teachers Guide 3-2-1-Contact Scientific Investigation from Great Plains National

Margie Corp

1 Video Resource for Science Teachers Science Kit & Boreal Laboratories

Jill Mitchell

1 Discovery Scope from Silver Burdett Ginn

Shelly Peretz

1 Midwest Model Supply Co. TITAN III model rocket

Linda Duncan

2 Aluminum Air Power Cell Kits from Silver Burdett Ginn

Pat Doyle

Vivian Hoette

Rainforest Preservation Foundation — 3 videos

5 Optics Discovery Kits from the Optical Society of Chicago

Karen Zuckerman

Like Bonomo

Gwen Pollock

Marva Anyanwu

Susan Grzanich

Trailhead Nature Store, Forest Park Nature Center:

1 Tracks T-shirt (Glow in the Dark) and 1 copy of *Identifying Animal Tracks*

Max Reed

Reaching for Connections and Imagine—Adventures in Nature

Dean Dittmar

Exploring Insects, Learning About Butterflies, and The Bug Game

Judy Corben

Carol Van De Walle
NSTA District XII Director: IL, IA, WI
6179 E. 500th Street
Lynn Center, IL 61262-9520
(309) 476-8236
cvandewa@isbe.state.il.us

HIGHLIGHTS OF THE NSTA SUMMER BOARD MEETING

The Summer Board meeting was held Aug. 4-8 at Calloway Gardens, Pine Mountain, GA. This was the first full board meeting since the expansion from twelve to eighteen districts. CAGs (Chapters and Associated Groups) representing many states were also on site, attending special leadership sessions. The following items provide you with brief highlights of the meeting.

1) As you may know NSTA has been searching for a new **Executive Director** to replace Bill Aldridge. Bill is not retiring, his new position as director of special projects will allow him more time to work on SS&C and other writing projects/grants. The Executive Board unanimously recommended Dr. Gerald Wheeler, Univ. of Montana. Contract negotiations are currently underway. Look for a full report in NSTA Reports.

2) Great concern and cooperation permeated the room as the CAGs and Board worked together drafting a letter to the Senate stressing the importance of continued support of the **Eisenhower funds**. This will be sent from Pres. Shelly Fisher's office following the meeting. The vote is scheduled to take place within a week. The loss of this money will have a dramatic impact on science and math teachers and ultimately students. We have recently established a **Legislative department**, they are just getting underway. You can expect to have updates posted on the World Wide Web. In this time of change it will be important to keep informed.

3) Another item of interest is the Local Leader program. Both the pros and cons were discussed in relationship to cost factors and impact. The initiative will continue for a second year during which the program will be studied carefully. If you have any suggestions, concerns, or strongly support the Local Leader program, please drop me a note. If you are interested in becoming a LL check your NSTA Reports, there is an application form in it.

4) The elections this winter will include selecting a new DD from our area: Illinois, Iowa, and Wisconsin. If you are interested, or would like to nominate someone, please use the nomination form in NSTA Reports, or send them to me.

5) **Awards:** Look for these new additions to NSTA's Awards programs: **Tapestry** will now be a K-12 program, elementary teachers begin planning now! **Sears**, is developing an Intermediate, 4-6, award program that encourages the importance of creative thinking and inventing. Marily De Wall, NSTA, is in charge of setting criteria, she will be meeting later in August with Sears and a committee of teachers. **DEF/NSTA Making a Difference Award**, 5-8 programs, \$2,500 (see application)

6) **CAGs representing our district:** Sharon Nelson, President WSST and Steve Pike, President Elect, WSST. Talk to them about the importance of networking with others in leadership positions. Sharon, also on the High School Level Committee, helped lead the first High School Town Meeting where teachers were given time to express their greatest concerns. Look for a report on this very successful meeting from Sharon and Lois Fruen, High School Level Director.

7) NSTA has embraced the National Science Education Standards and plans three initiatives to promote their dissemination and use. Compatibility guidelines will be available at the NSTA Area Convention in San Antonio, TX, December, or contact NSTA Publication Sales, 1840 Wilson Blvd., Arlington, VA 22201-3000.

IN CASE YOU NEVER LOOKED US UP

MOSBY \ mōz' bē \ n.

1: company with six high quality anatomy and physiology texts to fit your curriculum

2: your best source for exciting new advanced placement texts in chemistry and physics

3: publisher with a new text for high school Honors Biology I and Biology II.

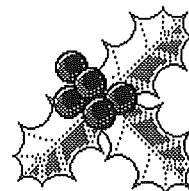
MOSBY is your best source for well written, quality texts for your advanced high school science courses. We offer the widest selection of anatomy and physiology texts and resources as well.

Our new chemistry text, **Chemistry, The Molecular Nature of Matter and Change** has rewritten the definition for advanced placement texts. The new 15th edition of **Anthony's Textbook of Anatomy and Physiology**, will be available in December, 1995. A broad selection of ancillary materials is available with each of our texts to assist both the teacher and student in the teaching/learning process. Please call or write for more information.

M Mosby

MOSBY • SPECIAL SALES
11830 WESTLINE IND. DR.
ST. LOUIS, MO 63146

1-800-325-4177



Science Is the Gateway: NSTA's National Convention in St. Louis

Come to St. Louis for NSTA's National Convention, March 28–31, 1996. The Gateway to the West has seen many changes since a revitalization period began in the early 1980's. The city's neighborhoods, skyline, and yes, convention capabilities all have benefitted from this resurgence.

The perfect example of this rebirth is Union Station. At one time the busiest train station in the world, this stunning structure now holds a shopping mall, a hotel, restaurants, and a theater. Next door is Kiel Center, the new home of the National Hockey League's Blues.

Downtown St. Louis begins with the Mississippi River and the incredible Gateway Arch. Rising 630 feet, the Arch stands as a memorial to Thomas Jefferson's dream of a continental United States. Take a tram to the top, where a breathtaking 30-mile panorama awaits. After your descent, walk along the cobblestone streets of Laclede's Landing, a 10-block riverfront area featuring restaurants, clubs, and shops. You'll also want to try your luck in the President Casino on board the Admiral, a riverboat that is permanently moored on the Mississippi.

Music is a major part of what St. Louis is all about. Ragtime music was refined here—pioneer Scott Joplin called St. Louis home for many years during the turn of the 20th

century. Jazz and blues still spill out of clubs of Laclede's Landing, the historic Soulard neighborhood, and the Loop neighborhood. For a change of pace, head to Powell Hall to hear the St. Louis Symphony Orchestra, the second oldest in the country.

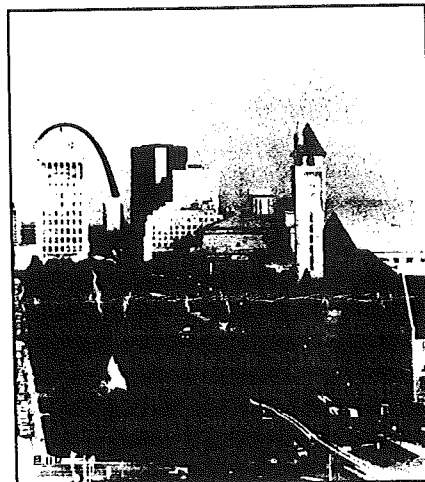
History buffs won't want to miss the Old Courthouse, where in 1847, a slave named Dred Scott sued his owner, challenging the legality of slavery. He lost the case, and the U.S. headed toward the Civil War.

Meet us in St. Louis!

SESSIONS The headquarters hotels are the Adam's Mark St. Louis, the Regal Riverfront Hotel, and Marriott's Pavilion Hotel. Sessions will be held there and at the Cervantes Convention Center. The exhibit hall is located in the Convention Center.

HOUSING In all, you can choose your housing accommodations from over 20 hotels. A housing form and map are located on the following pages. Be sure to act quickly—rooms get booked fast.

SPEAKERS General Sessions will be given by Peter Raven, director of the Missouri Botanical Garden, St. Louis; and Debbye Turner, Miss America 1990 and doctor of veterinary medicine. Former NASA astronaut Mae



St. Louis Convention and Visitors Commission

Jemison has been invited to give a General Session.

Alan Alda will be the banquet speaker, co-sponsored by NSTA and Scientific American Frontiers. The Robert H. Karplus Lecture will be given by Seymour Papert of the Massachusetts Institute of Technology, Cambridge. Phyllis Marcuccio, NSTA's Associate Executive Director for Publications, will give the Life Members Special Lecture. Former NASA astronaut Mike Mullane and wife Donna Mullane will give a special presentation sponsored by Silver Burdett Ginn. Many more speakers will be added as the convention approaches.

REGISTRATION You can register for the convention by filling out the form on a following page or by using our telephone registration. Call 1-800-328-8998 between the hours of 8:30 AM and 4:30 PM Eastern Time to register for the convention or enroll in tours, short courses, social functions, and other ticketed events. You must use a credit card (VISA, MasterCard, or DISCOVER) for this telephone registration. Purchase orders and checks must be mailed in. The telephone registration deadline is the same as the advance registration deadline, February 26.

ADVANCE PROGRAM More details and information on tours, short courses, sessions, and social events will be available in the Advance Program, which is mailed to all NSTA members in early January.



St. Louis Convention and Visitors Commission

THIS FORM IS FOR THE USE OF CONVENTION PARTICIPANTS ONLY.

Members or nonmembers registering to conduct business must contact the Exhibits Dept. to register as a Non-Exhibiting Industry Representative.

ADVANCE REGISTRATION—NSTA 1996 NATIONAL CONVENTION, March 28–31

1. REGISTRANT DATA Each participant (except nonteaching spouse) must complete a separate form
AVOID DELAYS! Carefully complete all information below. Lines marked with a (*) will appear on your badge.

OFFICE USE

TODAY'S DATE: _____ DAYTIME PHONE () _____ EXT. _____

☐ Ms./Mrs. ☐ Mr.

NAME (*)

First/MI Last

POSITION TITLE (*)

INSTITUTION(*)

WORK ADDRESS

City (*)

State (*)

Zip

☐ I am a dues-paying member of NSTA, No: *

☐ I am a dues-paying member of ☐ STOM ☐ ISTA (Ill.) Exp. _____

* NSTA Members: Your 8-digit number is on your membership card and on the mailing label of your NSTA Journal. You must provide your number to receive the NSTA Member registration rate and a 10% discount at the NSTA Science Store. An institutional membership number cannot be used to receive the NSTA Member rate.

☐ Check here and describe any special aid needed due to disability (attach extra sheet, if needed)

CHECK ONLY ONE IN EACH CATEGORY

Discipline	Position	Assignment
A. <input type="checkbox"/> Earth/Space	A. <input type="checkbox"/> Teacher/Prof.	A. <input type="checkbox"/> Pre.-Elem.
B. <input type="checkbox"/> Biology/Life	B. <input type="checkbox"/> Dept. Head/Chair	B. <input type="checkbox"/> Elem.-M/Jr.
C. <input type="checkbox"/> Chemistry	C. <input type="checkbox"/> Principal	C. <input type="checkbox"/> M/Jr.
D. <input type="checkbox"/> Physics	D. <input type="checkbox"/> Supvr./Coordr.	D. <input type="checkbox"/> M/Jr.-High
E. <input type="checkbox"/> Environ. Sci	E. <input type="checkbox"/> Administrator	E. <input type="checkbox"/> High Sch.
F. <input type="checkbox"/> Physical Sci	F. <input type="checkbox"/> Student	F. <input type="checkbox"/> K-12
G. <input type="checkbox"/> General Sci	G. <input type="checkbox"/> Scientist/Rsrchr.	G. <input type="checkbox"/> College
M. <input type="checkbox"/> Multidisciplinary	H. <input type="checkbox"/> Consultant	H. <input type="checkbox"/> Research
Z. <input type="checkbox"/> Other	Z. <input type="checkbox"/> Other	Z. <input type="checkbox"/> Other
School/Institution		
A. <input type="checkbox"/> Public	B. <input type="checkbox"/> Private	C. <input type="checkbox"/> Lab D. <input type="checkbox"/> Business Z. <input type="checkbox"/> Other

2. REGISTRATION INSTRUCTIONS By action of the Board of Directors, registration is required for participation in all activities of the convention.

To Qualify for the Earlybird or Advance Registration Rates:

- Register only one person (and nonteaching spouse and children) per registration form. Additional forms may be photocopied.
- Fees will be determined by the **POSTMARK DATES** shown at right.
- Check the box and circle the fee (at right) that applies to your registration. Do the same if your nonteaching spouse is **ATTENDING** the convention. Provide spouse's full name and full name(s) of children (high school age and under) **ATTENDING** the convention in the spaces provided.
- Total your fees in Sec. 3 and enter your check number or credit card data.
- Purchase orders will only be accepted for 2 or more persons. Registration forms for each person must accompany the purchase order.

IMPORTANT NOTE: If your registration is postmarked by the Advance deadline, your convention packet will be mailed to you by a week before the convention. **PLEASE, do not assume** that your school, district, or business mailed your form on time. Many are mailed **AFTER** the deadline. Registrations postmarked after the Advance deadline will require you to come to the Problem-Solving Booth in the Registration Area.

Consult the Advance Program (mailed to NSTA members in January) for registration hours and convention details. You must use the Advance Program forms to order tickets for tours, social functions, and short courses.

• **MAIL FORMS TO:** NSTA St. Louis Convention, Attn: T. Brent
PO Box 90660, Washington, DC 20090-0660

DON'T FORGET YOUR CAG NUMBER!

CAG ALLOCATION POLICY

NSTA provides the opportunity (at no cost to you) for convention attendees to contribute \$2.00 of their registration fee to any NSTA State Chapter or Associated Group (CAG). To take part, enter the number for your choice (from the table on the previous page) in the box above. (For example, STOM is #33; ISTA (Ill.) is #18.)

ST. LOUIS REGISTRATION

CHECK ONE ONLY, A-I

(and nonteaching spouse, if applicable)

Two to Four Days

	Earlybird Jan. 29	Advance Feb. 26	Onsite 3/28-31
A. <input type="checkbox"/> NSTA Member (Number must be entered above)	75.00	85.00	105.00
M. <input type="checkbox"/> STOM or ISTA (Ill.) Member (Enter information above)	75.00	85.00	105.00
B. <input type="checkbox"/> Nonmember	115.00	125.00	145.00
C. <input type="checkbox"/> Retired NSTA Member (Number must be entered above)	30.00	40.00	55.00
D. <input type="checkbox"/> International Registrant (except Canada)	30.00	40.00	55.00
E. <input type="checkbox"/> Fulltime Student	30.00	40.00	55.00

One Day Only—**CHECK DAY:** ☐ THURSDAY ☐ FRIDAY ☐ SATURDAY

F. <input type="checkbox"/> Non-Student (NSTA Member or Nonmember)	55.00	65.00	75.00
G. <input type="checkbox"/> Fulltime Student	25.00	30.00	40.00

Last Day Only—**SUNDAY**

H. <input type="checkbox"/> Non-Student (NSTA Member or Nonmember)	35.00	45.00	55.00
I. <input type="checkbox"/> Fulltime Student	20.00	20.00	25.00

☐ **NONTEACHING SPOUSE ATTENDING THE CONVENTION** 30.00 40.00 55.00

Spouse Name (fee enclosed): _____

Names of children **ATTENDING** the convention: _____

PLEASE NOTE: Your spouse and children must be registered in order to visit the Exhibit Hall. Registration is not required for family members to attend social functions or tours but tickets must be purchased for those events. Children of high school age and under can be registered for free. College students must submit separate registration forms and payment.

3. PAYMENT CALCULATION

REGISTRATION \$ _____

NONTEACHING SPOUSE \$ _____

MEMBERSHIP FEE (form attached from previous page) \$ _____

TOTAL PAYMENT DUE \$ _____

(\$ _____ FOR _____ PERSONS)

METHOD OF PAYMENT (DO NOT SEND CASH)

1. ☐ **CHECK #** _____ (Payable to 'NSTA St. Louis Convention')

2. ☐ **CHARGE** ☐ VISA ☐ MC ☐ Discover (only these cards accepted)

Exp. _____ Signature: _____

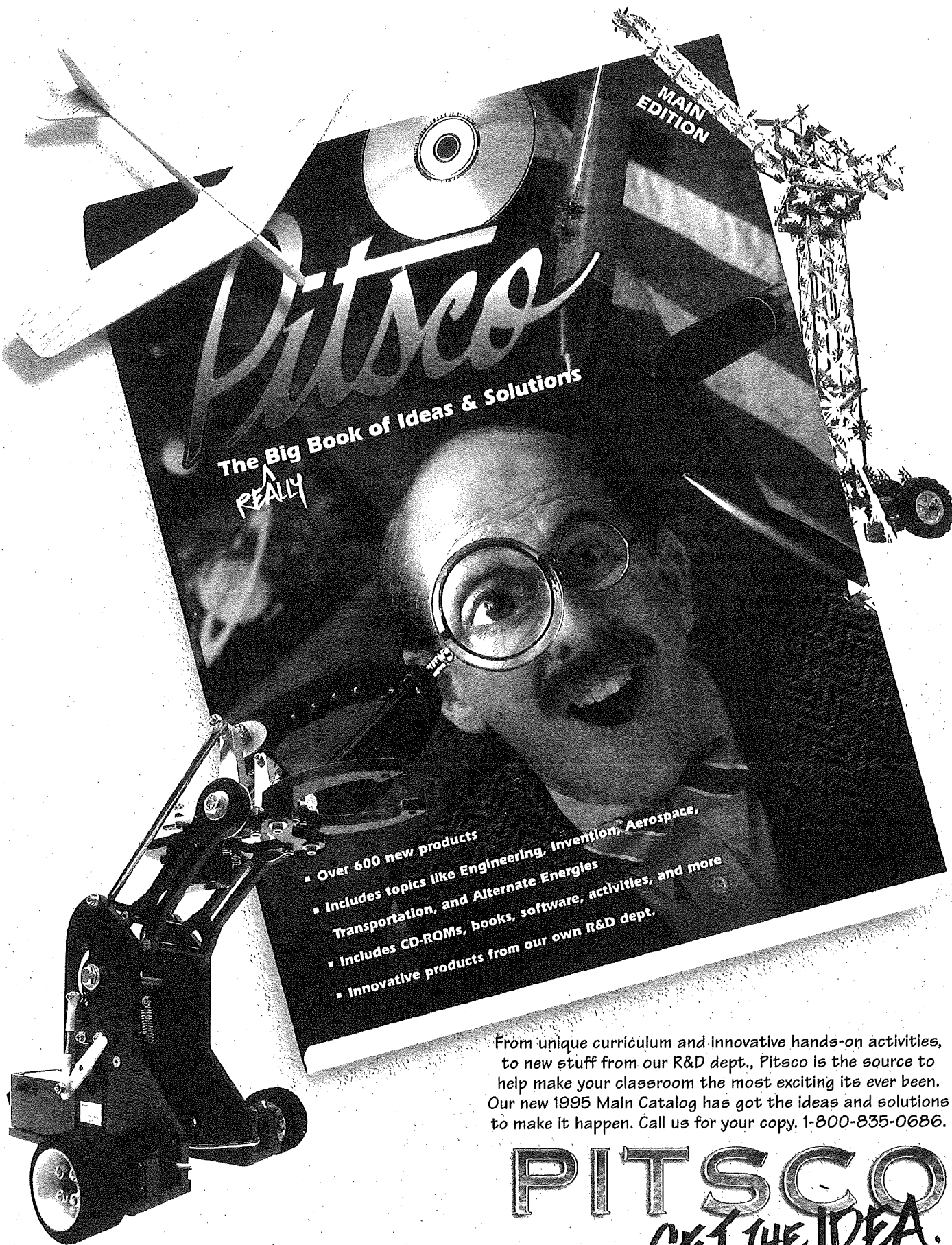
3. ☐ **BILL**, purchase order for **at least 2 persons** attached. P.O. # _____

Refund Policy: Refund requests must be in writing and postmarked 10 days before convention.

NEW MEMBER: \$ _____ ☐ DEP. WITH CONV.

☐ CC ☐ CK # _____ ☐ SENT TO MEMB. ON ____/____/____ INITIALS _____

OFFICE USE



From unique curriculum and innovative hands-on activities, to new stuff from our R&D dept., PitSCO is the source to help make your classroom the most exciting its ever been. Our new 1995 Main Catalog has got the ideas and solutions to make it happen. Call us for your copy, 1-800-835-0686.

PITSCO
GET THE IDEA.

1-800-835-0686

\$ \$ \$ \$ \$ \$ **ATTENTION** **ISTA** **MEMBERS!**

Be sure to attend the NSTA Convention in St. Louis. A registration incentive revenue sharing agreement has been set in place. For the first 1,000 full-time equivalent registrations (FTE's) ISTA will receive \$1.00 per ISTA member attending; for the next 1,000 FTE's, ISTA will receive \$2.00 for each ISTA member attending. For the next 1,000 ISTA members attending ISTA will receive \$3.00, and for the next, \$4.00 per member. We can receive big bucks for ISTA programs as a result. Don't forget to check the box indicating your affiliation on your registration. The CAG's Affiliation number for ISTA is 18. Be sure to write it in the box on the Advance Registration form.



—St. Louis Convention and Visitors Commission

NSTA INDIVIDUAL MEMBERSHIP FORM

Join NSTA now and save \$40 on the 2–3 day Nonmember registration rate by registering as an NSTA Member. See special rates for students, retired educators, and first-year teachers! Select the membership plan that best fits your needs and the journal(s) you want to receive. Membership payment must be enclosed with your convention registration to qualify for the NSTA Member rates. All membership plans include voting privileges, *NSTA Reports*, a choice of NSTA journals, a 10 percent discount at the NSTA Science Store at the convention or through our catalog, and other benefits.

YES, enroll me in the following membership plan (p CHECK HERE if you have been an NSTA Member in the past):

- ☐ Individual Membership with one journal (I have checked one journal below), \$52/year.*
- ☐ Individual Membership with two different journals (I have checked two journals below), \$79/year.*
- ☐ Individual Membership with three different journals (I have checked three journals below), \$100/year.*
- ☐ Individual Membership with all four journals below, \$115/year.*
- ☐ Joint NSTA/SCST Membership: Includes membership in both NSTA and the Society for College Science Teachers, and *Journal of College Science Teaching*, \$62/year.*
- ☐ Retired Membership: Includes one journal of choice (Check one journal below), \$22/year.*
- ☐ First-Year Teacher Membership: Includes one journal of choice (Check one journal below), \$26/year.* Include appropriate documentation that this is your first year teaching.
- ☐ Fulltime Student Membership: Includes one journal of choice (Check one journal below), \$22/year.*

Instructor's Signature _____

Graduation Date _____

JOURNAL CHOICE(S):

- ☐ *Science and Children*, Grades K–8, 8 issues per year
- ☐ *Science Scope*, Grades 5–9, 8 issues per year
- ☐ *The Science Teacher*, Grades 7–12, 9 issues per year
- ☐ *Journal of College Science Teaching*, 6 issues per year

*Foreign or Canadian members, add \$10 postage for EACH journal.

Name _____

Address _____

City _____

State _____

Zip _____

Daytime Phone (_____) _____

☐ Payment enclosed with my convention registration check.

☐ My check, No. _____, payable to 'NSTA Membership' enclosed

☐ Please charge my ☐ VISA ☐ MasterCard ☐ Discover

No. _____

Exp. _____

Signature _____

\$ _____ Dep. _____ / _____
 Batch _____ Ck# _____
 Initials _____ OFFICE USE

COMPUTER SPECTRUM

John Grow
Second grade teacher
Oakhurst Elementary School
P.O. 395
Oakhurst, CA 93644
email: jgrow@basslake.noca.fred.org

YOU CAN DO IT! AN INTERNET SUCCESS STORY

A major challenge for teachers today is to find a way to provide students with technology education that will move them into the 21st century. Many teachers believe it is important to educate children to use and understand the tools that the working world uses everyday, but many schools have outdated and inadequate equipment. Our experience at Oakhurst Elementary and three neighboring schools is an example of how to meet this challenge in a rural area.

The schools are located in the Sierra Nevada mountains near Yosemite National Park, and every call to the server in Fresno costs 30 cents a minute! Because of time, distance, and cost, few teachers were willing to use a phone modem to go online and work with other teachers around the nation with

similar interests. Many teachers were curious about modems and telecommunications, but only four in the mountain area had actually gone online during the past year.

We found that we could not have access to the local network provider without spending over \$21,000 for the first year to pay line charges, purchase a server, buy routers, and pay consortium fees and other costs, so we looked for a cheaper alternative which would suit the needs of our new telecommunicators. We set up a mode for Global School Net with local phone access and worked to install modems at every school site. Then we went about the task of promoting interest in using Global School Net.

Global School Net, formerly called FrEdMail, is a service provided by the Global School Net Foundation. It is supported mostly by consortium fees paid by subscribing schools and servers which carry its messages worldwide. Within this network, teachers can find calls for collaboration, e-mail, access to electronic journals, special interest group forums, and special curriculum projects and games for classes. Our main goal was to have a server of our own that would provide freer access without long distance charges to our rural area.

Make Tracks To



Forest Park Nature Center

Comprised of over 500 acres of dedicated Illinois State Nature Preserve, Forest Park Nature Center contains seven exciting miles of hiking trails. The Nature Center also features a natural history museum, viewing room for bird watchers, educational programs for school groups and the public, and handicap accessible restrooms & parking. Open year round.

The Trailhead Nature Store

features central Illinois' finest selection of science & nature related books, with discounts for teachers and quantity purchases.



5809 Forest Park Dr. Peoria, IL 61614 (309)686-3360
Open Monday-Saturday 9am-5pm, Sunday 1-5pm



Scrounging the hardware and persuading the districts to budget \$100 for each school for the first year was easy. We needed money from each school today for upgrading an Apple IIgs from the high school with a hard drive, a modem, FrEdMail server software, and our consortium fee for the year. In August, 1994, our node was up and running. Teachers, parents, and students could access the e-mail services; teachers could participate in curriculum projects and special interest groups; and teachers could use the electronic journals such as CNN Daily Reports without long distance costs.

The effort to provide telecommunications was more time-consuming than we had imagined. We wanted to visit each school site in our part of the county three times as part of our plan to bring about wide use. By November, 1994, we had run ourselves ragged doing this after school and driving the distances involved. The schools are roughly 20 miles from Oakhurst, but the roads are located in the Sierra Nevadas. Slow travel!

School sysops (system operators) Gaye Lewis and David Hoffman found several curriculum projects for teachers and students that spurred greater interest in regularly using the node. Lewis set up a curriculum project to share local weather data and found six classes to work together. In Yosemite National Park, weather can vary greatly over an area as small as five miles, so classes had plenty of data to share.

I began working with Kathy Hansen in Hallsville, Missouri, on a project to send Santa letters. The students in Hallsville played Santa by writing to the second graders at Oakhurst who were very excited to receive their letters just before Christmas vacation. David Hoffman found four other classes to work on the same project in large November, and suddenly lots of interest was generated by Global School Net and our node. Students from the mountain area began signing up as users, as did family members.

Two more teachers in the Yosemite area participated in the Geogame in January, 1995. In this game sponsored by Global School Net, classes from around the world send in clues to their location such as the latitude and longitude and important geographical landmarks nearby. The clues are sent to 25 other schools around the world with possible cities and towns. Each class attempts to match the geographical data with the exact location from the list. Teachers at Oakhurst Elementary School in grades 4 and 5 decided to share the clues, and even classes that had not been online began to participate offline. This was another benefit of the enthusiasm generated by one teacher in a school participating in the Geogame.

With three major curriculum projects in 11 classes from five school districts officially participating in the first year, we are pleased to report that we are continuing to drum up support for our node. We were visiting local service clubs, corporations, and beginning the second round of presentations at local schools.

The response has been very positive, and we are visiting individual teachers to remind them of the curriculum projects and how to participate in them. Slowly, more teachers are getting the word out through their enthusiastic participation in curriculum projects and e-mail, and our list of teachers is growing again.

Classrooms across the world are meeting on the Internet for a variety of curriculum projects. With the most basic telecommunications tools and an e-mail account, schools like those that John Grown writes about can share data to supplement and enhance classroom learning.

There are many Internet projects that emphasize data gathered by students in their own environments. Students must collect, manipulate, analyze, interpret, and communicate this data; they usually share their data with students in other parts of the country or even the world.

Every day, more teachers initiate projects like these and hope for other teachers to participate. In addition, there are several mailing lists for exchanging information between classes and schools. These lists can be used in those schools that have nothing more than an e-mail address. For more information, check out ENC's online services.

If anyone has questions about how we got started as telecommunicators, contact me at the addresses below:

Your Catalog to Science in Chicago and Nationwide SCIENCE FUN IN CHICAGOLAND

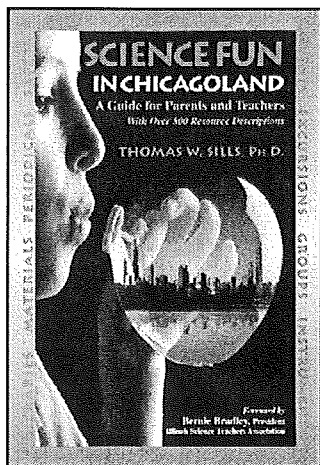
**A Guide for Parents and Teachers
With Over 800 Resource Descriptions
BY THOMAS W. SILLS, PH.D.**

**Foreword by
Bernie Bradley
ISTA President**

**193 pages
Paperback
6" x 9"**

**ISBN
0-9644096-0-7**

**ONLY
\$ 14.95**



Available at Your Local Bookstore

or from DEARBORN RESOURCES

P. O. BOX 59677, CHICAGO, IL 60659

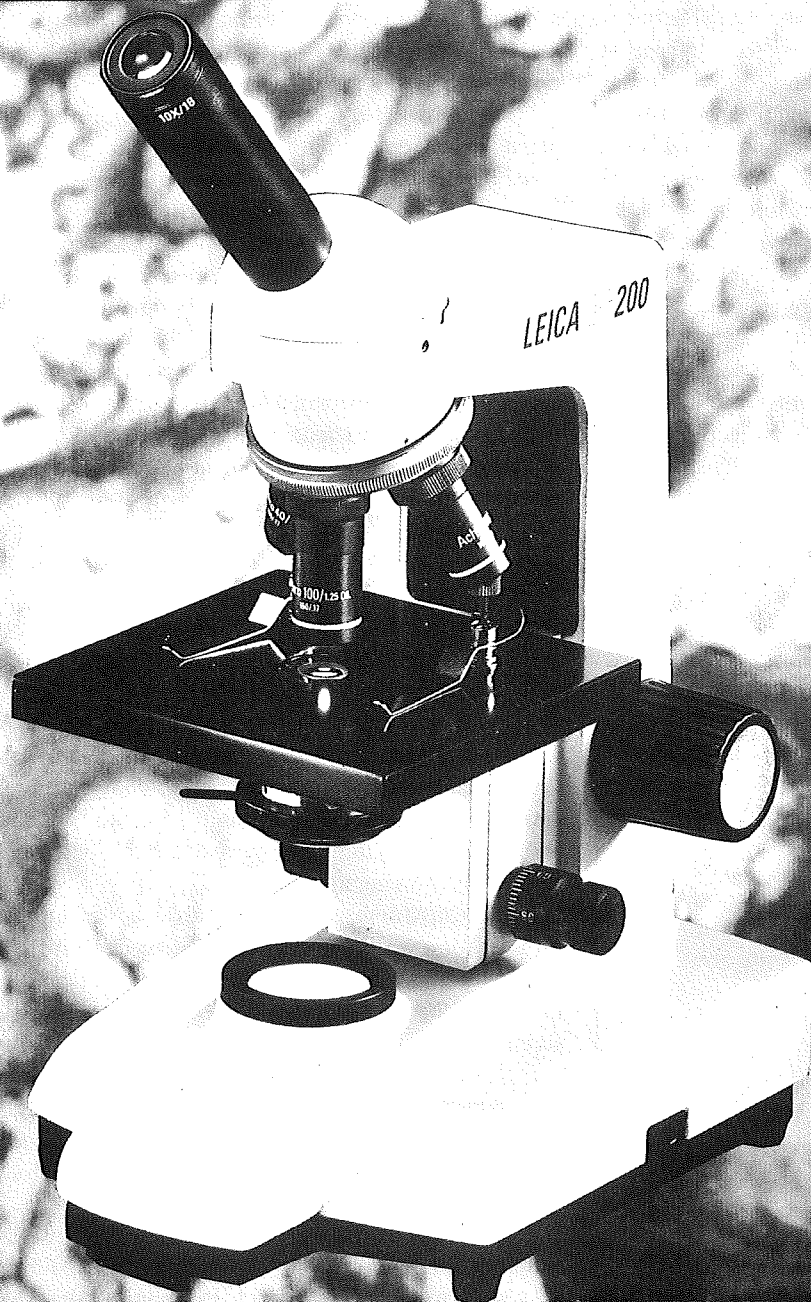
FAX 312-262-5731

for order forms and quantity discounts for schools.

There's a Bright, New Student in Class...

The New LEICA BF200

For A Demonstration Call Us Today 1-800-476-3893



Excellent Quality and Price in One Package

Leica's commitment to providing our customers with quality products at affordable pricing continues. The new **LEICA BF200 Compound Microscope** has been designed with your educational needs in mind.

Quality

- Superior optics assure crisp, clear images
- Illumination system features a 5,000 hour fluorescent lamp for bright, even light

Value

- High performance at a competitive price
- Several configurations available to meet your educational requirements and budgetary needs

Durability

- Solid product construction with a rugged yet sophisticated Eurostyle
- Backed by our 5 year warranty

Leica assures that your purchase offers both **quality and performance** at a **price** you can afford. This makes the LEICA BF200 the ideal solution for your educational environment.

As a mark of international excellence, the LEICA BF200 is designed to meet the applicable requirements of U.L., C.S.A., I.E.C. and V.D.E. safety standards — a first in its instrument class.

The LEICA BF200 Compound Microscope... at the head of its class.

Standard Models

Cat. No.	Head	Objectives		Illumination		List Price	Your Cost
32000-01	Monocular	4, 10, 40, 100X	Achromatic Abbe	120V Fluorescent		\$ 704.00	\$565.00
32000-03	Monocular	4, 10, 40X	Achromatic Disc	120V Fluorescent		\$ 494.00	\$385.00
32000-05	Monocular	4, 10, 40X	Achromatic Disc	Mirror Illumination		\$ 450.00	\$365.00
32000-06	Binocular	4, 10, 40, 100X	Achromatic Abbe	120V Fluorescent		\$1,214.00	\$950.00
32000-07	Teaching Head	4, 10, 40, 100X	Achromatic Abbe	120V Fluorescent		\$ 784.00	\$620.00
32019	Replacement Fluorescent Lamp		12.00				

Send orders to:
Associated Microscope, Inc.
 P.O. Box 1076
 Elon College, N.C. 27244
 1-800-476-3893
 Fax: 910-578-3897

SPECIAL INTERESTS

Larry R. Meyers
c/o Wiss, Janney, Elstner Associates, Inc.
29 North Wacker Drive, Suite 555
Chicago, Illinois 60606
Telephone: (312) 372-0555 Fax: (312) 372-0873

ENGINEERS WEEK: ILLINOIS '96 February 18-24

***"Engineers: Creating Tomorrow's World Today"* 1996 Engineer Poster - Essay Competition**

In conjunction with National Engineers Week, the Illinois committee is developing several activities aimed at interesting primary school children in the areas of engineering. One such activity is the 1996 Engineer Poster-Essay Competition.

This competition is open to all third through eighth grade school children through their schools. This competition provides a means by which students can work together and be recognized for both their interest in engineering and their writing and artistic work. The essays are to be 200 to 500 words in length on an engineer, living or deceased, who has had an impact on the students. This could be a structural engineer, mechanical engineer, chemical engineer, bio-technical engineer or any other type of engineer. The essay may be written or typed, and should note the reasons why this individual was selected and their achievements. Posters should be standard poster board size not exceeding 20" by 30" and made by the students. The posters should illustrate the work or aspects of the selected engineer and the concept of "Engineers Week."

Each school will be permitted to submit one entry in each of three age groups: third and fourth; fifth and sixth; and seventh and eighth. Each submitted poster-essay should be done by a group of up to three students and a teacher sponsor. All participating team members will receive a certificate of participation.

The winning selections in each of the three groups will also receive "Engineers Week Tee-Shirts and will be invited to attend the special luncheon to be held in February, during the Engineers Week activities. Winning selections will also be on display at various locations including the James R. Thompson Center (formerly the Illinois Center) during engineers week.

The deadline for submitting an entry is January 13, 1996. All entries should be mailed or delivered to the above address, Attn. Larry Meyers.

There is no cost to participate other than making sure that the essay and posters are sent in for judging. For questions or additional information, call Larry Meyers 312-372-0555.

For information on other National Engineers Week-Chicago programs contact Bob Johnson (312) 332-0107.

Nancy Riggs, Public Information Manager
Illinois-Indiana Sea Grant Program
University of Illinois at Urbana-Champaign
51 Mumford Hall Urbana, IL 61801
riggs@uiuc.edu PH. 217 333-8055 FAX 217 333-2614

SEA GRANT IS PARTNER IN OFFERING ELECTRONIC INFORMATION

Interrelationships are significant in environmental studies and in most all subject areas. Teachers now have access to an important new teaching tool that encourages students to think about the way that various Great Lakes issues are related to other issues.

Teachers and students traditionally research issues by sifting through various publications and periodical articles in libraries. Although traditional research methods continue to have significant importance in all disciplines, new technology offers quick and easy electronic access to the most current information on the Great Lakes.

By tapping into the Internet, the "library of the future," teachers can open up broader horizons for their students as they surf through various links to related information. The Great Lakes Information Network (GLIN), a collection site for Great Lakes information, can be accessed via the Internet. In addition to offering this easy access to current information, the structure of this GLIN encourages thinking in interrelated terms by allowing users to move quickly from one link to another.

Illinois-Indiana Sea Grant is a partner, along with the Great Lakes Sea Grant Network and other organizations, in this project that is led by the Great Lakes Commission, a compact agency of eight Great Lakes states. The project uses current technology to bring information into the classroom, and at the same time, provide a route to understanding the interrelated nature of land, air, water and all living things including humans.

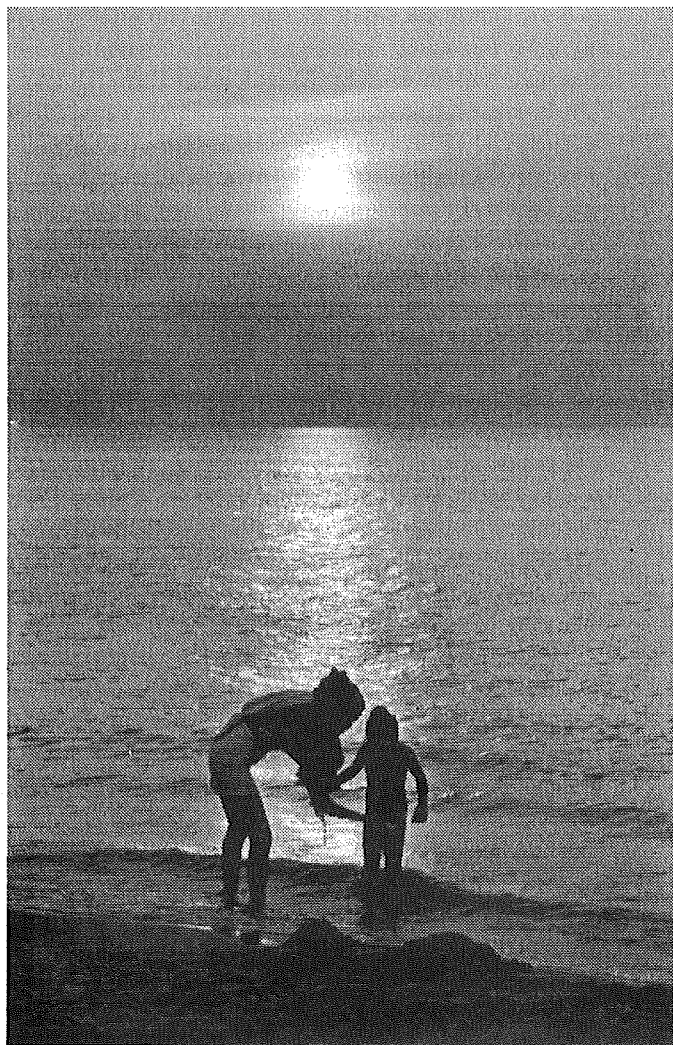
This interrelated nature is significant in understanding the need for pollution prevention. For example, lawn chemicals enter groundwater that flows into rivers and lakes where chemicals can affect fish. The chemicals can affect the health of people and wildlife that eat the fish. Additionally, future offspring of people and wildlife can be affected by those same chemicals.

By exploring such topics as environment and economy, users may click onto links that quickly lead to information illustrating the interrelated nature of various issues. The movement of natural resources and industrial products through Great Lakes shipping is related to toxic substance production and pollution prevention measures. Regional tourism often depends on the preservation of natural resources through pollution prevention, thus tying natural resources and pollution prevention to the regional economy.

A series of workshops sponsored by Illinois-Indiana Sea Grant has helped teachers learn to access GLIN, and Illinois-Indiana Sea Grant recently produced a tip sheet, "Teaching About the Great Lakes Through the Great Lakes Information Network (GLIN)" as part of The Leading Edge tip sheet series. This tip sheet may be requested from Illinois-Indiana Sea Grant. Single copies are free.

The Illinois-Indiana Sea Grant Program is one of 29 programs of the National Sea Grant College Program, a network of universities, government and the private sector that promotes economic development, stewardship and responsible use of the nation's marine, coastal and Great Lakes resources, enabling America to be more competitive in the 21st century. Illinois-Indiana Sea Grant combines resources of the University of Illinois and Purdue University to address concerns of the southern Lake Michigan region through research and outreach.

To request the tip sheet on using GLIN or to learn more about Sea Grant resources for teachers, contact Christine Pennisi, marine educator, at 312 761 5099, email PennisiC@idea.ag.uiuc.edu, or Nancy Riggs at the above address.



Illinois Beach State Park. Lake Michigan water quality issues are significant to area residents and future generations, and can be explored on GLIN. Photo Credit: Courtesy of Illinois-Indiana Sea Grant Photographer: David Riecks

Fred Walk

Alliance Reporter — *Dedicated to the Teaching of Geography in the State of Illinois*
Volume IV, Fall 1995

ILLINOIS BEE CHAMP IS NATIONAL RUNNER-UP! 500 SEE ILLINOIS "BEE"

Growth in the number of tourists visiting the Sinai Peninsula is an economic asset for what country? Although the United States is the largest exporter of wheat, which Asian country is the largest *producer* of wheat? Roughly a century of democratic government has helped make which country in Central America one of the most peaceful and politically stable in the region? Students at the 1995 Geography Bee were asked questions like these to measure their geographical understanding. How did you do? Look for the answers in the pages of this newsletter.

The seventh annual Illinois Geography Bee finals were held on the campus of Illinois State University on April 7. Over five hundred were on hand to watch the 100 participants compete for a trip to the National Geography Bee Finals in Washington, DC at the National Geographic Society Headquarters and the \$25,000 college scholarship.

The top three winners from Illinois were: 1st place, Aaron Wenzel, Freeport Jr. High School, Freeport, 2nd place, Peter McFerrin, Channahon Jr. High School, Channahon; and 3rd place, John Sarychoff, Holy Ghost School, Wood Dale.

Aaron went on to finish second in the National Geography Bee!! He and his family were excellent representatives from our state. Aaron, along with the first and third place finishers at the national geography bee received an all-expense paid trip to Orlando, Florida to compete in the International Geography Bee this past July. Please read Aaron's account of his Geography Bee exploits in this newsletter. Congratulations to Aaron, his teacher, Illinois Geographic member Mrs. Suzanne Trainor, and Aaron's very supportive family.

Alliance Reporter is published three times a year for the Illinois Geographical Society by the Illinois Geographic Alliance Committee. To be added to the mailing list, please send your name and address to Norman Bettis, Illinois Geographic Committee, Dept. of Curriculum and Instruction, Campus Box 5330, Illinois State University, Norman, IL 61790-5330 Attn. Chris Wissmiller 309-438-2756 or FAX 309-438-8659 or email NCBETTIS@RS6000.cmp.il.stu.edu

THE IGAP COACH GRADES FOUR, SEVEN, & ELEVEN SCIENCE

by Ovid K. Wong, Ph.D.

Three ground-breaking student texts, especially written by a leading Illinois science educator to prepare your 4th, 7th, and 11th-Grade students for the IGAP Science Test.

Each chapter contains instruction, sample questions with extensively annotated answers, and practice questions for students to answer on their own. Chapters conclude with a 10-15 question test on the material covered. At the end of each book is a full-length Practice Test that models the actual IGAP assessment.

The IGAP Coach: Grades 4, 7, & 11 Science are organized according to IGAP Goals as follows:

✧ **Knowledge of Science**

An overview of the basic scientific knowledge that students at each grade level should possess. Practice questions and instruction are taken from a variety of topics in Physics, Biology, and the Earth Sciences.

✧ **Science, Technology, and Society**

Questions involving the impact of science and technology upon the natural and human environments.

✧ **Principles of Scientific Research**

Questions on the scientific method—problem, hypothesis, experiment, examination of results, and forming conclusions—as well as on the ethical decisions involved in science.

✧ **Processes of Science**

Questions dealing with data collection, measuring devices, graphs and tables, and laboratory safety practices.

✧ **Practice Test**

A full-length IGAP-style test of the material covered in the book.

GRADE 4 (EDI 196)

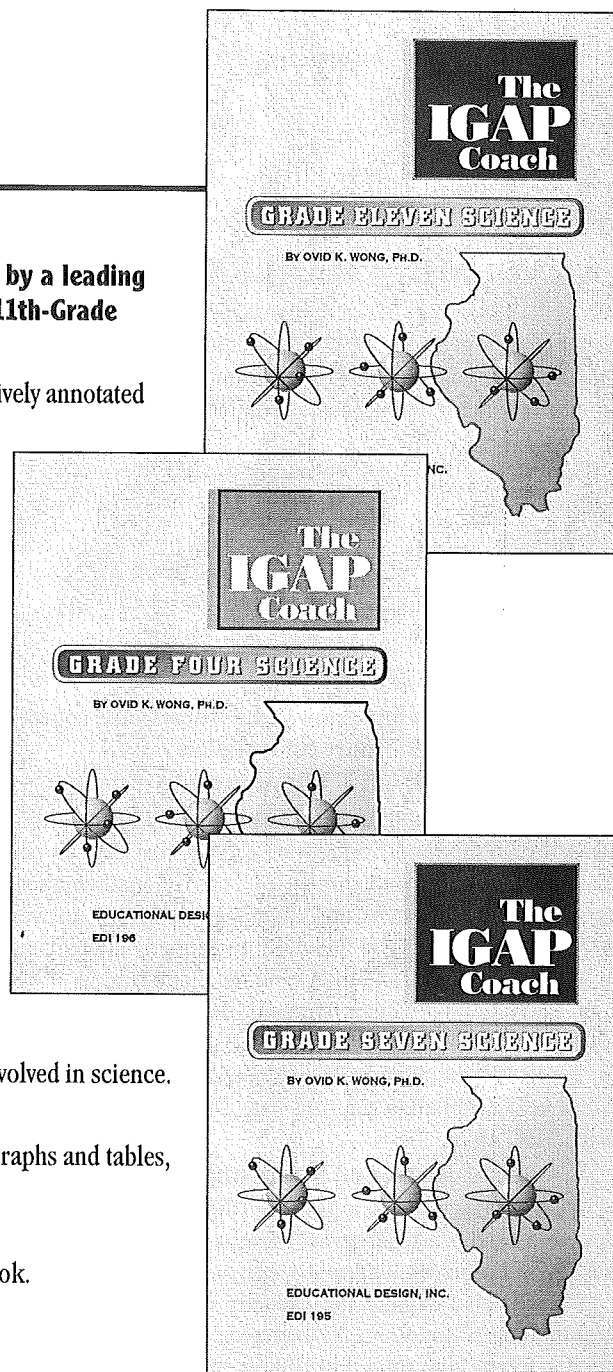
1-9 copies \$12.95 ea., 10-29 copies \$8.95 ea.
30 or more copies \$7.95 ea., Teacher's Guide free with order.

GRADE 7 (EDI 195)

1-9 copies \$12.95 ea., 10-29 copies \$8.95 ea.
30 or more copies \$7.95 ea., Teacher's Guide free with order.

GRADE 11 (EDI 192)

1-9 copies \$12.95 ea., 10-29 copies \$9.95 ea.
30 or more copies \$8.95 ea., Teacher's Guide free with order.



© 1995 EDUCATIONAL DESIGN, INC.
345 HUDSON STREET, NEW YORK, NY 10014

To order, call TOLL FREE (800) 221-9372
FAX (212) 675-6922

Or contact our Northern Illinois Sales Representative,
Carole Shulman, Chicago Vendor #25947
1460 Glencoe Ave., Highland Park, IL 60035
(708) 432-5654

Illinois JETS — Junior Engineering Technical Society
David L. Powell
dpowell@uiuc.edu
Kay Simmons
mksimmon@uiuc.edu
(800) 843-5410

ACADEMIC CHALLENGE - 1996

1996 will mark our 22nd anniversary of the Academic Challenge competition. 1995 set another record for attendance with 443 high schools (approximately 57% of Illinois schools) sending 6,364 students. The 1996 dates for testing are:

District	February 1-15
Regional	March 1-11
State Finals -	
Division I	Wednesday, March 27
Division II	Thursday, March 28
Division III	Friday, March 29

Note that some rules have changed. Contact your coordinator or our office for more information

SMART Challenge

(Science, Math and Reading Tests) - This is an in-school test for Freshmen and Sophomores. At a cost of \$35 per school you will be sent copies of tests in mathematics, English, biology, business, and chemistry along with answer keys. Administer the tests in school to as many students as you wish, score them, and then send results to Illinois JETS for comparison with other students in Illinois. Tests are multiple choice, and of 40 minutes duration. Call and leave your name, school name and address and asked to be put on the SMART Challenge mailing list. Test window will be April 15-26, 1996.

Summer Programs

We will offer two sessions of the Illinois JETS programs this year instead of a separate MITE session. *Please note that the MITE scholarship will now apply for either session.*

We will also expand the capacity of our programs to accommodate 100 students for each session. Brochures were mailed to every high school in Illinois in November. Here's a list of offerings:

Session I - June 16-28

Session II - July 7-19

Eligible students are those who will be either juniors or seniors in the Fall of 1996. Cost is \$400.

USEFUL INFORMATION

NACME (National Action Council for Minorities in Engineering) is active in promoting minority gains in engineering career fields. Their recent Research Letter (June 1995), includes some very useful information that explains much of what happens to minority youth "on the way to a career."

Of primary importance, in my view, is the flawed decision making process used by virtually all students when it comes time to choose math and science courses in high school. 79% of all students say that they made such decisions themselves, without significant advice from teachers or counselors. 93% of parents are "never informed about why these decision must be made.

Finally, and regrettably, over half of all students plan to drop math and science at the first opportunity. Ironically, most students (88%) believe that advanced math skills are required for certain jobs or careers!! If you are interested in getting a copy of the report, I suggest you write **NACME at 3 West 35th Street, New York, NY 10001-2281.**

EOH - Engineering Open House at the University of Illinois at Champaign/Urbana is scheduled for Friday and Saturday, March 1 & 2, 1996. You are invited to participate in a design contest titled "**U of I Toast to Success!**" Contestants must build a Rube Goldberg device enabling a team to start a toaster. Specific rules and entry forms will be supplied. *Please call Illinois JETS at 800/843-5410 and request your materials. Deadline for registration is December 30, 1995.*

Illinois JETS - For sale

We have a supply of rectangular and circular pins that are available as letter pins for JETS club members. The rectangular pins (\$3.50) measures 1 1/2 inches by 1 1/8 inches and the circular pins (\$3.00) measure 1 inch in diameter. Both feature a silhouette of the state of Illinois with the words Illinois JETS. The color scheme is a white background with gold lettering. Your high school initials will be engraved on the rectangular pin for an extra cost of approximately \$1 per pin.

Also for sale are Illinois JETS sweatshirts featuring the Illinois JETS logo on either a white or blue sweatshirt. Some schools have purchased these sweatshirts and personalized them with the name of their school. Price - \$13.00 each. *(For orders of 10 or more, \$10.00 each.)*

NEAS+

The NEAS+ package is available to individual students, as well as to colleges, universities, engineering organizations, high schools, or other groups that want to administer the program. Group programs can be offered on any day that is convenient. Students can take the survey at home or at school.

What Does the NEAS+ Measure?

The NEAS+ offers students a "snapshot" of their thinking and reasoning ability. The academic tests assess students' ability to apply knowledge in areas important in engineering and technology. The NEAS+ requires students to apply what they know, rather than to respond with memorized facts. The questions posed in the three-part survey cover topics normally taught in grades 9 through 12, and are mapped to subject areas. Along with a student guide, which answers students' general questions about college engineering paths, and the answers and solutions, the survey package includes "testing" sections in:

• **mathematical understanding**, which emphasizes reasoning ability, rather than formula memorization or computational skill. Students solve practical, quantitative problems and use mathematical techniques covered in such high school courses as algebra, geometry, trigonometry, number theory, and probability.

• **science reading and reasoning**, which measures your understanding of natural sciences material. This section assesses students' ability to understand the purpose of experiments; examine the logical relationships between experimental hypotheses and the generalizations that can be drawn from experiments; predict the effects of an idea in new situations; and judge the practical value of the ideas and theories presented. These skills are generally taught in science and English courses.

• **practical understanding**, which assesses students' ability to recognize and understand the interaction of forces and mechanical devices in common situations and to use the principles governing object movement in both simple and complex physical systems. It also measures students' ability to visualize and mentally manipulate three-dimensional objects from two-dimensional representations.

The goal of the NEAS+ is to give high school students the academic skills they need to pursue engineering or technology in college. When combined with other information and good counseling, the NEAS+ helps students determine their readiness for college engineering or technology study.

Ordering the NEAS+ Package

For \$17.25, students will receive the NEAS+ package by priority mail directly at their homes. The package includes a student guide, which explains the program in detail and offers general information about how students should approach their decision-making activities about college; the survey instrument; and scoring and diagnostic information, which will help students determine how they did and where they should focus their attention.

High schools, colleges and universities, and professional organizations may want to offer the NEAS+ to student groups. Quantity pricing is available—10-package sets are available for \$115.00. Colleges, universities or professional organizations that offer the NEAS+ to groups of students may want to consider offering an extended program for the students. This program may include tours, demonstrations, discussion groups, or informal activities.

For More Information

The NEAS+ package changes each year. For information on ordering the package or on offering the NEAS+ to student groups, contact JETS, 1420 King Street, Suite 405, Alexandria, VA 22314-2794; telephone (703) 548-5387; fax (703) 548-0769; e-mail (Internet) jets@nas.edu.

Explore New Territory!

Create Your Own Adventure!

Assistantships in Outdoor Education
Northern Illinois University

Graduate teaching assistantships* are available in Outdoor Teacher Education at Northern Illinois University for the 1996-97 school year, beginning in early January or Mid-August. The assistantships involve outdoor teaching at Lorado Taft Field Campus, Oregon, Illinois.

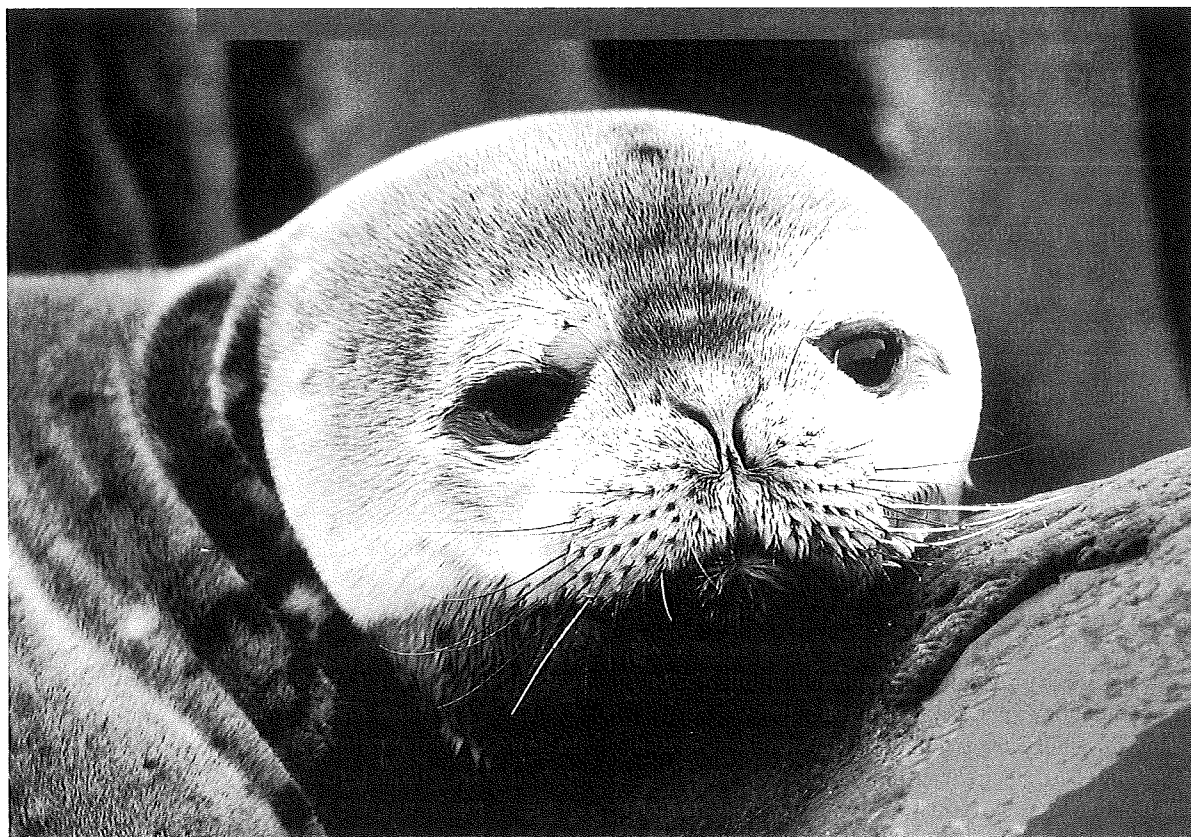
Because the teaching is primarily with public school students and university juniors and seniors, priority is given to those applicants who have had several years of experience in the elementary or secondary schools or nature and outdoor centers.

The assistantships pay a stipend of \$411/month for 9 months, include a waiver of tuition for 3 semesters, and partial room and board for nine months.

For applications and further information contact Dr. Knapp, Lorado Taft Field Campus, P.O. Box 299, Oregon, IL 61061. (815) 732-2111.



*In order to be awarded the Graduate Teaching Assistantship, you must apply to the Graduate School and be accepted.



Perplexed?

Today's choice of science multimedia materials can be confusing, and you don't have time to review them all.

Let us help. The books, videos, software, laserdiscs, and CD-ROMs we offer have all been reviewed by our experts. And we'll be happy to talk with you about them if you need additional information or advice.

To request our *Science Books & Multimedia* catalog for elementary through college, call 1-800-334-5551.

To contact Dr. Phil Owens, head of Multimedia, Publications & Math call 1-800-227-1150 or e-mail him at caroscipub@aol.com.

On the Internet we're at <http://www.carosci.com>.

Carolina Biological Supply Company

2700 York Road, Burlington, NC 27215

MINI IDEAS

Reprinted from KATS — Journal of Kansas Association of Teachers of Science

USING TERMITES IN THE CLASSROOM TO DEMONSTRATE SYMBIOSIS

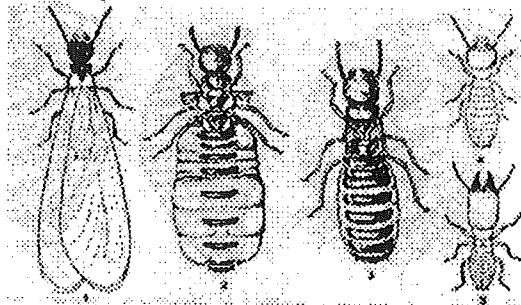
"Big fleas have little fleas upon the earth to bite em. And little fleas have lesser fleas, and so on ad infinitum"

Termites and their Symbiotic Protozoa

It is a relatively rare occurrence when one finds an organism that is able to use cellulose as its sole source of carbohydrates. Termites consume wood, yet many species lack a cellulose-splitting enzyme to break down this "food", the large, slow-moving flagellates found in the intestinal tract of termites are symbiotic organisms that digest the cellulose consumed by the termites. The protozoa are completely dependent on the termite for survival and are unable to live under natural conditions outside of the termite's body, a case of true symbiosis. For this reason the termite and its symbiotic flagellates are of particular importance. They are perhaps the most notorious of the cellulose digesting organisms due to the economic ruin they can inflict upon the average homeowner.

Many of the flagellates belong to the Kofioidea (Order Hypermastigina) or to the Pyronympha (Order Polymastigina). They reproduce asexually by longitudinal fission and encystment. These organisms possess a cellulose-splitting enzyme lacking in termites. Cleveland (1925) showed that when termites were defaunated they died within a few days. However, when dying termites were reinfected with flagellates through oral feeding, digestion again took place.

When the termites molt, the chitinous lining of the gut is lost along with the flagellates. After molting, reinfection occurs. Termites' symbionts are by no means alone in having the ability to break down cellulose. Cellulase has been found in several other organisms including malt, the vineyard snail and the snipworm. In addition to wood cockroach, *Cryptocercus*, contains many of the same symbiotic flagellates as the termites and is a source of cellulose digestion. Some wood-eating beetles, sowbugs, woodroaches, and cockroaches have similar flagellates, amoebae, or bacteria serving the same function. *Trichonympha* is common in the woodroach. (*Cryptocercus*) Encystment has been observed once a year when the woodroach molts.



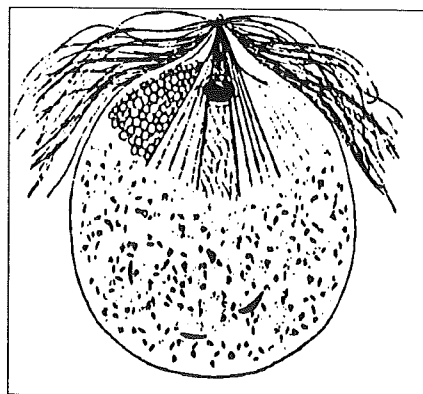
Termites: 1. Type with wings. 4. Worker
2. Queen 5. Soldier
3. Male

Keeping a Termite Colony

Colonies of termites may be kept in the laboratory for a continuing study of social insects. A colony consists of a wingless, large, queen, winged males, wingless workers, and wingless soldiers. Inspect old tree stumps and wet logs for termite galleries. Gently strip off sections of the bark and wood to expose the insects and their eggs. Collect all the stages with the wood in which they were thriving. In fact, move to the classroom as much of the log as is practical.

In the laboratory, separate the termites from the wood with a camel's-hair brush to avoid injuring their soft bodies. Keep the insects along with wood fragments, in covered finger bowls or Petri dishes. Add strips of moistened filter paper, then store them in a dark place at room temperature. Keep them moist by adding a few drops of water twice a week.

One simple method of termite observation recommends the use of a flat battery jar of the Delco type. Place a piece of balsa wood along the inside of each of the two wide sides of the jar. Then fill the jar about one-fourth full of earth. Place thin strips of balsa wood between the glass walls and the balsa wood sheets in order to leave a space for free movement of termites between the balsa wood layers and the glass walls. When the termites are introduced into the jar, they establish themselves with a few hours. Tunneling may be observed in a short time.



This is a sketch of the most important intestinal flagellate (*Leidyopsis*) of the termites. The small rod-shaped bodies are particles of wood.

Uses in the classroom

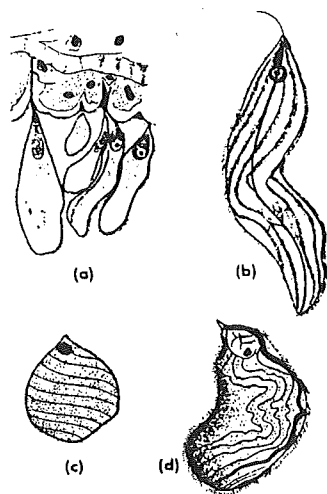
These insects are splendid examples for a study of social life; they are also used in class as a source of the symbiotic flagellates that are found in their intestines. Prepare wet mount slides of these flagellates as described below.

Observing Symbiotic Flagellates

To prepare a wet mount slide of the flagellates, place a termite in a drop of physiological salt solution (0.5 to 0.7 percent) or Ringer's solution on a clean slide. Use forceps to hold down the abdomen on the slide. With another forceps pull off the termite's head. The intestine (with other viscera) will be attached to the head part. Remove the remains of the termite from the slide, keeping only the intestine. Macerate the intestinal contents, and then apply a coverslip. Under the high-power objective of the microscope the long flagella will be visible on these specimens. Preparations may be circled with petroleum jelly, covered, and used for several hours. Students may also want to add a vital dye.

An alternative method obtains the protozoans from live termite specimens. This can be useful if the number of termites is limiting and they are needed for several lab periods. Care must be taken when handling the termite to avoid damaging the delicate body parts. Using the side of a dissecting needle, apply gentle pressure to the abdomen of the termite, moving the needle towards the terminal end of the abdomen. This should cause the termite to defecate, releasing hundreds of protozoa. Return the termite to the container and add a drop of saline solution to the slide. Mix with the needle. Place a cover slip on the slide and observe the protozoa.

The dependence of the termite on the protozoa can be demonstrated by killing the protozoa without killing the termite. This can be accomplished by 1) exposure to 100% oxygen for 24 hours or more, 2) incubation at 36 degrees C, or 3) starvation for 6-10 days. After such treatment the termites will eventually starve to death even though they may be observed eating large quantities of wood or filter paper. This material simply passes through their digestive tract untouched. If treated termites are fed intestinal contents or feces of untreated individuals, they become reinfected with flagellates and are able to receive nutrients produced by the breakdown of cellulose by the flagellates.



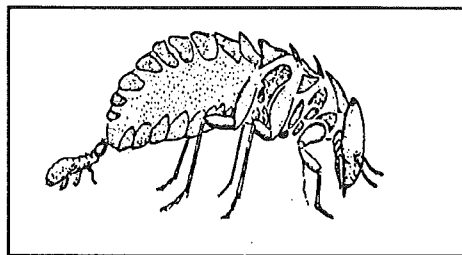
Pyrrsonympha vertens, flagellates found in intestines of termite: (a) cross section of the intestine of a termite, showing young *Pyrrsonymphae* attached; (b) extended form; (c) contracted form; (d) form showing wood fibers inside. (After J.F. Porter, *Trichonympha and Other Parasites*, Bull. Museum Comp. Zool. 1897-98.)

SAVE THOSE TEETH: (BIO AND CHEM)

Teeth treated with the fluoride ion have fluoroapatite formed from apatite. To mimic the action illustrating the difference between treated and untreated teeth, make up the following solutions

- About 250mL of a 2% solution of calcium chloride
- About 500mL of a 1% solution of sodium fluoride
- About 250mL of a 2% solution of disodium acid phosphate (Na_2HPO_4)
- You will also need 2 liters of deionized water,
- 2 cans of Coca Cola soda
- some 0.1M HCl
- 4 one-liter beakers

1. Apportion about 850mL of the water into each of the 4 beakers
2. Add 50mL of the calcium chloride solution to each beaker.
3. To two of the beakers add about 50mL of the Na_2HPO_4 solution.
4. A precipitate forms (representing the teeth with apatite)
5. To one beaker add half a can of Coca Cola and to the other beaker about 10mL of the HCl
6. To the other two beakers add about 100mL of the sodium fluoride solution. (precipitating calcium fluoride) representing teeth protected with fluoride ion.
7. As before, add the remainder of the Coca Cola to one beaker and HCl to the other. The precipitate will not dissolve.



One-day old nymph of *Kaloterms flavicollis*, Receiving proctodaeal food from the female termite, showing the manner in which infection with flagellates takes place. (After Goetsch, 1936)

MAKE A LIGHT BULB

Objectives:

Electrical energy is converted into heat and light by incandescent light bulbs. Friction occurs between thin light bulb filaments and electricity flowing through. This friction causes heat and the heat makes the filament glow. Heat is lost as energy changes from one form to another.

Vocabulary:

Incandescent: the property of producing light due to heat.

Filament: a high resistance wire that glows yellowish-white to produce light or heat surfaces.

Materials:

- Nichrome wire (32 gauge) or picture hanging wire. (Finely stranded lightweight size [\$1.60 will provide enough for one classroom.] Being iron, this wire has much higher resistance than copper wire.)
- Modeling clay. A silver dollar-sized chunk for every four students.
- Solid copper wire (18 gauge), insulated, enough to give each group of students two pieces about 10 cm long (available in hardware or electrical stores at about six cents a foot (30 cm), precut into 30 cm lengths. Each group will need two wires with 2 cm of insulation removed from each end.
- 12-volt battery (approximately \$10). The more batteries you have, the less waiting students will have to do. There is no danger of shock from these batteries.
- Small glass jars (such as baby food jars), one for every four students.

Procedure:

1. Have the students work in groups of four. If you are using picture-hanging wire, one student needs to cut the wire into pieces about 10 cm long. Unbraid the wire to obtain single strands.
2. Wrap single strand of nichrome wire or picture-hanging wire around a pencil to form a coiled filament. Leave 2 cm of straight wire at each end.
3. Have another student make the base by flattening a piece of modeling clay big enough to cover the mouth of the jar.
4. Stick two bare ends of your copper-insulated wire through the clay. These are called the connecting wires. Bend the top of these wires to create an eye of a needle. Clean off clay from exposed wire.
5. Thread filament wires through the eye of the connecting wires. Put the glass jar over the filament and press into the clay base.
6. Place one connecting wire on the positive terminal and one on the negative terminal. If it doesn't light: (a) Check to see if the filament wires are still touching the connecting wires, and (b) Make sure the connecting wires aren't touching each other any place. **DO NOT TOUCH FILAMENT.** You can burn your fingers.

Observations:

1. How does the brightness differ from the incandescent lights at your home? Why?
2. Besides light, what other kind of energy did the bulb produce?
3. How can you prove this?
4. What color does the filament glow?
5. Why do you think the filaments burn out so much faster than commercial light bulbs do?

Further Investigation:

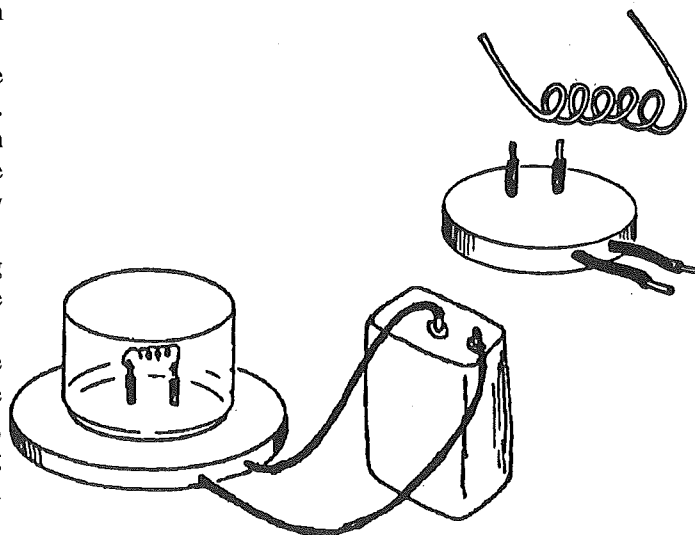
1. What happens if you change the length of the filament?
2. Does it make a difference if you do not coil your filament? Why do you think they coil filaments in commercial bulbs?
3. What happens if you change the size of the bulb?
4. Will your light still burn if you remove the bulb?
5. Why do light bulbs have bulbs?
6. How can you make a longer burning light bulb?

Teacher Note:

The thickness and length of a wire influence the amount of resistance. Thin wires are more resistant to the movement of electric current than thick wires, and long wires are more resistant than short. Therefore, the longer and thinner the wire, the dimmer the glow will be.

Extended Learning:

1. How many different kinds of light bulbs can you find around your house? (Floodlight, fluorescent tube, normal incandescent, colored bulb, flashlight bulb...) Have individual student graph the results or do a classroom graph.
2. How many light bulbs are in each room of the house? (Make sure to count refrigerator bulb, oven bulb...) What is the total number of bulbs in the house? Again, graphing can be done with this data.
3. How many watts does each bulb use? Find a total for each room and then the house.
4. Compare the number of light bulbs we use in the United States to another country. (Romania is an excellent example. The average apartment has one bulb!)
5. Have students write how their life would be different if they only had one light bulb for their home. Or no bulbs.



**ISTA OUTSTANDING SCIENCE STUDENT MEDALLION
SPONSORED BY CATERPILLAR FOUNDATION**

(Note: this form replaces individual mailing of the information sent in previous years.)

The award will be sent to the —high schools— that meet the following two criteria:

1. response sent by May 1st, 1996

2. Science Chairperson or contact person is an ISTA member the year the award is presented.

Only one medallion will be sent to each high school.

The student selected should have had a minimum of three year-long science courses during the ninth through twelfth grades and be of junior or senior standing in school. Factors to be considered are as follows:

General character of student, good laboratory and study habits High scholastic rank, leadership qualities, ability to solve problems, independence of thought, and interest & desire for a career in science

ISTA would like the award to be presented at the Honors Day or Award assembly at the school. Please give recognition at the presentation to Caterpillar Inc. as a financial supporter of this program.

The school will receive both a certificate and the medallion once I receive this form.

Science Supervisor _____

Name of Student _____

Student Rank **Junior** **Senior**

School Name _____

Mailing Address _____

City, State, & Zip _____

Send to:

Susan Blasingim

Science Resource Center

SIUE

Box 2226

Edwardsville, IL 62026

(618) 692-2149

OPPORTUNITIES

OPTICAL SOCIETY OF CHICAGO

Affiliated with the Optical Society of America

THE OPTICAL SOCIETY OF CHICAGO

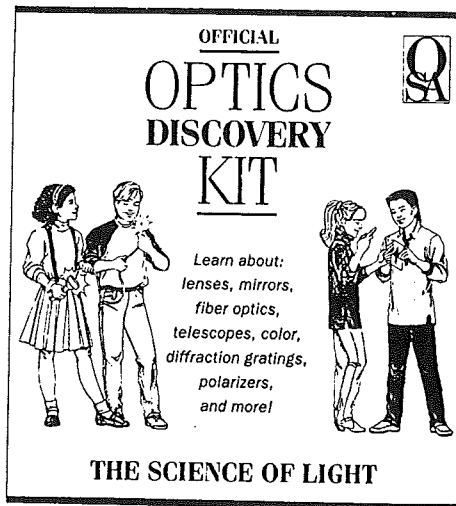
The Optical Society of Chicago was established in 1948 "to increase and diffuse the knowledge of fundamental and applied optics". In addition to technical meetings designed to update professionals involved in optics on the latest technology, the OSC is interested in encouraging the knowledge of optics in students of all ages.

Teachers may arrange for a free two-week loan of the Optical Society of America's Classroom Optics Kit through the OSC. This kit includes a Teacher's Guide as well as student experiment booklets and equipment for 16 set-ups. The kit teaches students about lenses, mirrors, fiber optics, telescopes, color, diffraction gratings, polarizers, holograms, and more.

In addition, several of our members visit classrooms in the Chicago area to give short talks on, "how we use optics everyday" as well as other topics. They are also willing to help guide students to resources for Science Fair

Projects involving optics and will participate in special school science programs. Although we cannot always guarantee a scheduling fit, we are happy to try to help teachers and students reach a resource who can help them.

For more information about the OSC or our programs, or to locate optics related resources, contact The Optical Society of Chicago, 640 Pearson Street, Suite 200, Des Plaines, Illinois 60016. Our phone is 708-298-6692 and our FAX is 708-298-1423.



Only Ohaus
balances offer
so much value.

Accept No Imitations!



C305



S200

- The features you want
 - An affordable price
 - Full 5 Year Warranty
 - Nationwide Service Support
- So when you're ready to buy a quality electronic balance call Ohaus at 1-800-672-7722; your partners in science education for over 80 years. Because there are no equals. Only imitations.

OHAUS®
Our customers carry
a lot of weight



©1995 Ohaus Corporation • Ohaus is the registered
Trade Mark of Ohaus Corporation



BIOLOGICAL SCIENCE APPLICATIONS IN AGRICULTURE PHYSICAL SCIENCE APPLICATIONS IN AGRICULTURE

**New high school agriculture courses
integrating agriculture, science, and
technology.**

Background and Trends

Agriculture is an applied science. Effective management of agricultural enterprises requires a knowledge of basic concepts and principles drawn from the biological and physical sciences. Using science fundamentals to solve agricultural problems has resulted in astonishing new technologies for agriculture. These technologies are creating constant change in nearly all phases of the vast agricultural industry. Employment opportunities in the food and agricultural sciences are very strong, with critical shortages of trained professionals in many fields.

Scientific literacy is a must for all citizens. However, traditional approaches for teaching science have produced disappointing gains in student achievement. A new approach is needed. Students need a combination of basic and applied studies in the sciences to more fully understand basic science concepts and principles. Linking agriculture and science in the secondary schools holds exciting potential for significantly improving both scientific and agricultural literacy.

Agricultural education in secondary schools is continuing to undergo dramatic change. High school agricultural curricula are becoming more science and business-based. Greater attention is being given to "why" approved agricultural practices are done as they are. The 1988 National Academy of Sciences report on agricultural education strongly recommended that applied science courses on agricultural topics might be made available at the high school level.

BSAA and PSAA

Biological Science Applications in Agriculture (BSAA)—Plant Science, developed in 1990 by agricultural education faculty at the University of Illinois, was the first in a series of new agriculture courses created for the secondary schools. In 1991, Physical Science Applications in Agriculture (PSAA) was completed. Since that time, two additional courses have been completed: BSAA-Animal Science and PSAA II. This provides a series of four one-semester courses, two in BSAA and two in PSAA.

This new curriculum gives agriculture teachers a powerful new tool for improving course content by connecting the science of agriculture to corresponding agricultural practices. BSAA and PSAA represent the first steps toward establishing comprehensive agricultural programs in the secondary schools that seek to serve both vocational and agricultural literacy objectives.

Course Descriptions

BSAA and PSAA are designed to reinforce and extend students' understanding of science by associating basic scientific principles and concepts with relevant applications in agriculture. These courses will deepen students' understanding of both the **content** and **process** of science through the use of numerous laboratory experiments and exercises. Students can also participate in a supervised agricultural experience program and activities of the FFA.

The content of these four courses supports the basic learning areas of the biological and physical sciences as stated in the Illinois State Goals for Learning. These courses are open to all students, regardless of current course patterns or future educational plans. Prerequisites: BSAA—one year of biology; PSAA—One year of math and one year of science, preferably algebra and physical science. Credit: 1/2 unit each.

Who should enroll?

Enrollment is open to all high school students who have the specified prerequisites. This includes those students with or without previous course work in agriculture. These courses will be valuable preparation for students planning to pursue further education, especially in agriculture or the sciences. Likewise, students not planning further schooling will find that these laboratory courses increase their interest and understanding of science and improve their overall scientific and agricultural literacy.

Acceptable for College Admission

The University of Illinois, Illinois State University, Western Illinois University, Northern Illinois University and Southern Illinois University at Carbondale and Edwardsville now accept BSAA and PSAA as laboratory science credit toward admission to any college on these campuses. Other universities in the state are expected to adopt a similar admissions policy. Over 20% of Illinois high schools with agriculture programs are now offering at least one of these courses.

Sample Course Topics—BSAA

Major units of instruction include methods of scientific investigation, environmental relationships, genetics, growth and development, reproduction, and processing plant and animal products. Examples of agricultural practices and science concepts/principles include:

Practices	Concepts
Breeding programs	Absorption
Chemical applications	Adsorption
Testing feeds	Diffusion
Growth regulation	Germination
Curing meat products	Metabolism
Hydroponics	Nitrogen Fixation
Monoculture	Photosyntheses
Agriculture	Respiration
Nutrient management	Translocation
Plant propagation	Transpiration
Evaluation of semen	
Seed inoculation	

Sample Course Topics—PSAA

Major units of study include scientific investigation, plus each of the five major systems of agricultural mechanics: production, environment, structures, power, and processing. Basic concepts in chemistry and physics are connected with specific agricultural practices as shown in the following example:

Practices	Concepts
Power machinery	Energy
Loading and transporting	Force
Hydraulic equipment	Ohm's Law
Environmental control	Mechanical Advantage
Electrical systems	Pascal's Law
Water testing	Polarity
Parallel circuits	Power
Cutting and conveying	Torque
Series circuits	Voltage
Processing Work	Work
Electrical meters	

Course Design

Students will engage in experimentation and other types of inquiry learning activities throughout the courses. They will reexamine and strengthen their basic knowledge of science with self-designed experiments and problem solving activities. Students will be active as learners. Teachers will use a process of **uncovering** rather than covering.



THE STUDENT CONSERVATION ASSOCIATION (SCA)

EXPLORATION EDUCATION EXPERIENCE WINTER, SPRING OPPORTUNITIES

BENEFITS

- Live & Work in National Parks, Forests & Refuges
- 12-Week Opportunities Nationwide
- Travel, Housing & Food Expenses Paid
- Expand Career Options
- Academic Credit Possible

To learn more about how you can be a part of the Resource Assistant Program, write to:

SCA
RA Program
PO Box 550
Charlestown NH 03603-0550.

Potential students gains in...

Agricultural knowledge/practices
Understanding of science concepts
Science process/research skills
Thinking skills
Motivation
Attitudes toward science and agriculture
Creativity
Leadership

Student activities

Experimenting
Inquiring
Problem solving
Questioning
Investigating
Researching
Discovering
Designing

FOR MORE INFORMATION Contact your high school agriculture teacher, guidance counselor, or any of the following:

Illinois State Board of Education

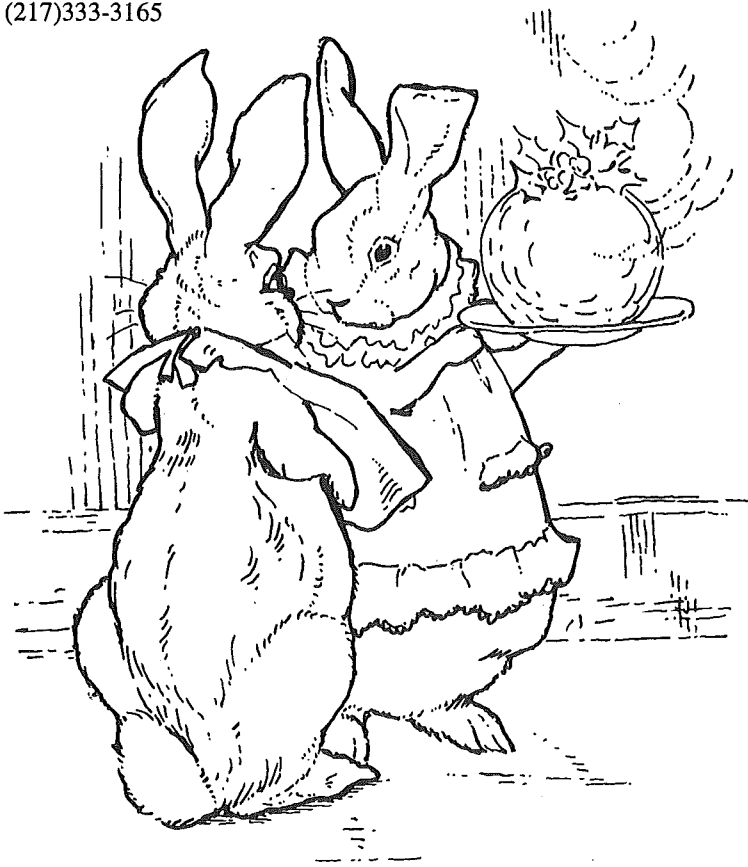
DAVTE—Agricultural Education
100 North First Street
Springfield, IL 62777
(217)782-4877

Facilitating Coordination in Agricultural Education (FCAE)

200 S. Fredrick
Rantoul, IL 61866
(217)893-0091

Agricultural Education Program

University of Illinois
328 Mumford Hall
1301 W. Gregory Dr.
Urbana, IL 61801
(217)333-3165

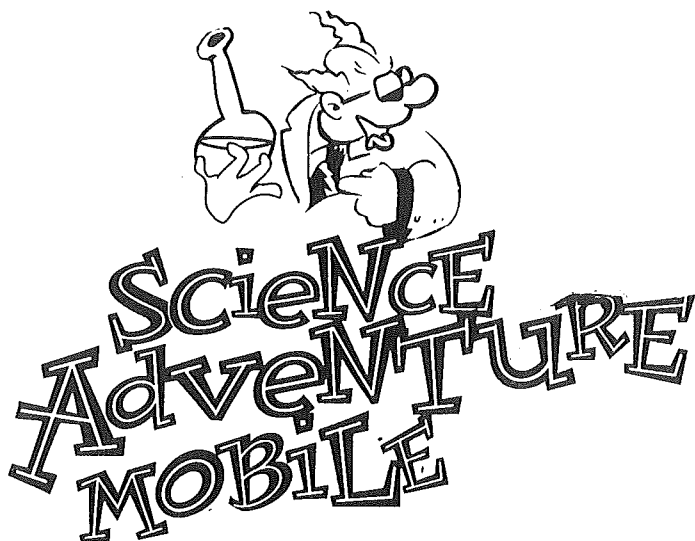




St. Louis Science Center

5050 Oakland Avenue
St. Louis, MO 63110
314-289-4464

OUTREACH 1995-96



The Playground for Your Head

SAM, the Science Adventure Mobile (donated by Union Electric) will bring a Science Center field trip to your door. "Hands-on" activities and team work are the focus of Science Festivals. The Big Map invites a "feet-on" exploration of the largest, most accurate map of the Earth. Crawl into the Unisphere and shine with the stars. All of these and more are available through the Outreach program of the St. Louis Science Center. **The outreach programs are available to Illinois teachers.** Betty Burris at the science center said she loves to come to Illinois so don't hesitate to contact the Center to find out more. Call 314/289-4462.

BIG MAP PROGRAMS

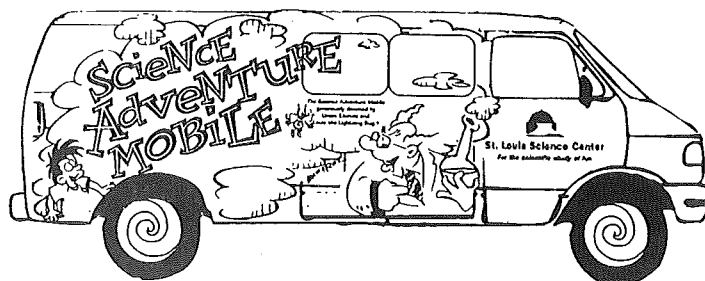
What is the size of a basketball court and is made of 126 U.S. Department of Defense Jet Navigation Charts? The 70' x 35' Dymaxion map, the most accurate flat map of the world! The world is literally at your feet on this Buckminster Fuller projection map. World geography, geology and environmental issues are just a few of the topics that can be explored. A room with a flat, smooth, clean floor space that can accommodate this map is required. Shoes are not allowed on the map, therefore clean socks should be worn that day.

Program Length: 60 minutes

Maximum: 4 sessions per day, Max. Capacity: 60 students per session

Required Supervision: 5-7 adults per session

Cost: \$450 per day; \$225 for 2nd day (if no additional set-up needed). \$50 for an evening presentation when scheduled on the same day as a regular session.



WALK ON THE WORLD:

Students walk across mountains, swim with the whales, locate their own private island and explore Earth's other geographical features. Younger students sit on a continent while investigating the cultural diversity of the people, and older students use atlases to locate countries around the world. Investigations on this unique map are challenging and fun.

Grade Level: 1st-8th (Activities vary by grade)

OUR EVOLVING WORLD:

Earth science comes alive in this program! Students explore the relationship between mountains, volcanoes, rivers, and the formation of gems, minerals and other natural resources.

Grade Level: 4th-8th

OUR THREATENED EARTH:

Environmental changes caused by Mother Nature and humans, and the possible consequences for these world threatening issues are investigated.

Grade Level: 4th-8th

UNISPHERE PROGRAMS

These star-studded programs will dazzle the students by bringing the stars and constellations indoors, during the daytime. The wonders of the night sky are introduced in the Unisphere, a portable planetarium. An air conditioned room, at least 30' x 30' x 12', away from traffic and noise, and one grounded electrical outlet are required.

Program Length: 45 minutes

Maximum: 5 shows per day

Max. Capacity: 30 students per session

Required Supervision: At least 1 teacher/adult per session

Cost:	1 show	\$150
	2 shows	\$200
	3 shows	\$250
	4 shows	\$300
	5 shows	\$350

STELLAR STORIES, LEGENDS AND LORE:

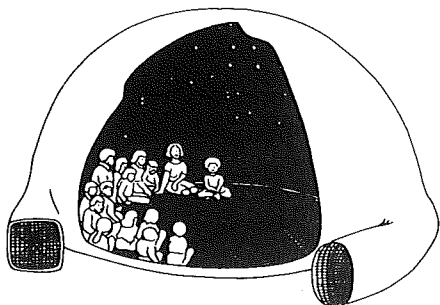
Stargaze while the night sky heroes and legends from different cultures around the world are immortalized.

Native American	(grades K-8th)
Greek	(grades 4th-8th)
African	(grades K-8th)
Combination	(grades K-8th)

SPACE, THE FINAL FRONTIER:

Identify seasonal constellations, differentiate stars from planets, discover colors in space, and explore other astronomical phenomena in this spaced out show!

Grade Level: 4th-8th



SCIENCE FESTIVALS

"Hands-on/Brains-on" activity stations encourage teams of students to experiment with a variety of related scientific problems. These require 10-12 adult volunteers, who will be trained 1 hour prior to the festival to facilitate the activity stations. In addition, festivals require 11 tables, 12 chairs, 2 grounded electrical outlets, 2 trash cans and access to a water supply.

Program Length: 60-75 minutes

Maximum: 4 programs per day

Max. Capacity: 60 students per session

Required Supervision: 10-12 volunteers per session

Cost:	1 session	\$275
	2 sessions	\$325
	3 sessions	\$375
	4 sessions	\$425

SCIENCE SENSE:

Investigate the wonder of the five senses, gain some understanding of the obstacles faced by the disabled, and challenge critical thinking skills.

Grade Level: K-3rd

Program Length: 60 minutes

CHEMMYSTERY:

Solve this "whodunit" caper by analyzing evidence from the crime scene. Students do fiber testing, soil and hair analysis, chromatography and more.

Grade Level: 4th-8th

Program Length: 75 minutes

PLANET EARTH IN CHANGE:

Every day is Earth Day as students investigate the problems of acid rain, water and air pollution, oil spills and overcrowded landfills, plus gain ideas about how they can lead more environmentally conscious lives.

Grade Level: 4th-8th

Program Length: 75 minutes

PHYSICS PHUN:

Students are challenged to overcome obstacles and solve problems while exploring a variety of physics concepts. Experimentation will help show a relationship between math and physics. Create a unique experience for your students by selecting 5 experimental stations which include reflection, buoyancy, simple machines, motors, electricity.

Grade Level: 4th-8th

Program Length: 75 minutes

TOTS

Turn On To Science with these demonstration oriented programs.

Program Length: 30-45 minutes

Max. Capacity: 40 students

Grade Level: Pre-K—2nd

Cost: \$50 per program

ICKY, STICKY SCIENCE

These non-Newtonian substances ooze with silly, slimey goo. What could be more fun!

SOUNDS FAMILIAR

Learn the science behind the sounds you hear...some familiar, some not.

NO BONES ABOUT IT!

Be a paleontologist and explore the world of fossils, dinosaurs and more.



COOKING WITH SCIENCE

Everyday science is explored in these demonstrations.

Program Length: 30-45 minutes

Max. Capacity: 40 students

Grade Level: 1st-8th

Cost: \$50 per program

THE GOOD, THE BAD & THE BUBBLY

Carbon dioxide is all around us. Find out how it affects our lives.

IT'S A GAS!

Explore both the usual and unusual properties of gases.

MINI-FESTIVAL

These activity stations are designed for evening presentations and smaller audiences.

Program Length: 30-45 minutes

Max. Capacity: 30 students

Cost: \$50 per program

DON'T DRINK THE WATER!:

Stations deal with different types of water pollution.

Grade Level: 4th-8th

SYMMETRY:

Stations deal with patterns of all types.

Grade Level: 1st-8th

SPECIALS

Plan early and take advantage of these 1995-1996 Outreach specials. For more information, call 314/289-4462.

- Winter is a great season for stargazing. Book a Unisphere program for January or February and receive a 20% discount (no other discounts apply).
- Encourage team work and spark the imagination by booking any Festival in March and receive a 20% discount (no other discounts apply).

OUTREACH TEACHER WORKSHOPS

Take a little bit of the Science Center back to your school. Attend these workshops and receive great benefits. For information and dates, call 314/289-4462.

UNISPHERE WORKSHOP:

Be the "STAR" of your school/classroom after attending this workshop. Learn to operate the portable planetarium, and develop classroom activities and Unisphere presentations in this 2-day workshop. Upon successful completion of the workshop, you'll be eligible to rent the Science Center's Unisphere for use in your school.

Cost: \$200 per teacher (includes 2 free rental days)
\$ 50 per each additional teacher from the same school (no free rental days)

Unisphere Rental: *\$100 for 1 day rental
 *\$ 50 for 2nd day rental
 *\$ 75 for each consecutive day

(*These rental fees are only for workshop participants.)

BIG MAP WORKSHOP:

Experience creative ways to bring geography, earth science and environmental science to life in this 1-day workshop on the Big Map. This Buckminster Fuller projection is the largest, most accurate flat map of the world.

Cost: \$200 per teacher (includes 50% discount on future bookings with workshop participant as an assistant. Arrange to hold either of these workshops in your school district for a special discount. Call 314/289-4462 for details.

TO BOOK THESE PROGRAMS:

Call 314/289-4464 at least 2 weeks in advance. The reservation office is open daily, 9:00 a.m.—4:30 p.m. Please have the following information ready when you call:

- **Date Desired for Outreach Visit:** Please have alternative dates in mind.
- **Outreach Program(s) and Times Desired:** A minimum break of 15 minutes is scheduled between each program session. A 30-45 minute lunch break is required if more than 2 sessions are scheduled.
- **Group Size and Grade Level:** Give an exact breakdown of students by grade level for each scheduled session.
- **Name and Address of School or Organization:** Please include county, school district and phone number, as well as CLEAR DIRECTIONS from the Science Center to your school or organization.
- **Payment:** FULL PAYMENT is required at least 7 days prior to the scheduled Outreach visit.

- **Service Fee:** A \$25 set-up service charge will be assessed if more than one style, title or program is presented on the same day (such as 2 Unisphere plus 1 Science Festival or 2 different Science Festivals on the same day). Requests for more than 2 kinds of programs will be approved on an individual basis.
- **Additional Fees:** Outreach reserves the right to assess a \$50/night food and lodging fee per presenter for Outreach programs which require an overnight stay.
- **Confirmation:** After you make a reservation, you will receive a confirmation in the mail. Please read, sign and return the yellow copy to the reservation office with proper payment as noted on the confirmation no later than 1 week prior to the scheduled show date.

John G. Shedd Aquarium
1200 S. Lake Shore Drive
Chicago, IL 60605



Sharkmobile Seen Cruising Chicago!

Can't come to the Shedd? Let the Shedd come to you! Starting this Fall, the Shedd Aquarium's Outreach programs will bring the oceans' wonders to auditoriums, festivals, classrooms, libraries, and meeting places around Chicago. Lively programs featuring active learning tools, animal artifacts and more, will help illustrate biological concepts and encourage scientific observation, exploration, comparison and deductive reasoning. But most of all, students will have a whale of a time. Formal classroom programs, auditorium programs, and special events will be offered. Keep an eye out for the Shedd Sharkmobile cruising around Chicago. Call Bill Street, the Shedd Aquarium Outreach Coordinator at (312)939-2426 ex. 3309 for more information.

"Building Bridges With The Community"

Reaching the Chicago community and servicing diverse populations living in the city is a primary focus of the John G. Shedd Aquarium. The aquarium is interested in collaborating with different schools, community organizations, and other cultural institutions to broaden our audience. If you know of any communities or organizations in Chicago that are underserved but would be a natural connection with the Shedd, please call Rhea Combs, Community Education Representative, at (312)939-2426 ext. 3410.

**1996 SCIENCE INSERVICE
OPPORTUNITY
FOR TEACHERS
EARTH PROCESSES
INSTRUCTIONAL
CENTER (EPICENTER)
A Summer Program for
Middle Level Teachers
July 5-9, 1996**

An opportunity for 30 middle level (grades 5-9) teachers of Earth Sciences. EPICenter (supported by the National Science Foundation) is being offered in 1996 at Purdue University, West Lafayette, Indiana. The program is designed to :

- Improve the background of Earth processes science content
- Assist teachers in applying Earth Science content to their classrooms through training in use of Earth processes science teaching materials
- Assist teachers in disseminating their understanding of Earth processes though local in-service, regional, and national presentations
- Provide support for the participants to return to their schools in leadership roles via opportunities in grant writing and modeling skills

Travel, subsistence, stipend provided by grant program, and six semester hours of tuition-free graduate credit (3 credits Summer 1996, 3 credits Spring 1997) will be available. Teachers will be chosen from Illinois, Indiana, Kentucky, Michigan, Ohio, and St. Louis Metropolitan area.

Women, minority, and special needs teachers are encouraged to apply.

For further information and application materials contact:

**Dr. Gerald Krockover, Co-director
EPICenter Program for Teachers
Purdue University
1397 Civil Engineering Building
West Lafayette, IN 47907-1397
800-213-5765
FAX 317-496-1210**

email:

Internet: xvp2@sage.cc.purdue.edu

Prodigy: GVMW68A

Compuserve: 72623.1751

Ronnee Yashon
Educational Coordinator
Wright Center for Science Education
Tufts University
4 Colby Street
Medford, MA 02144
617-628-5000 x5394
FAX 617-627-3995
email: ryashon@pearl.tufts.edu

**FELLOWSHIP FOR
SECONDARY SCIENCE
TEACHERS**

The Wright Center is inviting applications for its year long fellowship in residency for secondary teachers of science. This fellowship offers teachers time to pursue projects related to their fields while in residence at Tufts University. A \$35,000 salary plus benefits through Tufts University and a moving stipend are part of the package. The dates of the fellowship are September 1, 1996-June 30, 1997. Contact Ms. Yashon at the above address.

SPACE CENTER HOUSTON
Educational Programs
P.O. 580653
Houston, TX 77258-0653

**ANNUAL EDUCATORS
CONFERENCE —
INTERNATIONAL SPACE
STATION
FEBRUARY 8, 9, 10**

Space Center Houston's second annual conference brings educators from across the country together with scientists, astronauts, and engineers who are actively involved in space station activities. For registration information call 713-244-2145. Teachers interested in receiving graduate credit for participation in the above conference please call Bob Jones, University of Houston Clear Lake at (713) 283-3562.

**1996 HIGH SCHOOL ESSAY CONTEST
"SHOULD I BUILD IN THE FLOODPLAIN?"**

The Illinois Association for Floodplain and Stormwater Management (IAFSM) is a nonprofit association of professionals concerned with protecting people from the dangers and damage of flooding. To encourage high school teachers and students to learn more about floodplains, the Association is conducting an essay contest. Topic: "Should I build in the floodplain?"

Prizes: 1st place: \$200

2nd place: \$100

3rd place: \$50

The first prize essay will be published in the Association's quarterly newsletter, IAFSM News.

Essay Requirements:

1. The contest is open to any Illinois high school student.
2. The essay must be 500 to 1,000 words, double-spaced, typewritten.
3. The essay must use a minimum of two references. Possible references include local building regulations, newspaper articles, and state and federal publications on floodplain or stormwater management.
4. The essay must reference a minimum of two interviews. These can be with local building officials, engineers, developers, naturalists, floodplain residents or other people with knowledge or experience with the topic.
5. All references and interviews should be included in a bibliography.
6. A maximum of three essays from each high school will be accepted.
7. Submit the essay so it is postmarked no later than March 10, 1996. Multiple submittals from the same school can be included in the same mailing. ; Each submittal must include: the author's name, address and phone number; the name, address, and phone number of the high school; and the name of the teacher. Mail to: IAFSM Essay Contest, 153 Nanti, Park Forest, IL 60466

QUESTIONS? CALL BRAD BRINK, CHAIR, IAFSM EDUCATION COMMITTEE, 708-210-5672

FIELD TRIPS AND WORKSHOPS

Mary Kay Hemenway
(512) 471-6503

AMERICAN ASTRONOMICAL SOCIETY TEACHER RESOURCE AGENT PROGRAM

The American Astronomical Society Teacher Resource Agent (AASTRA) Program invites teachers to apply to attend a four-week summer institute during the summer of 1996. The institutes will be held at Loyola University in Chicago, Northern Arizona University in Flagstaff and University of Maryland at College Park. Upon completion of the institute, participants are required to present workshops on astronomy to elementary and middle school teachers within their geographic regions. Elementary and secondary school teachers with a strong interest in astronomy are encouraged to apply. Participants' room and board, up to \$350 in travel expenses, a \$1200 stipend and instructional materials will be provided.

Institute Dates

June 17-July 12 at Northern Arizona University

June 27-July 25 at University of Maryland

July 8-August 2 at Loyola University

For further information and applications contact the American Astronomical Society Education Office, University of Texas, Astronomy Dept., Austin, TX 78712-1083, 512-471-6503, aas@astro.as.utexas.edu, <http://www.aas.org>

SUMMER SCIENCE IN ENGLAND

The University of North Carolina at Asheville (UNCA) conducts a summer comparative science education program through the cooperation of the College of Education of the University of Bath, England. From July 3 to July 31, 1996, U.S. science teachers can visit English classrooms that are still in session and attend lectures on the historical development of the British education system and on global environmental problems. Field trips to areas of special educational interest and seminars are also part of this program.

Any person who is or has been involved with science education K-12, is eligible. The \$1,900 fee covers tuition and housing, which will be on the University of Bath campus.

The spouse and/or dependent adolescent child of the participant also may attend, at a cost of \$950.

For information, contact Dr. Gary Miller, UNCA, One University Heights, Asheville, NC 28804-3299, (704) 251-6441 (days) or (704) 891-9595 (evenings). The registration deadline is April 1, 1996, but applications will be taken until the course is filled.

Kathleen Holman
301-942-9595

ELEMENTARY SCIENCE LEADERSHIP INSTITUTES

For the eighth year, the National Science Resource Center (NSRC) will be conducting two Elementary Science Leadership Institutes at the Smithsonian Institution in Washington, DC during the weeks of June 23-28, 1996 and July 21-26, 1996. Up to 20 teams of four to eight participants are accepted at each institute.

Representing local school districts, teams are comprised of school district administrators, teachers, and scientists from corporations, universities, colleges, and federal research facilities. Through the NSRC Leadership Institutes, they become more effective resources and catalysts for improving elementary science education within their communities.

The deadline for applications is Friday, March 1, 1996.
For information or application materials, contact:

Director of Outreach
National Science Resources Center
600 Maryland Avenue SW • Suite 880
Washington, DC 20024
Phone: (202) 287-2063 Fax: (202) 287-2070
email: jlee@nas.edu

The National Science Resources Center is jointly operated by the Smithsonian Institution and the National Academy of Sciences to improve the teaching of science in the nation's schools. In addition to its outreach and leadership activities, the NSRC collects and disseminates information about exemplary science teaching resources, and develops science curriculum materials.

Solving Problems by Sharing Ideas

FLINN SCIENTIFIC INC.

Looking for some great chemistry demonstration ideas to share with your students? **Flinn Scientific** will present two fantastic chemistry demonstration programs at the 1996 National Science Teachers Association Convention March 28-31, 1996 in St. Louis, Missouri. **A Morning of Chemistry** will feature a series of quick and easy demonstrations from the authors of the great, new chemistry demonstration book **A Demo-A-Day**. Demos you can do daily in your classroom. An **Incredible Evening of Chemistry** will involve two hours of fun and excitement from three of the country's top chemistry demonstrators. Both programs are free to NSTA Convention Attendees.

**THE COSTA RICAN NATURALIST
AN NSTA SPONSORED TOUR
July 31-August 13, 1996**

Explore the tremendous biodiversity of Costa Rica's wild-est forests. This value-packed trip includes visits to montane wet forests of Tapanti Wildlife Refuge, the dry forests of Santa Rosa National Park, cloud forests in the Talamanca Mountains, and a Caribbean lowland rainforest. Additional features include visits to Costa Rica's largest geothermal power plant and hot springs, an indigenous Chorotega Indian community famous for its pottery, Lankester gardens, the oldest churches in the country, the largest tropical agricultural research center in the New World, rafting the Corobici River and a city tour of San Jose.

The land cost of \$1,987 is per person, double occupancy, and is all-inclusive except items of a personal nature. Reduced airfares available throughout the US, starting at \$294 from Miami and Orlando (subject to availability). Group size is limited to 15 persons. This trip will be led by Chris Migliaccio, Associate Professor of Natural Science, Miami-Dade Community College/Wolfson Campus.

For reservations, contact Holbrook Travel/Group Department at 800-451-7111. Your \$200 deposit (fully refundable until May 31, 1996) will guarantee your space on this tour.

**EDUCATOR'S RAINFOREST WORKSHOP
AN ADVENTURE OF A LIFETIME!**

If you are searching for something unique! spirited! and fun! join a faculty of as many as eight recognized field researchers and environmental educators, including the *Great Kapok Tree* author Lynne Cherry. Earn academic credit during **AMAZON Rainforest, Indigenous Cultures, and Canopy Walkway** (July 6-13, 1996); **BELIZE Rainforest, Barrier Reef, and Maya Ruins** (July 17-25, 1996); or **COSTA RICA Rainforest, Cloud Forest, and Sea Turtle Nesting** (July 28-August 3, 1996).

Workshop participants join as many as 10 small-group field sessions, each lasting 3 hours and including: **RAINFOREST ECOLOGY; RAINFOREST CONSERVATION; TROPICAL MAMMALS; NEOTROPICAL INSECTS; MEDICINAL USES OF PLANTS; INDIGENOUS CULTURES OF THE RAINFOREST.** The **AMAZON** Workshop benefits the **Amazon Center for Environmental Education and Research (ACEER)** and offers spectacular vistas from more than ten stories in the treetops.

Each workshop has an action-oriented format designed to give you a portfolio of ideas to translate your experience for others. Your journey continues through the *Educator Exchange* linking you to over 250 other action-oriented educators, in addition to conservation, research, and cultural exchange projects. For a detailed information package, call **1-800-669-6806** or write to Frances A. Gatz, 801 Devon Place, Alexandria, VA 22314.

North American Wholesale Lumber Association Inc.
3601 Algonquin Road, Suite 400
Rolling Meadows, Illinois 60008
708/870-7470 FAX 708/870-0201

**REDWOOD TOUR GIVES CHICAGO-
AREA TEACHERS TOOLS TO TEACH
LUMBER ISSUES**

For the last few years, we've heard a lot from "environmentalists" about such forestry issues as clear cutting and spotted owls. But this fall, thanks to several lumber wholesaler firms, there may be some lively discussions in our schools about the benefits of planned forest management, wildlife conservation, and reforestation.

In mid-July, 27 elementary school teachers from across the country participated in the 2nd Annual Teachers Tour to the Redwood region in California. The three-day, all-expense-paid tour of Redwood forests, research, and production facilities was sponsored again this year by the North American Wholesale Lumber Association (NAWLA) and the California Redwood Association (CRA), with the assistance of the Redwood Region Conservation Council and the Temperate Forest Foundation (TFF). The objective of the tour was to provide teachers with a hands-on learning experience about Redwood forest management practices that they could take back to their classrooms.

Joann Reilly and Eileen McIntyre, teachers from Evergreen Park, Ill., participated in the tour under the sponsorship of NAWLA member Chicago Suburban Lumber of Forest Park, Ill. The 1995 Teachers Tour (conducted in the Redwood area of Arcata, Eureka, and Scotia, Calif., in July) included visits to a state park, a privately owned commercial forest, a Redwood nursery, a lumber mill, and a salmon fishery. Teachers were given ample opportunity to talk and interact with foresters, biologists, mill workers, and government officials from the California Department of Forestry. Officials from Arcata Redwood Co., Pacific Lumber Co., and Simpson Timber Co. were also on hand to answer questions and serve as guides.

Among the topics covered by the forestry experts were harvesting techniques, reforestation procedures, protection of streams and waterways, minimizing soil erosion, wildlife conservation, and laws governing the industry. The teachers also viewed a new video program, *Wood: The Miracle Resource*, which was developed by the TFF. Teachers were given printed, audio-visual and CD-ROM based materials provided by the CRA and the TFF.

Founded in 1893, NAWLA is the oldest and largest trade association of its kind in the forest products industry. NAWLA members are dedicated to maintaining the integrity of lumber distribution in North America and to the responsible use of forest resources. Contact the NAWLA at the above address for information on upcoming programs.

Cheryl Mell
Teacher Services
John G. Shedd Aquarium
1200 S. Lake Shore Drive
Chicago, IL 60605
312/939-2426, ex. 3360

SHEDD AQUARIUM TEACHERS' WORKSHOPS — WINTER 1996

The Aquarium is a wonderful resource for a unique educational experience. Take advantage of Shedd Aquarium's expert teaching staff by attending any of our 12 teacher workshops offered this spring!

Sleep with the Fishes II - For Teachers Only!

Last year's slumber party was such a success, we thought we'd keep the tradition going! This evening will begin with our own private marine mammal presentation in the Oceanarium, followed by a seated dinner around the Coral Reef Tank. Rotate through workshops on creatures of the deep, aquatic arts and crafts, how to train marine mammals, aquatic plants, a journey to the Galapagos Islands, exhibit design, aquatic storytelling and more! Enjoy a midnight snack, then snuggle in your sleeping bag and sleep with the fishes! Wake up early for breakfast at 7:00 a.m., then participate in more workshop opportunities. Take home a t-shirt to prove YOU slept with the fishes. Departure is at 10:30 a.m. Tell us your t-shirt size when you register.

Friday, February 16, 1996, 6:00 p.m. to Saturday, February 17, 1996, 10:30 a.m.

Overnight workshop fee: \$40

NEW! Aquatic Arts and Crafts II

Our first arts and crafts workshop was such a success, we decided to offer another! Learn how to make lobster hats, pitcher plants, aquatic African adinkra medallions and more! Find out how to build a life-sized killer whale in your classroom, and take home your very own fish printing t-shirt. Gather plenty of new activities to share back in the classroom with your students!

Saturday, March 9, 1996, 9:30-12:30 (code 006SA)

Workshop fee: \$10

NEW! Aquatic Storytelling

Join literary storyteller Donna Dettman as she unlocks the magic of the printed word and brings undersea stories to life in the imagination of her listening audience. After tickling your ears with several tales, Donna will explain the art of storytelling and give you the opportunity to practice your own storytelling skills. Aquatic children's literature resources and activities provided.

Saturday, March 16, 1996, 9:30-12:30

Workshop fee: \$20

NEW! Aquatic Science with Bottles, Zip Lock Bags and Film Canisters!

Did you know that you can use bottles to create an ecosystem, explore predator-prey interaction and model a lakeshore? Learn about science and the environment using a variety of recyclable containers, including 2-liter soda bottles, zip lock bags and film canisters. Build and take home a wave in a bottle, water cycle demonstration, film canister motor boat and more!

Wednesday, March 20, 1996, 4:30-7:30

Workshop fee: \$20 (Price includes *Bottle Biology Book*)

NEW! The Abyss: Take the Plunge

How do animals survive at 10,000 meters beneath the sea? Explore the cold, dark high pressure environment of the abyss and the bizarre creatures that live there. Transform your classroom into a deep-sea habitat complete with flashlight fish, opalescent squid and giant tube worms. Participate in a variety of "glow-in-the-dark" activities to learn the benefits of bioluminescence—they'll brighten your ocean unit!

Wednesday, April 3, 1996, 4:30-7:30

Workshop fee: \$10

Physics of the Sea

Looking for a new approach to teaching physical science? How about an aquatic twist! Explore the streamlining of cetaceans, effects of pressure on deep sea animals, communication through sound and more. Look for examples of aquatic physical science in the Aquarium and Oceanarium, participate in hands-on laboratory activities, and take home some great new ideas for teaching physics.

Saturday, April 27, 1996, 9:30-12:30

Workshop fee: \$5

NEW! Get Hooked On-line!

Just what is that Internet-thing, anyway?! Find out what it is and how to use this sensory resource to teach aquatic science and astronomy in your classroom. This highly interactive session will be useful whether you're a new user or an old hand to this technology. Participate in activities you can later use with your students. Class will be held at Adler Planetarium's new computer lab (directions to site included with confirmation). Space is limited to 20.

Saturday, May 11, 1996, 9:30-12:30

Workshop fee: \$15

NEW! Pond life Lab

Water striders, dragonfly nymphs and cattails are just a few of the neat plants and animals found in a pond. In this hands-on workshop, create your own mini-pond ecosystem. Learn about collecting equipment and techniques, observation and identification, and the best times of the year to visit ponds. Spend the morning getting an up-close and personal look at aquatic life

Wednesday, July 17, 1996, 9:30-12:30

Workshop fee: \$10 (Price includes *Pond Life - A Golden Guide*)

An Aquarium in Your Classroom

We'll introduce you to basic aquarium-keeping through discussion and demonstration and give you a take-home packet on aquarium care. Find out how to integrate aquatic animal behavior and physiology into your curriculum using non-invasive experiments and observation skills.

Wednesday, August 7, 1996, 9:30-12:30

WORKSHOP REGISTRATION

To register for a teacher workshop, please call (312) 986-2300, Monday through Friday, 9 a.m.-4 p.m. Please have ready the name of the workshop, date, code and credit card to charge workshop fee.

SCIENCE EXPLORERS

The special programs listed below use Bill Kurtis' videotapes to encourage students to consider careers in science. Through classroom activities (developed by fellow classroom teachers and Shedd Aquarium), videotape and a field trip to Shedd Aquarium, each of these programs gives students a new perspective of people working in the field of science.

Call 312/986-2300 and request an application form.

Each teacher accepted to participate in this program will receive:

- * a full-day teachers' workshop and lunch
- * a copy of one of these video tapes: "Why is this Dolphin Smiling?," "Creating an Ocean" or "Sounds of Discovery"
- * pre- and post-visit activity curriculum

These programs are sponsored by the U.S. Department of Energy through Argonne National Laboratories.

Grades 9-12 — "Creating an Ocean"

Find out how the Oceanarium was designed and why this Pacific Northwest coast exhibit was created, how the animals were acquired, and look at the science-related careers involved in building and maintaining an exhibit of this size. Includes a visit to the Oceanarium.

Saturday, January 20, 1996, 9:00-4:00

NEW! Grades 6-8 — "Sounds of Discovery"

Join Bruce Mate (via video) in his adventure to tag sperm whales in the Galapagos. Become familiar with nautical and whaling terms, whale anatomy and behavior, navigation and echolocation and gather information on associated science careers. The curriculum guide includes activities that meet Illinois State Goals and Objectives for Science. Coordinated field trip includes observing and recording dolphin behavior.

Saturday, Jan. 27, 1996, 9:00-4:00



SUMMER WORKSHOP TWELVE DAY FIELD STUDY

A field study will be conducted by the Geology and Geophysics Department of Texas A&M University from July 10 - July 21, 1996. The program will provide 3 extension credits for the twelve days. Two days of review of minerals, rocks, and structural features will precede 10 days on a chartered bus. The trip will include Dinosaur Valley Park at Glen Rose, Palo Duro Canyon on the High Plains, Capulin Mtn. Volcano, Stonewall (sandstone hogback) Great Sand Dunes, Mesa Verde, Wilson Arch, Monument Valley, Painted Desert, Grand Canyon, Petrified Forest Park, Radio Astronomy Array, Carlsbad Caverns, Caverns of Sonora and the Llano Uplift of Texas. This is an energy company sponsored program permitting teachers other than the sponsored participants from Texas to attend at their own expense.

Any school teacher K thru 12 and Junior, Community or Four-year College is eligible. A companion may be included for the same rate. There are some restrictions regarding non-teachers. Admission to Texas A&M University and any of its sponsored programs is open to qualified individuals regardless of race, color, religion, sex, age, national origin, or educationally-unrelated handicaps. A minimum of 15 participants may be required. Closing date will be about March 1, 1996. Acceptance is on first apply, first accept basis, and may start earlier and may extend later than March 1996.

The cost will be \$450 for extension operational costs and \$455 for lodging, **MEALS ARE NOT INCLUDED**. The Single Supplement is \$230.00.

FOR ADDITIONAL INFORMATION:

Dr. M. C. Schroeder
Department of Geology & Geophysics
Texas A&M University
College Station, Texas 77843-3115
(409) 845-2451

AWARDS AND RECOGNITION

ILLINOIS EDUCATORS TO RECEIVE AWARDS FOR SCHOOL TECHNOLOGY PROJECTS

Gov. Jim Edgar has announced three teams of Illinois educators have been selected to receive the Pioneering Partners for Educational Technology award from the Council of Great Lakes Governors for the creative use of technology in their classrooms.

The winning teams are from East Peoria Community High School, Evanston Township High School and Carlinville Middle School. They are among 24 education projects in the Great Lakes states being honored in the annual program.

At East Peoria, teachers Bill Beckman, George Haug and David Lucas teamed up to expand students' study and analysis of water samples along the Illinois River to include creek study, groundwater and lake study. Using a telecommunications system, the Southern Illinois Education Network, students enter water quality data and electronically transmit files to the university as well as write about community history and culture relating to rivers.

The transition of special education students from school to work is the focus of Evanston Township High School's winning team — Frank Gnagni, coordinator of instruction technology, and Fern Pollack, special education teacher. They designed a three-semester computer survey curriculum that allows students to progress at their own pace through keyboarding, research and independent study projects, while taking on at least one community service project each semester.

Middle school students in Carlinville are using technology to sharpen their writing, technical literacy, social and communication skills through production of the school-wide newspaper, "What's Up Warriors?" Virginia Granger, media specialist, and Gayla Walters, computer technology coordinator, are being honored for their work with students on the project which has evolved to a partnership with NEWSDAY, an Internet project for fifth through twelfth grades in 35 schools around the world.

Winning teams will each receive \$3,000 and are eligible for up to an additional \$2,000 in matching funds. The Illinois teams will attend a Partnership and Educational Leadership Summit July 26-30 at the GTE Management Development Center in Norwalk, Conn., where they will receive special training and the opportunity to meet with public and private sector leaders from the eight Great Lakes states.

The 24 award-winning schools also will be connected to "GreatLinks Net," an electronic network allowing them to correspond by electronic mail and sample features of the Internet, a system of linked computer networks used by students, educators, researchers, businesses and government.

Winners were selected by an advisory panel of government, business and education leaders appointed by the governor of their state. Advisory board members from Illinois are Mark Gallagher, technology coordinator for the Office of the Governor, and Cheryl Lemke, technology director for the State Board of Education. The Great Lakes states participating are Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin.



Pictured with local educators (back) are: Kathy Bjelland, educational technology specialist, office of the Lt. Governor; Bill Zielke, regional president, GTE Telephone Operations; Cheryl Lemke, associate superintendent of technology and systems, Illinois State Board of Education; Sterling Burke, IBM Corporation; Philip Stockton, vice president for editorial and production, Encyclopedia Britannica; and, Alan November, Pioneering Partners faculty. Pioneering Partners is sponsored by the Council of Great Lakes Governors and GTE.

ILLINOIS PRESIDENTIAL

AWARDS OF EXCELLENCE

Elementary

Mary E. Sue Kerr
Washington School
Belleville

Elizabeth Ann Trummel
Hussman Elementary School
Crystal Lake

Jim Zimmerman
Thomas Paine Elem. Sch.
Urbana

Secondary

Nancy Kaweck Nega
Churchville Jr. High School
Elmhurst

Brian B. Poelker
Midwest Central Jr. H. S.
Manito

David T. Workman
Illinois Math and Science Academy
Aurora

ISTA AWARDS OF EXCELLENCE

Elementary

Ruth Arendsen
Hawthorn Intermediate School
Vernon Hills

Christine Ballenger
Forest Glen Elem. School
Glen Ellyn

Kathleen Donelan
Concord School
Darien

Karen Dozier
Pawnee Elementary School
Pawnee

Sandra Isaacs
Lincoln Trail Elem. School
Mahomet

Sharnell Jackson
Rufus Hitch Elem. School
Chicago

Polly Mullins
Hamilton Elem. School
Hamilton

Secondary

John D. Baird
Quincy Sr. H.S.
Quincy

Sister Christine Gray
Queen of Peace H.S.
Burbank

Steven Isoye
Deerfield H.S.
Deerfield

Thomas Koenigsberger
Adlai E. Stevenson H.S.
Lincolnshire

Karoline Krynock
Barrington Middle School
Barrington

Mark Linnerud
Morgan Park Academy
Chicago

John Young
Princeton H.S.
Princeton

Anna Zuccarini
Thayer J. Hill Middle School
Naperville



LEGO Dacta GEARING UP Today's Students

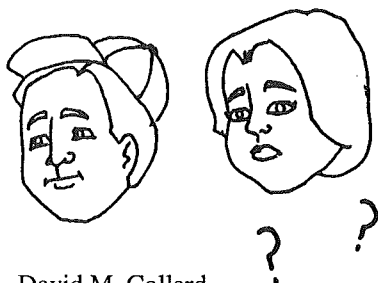
LEGO Dacta has a K-12 system for hands-on learning in the areas of technology and science.

From learning the basic concepts of simple machines—up to controlling a robot with our computer control product line—LEGO DACTA materials make learning accessible and exciting.

Call us at **800-527-8339** or contact your local representative for:

- a full-line brochure
- product demonstrations
- regional curriculum links
- in-service training
- local & regional exhibitions we'll be attending
- grant information

LEGO dacta
The educational division of the LEGO Group.



David M. Collard
School of Chemistry and Biochemistry
Georgia Institute of Technology
Atlanta, GA 30332-0400
(404) 894-4026

POLYED: 1996 POLYMER TEACHING AWARD ANNOUNCED

**The joint education committee of
the ACS Divisions of Polymer
Chemistry and Polymeric
Materials: Science and Engineering**

The Polymer Education Committee (POLYED) of the American Chemical Society (a joint committee of the Polymer Chemistry Division, Inc., and the Division of Polymeric Materials: Science and Engineering) has announced details of the 1996 Award for Excellence in Polymer Education by a High School or Junior High Science Teacher. Sponsored by the Dow Chemical Company Foundation.

This award recognizes the efforts of high school and junior high chemistry teachers who help students meet the challenges and responsibilities of living in a technological age and who encourage students to consider careers in chemistry. Awards are based on

- the applicants' innovative use of classroom and laboratory activities to promote understanding of polymer chemistry and its role in the everyday lives of students, and
- the applicants' outreach activities to encourage other teachers to explore polymer chemistry with their students.

POLYED will recognize the national award winner at an American Chemical Society national conference. Award winners receive a cash prize, a set of polymer chemistry materials for use in the classroom, and a certificate of recognition. Applications for the 1996 award are available from Professor David Collard, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, Georgia 30332-0400, and will be accepted until February 15, 1996.

The 1995 National Award was presented to:

Mary E. Harris, Burroughs School, St. Louis, Missouri

Mary Harris' overriding goal is to make science interesting, fun, and relevant for her middle school science and high school chemistry students. To demonstrate how polymer chemistry is used to create everyday items, she engages her students in hands-on activities involving such items as Gummi candy animals, plastic containers, and packing peanuts.

As chairperson of a National Middle Level Science Teachers' Association (NMLSTA) committee working in association with the American Plastics Council, she has been instrumental in the creation of "Hands On Plastics: A Scientific Investigation Kit" for middle level teachers, which were available to teachers at the National Science Teachers Association conference in Philadelphia this past March. She has also been co-leader of a "Teaching with Toys" workshop series for teachers of grades 5-9, which focused on explaining the chemistry of toys to middle level teachers. Harris serves as editor of *Level Line*, the NMLSTA newsletter, since 1991 (membership of 1,300); a newsletter that encourages middle level teachers to use simple demonstrations and lab activities.

The University of Michigan

**FUNDING AVAILABLE for GRADUATE STUDIES
in SCIENCE EDUCATION**

The Educational Studies Program at the University of Michigan in Ann Arbor offers M.S. and Ph.D. degrees with a Specialization in Science Education. Research and teaching assistantships are available for qualified applicants. Research assistantships may involve work on any of a variety of externally funded projects. Teaching assistantships include supervision of student teachers or work with methods and practicum classes.

Opportunities exist for studying:

- students' learning during innovative science instruction,
- teachers' knowledge and beliefs and their role in implementing innovative science instruction,
- technology in science classrooms and in science education research,
- history and philosophy of science and science education,
- gender and science teaching and learning, and
- alternative assessment in science.

Applications for Fall 1996 are due by February 1, 1996

**For applications contact Carol Birmingham,
The University of Michigan,**

1323 S.E.B., Ann Arbor, MI 48109-1259; (313) 763-1342.

For additional information contact

**Dr. Liza Finkel at (313) 747-0594; lfinkel@umich.edu or
Dr. Joe Krajcik at (313) 747-0597; krajcik@umich.edu**

REVIEWS

Reviews submitted to April Whitt by Patty Crews
Fernbank Science Center
156 Heaton Park Drive
Atlanta GA 30307

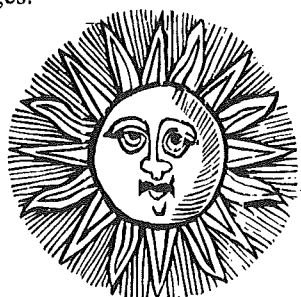
SCIENCE ON ICE—RESEARCH IN THE ANTARCTIC

by Michael Woods

Michael Woods takes us on a trip to the bottom of the earth where scientists explore the origin of the universe and the depletion of the ozone layer. Touching everything from early exploration to current research in the Weddell Sea, students learn the importance of studying the earth's harshest continent. Using recent discoveries, such as ice cores, Woods does an excellent job of illustrating how the dynamics of Antarctica ice affects the earth as a whole.

The books, beautifully colored maps, and photographs make you feel like you are there. The thick paper and wide margins, however, make the book less "environmentally friendly" than it could be.

Published by The Millbrook Press
1995, 96 pages.



GENETICS AND HUMAN HEALTH—A JOURNEY WITHIN

by Faith Hickman Brynie

Illustrated by Sharon Lane Holm

Like a good detective story, Brynie artfully weaves information to solve the problem that led to Olympic volleyball star, Flo Hyman's, premature death. Genes, cells, chromosomes, DNA, and family trees are all explored to trace the route of Marfan's Syndrome, Cystic fibrosis, sickle-cell anemia, Tay-Sachs disease and Huntington disease.

Beginning with Gregor Mendel's 19th century pea patch and progressing to the laboratory of Watson and Crick, patterns of inheritance are discovered and predicted. Faith Hickman Brynie does an excellent job of engaging the student in the science of genetics.

Published by The Millbrook Press
1995, 128 pages

Sherry G. Nix
Science Teacher and Gifted Educator
Bob Mathis Elementary
DeKalb County School System
Decatur, GA

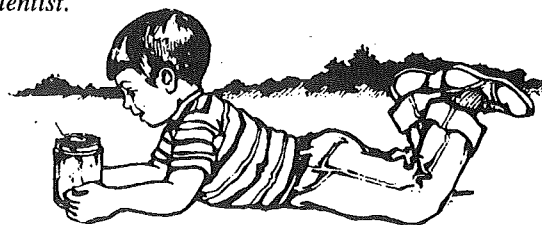


A REVIEW OF THE SET OF WORLD BOOK'S *YOUNG SCIENTIST*, VOLUMES 1-10

The 10-volume set entitled *Young Scientist* by World Book is designed for elementary students. Each volume contains many colorful and labeled drawings, diagrams, and photographs that can be used by primary students in their search for scientific knowledge and scientific awareness. The older elementary students will be delighted not only by the brief, concise, up-to-date scientific data contained in each volume, but World Book has gone one step further and included many hands-on science activities in the *Young Scientist* set that will allow students to further explore their world by incorporating what they learn with activities from the every day world thereby making the information that students learn more relevant to their daily life.

Elementary science teachers will find the *Young Scientist* a very useful tool in developing lesson plans. Each volume includes the basic vocabulary necessary to the understanding of a particular scientific concept from many of the areas of science such as biology, geology, space science, computer technology, botany, and the physical sciences. Each volume also includes many visual aids that can be used in the classroom to expand the students' knowledge of scientific concepts. In addition, each volume contains many ideas that can be adapted for use in developing hands-on science labs.

The *Young Scientist* set seems to cover many of the basic scientific concepts that all young students of science should be aware of from space technology to computers, from human biology to machines, and from atoms to electricity. This set even deals with many of the global environmental problems affecting life on earth today. Additional help is provided by an in-depth index that can be used to cross-reference many of the topics covered in each volume of the *Young Scientist*.



EDUCATIONAL MATERIALS

CLASSROOM NEWS

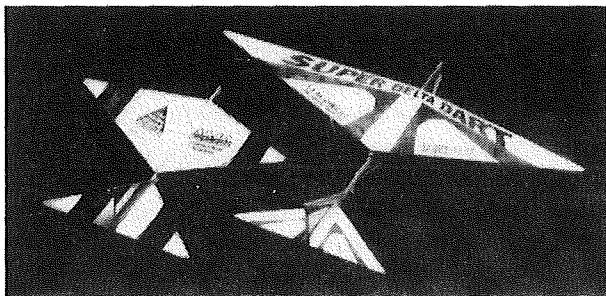
Please Share Classroom News with a K-12 Teacher You Know. Here is a hand-picked selection of news and ideas published in the Fall 1995 issue of the *Journal of Natural Resources and Life Sciences Education*. These news items are selected especially for teachers of grades K-12. We hope you find them useful. Check out the journal—you might just find some useful information for classroom, labs, quizzes, or field trips! Become a subscriber! For more information, contact the managing editor, Susan Ernst, at the American Society of Agronomy headquarters office, 677 S. Segoe Road, Madison, WI 53711; phone (608) 273-8080 or fax (608) 273-2021. Sit back and enjoy!

Videos Bring Agriculture Into the Classroom

In an era when most children don't live on farms, it's difficult for teachers to teach them the basic vocabulary of agriculture.

Videos can help. By bringing agriculture into the classroom, they can help today's children understand our nation's food and fiber system. Following is a list of four recent videos produced for preschoolers and elementary school children.

Bigger is Better



Introducing the *Super Delta Dart*, shown alongside its smaller sibling, the *Delta Dart*

- Longer flight times
- Stronger, with larger framing sticks
- Moveable/removeable wing - which allows for experimentation with changes in the center of gravity
- Same unique construction method as the *Delta Dart* with enhanced student instruction manual
- The natural next step up from our *Delta Dart*

To receive our latest free catalog, contact:



**MIDWEST
PRODUCTS CO., INC.
EDUCATIONAL
PRODUCTS DIVISION**

400 S. Indiana St. P.O. Box 564
Hobart, IN 46342 (800) 348-3497

Summer on the Farm. What is a combine? How is corn planted? What's inside a silo? Answers to these and many other questions are in this 30-minute video. From planting in the spring to harvest in the fall, this video helps students see what life on the farm is like. Children see farm machinery in action and close-up photography gives young viewers a sense of being part of the action. An educational edition is licensed for public viewing and includes a teacher's manual. The video is the first in what is intended to be a three-part series. The educational version of the video is available for \$49.95 plus tax and a \$5.00 shipping charge. Quantity discounts are available, or individual copies, at a reduced price, can be obtained by calling (800) 747-6470. For more information, contact Summer on the Farm Series, 1261 East Lake Road, Skaneateles, NY 13152; phone (315) 636-8044.

Tractors, Combines, and Things on the Grow. Young children are fascinated by big machines. This video focuses on the powerful machines that are used to bring food from field to table. It is recommended for children age 2 and up. It would be especially good for preschoolers. The video has earned the seal of approval from The American Farm Bureau and the National Corn Growers Association. Single copies are \$19.95 plus \$3.95 for shipping and handling. For more information, contact Just Our Size Videos at (800) 808-FARM.

Farmtastic Agtion. This 19-minute video showcases a farmer's many tasks, and it provides educational information and a respect for farm safety. Throughout the video are farm facts—letting children know the size of an acre or the number of kernels on an ear of corn. This video uses little narration; instead, explosive music and fast-paced edits show farm machinery in action. Single copies are \$14.95, plus \$3.50 shipping and handling; Illinois residents add 6% tax. For more information, contact I & I Video Productions, 207 Main Street, Suite 200, Peoria, IL 61602; phone (309) 671-0206.

Vrrroooooom! Farming for Kids. It takes a lot of equipment to grow vegetables and grain, and all of it is interesting to young children. This 30-minute video gives a close-up view of the plows, cultivators, planters, and various harvesters. The computer is another important piece of farm equipment, and the children see that today's agriculture is a high-tech business. Included with the video is a handy reference card that answers questions children may have about the various pieces of farm equipment. Single copies are \$19.95 plus \$3.95 shipping and handling. For more information, contact Rainbow Communications, 1275 School Road, Victor, NY 14564, phone (800) 518-FARM.

Reprinted in part from *Ag in the Classroom Notes* (Vol. 10, No. 1), 14th and Independence Ave., SW, Room 4307 South Building, USDA, Washington, DC 10150. For multiple copies of "Classroom News," contact the ASA Headquarters Office for reprint prices: ASA, 677 S. Segoe Road, Madison, WI 53711; phone (608) 273-8080 or fax (608) 273-2021.

Collection and Maintenance of Ants

If your class is studying ants, you'll want to see the January 1995 issue of *The Kansas School Naturalist*. The issue is titled "Collection and Maintenance of Ants," and addresses general ant biology and includes two brief articles. The issue includes many photographs and diagrams, and other recommended books for children on ants.

Other recent issues on insect topics include: "Checklist of Ants of Kansas," "Collembola," "Showflied," "Making An Insect Collection," "I Didn't Know That! (insects)," "Tiger Hunting in Kansas."

The Kansas School Naturalist is published by Emporia State University and is sent free of charge and upon request to teachers, school administrators, librarians, youth leaders, conservationists, and others interested in natural history and nature education. Contact Kansas School Naturalist, Box 4050, Emporia State University, 1200 Commercial Street, Emporia, KS 66801-5087; phone (316) 341-5311.

New Children's Curriculum Focuses on Environment

"Water, Wildlife, and You" is a new environmental curriculum that a 25-year-old-college senior developed. Molly Stokes is an environmental science major at Wesley College and worked on the curriculum while interning at the Kent County Extension Office, Delaware.

Geared to 8- to 12-year-olds, the material features a strong emphasis on interactive learning. And the hands-on aspect is even extended to the training sessions that prepare educators to implement the curriculum.

To learn more about the "Water, Wildlife, and You" curriculum, contact the Kent County Extension office at (302) 697-4000.

Meet The Trash Pack

The Trash Pack is unlike anything you've ever seen. This 5-pack of canine characters have one common goal—to arm kids with knowledge about the environment and recycling. There are some environmental education projects available that you might want to check out.

"Talkin' Trash: The Trash Pack's Encyclopedia & Resource Guide on CD ROM" is suitable for children and adults. By clicking on one of the Trash Pack characters, you will enter into the incredible world journey. The CD blends music, comedy, and game-show elements to teach children about the environment in which we live.

"The Trash Pack's 5 Day Teaching Module" is suitable for teachers and parents. It is an education tool designed to break down complex blocks of information into digestible bits—there are projects for children in pre-K to 6th grade. The 5-day teaching module package consists of one video tape in five segments, a teacher's guide, a classroom poster, and 12 activity books. The products in the kit are available as a package or sold as separate pieces. For more information, contact Linda Moerschell, P.O. Box 907, Potsdam, NY 13676-0907; phone (315) 265-8122; or Tom Phillips, c/o onFilm/EMS, P. O. Box 1665, Thousand Oaks, CA 91358.

Taking Care of Business

The spirit of entrepreneurship is thriving among today's high school students. In a recent survey, 7 out of 10 said they wanted to start their own business. But in the same survey, 86% said their knowledge of business is at best, fair.

A new teaching package may give these future business owners the skills and information they need. Taking Care of Business is a multi-media educational package that introduces students to the ways Americans organize their communities—in businesses, in community service organizations, and in government. Developed by the National Council of Farmer Cooperatives, the package was designed to meet curriculum standards for social studies, economics, and related subject areas.

In a videotape and accompanying teacher materials, students learn about four types of businesses: sole proprietorships, partnerships, corporations, and cooperatives. Besides agribusinesses represent each of the four types, teachers can incorporate lessons about agriculture into their discussions of the free enterprise system.

The lessons also include economics (students learn about production of basic products, processing and manufacturing, distribution, service, and profitability), and history (students trace the impact that businesses have had on American society). Single copies of Taking Care of Business are available for \$25.00 from NCF, Education Department, 50 F Street NW, Suite 900, Washington, DC 20001; phone (202) 626-8700. Discounts are offered on bulk purchases.

Reprinted in part from *Ag in the Classroom Notes* (Vol. 9, No. 9), 14th and Independence Ave., SW, Room 4307 South Building, USDA, Washington, DC 20250.

Water Resource Education Posters. A colorful series of five posters illustrating various water resource issues is available in grade school or middle school editions from U.S. Geological Survey, National Water Information Clearinghouse; phone (800)

Hands-On Science Activities. "Wonder Science" is a monthly publication (October-May) that is a joint endeavor of the American Chemical Society and the American Institute of Physics. This publication is full of hands-on science activities intended for use with elementary school students under teacher supervision. The single copy subscription price is \$6.00, plus \$3.50 shipping and handling, for the eight issues. For subscription information, call (800) 333-9511.

Math and Science Videos. Free to educators upon request are three videos related to math and science. The videos, with teacher's guides, are: The Challenge of the Unknown," "The Search for Solutions," and "A Home for Pearl." One copy of each of these videos along with the teaching manual, is available at no charge. For more information, call (800) 526-4773.

NEWS From THE LABORATORY SAFETY WORKSHOP

A National Center for Health, Safety and Environmental Affairs NEW LAB SAFETY VIDEO SHORT COURSE AVAILABLE

The Laboratory Safety Workshop has produced a "Two-Day Lab Safety Video Short Course". The course consists of eight, 90-minute VHS videotapes covering 25 lab safety topics and a 175-page, three-ring course notebook.

The video is an edited live recording of a two-day short course presented by LSW's founder and President, Dr. James A. Kaufman. Regarded as the nation's leading authority on laboratory safety, more than 25,000 scientists and science educators have attended Dr. Kaufman's seminars and short courses. The course is filled with an enormous amount of lab safety information, resources, examples of accidents and the special brand of humor that has delighted seminar participants for more than 15 years.

The videos cover: (1) Introduction, Scope Of The Problem, Legal Aspects; (2) OSHA Lab Standard, Accidents; (3) Fire Control, A Condition of Employment, Labeling, Biological And Animal Hazards; (4) Handling Glassware, Eye And Face Protection, Record keeping; (5) Planning For Emergencies, Day-Two Introduction, Handling Chemicals; (6) Ventilation, Electrical Safety, Your Worst Problem; (7) Storage Of Chemicals, Disposal Of Chemicals; (8) Safety Equipment Display, Needs Assessment, Employee Involvement, Safety Program Planning And Concluding Comments.

"Finally, there's an affordable video training program that provides a thorough introduction to the fundamentals of laboratory safety and the development of laboratory safety programs," says Kaufman. "Thanks to a grant from the Cabot Corporation Foundation (Boston, Mass.) we were able to create an invaluable training tool for colleges and universities.

The video short course listed for \$795 including the notebook. Individual videos may be purchased separately for \$125.00.

The *Laboratory Safety Workshop* is the nation's only nonprofit organization whose mission is to make health and safety an integral and important part of science education. For more information about the video short course, LSW's other programs and services or a free copy of their "Laboratory Safety Guidelines: mail or fax your request to 192 Worcester Road, Natick, MA 01760-2252. fax:508-647-0062.



Stacie Cassat
BBN-Educational Technologies Dept.
150 Cambridge Park Drive
Cambridge, MA 02138
617-873-3320

MULTI-LEVEL SCIENCE: GENETICS FROM DNA TO POPULATIONS

- How are genetic diseases inherited?
- My uncle has sickle-cell anemia.
- How likely are my children to have it?
- If you cut off a mouse's tail will it have short-tailed babies?

Sponsored by the National Science Foundation, the **Multi-level Science Project** at Bolt Beranek and Newman is investigating the use of innovative educational technology for improving the teaching of genetics to high school students.

Central to our research is the implementation of **GenScope** — an open-ended computer-based exploratory environment that presents the processes of genetics visually and dynamically to students and makes explicit the many causal connections and interactions between them.

GenScope seamlessly integrates five levels of description, dealing with molecules, chromosomes, organisms, pedigrees and populations. Each level contains representations of the important biological processes and information available at that level, as well as tools that enable students to manipulate that information. Interventions made by students at any level affect each of the others, as appropriate.

The goal of the project is to help students acquire reasoning processes and mental models characteristic of those of professional geneticists.

You may find out more about the **GenScope** project at our WWW site:

<http://copernicus.bbn.com:70/genscope/homehtml>

We are also providing free copies of the **GenScope** software to people who are willing to give us feedback. If you would like to receive a copy of this software, please fill out the form at:

<http://copernicus.bbn.com:70/genscope/Software-Request.html>

and click on the "Send Request" button. A compressed copy of **GenScope** will be mailed to you.

If your browser does not support forms, then as an alternative send an email (including all the information requested in the form) to:

genscope-software@copernicus.bbn.com.

Please note: To run the **GenScope** software, you must be using a **Macintosh** platform, have a minimum of 6 megabytes of RAM, and a color monitor set to 256 colors.

**JEI ANNOUNCES ITS FIFTH CD ROM DATA
DISK: PORTRAIT USA: EXPLORING AMERICA
THROUGH EARTH SCIENCE**

Portrait USA gives you powerful tools to investigate our dynamic Earth; ready access to vast amounts of geographic and geologic data from prehistoric to the present that can be used for graphics analysis and modeling. Discover and explore America by simple mouse point-and-click. Zoom, for example, into your state or region and view the geology, topography, and earthquake occurrences. You may also show faults, interstate highways, rivers, and placename plus many other geographic options. You follow your own path of discovery with Portrait USA - no prefabricated views or decision routes. This interactive CD-ROM lets you see the contiguous USA and learn about Earth in a brand new way.

Extensive Geologic and Environmental Databases

Include:

Digital Shaded Relief Image (805 m resolution).
Topography/Bathymetry (805 m resolution).
10 Landsat 5 Thematic Mapper Images (28.5 m resolution).
150,000 Placename Database.
Geology of the United States.
Faults of the United States.
International/State/County Boundaries
Rivers of the United States
Isostatic Gravity of the United States
DNAG Gravity of the United States
DNAG Magnetics of the United States
MAGSAT Magnetics of the United States
Earthquakes (1534-1994)
Geothermal Data
Crustal Stress Measurements
System Requirements
80386DX or higher Processor
4 MB RAM
6 MB Free HD Space
SVGA Graphics Card and Monitor (640x480x256 colors)
CD-ROM Drive
MS-compatible mouse
MSCDEX 2.2 or later CD-ROM Extensions

Other features:

Model coastal flooding by shifting sea-level
Full profiling across any line in the contiguous United States
Screens can be saved as a PCX image.
Users can add to the Earthquake, Stress, and Thermal databases
User-controlled shaded-relief rendering of any region and MUCH MORE!

Sample Screen Shots:

Geology of Maryland and E. Pa
Rivers around New Orleans.
Thematic Mapper scene of Central Pa.
Portrait USA can be ordered from:
AGI Publications Center
P.O. Box 205

Annapolis Jct., MD 20701

Ph. (301) 953-1744 FAX (301) 953-2838

Please allow 4 to 6 weeks for delivery.

Portrait USA Earth Science CD-ROM

Price: \$59.95 for science educators and members of AGI member societies. \$89.95 for non-members.

Price does not include shipping and handling.

Prices subject to change without notice.

Payment may be by VISA, Mastercard, check, or money order. Checks and money orders must be payable in U.S. funds drawn on a U.S. bank.

Prepayment is required. Virginia residents add 4.5 percent sales tax. If you have any questions concerning Portrait USA please email: portraitusa@jei.umd.edu

**DINOSAUR
BONES • BIRDS •
MAMMAL
SKULLS AND
MORE...**



THE FIELD MUSEUM
• adding excitement to your classroom •

**For a free menu of take-out resources call:
The Harris Educational Loan Program
(312) 322-8853
Serving Chicago-area educators since 1911**

ONLINE RESOURCES AVAILABLE FROM ENC

The Eisenhower National Clearinghouse for Mathematics and Science Education Digital Curriculum Laboratory (DCL) is an easy-to-use special collection of math and science resources. The DCL includes the ENC Catalog of Curriculum Resources, a searchable database of K-12 math and science instructional resources, as well as a database of Federal programs, searchable by state. Free access is provided to resources on the Internet with quick links to materials of interest to math and science educators.

ENC In Print consists of publications of particular value to teachers and others interested in education, including:

ENC Focus—a series of mini-catalogs that pull together a select group of mathematics and science curriculum resources on various topics. The topics for 1995/96 include: real data and integrated mathematics and science materials.

Guidebook to Excellence—identifies Federal programs and resources for K-12 mathematics and science teachers and students and is easily searchable by state.

Perspectives on Reform—series published in cooperation with NSTA, NCTM, and Project 2061, supporting implementation of their major reform efforts.

ENC Update (newsletter)—information about ENC and promising uses of technology in education.

ENC On Disc (available late 1995) will provide an alternate way to access materials and the ENC Catalog through two CE-ROMs distributed free of charge to each U.S. school requesting a copy. The CE-ROM catalog duplicates the online catalog and will be fully searchable.

CD-ROMs can contain tens of thousands of text pages as well as sound, images, and full motion video. One of the ENC CD-ROMs will contain information on curriculum reform, state curriculum frameworks, assessment, standards, equity issues, and professional development as well as materials describing innovative practices in mathematics and science education. A second CD-ROM will contain curriculum materials that teachers can use in the classroom. Most materials will be free of copyright restrictions and fully available for classroom use. Some will be "shareware," software that can be examined without charge, but which requires a nominal fee for classroom use.

Both CD-ROMs will also include an Internet education directory and tutorial. The Internet directory will introduce and explain the Internet and can be used by teachers to examine and demonstrate the benefits of Internet access.

ENC In Collaboration defined ENC's work with groups from around the nation in creating a network of support for improving mathematics and science curriculum. ENC, ten Eisenhower Regional Consortia, and twelve ENC Demonstration Sites are allied to help teachers gain access to resources they need.



YES, I WOULD LIKE TO CONTRIBUTE TO THE ISTA SPECTRUM

I have a good idea that I'd like to share!

Name: _____

School or (name) _____

Business: (address) _____

(city, state, ZIP) _____

(telephone) (____) _____

Home: (address) _____

(city, state, ZIP) _____

(telephone) (____) _____

Title of Contribution: _____

I would like my article to appear in:

___ARTICLES

___IN FOCUS

___SPECIAL INTERESTS

___MINI IDEAS

___REVIEWS

___POTPOURRI

___OPPORTUNITIES

___MEETINGS

___AWARDS/RECOGNITION

___FIELDTRIPS/WORKSHOPS

___EDUCATIONAL MATERIALS

Please print my contribution in the following issue(s):

___Fall (due June 1)

___Spring (due December 1)

___Winter (due September 1)

___Summer (due March 1)

SPECTRUM welcomes black and white glossy photographs. We can sometimes use color pictures but they must be sharp with high contrast. Please enclose a stamped self-addressed envelope if you want your photos returned.

ISTA REGIONAL DIRECTORS

REGION II

Cathy Flannery
LasSalle-Peru H.S.
541 Chartres Street
LaSalle, IL 61301
(815)223-1721
flannery@rs6000.ivcc.edu

Linda Duncan
Pecatonica Comm. Unit School
District #321
1200 Main Street, Box 419
Pecatonica, IL 61063-0419
(815)239-2550
FAX (815)239-2125

REGION III

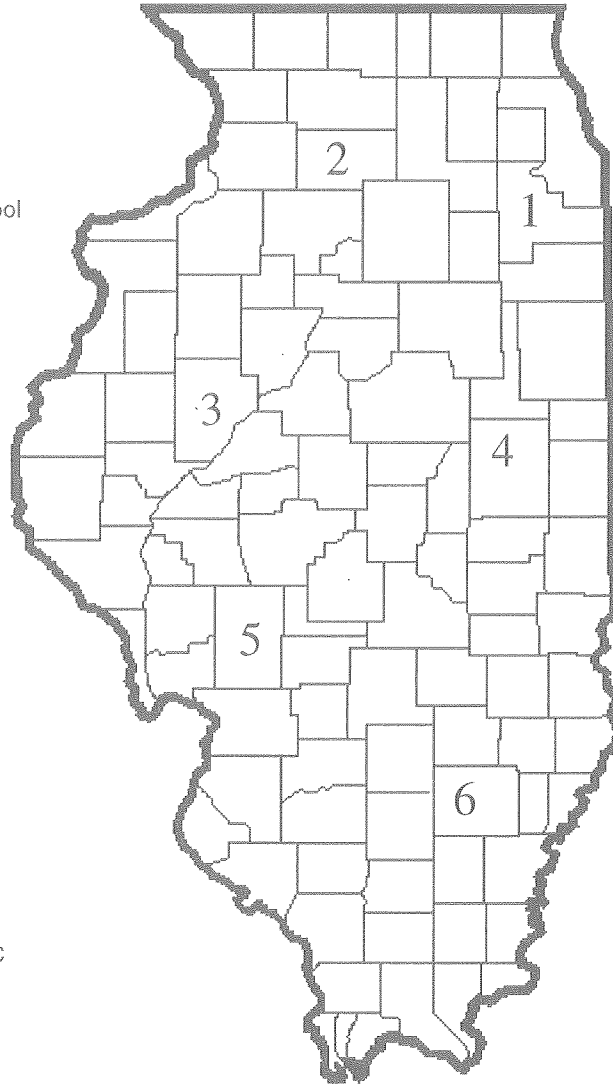
Don Powers
Science Education Center
Western Illinois University
Macomb, IL 61455
(309)298-1258
FAX (309)298-2222
dpowers@ccmail.wiu.bgu.edu

Karen Zuckerman
Hollis Consolidated Grade
5613 W. Tuscarora Rd.
Peoria, IL 61607
(309)697-1325
FAX (309)697-1334

REGION V

Dean Dittmar
Southern Illinois University
Agriculture Bldg., Office 158C
Carbondale, IL 62901-4414
(618)453-6985
FAX (618)536-7734

Ann Scates
Dept. of C&I
SIU-Edwardsville
Edwardsville, IL 62026
(618)692-3065



REGION I

Ann Rubino
c/o Fireworks Educational
Box 2325
Joliet, IL 60434
(815)725-9057
ARubino1@aol.com

Barbara R. Sandall
North Central Regional
Educ. Lab.
1900 Spring Rd.
Oak Brook, IL 60521
(708)571-4700
sandall@ncrel.org

REGION IV

Keith Hanson
Northridge Middle School
1619 N. Jackson
Danville, IL 61832

Jim Zimmerman
Thomas Paine Elem.
1801 James Cherry Dr.
Urbana, IL 61801
(217)344-3778
jimz@ncsa.uiuc.edu

REGION VI

Wes Heyduck
Fairfield H.S.
300 W. King
Fairfield, IL 62837
(618) 842-2649

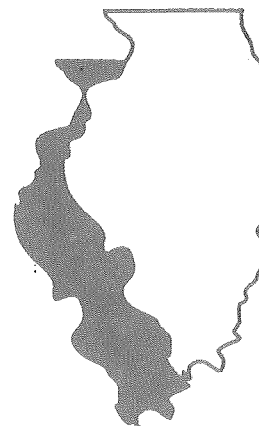
Suzanne Asaturian
Carbondale Comm. H.S.
200 N. Springer Street
Carbondale, IL 62901
(618) 457-3371
FAX (618)549-1686

Listing of Counties Comprising Each ISTA Region

Region I	McHenry, Lake, Kane, Cook, DuPage, Kendall, Will, Grundy, Kankakee
Region II	Jo Daviess, Stephenson, Winnebago, Boone, Carroll, Ogle, DeKalb, Whiteside, Lee, Rock Island, Henry, Bureau, LaSalle, Putnam, Marshall
Region III	Henderson, Warren, Knox, Stark, Peoria, Hancock, McDonough, Fulton, Tazewell, Schuyler, Mason, Adams, Brown, Cass, Menard, Pike, Scott, Morgan, Sangamon
Region IV	Woodford, Livingston, Ford, Iroquois, McLean, Logan, DeWitt, Piatt, Champaign, Vermillion, Macon, Shelby, Moultrie, Douglas, Edgar, Coles, Cumberland, Clark
Region V	Calhoun, Greene, Macoupin, Montgomery, Madison, Bond, St. Clair, Clinton, Monroe, Washington, Randolph, Perry
Region VI	Fayette, Effingham, Jasper, Crawford, Marion, Clay, Richland, Lawrence, Wayne, Edwards, Wabash, Jefferson, Franklin, Hamilton, White, Jackson, Williamson, Saline, Gallatin, Union, Johnston, Pope, Madison, Alexander, Pulaski, Massac

ILLINOIS SCIENCE TEACHERS ASSOCIATION

MEMBERSHIP APPLICATION



NAME _____
LAST FIRST

DATE _____ REGION (SEE MAP) _____

HOME ADDRESS _____
STREET APT. NO.

CITY STATE ZIPCODE PHONE FAX/EMAIL

EMPLOYER ADDRESS _____
STREET

CITY STATE ZIPCODE

(HOME ADDRESS WILL BE USED UNLESS OTHERWISE SPECIFIED)

PROFESSIONAL ASSIGNMENT ELEMENTARY _____ JUNIOR HIGH _____ HIGH SCHOOL _____
COLLEGE _____ OTHER _____

REGULAR MEMBERSHIP \$25.00

ASSOCIATE MEMBERSHIP (RETIREES AND STUDENTS) \$15.00

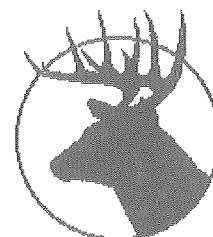
SEND FORM WITH CHECK OR MONEY ORDER TO:

GEORGE ZAHROBSKY
MEMBERSHIP CHAIR
P.O. BOX 2800
GLEN ELLYN, IL 60138

ISTA SPECTRUM
UNIVERSITY OF ILLINOIS
COLLEGE OF EDUCATION
1310 S. SIXTH STREET
CHAMPAIGN, IL 61820

NON-PROFIT ORGANIZATION
U.S. POSTAGE PAID
CHAMPAIGN, IL 61820
PERMIT #75

*****3-DIGIT 625
GARY L. BUTLER 289*
420 S TOWER RD
DAWSON IL 62520-3392



WINTER 1995