SPECTRUM

Winter/Spring 2003

Illinois Science—Something to Celebrate!

2003 ISTA Annual Convention

Peoria Civic Center and Pere Marquette Hotel

October 16-18, 2003

Reserve these dates now!

SPECTRUM

JOURNAL OF THE
ILLINOIS SCIENCE TEACHERS ASSOCIATION
Volume 29, Number 1

SPECTRUM is published three times per year, in Spring, Fall and Winter by the Illinois Science Teachers Association, University of Illinois, College of Education, 1310 S. Sixth Street, Champaign, IL 61820. Subscription rates are listed on p. 48.

Send submissions, subscriptions, and inquiries regarding the journal to:
Diana Dummitt
ISTA Executive Director
University of Illinois
College of Education
1310 South Sixth St.
Champaign, IL 61820
(217) 244-0173 (217) 244-5437 FAX
e-mail: ddummitt@uiuc.edu

Cover: Illinois School for the Visually Impaired students experience the IDNR Conservation World at the 2002 Illinois State Fair. Their teacher is John Moreland.

The Illinois Science Teachers Association recognizes and strongly promotes the importance of safety in the classroom. However, the ultimate responsibility to follow established safety procedures and guidelines rests with the individual teacher.

SPECTRUM IS PRINTED ON RECYCLED/RECYCLABLE PAPER

Spectrum

The Journal of the Illinois Science Teachers Association
Volume 29, Number 1

Winter/Spring 2003

Articles

Departments

ISTA News

President's Corner

Edee Norman Wiziecki

National Center for Supercomputing Applications
edeew@ncsa.uiuc.edu

Age of Change

This past year, there were a number of changes at the state and federal levels that have had a direct impact on the science teachers in our state. For example, the loss of scientific literacy funds was a tremendous blow to science education and brings an end to a program with proven success that had been in place for many years. At the federal level, 'The *No Child Left Behind* Act of 2001 is changing the way schools conduct the business of educating students and in how they provide teachers with quality professional development. The funding that was targeted specifically for professional development through the Eisenhower Professional Development program is now combined with the Class Size Reduction program and forms the new Improving Teacher Quality State Grants. These grants are said to focus on "using practices grounded in scientifically based research to prepare, train, and recruit 'high-quality' teachers." The impact of these sweeping changes is yet to be realized.

What is realized in response to these changes is that many school districts are changing the way they provide teachers with professional development opportunities. More and more districts are providing professional development on-site rather than paying the cost to send teachers to conferences—once the mainstay of teachers' professional growth. This challenges organizations, such as the ISTA, to constantly assess how to meet the needs of its membership.

The ISTA leadership recognizes the importance of continually improving the quality of its programs, its recognition and leadership opportunities, and its resources. We are already planning well into the future. The 2003 convention in Peoria features many new programs and a special day of workshops for new and pre-service teachers and their mentors. This special day is designed to help nurture our newest professionals in an appreciation of the value in participating in professional organizations. In 2004, we will hold our first summer conference. The ISTA recognizes outstanding teachers through its award programs for elementary through high school science teachers.

The *Building a Presence for Science* program is growing and flourishing. It provides opportunities to enhance the leadership skills of many science educators. Our association continues to develop resources, such as the ISTA website, listserv, and professional journal to meet the needs of our changing professionals. The ISTA will produce an on-line version of the *Spectrum* for those who are well established in the world of technology.

As in any professional association, the ISTA depends upon its members to provide support and to communicate with its leaders how best to meet the needs of today's science teachers. To that end, we ask you to complete an on-line needs survey on the ISTA website to help us meet your professional growth plans. We encourage all members to complete the survey and to become an active part of your association. This is your opportunity to help frame the future of ISTA.

Edee

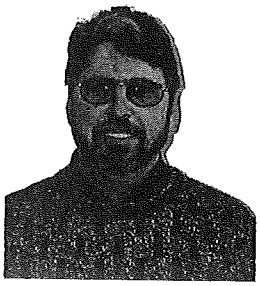
Around the State

2003 Election Results — Meet your New Officers and Congratulate them!

President-elect
Ray Dagenais

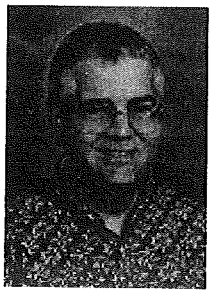
rjdag@imsa.edu

Vice President
Kevin Seymour



kseymour@roe9.k12.il.us

Secretary
Andy Apicella

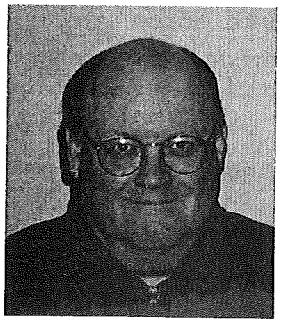


aa2100@riverdale.rockis.k12.il.us

Region 1
Rich Mitchell

MITCHELLRC@365u.will.k12.il.us

Region 2
Larry McPheron



lamcp@hotmail.com

Region 3
Jill Carter

jcarter@pekinhigh.net

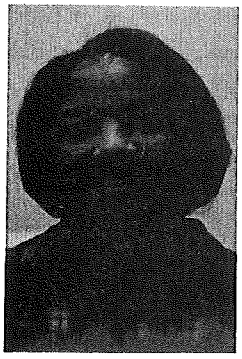
Region 4
Susan Golden

sgolden@dps61.org

Region 5
Pam Abbott

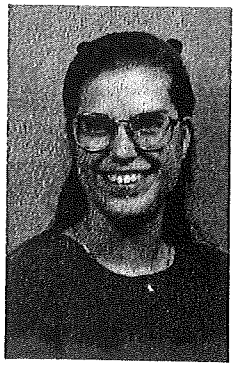
psabbott@mindspring.com

Region 6
Jackie Meadows



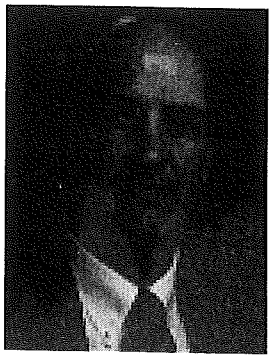
wbdoodle@yahoo.com

Region 7
Nancy Grim



n-grim@csu.edu

Many thanks to Don Nelson, ISTA Past-President for coordinating the election for the last two years. Don is now going off the board. Over the years, Don served as Region 3 Director, President Elect, President, and Past President.



Thanks Don!

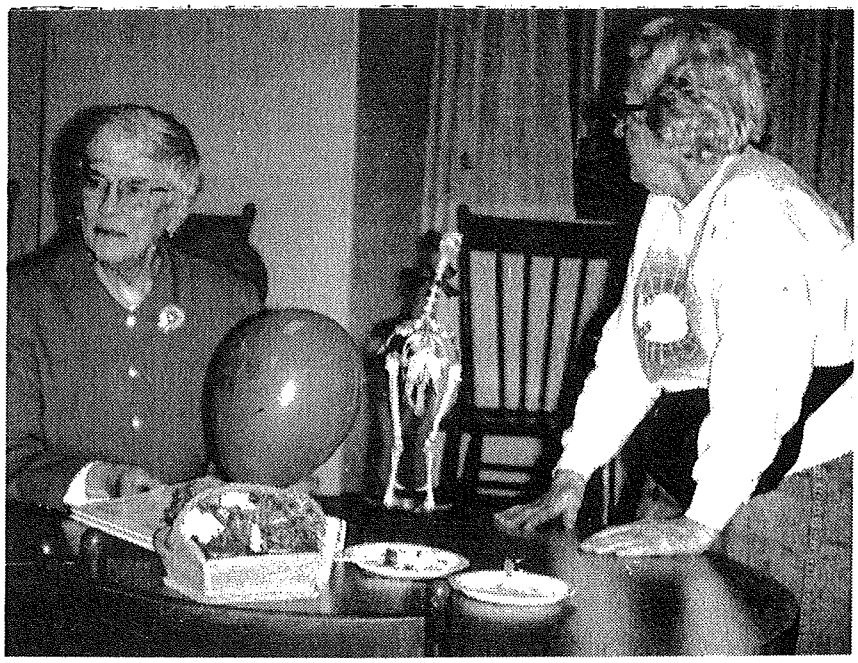
Happy 80th Birthday to an ISTA Icon!

Mary Eileen Keegan

April 1, 1922 has turned out to be a most fortuitous date for the well-being of Science Education in Illinois, for on this date, Mary Eileen Keegan was born in Fon-du-Lac, Wisconsin. Mary was the oldest of a family of 10—5 boys and 5 girls. Soon after her birth, the family moved to Libertyville, Illinois.

Mary became a teacher in the Libertyville Schools, but later transferred to the Winnetka School system. She was one of the few who came together on a blizzardy Sunday in December 1966 to start to develop the Illinois Science Teachers Association (ISTA). She served as Program Chair of the first convention at LaSalle-Peru High School while working as an outstanding science consultant in Winnetka. Her office was often used until midnight by ISTA founders to prepare material for the fledgling organization.

April 1, 2002 rolled around, and Mary's 80th birthday was celebrated at three different affairs. The first celebration was a family one attended by brothers and sisters, nephews and nieces, grandnieces, and grandnephews. Her niece, Julie, had surreptitiously lifted Mary's Rolodex in the fall and had sent letters out requesting memorabilia and personal notes. These she compiled into a truly lovely album. A number of past ISTA officers who had worked closely with Mary in ISTA's founding days responded and their notes are now in the treasured memento. Her family gave her a lovely ring with gemstones representing the nieces and nephews.

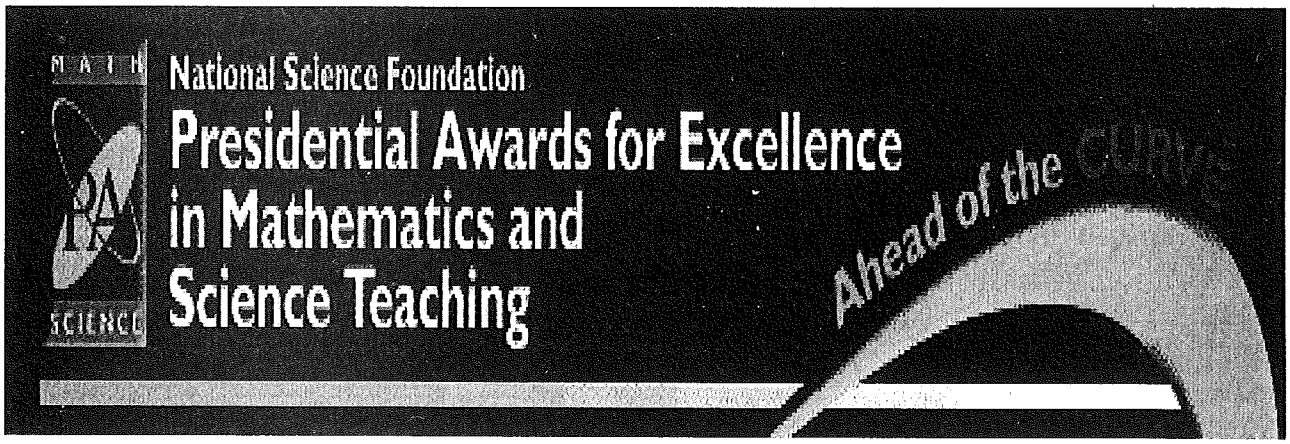


Mary and her dear friend Kay Taft, author of this article, celebrate Mary's milestone.

Another celebration was hosted on the actual date of her birthday at Loyola-Mallinckrodt campus in Wilmette by her colleagues in the Education Department. A delightful ABC book was compiled in a very unique way. Tributes, literally from A to Z, each letter a single sheet beautifully computer generated, contained an appropriate item relating to her career in education. One by one, they were read by different individuals and presented to Mary. They were encased in laminated folders, and she put them in a notebook, which had been provided. Several gifts, including the decorated fowl shown in the picture were presented. A truly beautiful cake was one of the highlights.

Lastly, her colleagues from the Winnetka Schools had another party for her on another date. All in all, these celebrations were fitting tributes to one who has done so much for family and friends. Mary has given unstintingly of herself to bring the joys and wonders of science to the children of Illinois and to their teachers — especially through workshops, as a college instructor, and through the formation of ISTA.

Mary, we'd like to wish you 80 more, but will settle for whatever we get. Congratulations from all of us!



WHAT ARE THE PRESIDENTIAL AWARDS?

- Our Nation's Highest Award for Mathematics and Science Teachers
- $10,000 Award Paid Directly to the Awardee
- Recognition Events in Washington, D.C.

WHO CAN APPLY?

- Teachers who are assigned to grades 7-12 mathematics and/or science classrooms in a public or private school; NEW THIS YEAR - TEACHERS WHO ARE ASSIGNED TO GRADES 1-6 MATHEMATICS AND/OR SCIENCE CLASSROOMS IN A PUBLIC OR PRIVATE SCHOOL WILL BE AWARDED IN THE 2004 CYCLE.
- Teachers who have at least 5 years teaching experience in grades 7-12 in mathematics and/or science prior to application;
- Teachers who are full-time employees of their school districts;
- Grades 7-12 teachers who are assigned, at least half-time during the school year, to classroom teaching of mathematics or science, or grades 7-8 self-contained classroom teachers;
- Teachers who are employed in any of the 50 states or four U.S. jurisdictions

HOW CAN I APPLY?

- Teachers Must Be Nominated. ASK SOMEONE TO NOMINATE YOU! USE THE FORM ON PAGE 7
- Principals, teachers, students, and other members of the general public may nominate a teacher for the award by filling out the nomination form available on the PAEMST website, www.nsf.gov/pa

WHAT IF I NEED MORE INFORMATION?

- Contact your Illinois State Coordinator for Science: Diana Dummitt at ddummitt @uiuc.edu or call 217-244 -0173.

Program Information

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) Program was established in 1983 by The White House and is sponsored by the National Science Foundation (NSF). The program identifies outstanding mathematics and science teachers, kindergarten through 12th grade, in each state and the four U.S. jurisdictions. These teachers will serve as models for their colleagues and will be leaders in the improvement of science and mathematics education. Beginning in 2003, the competition will alternate each year between teachers of grades 7-12 and teachers of grades K-6. In 2003, teachers of grades 7-12 mathematics and science in each state and the four U.S. jurisdictions will be eligible to apply. Teachers of grades K-6 will be eligible for the Presidential Awards in 2004. The nomination form for 2003 can now be downloaded by clicking on the Nomination form link and the application form for 2003 can now be downloaded be clicking on the Application form link. The 2002 PAEMST Awardees will be announced at the beginning of March 2003. Each Presidential Awardee will receive a $10,000 award from the National Science Foundation. Each Awardee will also be invited to attend, along with a guest, recognition events in Washington, D.C. during the week of March 18-23, 2003. These events will include an award ceremony, a Presidential Citation, meetings with leaders in government and education, sessions to share ideas and teaching experiences, and receptions and banquets to honor recipients.

Nomination Forms and Applications Are Available Now.
Visit
www.nsf.gov/pa
Deadline for receipt of applications:
May 1, 2003

Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)

2003 Nomination Form

I nominate the following teacher for the 2003 PAEMST:

Teacher's Name:_____

E-mail Address:_____

School's Name:_____

School's Address:_____

I can be contacted at :

Name_____

E-mail Address_____

Mailing Address_____

Please explain briefly how you came to know the nominee's work.

_____

_____

_____

_____

Please submit this nomination to your State Coordinator as listed on the PAEMST website: www.nsf.gov/pa.

Eligibility The following are the eligibility criteria for the 2003 applicants:

- Teachers who are assigned to grades 7-12 mathematics and/or science classrooms in a public or private school in a state or eligible jurisdiction;
- Teachers who have at least five years teaching experience in grades 7-12 in mathematics and/or science prior to application;
- Teachers who are full-time employees of their school districts;
- Grades 7-12 teachers who are assigned, at least half time during the school year, to classroom teaching of mathematics or science, or grades 7-8 self-contained classroom teachers; and
- Teachers who are employed in any of the 50 states or four U.S. jurisdictions. The jurisdictions are Washington, D.C., Puerto Rico, Department of Defense Schools, and the U.S. Territories as a group (American Samoa, Guam, the Commonwealth of the Northern Marianas, and the U.S. Virgin Islands).

Please note that past Presidential Awardees are ***not*** *eligible.*

Who is My Key Leader?

Congratulations to these Illinois science leaders who have made the commitment to become Key Leaders for the Building a Presence for Science Program! Counties are listed in aphabetical order. Email your Key Leader today to join the network as the Science Point of Contact for your school!

Gail Hermann
Quincy Senior High School
ghermann@adams.net
Adams

Cheryl Kestner
Central Elementary School
giraffe@adams.net
Adams

Jacquelyn Meadows
Egyptian Comm. School Dist.
wbdoodle@yahoo.com
Alexander, Massac, Pulaski

Karlene Johnson
Greenville College
kjohnson@greenville.edu
Bond, Fayette

Jeff Pfaffe
accentral@casscomm.com
Brown, Cass

Pamela Byrne
Princeton High School
byrne@theramp.net
Bureau

Kathleen Godbout
Northlake Middle School
godbeaux@theramp.net
Bureau

Robert Malerk
Hall High School
rmalerk@hotmail.com
Bureau

Carol Widegren
clwidegren@aol.com
City of Chicago

Don Reid
donreid@macoupin.k12.il.us
Calhoun, Greene, Jersey, Macoupin

Leonard Freidhof
Eastland High School
chemguy@aeroine.net
Carroll

Angela Van Brooker
Rushville High School
avanbrooker@casscomm.com
Cass

Sheila Ashbrook
University of Illinois
sashbroo@uiuc.edu
Champaign

Jan Hari
Urbana Middle School
harija@cmi.k12.il.us
Champaign

Elizabeth Sudlow
Centennial High School
sudlowscience@earthlink.net
Champaign

Margie Uzarski
Urbana High School
muzarski@aol.com
Champaign

Edee Wiziecki
National Center for Supercomputing Applications
edeew@ncsa.uiuc.edu
Champaign

Marva Anyanwu
Wendell E. Green
mlanya@aol.com
City of Chicago

Renee Bearak
Ames Middle School
rbearak@aol.com
City of Chicago

Robbin Cadena
Daniel Boone
honeybee60645@yahoo.com
City of Chicago

Dennis Carroll
Orr High School
dennis.carroll@att.net
City of Chicago

Linda Carter
Administration
lealyn@msn.com
City of Chicago

Lydia Davenport
Medgar Evers School
scifimom@netzero.net
City of Chicago

Denise Edelson
Hannah G. Solomon Elementary
dedelson115@aol.com
City of Chicago

LaSandra Glass-Gibson
Morrill School
Asksann@hotmail.com
City of Chicago

Susan Grabowski
Schurz High School
sgrabowski@enc.k12.il.us
City of Chicago

M. Elaine Granger
Michele Clark Middle School
megrang@yahoo.com
City of Chicago

David Henry
Brentano Math & Science Academy
TCH853@aol.com
City of Chicago

Daucenia Hunter
Medill Professional Development Cntr
City of Chicago

Roz Iasillo
Mother McAuley Liberal Arts HS
Chicago
riasillo@mail.mothermcauley.org
City of Chicago

Michael Lach
CPS Central Office
mikelach@mac.com
City of Chicago

Vincent Maccagnano
Gwendolyn Brooks Coll. Prep. Acad.
Cgobklyn@aol.com
City of Chicago

Nijole Mackevicius
Administration
nimacke@address.com
City of Chicago

Venita McDonald
R. H. Lawrence
larrymac@UIC.edu
City of Chicago

Gary Morrisey
Medill TPD Center
gjmorrissey@cps.k12.il.us
City of Chicago

Rita Nelson
Administration
rnelson009@aol.com
City of Chicago

Marvin Nochowitz
Irving Elem School
mlnochowitz@hotmail.com
City of Chicago

Don Price
Curie Metropolitan High School
donprice@mac.com
City of Chicago

Mary C. Rodriguez
Lara Academy
maryrod41@hotmail.com
City of Chicago

Paula Roginski
Sacred Heart
proginski@hotmail.com
City of Chicago

Patricia Ryan
Portage Park School
p.d.ryan@att.net
City of Chicago

JoElla Siuda
The Illinois Institute of Art
siuda@aii.edu
City of Chicago

Maureen Sorenson
Morrill Math & Science Spec. School
berkoberk@aol.com
City of Chicago

John Stewart
Rachel Carson Elementary School
misterstewart@teacher.com
City of Chicago

Cynthia Varnado
Whistler School
cvarnado@aol.com
City of Chicago

Loretta Walton
Nicholson Specialty School
LorettaWalton@gaggle.net
City of Chicago

Jerry Weissbuch
Mitchell Elementary
weissbuch@msn.com
City of Chicago

We still need one more Key Leader for the following counties: If you work in one of these counties, apply today at the ISTA website: www.ista-il.org

Christian
Douglas
Edwards
Effingham
Franklin
Henderson
Henry
Iroquois
Jackson
Jefferson
Kendall
Knox
LaSalle
Livingston
Madison
Marion
Marshall
Mercer
Putnam
Ogle
Perry
Randolph
Richland
Shelby
Stark
Wabash
Warren
White
Whiteside
Woodford

Marsha Lee
Casey-Westfield High School
marshal@rr1.net
Clark, Cumberland

Doug Mack
Floyd Hensen Junior High School
dmack_52@yahoo.com
Clay

Marylin Lisowski
Eastern Illinois University
cfmfl@eiu.edu
Coles

Tim McCollum
Charleston Middle School
cxtdm@eiu.edu
Coles

Linda Anderson
East Prairie School
landerson@eps.n-cook.k12.il.us
Cook

Catherine Berry
Winston Campus
berryc@ccsd15.k12.il.us
Cook

Nanette Cassettari
James Giles
Cook

Kathleen Gingrich
East Prairie Elem School
kgringrich@eps.n-cook.k12.il.us
Cook

Walter Glogowski
Ridgewood High School
wglogowski@ridgenet.org
Cook

Nancy Grim
Chicago State University
n-grim@csu.edu
Cook

Nancy Hayes
District #15
n6659@msn.com
Cook

Lynne Hubert
Joseph Sears School
lchubert@aol.com
Cook

Vickie Karkazis
Lincoln Hall Middle School
VKarkazis@aol.com
Cook

Thomas Kearney
Victor J. Andrew School
TKearney@d230.org
Cook

Joe Kerke
Hillcrest High School
JKerke@bhsd228.com
Cook

Lisa Kilcran
Skokie School
kilcranl@nttc.org
Cook

Howard Knodle
Maine South High School
hknodle@comcast.net
Cook

Michele Lenz
Lyons Twp High School-District 204
mlenz@lths.net
Cook

Nancy Mosher
Infant Jesus of Prague
nmosher@enc.k12.il.us
Cook

Debra Nowocin
Washington School
dnowocin@enc.k12.il.us
Cook

Jim O'Malley
Thomas A. Edison Elementary
Omalleyj@skokie69.k12.il.us
Cook

Sheila Raja
Thornton Fractional North HS
sraja@tfd215.org
Cook

Mary Rice
Spring Valley Nature Center
mrice@iols.net
Cook

Sylvia Tufts
Thornridge High School
stufts@ix.netcom.com
Cook

Hillary Tulley
Niles North High School
hiltul@niles-hs.k12.il.us
Cook

Bradley Wright
Dwight D. Eisenhower
bradley.wright@chsd218.org
Cook

Marianne Zito
Schaumburg School District #54
mariannezito@sd54.k12.il.us
Cook

Elaine Zych
St. Michael
ezych@enc.k12.il.us
Cook

Max Reed
ROE 12
mreed@ROE12.net
Crawford, Jasper

Susan Wong
DeKalb High School
swong@dist428.dekalb.k12.il.us
DeKalb

Steve Ramsdell
Clinton High School
sramsdel@prairienet.org
DeWitt

Linda Shadwick
Villa Grove High School
Douglas

John Adamowski
Fenton High School
adamowski@dupage.k12.il.us
DuPage

Phil Block
Hadley Jr. High School
pblock@attbi.com
DuPage

Marjorie Cave
Professional Development Center
mcave@dupage.k12.il.us
DuPage

Bobbie Dorre
C. E. Miller School
bhdorre@yahoo.com
DuPage

Bill Fraccaro
Franklin Middle School
elbow@kwom.com
DuPage

Jean Gotkowski
Reskin Elementary School
dgotkowski@enc.k12.il.us
DuPage

Rita Januszyk
Gower West Elementary
rjanusz@gower.k12.il.us
DuPage

Mary Ellen Krueger
Beebe School
mkrueger@ncusd203.org
DuPage

Nancy Nega
Churchville Middle School
nnega@enc.k12.il.us
DuPage

Sheryll Renken
Indian Prairie School
sher_renken@ipsd.org
DuPage

Anna Zuccarini
Clifford Crone Middle School
azuccarini@wideopenwest.com
DuPage

Elizabeth Burton
VIT Elementary
lburton@macomb.com
Fulton

Suzanna Frederiksen
Coal City Middle School
sfred4949@aol.com
Grundy

Deborah Moffitt
Nauvoo-Colusa Jr High School
dmoffitt@roe26.k12.il.us
Hancock

Janice Gustafson
C.R. Hanna Elementary School
orion4@qconline.com
Henry

Robert Burtch
Batavia Middle School
robertburtch@avenew.com
Kane

Robert Keck
Streamwood High School
keckshsbioteachr@netscape.net
Kane

Mary Lou Lipscomb
IMSA
lipscomb@imsa.edu
Kane

Paula Mytych
Burlington Central HS
Mytessmer@lightfirst.com
Kane

Carolyn Riley
Wayne Elementary School
CarolynFRiley@avenew.com
Kane

Steven Rogg
Illinois Mathematics & Science Academy
Rogg@imsa.edu
Kane

Barbara Romack
Kaneland Elem. North
bromack@Kaneland.org
Kane

Kathleen Williams
Dundee Middle School
kathleenwilliams@d300.kane.k12.il.us
Kane

Cathy Carter
Manteno CUSD #5
ccarter@manteno.k12.il.us
Kankakee

Jim Frogge
Bishop Mcnamara High School
mcnamarajlf@hotmail.com
Kankakee

Lori Loving
Two Rivers Prof Dev Cntr
lloving@roe33.k12.il.us
Knox

Nan Buckardt
Lake County Forest Preserves
nbuckardt@co.lake.il.us
Lake

Eeva Burns
eevaburns@msn.com
Lake

Marie Gehrig
Beach Park Middle School
gehrig101@cs.com
Lake

Beth Giglio
Adlai Stevenson HS
bgiglio@district125.k12.il.us
Lake

Steven Isoye
Warren High School
sti963@aol.com
Lake

Joyce Norton
North Chicago Comm. HS
jonorton@earthlink.net
Lake

Sharon Peterson
Antioch Comm. HS
speters@sequoits.com
Lake

Anne Reichel
District 103
areichel@district103.k12.il.us
Lake

Ali Widmar
North Barrington Elem School
widmar@ny.com
Lake

Pam Riss
Northlawn School
priss@ses44.net
LaSalle

John R. Clark
Lawrenceville High School
rwatcher@d20.lawrnc.k12.il.us
Lawrence

Carol Flohr
Dwight Grade School
flohrc@dgs.k12.il.us
Livingston

Brian Poelker
Midwest Central Middle School
bpoelker@ntslink.net
Logan

Janet Lynn Crow
Eisenower High School
jcrow@dps61.org
Macon

Cinda Farris
Holy Family School
HFTEACH@aol.com
Macon

Don't Miss these Upcoming Events for Building a Presence Participants!

2003 Summer Key Leader Update

No charge for those who have not yet attended a Key Leader training. Details will be posted on the ISTA website by March 14th.

Philadelphia NSTA National Building a Presence Events

2003-03-28	08:00 - 10:00	Building a Presence for Science Key Leader/Point of Contact Breakfast (RSVP to Diana: ddummitt@uiuc.edu)
2003-03-28	11:00 - 12:00	Highlights of NSTA's Building a Presence for Science Program: Why It Works
2003-03-28	12:30 - 13:30	How Building a Presence for Science Key Leaders and Points of Contact Create Professional Learning Communities
2003-03-28	14:00 - 15:00	Building a Presence for Science in Pennsylvania
2003-03-28	17:00 - 18:30	Building a Presence for Science Reception
2003-03-29	09:00 - 13:00	Teaching Science as Inquiry (SC–39)
2003-03-29	09:30 - 10:30	Building a Presence in Science in Our School, Community, and Culture

Susan Golden
Stephen Decatur Middle School
sgolden@dps61.org
Macon

Karla McAdam
Maroa Grade School
jlmcadam3@ameritech.net
Macon

Cyndi Selby
Meridian Intermediate School
clselby@hotmail.com
Macon

Bob Sederwall
ROE #40
rsederwall@roe40.k12.il.us
Macoupin

Pam Abbott
Roxana Sr. High School
psabbott@mindspring.com
Madison

Majorie Burgett
East Middle School
burgett85@yahoo.com
Madison

Monique Liguori Weinberg
McCray Dewey
mweinberg@triad.madison.k12.il.us
Madison

Mary K. Masterson
Bethalto East Elementary
mmasterson@piasanet.com
Madison

Amy Telford
Sandoval Sr High School
atelford@accessus.net
Marion

Tracy Trimpe
Havana Junior High School
ttrimpe@sciencespot.net
Mason, Menard

Greg Van Vleet
Edison School
greg.vanvleet@schools.macomb.com
McDonough

Kevin Collins
Huntley High School
kcollins@d158.k12.il.us
McHenry

William Donato
Woodstock High School
Baguaba@aol.com
McHenry

Barbara Levandowski
Woodstock CUSD #200
blrbsnfo@d200.mchenry.k12.il.us
McHenry

Ann Min
Beardsley Middle School
amin@mc.net
McHenry

Keith Holtzman
Ridgeview Jr/Sr. High School
kholtzmn@ridgeview19.org
McLean

Tammy Knippenberg
Holy Trinity Catholic School
jimknippenberg@earthlink.net
McLean

Carl Wenning
Illinois State University
wenning@entropy.phy.ilstu.edu
McLean

Deb Greaney
Waterloo CUSD #5
mdg2574@htc.net
Monroe

Gladys Hewitt
Central A&M Middle School
gladyshewitt@hotmail.com
Montgomery

Patricia Boldt
Scott-Morgan CUSD #2
pboldt@roe46.k12.il.us
Morgan

Stacy Baker
Pleasant Hill Elem School
msfrizzle87@yahoo.com
Peoria

Like Yeng Bonomo
Princeville High School
bonomoly@hotmail.com
Peoria

Coleen Martin
Wilder-Waite Grade School
martijl2@mtco.com
Peoria

Ellen Tallon
Peoria Notre Dame High School
ellentallon@hotmail.com
Peoria

Gail Truho
Columbia Middle School
gltruho@earthlink.net
Peoria

Georgiean Benson
Washington Middle School
bensonge@faculty.monticello.k12.il.us
Piatt

Keppen Clanton
Griggsville-Perry High School
Keppenc@hotmail.com
Pike

Terri Franklin
Chester High School
tfrank73@yahoo.com
Randolph

Andrew Apicella
Riverdale High School
aa2100@riverdale.rockis.k12.il.us
Rock Island

Karen Meyer
Rock Island/Milan #41
MsKMeyer@aol.com
Rock Island

Carol Van De Walle
Audubon Elementary School
cvandewa@geneseo.net
Rock Island

Judy Fliege
Trinity Lutheran K-8
SFliege270@aol.com
Sangamon

Sandra Kennedy
St. Aloysius School
Sangamon

Jean Ann Mies
Loami Elementary
Sangamon

Gary Miller
Williamsville HS
millerg_us@yahoo.com
Sangamon

Harold Wilber
Franklin Middle School
Sangamon

James Sparks
Mattoon High School
jsparks@mcleodusa.net
Shelby

Kathy Costello
Millstadt Consolidated School
kjcostel@stclair.k12.il.us
St. Clair

Sherry Deets
Belleville Township West High School
sdeets@mvp.net
St. Clair

Rebecca Merrill
O'Fallon Township High School
merrill@oths.k12.il.us
St. Clair

Ellen Reilly
Whiteside Middle School
ejreilly@stclair.k12.il.us
St. Clair

Deborah (Debbie) Tschopp
Dakota Jr./Sr. High School
dtschopp@dakota.stphsn.k12.il.us
Stephenson

Jill Carter
Pekin Community High School
jcarter@pekinhigh.net
Tazewell

Sandra Gasparovich
Address: Central Junior High School
gasparsk@aol.com
Tazewell

Shelley Barker
Danville High School
slbarker@aol.com
Vermilion

Elwood Gruschow
Jamaica High School
gruschow@usa.net
Vermilion

Julie Marshall
Nashville Dist. #49
jmmarshall5@yahoo.com
Washington

Wesley Heyduck
Fairfield Community HS
wheyduck@midwest.net
Wayne

Mary Barrett
Troy Middle School
mfbarrett1@aol.com
Will

Ken Carlson
Laraway School
Kcarl50@ameritech.net
Will

Katherine Kendall
Valley View CU.S.D 365-U
KKSciTeach@aol.com
Will

Richard Mitchell
Valley View Public SD 365U
mitchellrc@365u.will.k12.il.us
Will

Marvin Orr
Lincoln-Way Central High School
morr@lwhs.will.k12.il.us
Will

Diane Saunders
Indian Trail Middle School
dsaundrs@aol.com
Will0

Kathleen A. Gaare-Wiese
Creal Springs
cwiese@midamer.net
Williamson

Carol Kraft
Rockford Science & Technology Academy
Carol.Kraft@rps205.com
Winnebago

Lawrence McPheron
Boylan Catholic High School
lamcp@hotmail.com
Winnebago

Robert Stuyck, Jr.
Durrand Junior High School
rstuyck@hotmail.com
Winnebago

Sharon Wynstra
Rockford District Science Coordinator
wynstras@rps205.com
Winnebago

Attention Key Leaders: Join 50 Illinois Math Key Leaders for the **CSynergy Program**

Holiday Inn, Champaign, Illinois
Monday, July 14, 2003 through Thursday, July 17, 2003

Application Deadline: April 15, 2003

Participant Selections: May 15, 2003

Complete information and applications available at:
http://www.ncsa.uiuc.edu/Divisions/eot/programs/CSynergy/

CALL FOR PRESENTATIONS

"Illinois Science: Something to Celebrate!"

ILLINOIS SCIENCE TEACHERS ASSOCIATION ANNUAL CONFERENCE
PEORIA CIVIC CENTER AND PERE MARQUETTE HOTEL
FRIDAY, OCTOBER 17, 2003

DEADLINE FOR SUBMISSION: POSTMARKED BY APRIL 14, 2003

Principal presenter:

Name _____

Affiliations/School _____

Mailing Address _____

City, State, Zip _____

Day Phone _____

Evening Phone _____

Email _____

Additional Presenter:

Name _____

Affiliations/School _____

Mailing Address _____

City, State, Zip _____

Day Phone _____

Evening Phone _____

Email _____

Title of Presentation _____

Program Description (exactly how you want it to appear in the program) 25 word maximum:

_____

_____

_____

_____

_____

Check the intended audience ☐ K-3 ☐ 4-6 ☐ 7-8 ☐ 9-12 ☐ K-12 ☐ Administration

In order to minimize costs, presenters are encouraged to bring their own equipment when possible. Audio-Visual Equipment required: _____

_____

All rooms will be set up with tables unless otherwise specified:

_____

SAFETY: All ISTA presentations must conform to NSTA minimum safety guidelines for presenters. Will you be using chemicals or hazardous materials? ☐ Yes ☐ No
If yes, please describe: _____

_____

I understand the NSTA minimum safety guidelines for presenters. I promise to conform to these guidelines while giving my presentation at the Illinois Science Teachers Association Annual Conference.

Signature _____ Date _____

Return to: Jill F. Carter, Program Chair
Pekin Community High School
320 Stadium Dr.
Pekin, IL 61554

If you have any questions:
Diana Dummitt at (217) 244-0173
ddummitt@uiuc.edu

Thanks to our 2002 ISTA Convention Program Chair, Rich Mitchell Great Job, Rich!

Meet our 2003 ISTA Convention Program Chair, Jill Carter Pekin High School jcarter@pekinhigh.net

It takes many volunteers to run a successful convention.
Why not be a part of planning the fun at Peoria? Our next planning meeting is April 22 at the Pere Marquette Hotel in Peoria.
Contact Diana Dummitt today at
ddummitt@uiuc.edu or 217-244-0173

2003 Illinois Science Teachers Annual Convention

Peoria Civic Center and Pere Marquette Hotel

October 16-18, 2003

You won't want to miss it —

Reserve these dates now!

ExxonMobil

ILLINOIS SCIENCE TEACHERS ASSOCIATION

ExxonMobil and the ISTA are asking-

What could your school do with
An Apple Science Mobile Lab
With 10 iBook computers ??

ExxonMobil and the Illinois Science Teachers Association are providing an innovative opportunity for Illinois K – 8 schools to demonstrate how they would integrate technology into the science classroom.

The Apple Science Mobile Lab features 10 Apple iBooks, 32 Vernier sensors, and a ProScope Digital USB Microscope. Because this lab is portable and features wireless networking, it can easily be brought into any classroom.

- This competitive grant is open to all K – 8 schools in Illinois.
- Applications are due April 1, 2003
- Winner will be awarded with a ceremony at the winning school May 15, 2003
- Demonstration of technology program required at 2003 ISTA Convention

For applications or more information, contact:

Rebecca Hall
217-244-1984
hall@life.uiuc.edu

Kevin Seymour
217-893-4921
kseymour@roe9.k12.il.u

ExxonMobil

NSTA

ISTA

Are you part of

Illinois Building a Presence for Science?

You need to be!

Time is Running Out — Become the Point of Contact for your School Today.

Our goal is to have all participants in place by Fall 2003. Creating a comprehensive network of leaders in science education, the Illinois Building a Presence for Science Program (BaP) is administered by the National Science Teachers Association and funded by the Exxon Mobil Foundation. The Illinois Science Teachers Association is engaged in an ambitious effort to create a network among Illinois teachers who share a special enthusiasm for science education. This program is an exciting opportunity for educators to become part of a network of dynamic teachers who will take the lead in implementing standards-based science teaching and learning. The goal of this program is to create a comprehensive communications and professional development network of outstanding science educators.

Objectives:

- Create a state network of science and mathematics teachers to share resources about effective teaching and learning.
- Lessen teacher isolation and enhance collaboration.
- Assist teachers to implement the Illinois Learning Standards in their schools.
- Provide quality professional development opportunities and standards-based resources to help all students learn science.

Don't Miss this Great Opportunity!

For more information, go to the ISTA website:

www.ista-il.org

ISTA Board Buzzzz...

ISTA Board Meeting Minutes November 7, 2002 Pheasant Run Resort

In Attendance:

President	Edee Wiziecki
Vice President	Ray Dagenias
President-Elect	Marylin Lisowski
Treasurer	Carl Koch
Exec. Director	Diana Dummitt

Directors:

Region I	Anna Zuccarini
Region II	Andy Apicella
Region III	Don Powers
	Jill Carter
Region IV	Kevin Seymour
	Rebecca Hall
Region V	Pam Abbott
Region VI	Wesley Heyduck
	Marsha Lee
Region VII	Nancy Grim
	Jim Pudlewski
Action Editor	Kevin Seymour
Bus./Ind.	Katie Kendall
Awards	Ann Linenfelser
	Nancy Nega
Web	Tracy Trimpe

Edee Wiziecki called the meeting to order at 7:45 p.m. Ann Linenfelser took notes for absent secretary Deb Greaney.

President's Report

Edee reported on the October meeting with State Superintendent of Education, Robert Schiller. Diana Dummitt and David Woods (ISBE) also attended this meeting. The following concerns were addressed to Mr. Schiller: ISTA activities, the missions and goals of the ISTA, the loss of scientific literacy funding in Illinois, the concerns of science educators and what was Dr. Schiller's vision for science education in Illinois. Mr. Schiller indicated that the best thing for ISTA members to do would be to lobby legislators for funding support of ISBE initiatives. Mr. Schiller was not familiar with the Science Literacy funds. He mentioned that in the future it was likely the there would be further cuts in categorical grants. The message from ISTA is that our organization does not want to be invisible.

President Elect's Report

Marylin Lisowski reported the new Strategic Plan was posted on the ISTA website and that the members of the Board should review the plan and consider signing up for the parts of the action plan that they are willing to work on.

Other committee reports would be published at a later date.

Finance Committee

Ray Dagenais reported on the Finance Committee that the expenses left from the Peoria 2001 convention were paid in 2002. Building a Presence program is giving us money to assist in running the BaP program. The committee recommendation is to invest the CD that matures in December for another two years.

Convention Treasurer's Report

Carl Koch presented the Convention Treasurer's Report for the 2002 Pheasant Run Convention. There are penalties assessed to ISTA for not meeting the required 750 room nights. Expenses increase in meeting room rates for sessions. The basic rate for room rates was increased in April, there was a 45% increase. Pheasant Run required that ISTA make payments at the start of the convention for $91,000. $33,000 came from BaP funds but the ISTA may have to use money from the CDs.

Future Conventions

There was a discussion of a list of concerns about the future conventions. The ISTA has 3000 people in the database yet there may only be 700 attending this year's convention. Over the last five years there has been a drop in numbers of convention attendants whether in Chicago area or downstate. The number of vendors is down for this year with about 12 fewer than the number of vendors at the 2001 Peoria convention. Vendor fees are an important part of the income for the ISTA convention. There was a discussion of having the 2004 convention during the summer in Bloomington and using schools. The convention would require a commute from the hotels to the convention site. The NSTA regional convention will be held at Navy Pier in November 2005.

2003 Budget
Carl presented a proposal for the 2003 budget. Membership is kept at $36,000, there is a decrease in convention registration and vendor income from 2002 to 2003. The 2003 convention will be held in Peoria from October 16-18. BaP program budget includes $16,100 with $7,500 coming from Exxon. Motion to accept the proposed 2003 budget made by Don Powers, seconded by Andy Apicella. Motion passed.

Elections
Edee presented the report for absent Past-President Don Nelson who is chair of the Nominations and Election committee on the slate of candidates for the January 2003 ISTA elections. Nominations are open until December 1 for officers and regional directors. Marylin Lisowski asked that Andy Apicella be added to the candidates for secretary. Pam Abbott withdrew her name for the secretary's position and accepted the nomination for regional director from region 5.

Assessement White Paper
Edee presented a report on the Assessment White Paper that will be voted on at the general membership meeting of ISTA on Saturday morning. If approved a copy will be sent to ISBE State Superintendent and district superintendents and building principals throughout Illinois. The final version will be posted on the ISTA website and in the Spectrum.

Website
Dawn is working on the background folders for the ISTA website. BaP funds are being used to enhance the website. There was a discussion about adding publications to the website, whether the whole Spectrum should be posted or just parts of the Spectrum.

Building a Presence
There was a good turn out at the pre-conference workshop. Illinois BaP now has 182 identified Key Leaders with 14 new KLs since the July workshop. 33 Key Leaders are from the Chicago Public Schools system. Pam Abbott asked if it would be possible to list the Illinois Key Leaders and Points of Contact on the ISTA website in case there are more data base losses on the NSTA site. Marsha Lee suggested that in the future BaP trainings that rather than just having speakers that some time be allowed for hands-on or share fair activities between regional Key Leaders.

Needs Survey
This will be addressed at the next Board meeting in March, 2003. Andy suggested that proposed needs survey that was worked on at the September Board meeting be e-mailed to all Board prior to the Board meeting for review and comment.

General Membership Meeting
Introduce regional directors and officers. Approve the minutes of the 2002 Convention's general membership meeting. Ask members to respond to proposal to move ISTA convention to summer programs in 2004. Anna Zuccarini has attendance prizes provided by vendors for the meeting.

Other
Marylin Lisowski presented a request from Kay Taft to allow retired teachers to retain voting rights in the ISTA. Currently, Associate membership dues (most retired and all pre-service) are $15 and these members are nonvoting members. Full membership dues are $35 and this class of membership is allowed a vote. The Board took no action on this matter.

Andy Apicella is working on a review of the bylaws and operating policies documents of the ISTA. A committee was formed to continue this work and present a report to the March 2003 meeting. Kevin Seymour, Marylin Lisowski, Jim Pudlewski and Pam Abbott volunteered to serve on the review of the documents.

Adjournment
Motion to adjourn was made by Marsha Lee at 9:22 p.m. Seconded by Nancy Grim.

Recorded by Ann Linenfelser for Deb Greaney

In helping the students choose teams, I asked them to consider classmates they worked with most effectively and who were responsible for getting their work done on time. They then made two different lists of three students with whom they could work. Often some of the lists were very similar. While this process did not always work, it made the students think about potential group members before they signed up to work with them. Then I had the students get into groups that approximated one of their lists. I then met with each group to discuss how well the group would work together.

Conflict between group members had to be resolved periodically. Once in a while members of a group wanted to remove another member for not completing their fair share of the workload. The teacher had to decide the appropriate course of action. Sometimes it was better to keep a group together. If a student was removed from a group, one option was to assign a new project of equal complexity to the student.

Project schedule — It was expected that the students follow the schedule established in the assignment instructions. In the first week of the project, students conducted their research and prepared an outline for the book. The students were required to complete this stage before they could progress to the next. In the second week, the students prepare the preliminary draft of the book. Upon approval of the draft, the students progressed to the third (and last) stage of the project in which the final draft was prepared.

Book design — This was one of the first decisions student groups had to make. Did they want to write a children's book, a lower school book, a middle school book, or high school book? Would it be a picture book? Would it be a pamphlet? Depending on the skill level of the students and the target audience of the book, books ranged from 15 to 30 pages in length. Book length had to be monitored, or it became very difficult for the students to complete them.

Daily work plan — Each day, students filled out a work plan. The plan helped students focus on what they needed to accomplish each day. The plan included both individual and group work goals. The top portion of the form was filled out in the beginning of class and then the forms were approved by the teacher. The bottom two portions were filled out during the last 10 minutes of class and then the forms were approved again. In the beginning, it was necessary to closely monitor student groups to determine if they were working on the subject they had chosen for the day. This helped to make the plan a useful planning document, and not just something filled out for teacher approval.

Research — Research focused on two areas — first, on book design and reading level, and, second, on subject matter. For book design the students examined a wide variety of books, eventually choosing a book level.

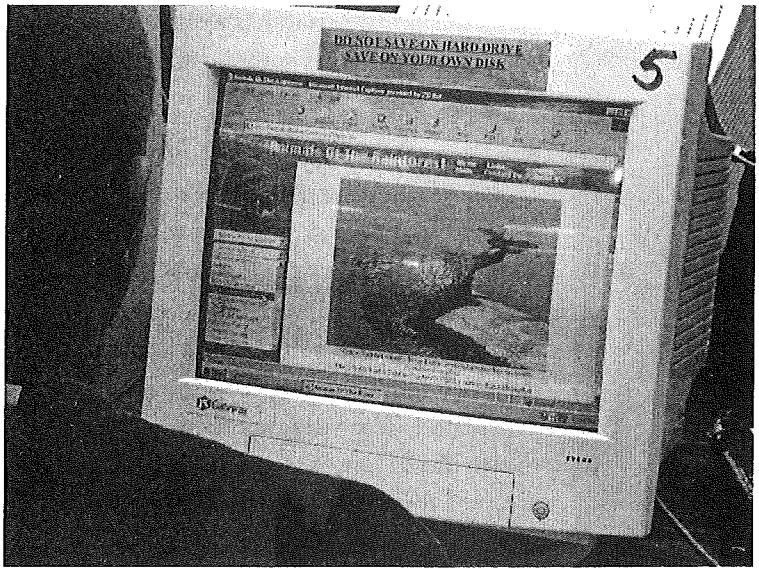
For the subject matter research, students started with general ideas, becoming more specific as they got a better understanding of their subject. As their research progressed, the students were asked to share their notes with other members of the group so their effort were not duplicated. The students were encouraged to use books, magazines, journals, and the internet for their research. They could not rely solely on the internet.

It was always beneficial to help the students focus their research before they wasted large amounts of time wandering around the library. I found that it helped students feel less overwhelmed if I met with each group, discussed their research and helped them organize it into manageable portions.

Special requirements — In an effort to have students create original artwork for their books, copyrighted material was not allowed to be used without the copyright holders' written consent. To obtain authorization, students would write formal letters requesting permission to use the copyrighted material. Since it was a school assignment, occasionally permission was granted. With the short duration of the assignment, receiving permission in time is problematic. Each time this project has been done several students were able to secure permission to use a small amount of copyrighted material. For most of the students, this meant they had to design and execute their own artwork. While the books still looked like student publications, the benefits gained from this requirement were worthwhile.

The students were required to include an eight item annotated bibliography with a four or five sentence description of each source used in the project. This requirement seemed to get students to actually read portions of the books rather than to merely add a list of books to a bibliography without ever having looked at them.

Out of school work — Since there was not enough time to complete the project in class time alone, it was clearly communicated to the students that considerable work outside the class was necessary. Students were reminded of



Research focused on two areas — first, on book design and reading level, and, second, on subject matter.

this several times over the three week period. The students exchanged telephone numbers and e-mail addresses so they could easily communicate with each other.

Final draft — The final drafts of most of the students' projects were very impressive. This can be attributed in a large part to the close monitoring the students received throughout the project.

Student Comments

Student opinions about the project evolved as the project progressed. Initially, students complained that the project was outrageous and it was much more work than they had ever had before. These strong opinions subsided as the writing teams became fully involved in their research, developed outlines, and organized their projects. Teacher interaction with the students helped them get over these feelings and it helped them to better understand how to complete each stage of the project.

By the second week, many students who had completed outlines indicated that they began to feel they were in more control of the project. For the third week, once the rough draft was completed and was acceptable to the teacher, students claimed the hardest part was over. If a very strong rough draft was prepared, many students felt they only had to put the final touches on their book.

At the end of the project students are asked to respond to a brief questionnaire. A sample of their responses follow.

What aspects of this project challenged me?
Trying to figure out how the book would be in terms of the format, cover, and bibliography. Also trying to put the book together.

Working with others as a group challenged me because I am used to working all by myself.

The amount of work that had to be done by each person in the group was challenging. A lot of research and careful planning had to be done.

There were many challenging parts to writing the book on endangered species. The more challenging parts were finding information and rewriting them as an amateur author, but still using true facts.

Getting everything together, but really making sure everyone did their part.

This project challenged me because there was a lot of research and being with your group all the time, everyday. And the fact of making sure everything was in order or its proper place.

The deadlines challenged me because usually you are given a due date and have to have the book completed by that date. But with this project, we had three due dates....

What would I do differently if I do this project again?
Get everything and everyone organized in the beginning and not near the end. I would get my work done at least two days before the due date. I would also make sure everything is clear to read and understand. I would write out a schedule that tells when we need to do certain tasks. I would also communicate with the group members more. I would not have people in my group who do not contribute 110 percent to the workload needed to be put in.... I wouldn't procrastinate about the deadlines.

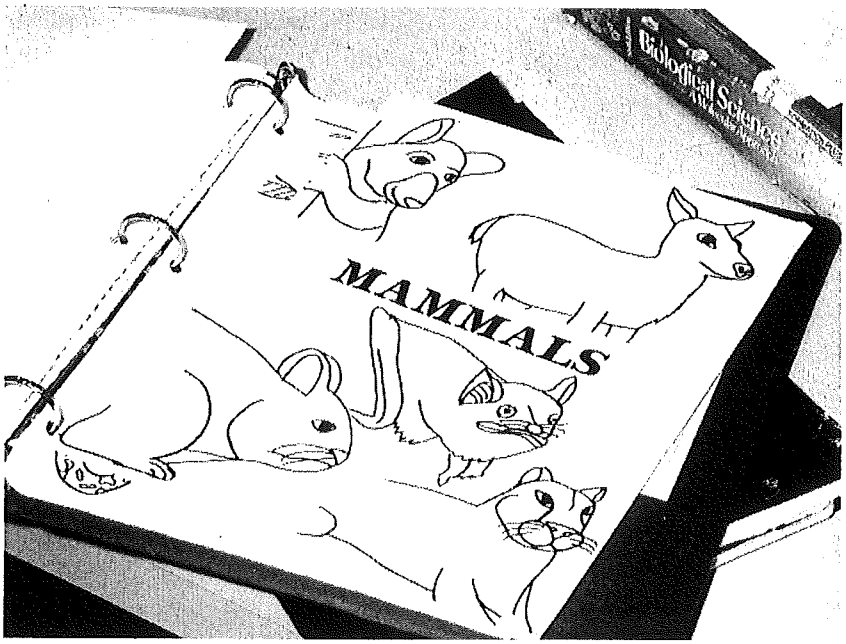
What did I find the most interesting thing about this project?
I found that people can't be depended on and that you have to do everything yourself. It's hard and it was kind of fun and of course it pushed me to my limit. It helped me to understand my topic a little better. But the most interesting thing about this project was not that it was stressful, but the satisfaction that I got found to be very great which shocked me.

I really learned a lot about this project. I didn't think I would learn as much as I did. I was surprised how much I remembered from the chapters I wrote.

The most interesting thing about this project is that it was all our own work. We took the pictures, wrote the text on our own, and created the whole concept of the book.

I found that if you consider something important and work hard at it, then the end result will be greater than you think.

I found it interesting working with a group that contributed several different ideas to the project. It was neat seeing all of the ideas blend together in order to make the finished project.



Projects spark enthusiasm and focus the students' attention on the important facts of a subject.

How would you describe this project to a friend?
I would say my biology teacher had a great assignment for us. I was to create a book on a certain given topic. It was a great assignment, but you have to know exactly who to work with.

Very hard, stressful, but worthwhile.

It requires a lot of work, but if your book turns out nice, you'll see the work you did was worth it.

I would have to tell them that writing a book isn't the least bit easy and that it is unacceptable to waste time.

I would tell them that it was a project that challenged my mind, but at the same time it let me enjoy working.

I would describe this project as time consuming, requiring a lot of hard work. I would also describe it as being very interesting and a creative project to complete with a group of people.

I would tell a friend that this project is very fun, but can cause physical and emotional problems. This project can be disappointing if your people in your group forget to bring their share of the project to school. This overall project is worth working for, because you know the people better, and you have more knowledge on a specific topic.

It is fun and original. The project needs a lot of attention and cooperation to finish. The project is rewarding. At first it's slow, but at the end everything comes together.

I would describe this project as trying and stressful, but overall very helpful. It is helpful because it shows you how to work with groups throughout your school career.

I would say that the project is better than it seems. First, you will get paranoid of all the deadlines, but if you do your part and pace yourself (don't work on one thing too long) then you will meet all the deadlines. In the end, you would never thought that your book would turn out the way it did. I am proud of my group members for all their effort they put into our book.

I would describe the project as fun, interesting, good experience, way to learn responsibility and it was rewarding.

I would describe the project as a time consuming project that requires a group effort in order to create a good book. If you try, you can make it fun.

Conclusion

After examining the books produced from this project, it is clear that it achieved its intended purposes. Students have been proud of the books their teams produced, they learned new skills, and they had a true sense of accomplishment when the project was finished.

Wonderful Life

Brian Poelker

Midwest Central Middle School
bpoelker@ntslink.net

With a letter in hand and a few well thought-out questions I walked into the Museum of Comparative Zoology at Harvard University and found out you couldn't get to Stephen Jay Gould's office through the main entrance. Going out and around the building I entered a small side door that led to the collections center. Dr. Gould wasn't in that day, however, the assistant curator, Fred Collier, was.

Fred Collier had recently retired from the Smithsonian Institution where he was the curator of invertebrate paleontology. He asked what I was interested in besides talking with Steve. (This is a situation that I have encountered several times in talks with scientists. Once you roll your sleeves up in the lab and get to work the names are Steve and Fred. They are real people!) I told Fred I was most interested in the Burgess Shale. I couldn't have picked a better topic. The Smithsonian houses the largest collection of Burgess organisms in the world and Fred Collier was the curator of the collection when Harry Whittington made his great discoveries that were highlighted in Gould's book *Wonderful Life.*

With relish, Fred showed me all that Harvard had to offer, which is the world's second largest collection of Burgess Shale organisms. The Burgess Shale fossils are found in Yoho National Park near Banff, Canada. Charles Walcott discovered the fossil bed in the early 1900s and amassed a great collection for the Smithsonian. The Burgess organisms lived just after the Cambrian Explosion, some 515 million years ago. They include all of the phyla of animals alive today, except the Bryozoans, which originated in the Ordovician. The detail in these fossil remains is truly incredible. After the excursion through the fossil drawers Fred gave me a tentative date that Steve would be in. He was out of the country at the time.

I showed up on June 23 armed with questions. I was fortunate to spend a summer working on a curriculum project at the Center for Astrophysics on the Harvard campus in 1992. I wrote Dr. Gould a letter asking if he would be available during the summer. He replied that he would be happy to talk with me. I entered the office with more than a small amount of trepidation and found Dr. Gould busy catching up on a bulging mailbox. His "office" is a very large portion of the original museum. We talked about the current problems with teaching evolution, but soon the conversation switched to my T-shirt, which featured four very detailed trilobites. One that caught his attention in particular was *Paradoxides gracilis.* He had several nice specimens in a collection drawer nearby.

Paradoxides graced the ancient seas of the island continent of Avalonia during the Cambrian period. Avalonia was crushed in the creation of the supercontinent of Pangea during the Permian Period. When Pangea consequently split, parts of Avalonia, and *Paradoxides*, ended up in very different places. We now find the fossil in Boston, Newfoundland, Canada, and Wales, England!

Paradoxides of course gets it name because when the trilobite was discovered scientists knew it wasn't possible for it to swim across the ocean but there was no theory to account for its location on separate continents! We talked a bit about the Burgess fossil *Hallucigenia,* which was a problem that was solved by turning the organism upside down and backwards, and he signed my book.

In 1972 Niles Eldridge and Stephen Jay Gould authored the Theory of Punctuated Equilibium as an alternative to Darwin's phyletic gradualism. Punctuated Equilibrium holds that species change little for long periods of time with speciation occurring abruptly (in terms of geological time). Creationists, taking the view that "Gould said Darwin was wrong", took his work out of context in making their case against evolution. Nothing could be farther from the truth. Thomas Henry Huxley

acted at "Darwin's Bulldog" in the 1800s. Stephen Jay Gould filled that roll in our generation. His testimony for the teaching of evolution in the classroom was crucial in overturning laws Arkansas and the school board decision in Kansas.

From the Cambrian Explosion or baseball, no topic could escape his pen. Stephen Jay Gould's writing enriched nearly all areas of scientific study. Although he wrote much for the general public in his monthly Natural History essays, appropriately titled "This View of Life", he required an effort from his readers to make connections between sometimes seemingly non-related events and circumstances. His view of the history of life showed a pathway studded with a myriad of contingencies. How would the evolution of life on earth been different if *Pikaia* had not left descendants? Even though Dr. Gould was just spending a short time at the office, checking out the pile of paperwork, he took some time to talk to a middle school science teacher show him some fossils and sign his book. The doors we can open are incredible if we try hard enough. For those of us teaching biology and geology, he would have us use his ideas to help our students learn about and understand the "Wonderful Life" of the many varied organisms we see about us and how they got here.

The Physics Workbook: A Needed Instructional Device

Stewart E. Brekke

High school students who take introductory physics are often confused and immediately immersed in an abstract higher level course that proceeds rapidly (B.G. Aldridge, 1989). One of the fundamental skills to be mastered in high school physics is problem solving. This skill should be a major part of the course. Problem solving in high school physics is also the hardest part of the course (J. Larkin, and F. Reif 1979) as it is in college and university physics. This is mainly because complicated problems are very frequently given to the students who many times have no background or schema to solve them (B.G. Aldridge, 1989). The course is then made unnecessarily difficult since the majority of students encounter obstacles in the problem solving and this tends to turn them away from physics. To complicate matters, most problem solving behaviors are established by the modeling effect (F. Reif, 1981) or by examples in the text (J. Rigden, 1987) and practice (F. Reif, J. Larkin, et al, 1979). The high school and college physics texts frequently do not give examples for all problems in the text and the student is usually caught in a dilemma since he has really little background for solving the problems and has few examples illustrating how to solve them. The student must then rely upon a problem solver such as *Shaum's Outline* or must get help from a knowledgeable person such as a cousin or older brother who has had the course before in some form.

My solution is to develop a workbook that has exercises of a simple nature in problem solving but also more advanced problems as well. The general format of most mathematical type physics texts, high school or university, is that a principle or law is stated in mathematical form, commonly called a formula, and the student applies the formula to situations given in the form of exercises. In the high school introductory course as well as in the university introductory course, these formulas are generally in terms of algebraic and trigonometric language of about the Algebra IT level in high school.

In a number college and of high school texts such as in *Modern Physics,* (Various editions), formerly the most widely used text in America, and most problems were given once. If the student can solve a given problem, he has no practice with this type of problem and tends to forget how it was solved. If the student cannot solve the given problem type. the teacher must show the student how to solve it and the student gets little experience solving the problem since he has no problems to practice on for mastery. In both cases the' student cannot integrate the solution technique into his problem solving schema. And it is not available for later use.

One of the fundamental skills to be mastered in high school physics is problem solving.

The writers of these introductory high school and college texts seem to have forgotten how humans, as well as other animals, learn. These authors have forgotten a fundamental law of learning established by Thorndike, that practice makes perfect (G. LeFrancois, 1986). Further, another law discovered by Thorndike early in this century was the law of effect which states that responses followed by a satisfying state of affairs will be remembered. How can a student remember a formula or a solution to a problem type unless he has some satisfying experience such as being able to solve a basic problem which he can continue to try to do until he is perfect at it through practice? The models that should be used in physics texts and courses are drill and practice models that are used successfully in mathematics. As Gagne has pointed out, solving complex problems often requires prerequisite skills. A prerequisite skill for solving a complicated physics problem is often being able to apply formulas to a simpler situation and then transferring them to the more difficult, or at least it is a great deal easier to solve a more complicated problem in physics once the simpler problems are mastered (C. Middlecamp & E. Kean, 1987). Mastery comes through practice.

In order to facilitate problem solving on a basic level, students must have an opportunity to solve problems using the simple formulas that students usually get in high school physics. Also, they must practice so that the basic formulas will be put into the students' memories and the students will then have command of the formulas. Only then can they apply the formulas to appropriate situations in physics and later build on them for more sophisticated work in the subject. Also, terms, ideas and pictorial models and diagrams must be mastered in high school physics. Physics texts have neither the space nor the inclination to give students, especially high school students and beginning college students, the help that is needed for mastery, practice and isolation of key ideas on a subject such as Newton's Laws of Motion or Wave Motion or Light.

What is needed is some kind of work text in physics, high school and introductory college, to help students learn the basics. At present, there are two outdated high schools work texts which also double as laboratory manuals. One is published by CEBCO (1964), and the other by AMSCO (1967). The group that puts out the "Conceptual Physics" material has a separate workbook-type publication on the ideas of physics (1987), but does not have quantitative problem solving in any large measure. College physics packages often contain solution manuals and student study guides, but really are not work texts in which students can write answers, answer questions, draw relevant diagrams and get practice solving basic physics problems based on examples immediately available to the student. Some of the material for physical science, a lower level high school course, that accompanies physical science texts, especially in the qualitative aspects of physics, I have found to be very useful. Such material includes puzzles, exercises, reviews of terms and ideas and often clarify concepts to the higher level physics students. At this stage computer assisted instruction is being developed and may be useful in some respects to enhance student learning in the introductory physics course in high

school and college, but there is no substitute for students writing in the answers on a worksheet or solving physics problems using pencil and paper. Further, all students do not have computers at home, and if they do, the computers may not be compatible with the software accompanying a course package. Therefore, from the student-learning standpoint, current work texts are needed, especially at the introductory level in high school and college.

According to B. F. Skinner, the teacher is basically responsible for the subject matter skills and knowledges and Skinner contends that there are some general rules of thumb for classroom learning. The rules are 111) the student learns by doing, 2) the student learns from experience, and 3) the student learns by trial and error" (Bell-Griedler, 1986). A work-text in any subject, not only in introductory physics, will help to reach these objectives although Skinner would prefer them to be more specific. In a work-text the student will actually work with the material in the course, answering questions, drawing diagrams, and most of all, solving problems on a basic level. The work text will give the student basic experiences in the subject. While a student does not necessarily have to learn by trial and error (Bell-Griedler, 1986) as Skinner points out, answers for, say odd numbered problems, will provide feedback for the student so that the trial and error process is minimized as well if there are examples to help solve the problems in the work-text. Skinner also says that the teacher should construct the behavioral repertoires to maximize learning and should generate motivation for learning (Bell-Griedler, 1986). A work-text would be especially useful for introductory high school and college physics since the subject matter in these courses is basically the same the world over and since a student would be dealing with subject matter made simple, he would tend to be self-motivated especially if he was successful with the work since the reward for successful problem solving would be validation of the correct answer. In order to generate success. At least in part, models or examples for doing the problem solving will be provided. Problem solving is the major part of any reputable physics course and success in this area will generate enthusiasm on the part of the typical student.

As Skinner has pointed out, there are punishing contingencies in the traditional school method of "assign and test" (Bell-Griedler, 1986). Most physics students in any level of physics have difficulty with the course material, mainly the problem solving. Because they must sink or swim since the grade in a physics course is based upon tests, students often have an aversion to physics courses in general. The average student tends to do badly in this situation since he often does not have available responses to solve the required problems especially and gets punished for his wrong answers with a low grade or failure in the course. The student must be taken through a carefully planned sequence of behaviors in order to master the required material, or in the case of physics, the problems and exercises in the physics book. A work text will meet this lack of available responses to physics problem solving and will provide behaviors that will help him/her master essential material.

From the teacher's point of view, a work-text would help the learning of students if one were available. Time constraints often make it impossible to provide introductory physics students, as well as students in other subjects, with proper materials that enhance learning. Teachers frequently are engaged in administrative duties such as record keeping. Extra teaching duties such as hall guard and counseling so that they have neither the time nor expertise to make good learning materials (AAAS, 1989). Further, a ready made lesson for class or homework frees the teacher so that he/she could help the students more often provided the lesson was meaningful and pertinent to the course. In physics the course work is the same everywhere, so good materials, providing solid basic instruction would help the teacher to teach the course with few local alterations. By making the materials primarily basic, all high school physics students will be able to master them and for those with poor skills, the teacher will have some time to help them. Finally, a work text with meaningful quality learning material will also help in classroom management since students will be busy doing their seat work in the

work text with success. From this, a better classroom atmosphere in the physics course will result not only from the success of most of the students, but also from the ability of the students to do some of the higher level materials since they will have some of the prerequisite skills needed for them which were developed in the work text. The teaching of chemistry is under constant attempts to improve itself through better learning materials. There are many chemistry workbooks for instance and because of this, the teaching of chemistry has improved. The teaching of physics. High school and college, needs to have this approach if we are to retain the students we now have in physics and encourage more students to take physics.

Problem-Based Learning for Teachers of Science Workshop
June 9 - 13, 2003

Real change in the practice of in-service teachers requires a sustained effort in professional development in which master teachers demonstrate new and effective ways of teaching, allow the teachers to try the new methods, and then help them to improve their practice. This workshop will show in-service teachers how to employ student-centered, inquiry-oriented, constructivist teaching practices using the techniques of Problem-Based Learning (PBL). PBL makes the classroom as real as possible for students by bringing in true-to-life problems for students to solve. Its authentic curriculum motivates students to solve engaging problems, learning science as they do so. Teachers become facilitators of learning, and not authority figures of science. For many children, exposure to traditional methods of science teaching results not in understandings, but in alienation from science. PBL can change all of this and benefit students in additional important ways. The ability of science teachers to incorporate intellectual and social skills in their teaching through PBL pedagogy will greatly influence students' success in school, in the workplace and in the community. In this workshop, teachers, taking on the role of students, will expand their content knowledge through the use of human and technological resources, apply newly acquired information, intellectual processes, and social skills to solve real-life problems.

Information on this and other summer workshops can be found at:
http://www.phy.ilstu.edu/workshops/

REFERENCES

Abner, J. & Diamond L. (1967). *Workbook and Laboratory Manual in Physics.* New York: AMSCO School Publishing Co.

Aldridge, B. G. (1989). *Essential Changes in Secondary School Science: Scope, Sequence and Coordination.* Washington, D.C.: NSTA. p. 4.

American Association for the Advancement of Science (1989). *Project 2061: Science for All Americans.* Washington, D.C.: Author. p. 146.

Bell-Griedler, M. (1986). *Learning and Instruction: Theory Into Practice.* New York: Macmillan. p. 76-115.

Carpenter, G. (1969). *Discovery Problems in Physics.* Fairfield: CEBCO Publishing.

Larkin, J. & Reif, F. (1979). Understanding and Teaching Problem Solving in Physics. *European Journal of Science Education,* 1(2). p. 191-230.

LeFrancois, G. (1988). *Psychology for Teaching* (6th Edition). Belmont: Wadsworth p. 27.

Middlecamp, C. & Kean, E. (1987). Generic and Harder Problems: Teaching Problem Solving. *Journal of Chemical Education.* 64(6). p. 5160517.

Reif, F. (1981). Teaching Problem Solving—A Scientific Approach. *The Physics Teacher,* 19(5). p. 310.

Reif, F., Larkin, J. & Brackett, G. (1976). Teaching General Learning and Problem Solving Skills. *American Journal of Physics,* 44(3). p. 212-217.

Rigden. J. (1987). Problem-solving Skill: What Does It Mean? *American Journal of Physics,* 55(10). p. 877.

Wells, D. & Slusher (1983). *Shaum's Outline Series: Theory and Problems of Physics for Engineering and Science.* New York: McGraw Hill.

Summer Fun and Learning at the Illinois State Fair

Harry Hendricksen

Water Educator
Illinois Department of Natural Resources

The Illinois Department of Natural Resources annually invites select Rivers Project schools to present water quality information at the Illinois State Fair. Seven teachers and fifty students participated last August to cover all but one day of the fair in often steamy weather.

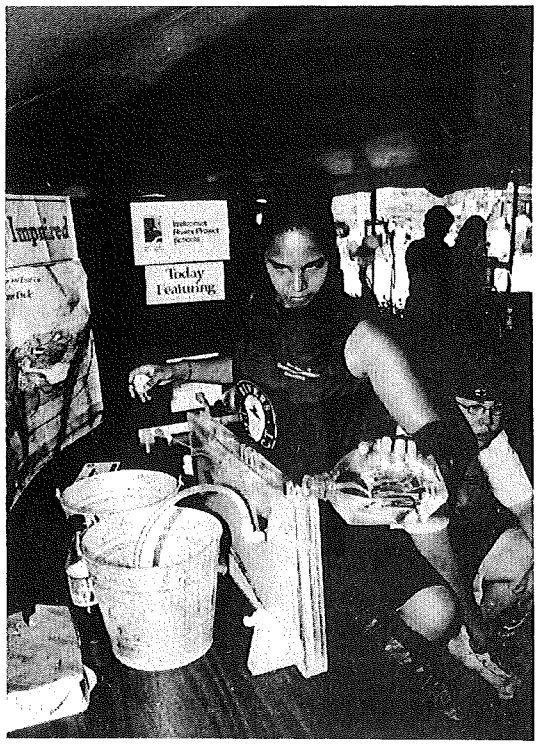
One of these teachers, John Moreland, science teacher at the Illinois School for the Visually Impaired (ISVI), has brought science students to the Discovery Tent in DNR Conservation World for the past seven years.

Moreland stated, "Our students really look forward to the State Fair each year. Although they have extreme vision problems, they still serve as excellent ambassadors for the school and for Clean Water. They do great work in relating water testing and modeling concepts. They also learn a good deal by visiting with DNR staff and by going to other Conservation World exhibits and shows."

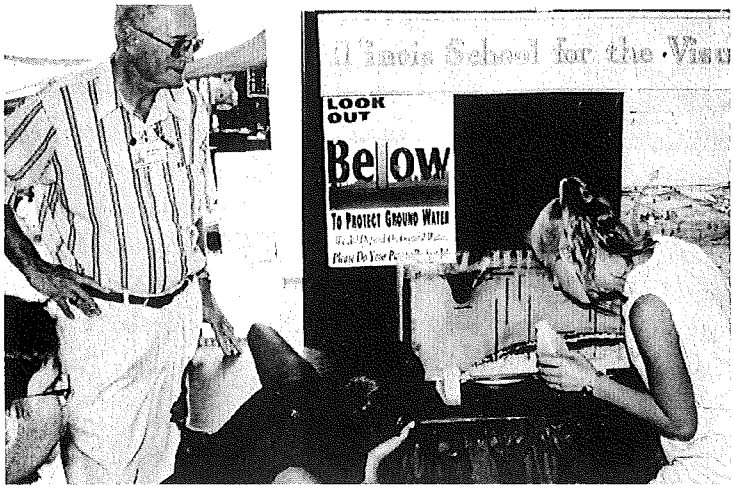
Dr. Bob Williams, Rivers Project founder and retired science education professor at SIUE, stated, "It is very important for students to get involved in community activities including public information. We have been pleased to arrange for high school students to help DNR at the State Fair since the students seem to be building confidence and learning important community skills. If properly structured, children often learn and relate well to teaching by other students. We especially credit the Rivers Project teachers for volunteering their time and extra effort in late summer, when many are getting ready for fall school opening."

Photo 1: ISVI students explain underground water movement to a young fairgoer.

The DNR hopes to continue arrangements for student participation. The students bring a different perspective and their water messages, trivia games, project reports, and hands-on science demonstrations show their presentation skills and deep concerns about water resources.Much of the credit goes to the Rivers Project teachers for making extra efforts in preparing their students and enthusiasm about hearing their students proudly tell about their water research and community projects.



Schools and teachers provide models, materials and activities; DNR provides transportation, fair passes, a table and a backdrop.



ISVI Science Teacher John Moreland oversees his students use of a groundwater flow model.

Despite the August heat, ISVI/Rivers students demonstrate water concepts. They proudly wear their Rivers Project T-shirts.

Rivers Project Training for High School and Junior High School Teachers

Join us for a training in the six content areas where curriculum has been produced. Participants will be learn to conduct chemical tests on water; identify bottom dwelling organisms from rivers & streams; relate to how humans affect and are affected by rivers, describe geological conditions that impact rivers, and write about rivers and streams from both the content and personal feeling's view point. High school teachers, many with years of experience, will serve as instructors. Information on the session, costs and applications can be found at:

http://www.siue.edu/OSME/river

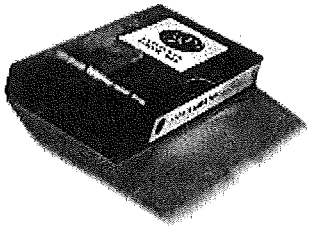
Mining & Environmental Education: A Caterpillar Community Outreach Project

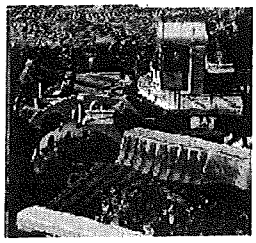
Gary Crull and Rand Broutin

Contact: crull_gary_a@cat.com or 217-475-4025

Caterpillar has assembled a Mining and Environmental educational outreach team to provide tools for teachers and students. They have put together an integrated program for energy and natural resource education that will help teachers meet state and national core objectives. Ten years ago Caterpillar produced an award winning mining film, *Common Ground*, that is still regarded as one of the top education aids requested by teachers. Every year, Caterpillar donates more than 3000 copies of this film to teachers around the world. Beyond Caterpillar produced materials, the educational outreach team will also be introducing *Out of the Rock*, a comprehensive minerals resource and mining education program that can be integrated into science, social studies, language arts, math, and other disciplines. The theme of this project is "If It Can't Be Grown, It Has to Be Mined."

There are several teachers in the area that will be part of a pilot program. These teachers will receive a resource kit that includes handouts, films, visual aids, hands-on exercises, CDs, and posters. They will use the new materials for a trial period and measure the progress of learning in their classroom. Technology and careers also will be addressed. Every school will maintain a library of educational materials for teachers and other educators.





Common Ground, a film produced by Caterpillar to help mining education has been used in more than 25,000 classrooms since its release ten years ago.

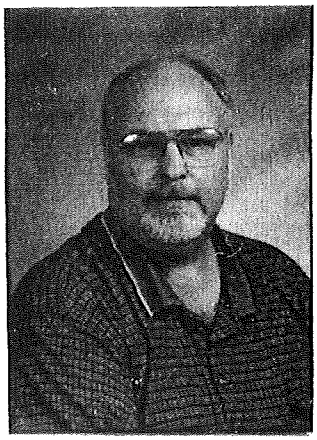
Some of the opportunities offered will enable teachers to receive college credit after successful completion of workshops. They will be given Internet web sites to refer to for more information, have access to miners in the area for discussing careers and how mining is done, and be involved in trips to seminars and conventions to get a more "hands-on" approach on the subject.

Caterpillar will provide educational materials, sponsor and conduct teacher-training workshops, participate in classroom instruction, help arrange for field trips, meet learning standards, and demonstrate Education for Careers (Technology and Vocational). The company will also partner with mines and quarries in this effort. A local mine already is helping with the project.

Other organizations have committed to help Caterpillar equip students and teachers with accurate, balanced mining education materials. The **SME**, Society for Mining, Metallurgy, & Exploration, **NFSI**, Near and Far Sciences for Illinois, **ICA**, Illinois Coal Association, **DCCA**, Department of Commerce and Community Affairs, and Women in Mining have volunteered to help.

To kick off this new outreach program, pilot teachers will be invited to the Caterpillar Decatur Plant for an educational welcome house. Miners, teachers, instructors, inspectors, and Caterpillar MCE Mining personnel will give a special tour of the Decatur facility as well as introduce the program.

Key Leader Focus



Tom Kearney

Andrew High School
tkearney@D230.ORG

I really believe in the teacher sharing ideas. At Andrew High School, one time per month a group of teachers of all subject areas get together for about 1 hour and just share general teacher/education ideas—ideas that can be used in any kind of classroom. It is really cool. I have learned a lot and think it has helped me become a better teacher. I will give you a example—I much prefer to create thinkers in my class instead of students that will memorize for a test and then forget the material sooner then they walk out of my class. One of the ideas we talked about was the idea of Journaling, and key words that create different levels and layers of thinking. I also now have my students read and then report on a newspaper article on something Biology related each Friday. They summarize the article then ask 4 "thinking kinds of questions". I love this kind of activity because my book is outdated and it gives me a chance to talk about "our real world and what is going on in science", and gets great discussions going. These kinds of things are very valuable for me. I have a whole folder of them!

I am involved in the SSSTN (South Suburban Science Teacher Network). Again a situation where Science teachers can come together show ideas/projects/technology, etc. This SSSTN was originally created by Rich Mitchell and the S4 group. My new DC—Kelly Ludwig—is now the chair for this group. At our meetings we ask the host school to maybe set up a small program—maybe a guest speaker, demo, experiment, etc, and then end up with a teacher share session. Everybody brings a "lesson" or some activity to share and pass out. Another example of the BaP concept.

My Animal Behavior class is a class without a book, so I really search and create my own lessons, assignments, activities, etc. My philosophy is that it is ok for me to attend a workshop, or be told about a great website—but if I can not apply it to my class so that I can actually work it in my class—then it isn't as valuable anymore. So I really like the kinds of websites or sharing where I can then actually use it in my class.

ABOUT TOM

I have been married for 28 years to Sue, and have 3 children and 3 grandaughters (which we spoil). I graduated from Proviso West HS in Hillside, Ill. in 1971 and went to the U of I in Champaign. I majored in PE, minored in Driver Ed and Bio, graduating in 1975. Played 1 year of football at U of I (had a neck injury that finished me there), and 4 years on the track team (lettered 2 years there). Got my first job at Stagg HS, spent 14 years there and transfered to Andrew HS (both schools in the same school district) where I am now teach Biology and a class called Animal Behavior. Have also taught Ecology. I am also the head Girls's track coach here—have coached track now 24 years and football for 7 years (got out of football in 1982). I love my job—don't think of it at all as a job. Love my classes. The Animal Behavior class does not have a book, so I can create and do a wide variety of what I think are cool and unique things for the class. I am a part of the IABT, ISTA, what we call the SSSTN (South Suburban Science Teachers Network), and a group that we call Teacher Sharing (at our school). With my children all being grown up and on their own—my wife and I like to travel a little in the summer and love to watch animals and nature.

Things that I think I do that might be a little different—first of all I have a lot of my ideas, assignments, projects, etc actually on my website www.tkearney.net I like to do what I call PBL (Problem based learning or Project based learning). My students create their own animal webpage (they become a expert in a animal, make zoo habitat pictures they scan into the webpage, use software called "paint" to create a behavioral enrichment, contact experts in the field, and then lastly create a crossword puzzle all on their website), track animals on satellite, make their own comic strip about a animal topic, and a variety of other online activities. In my Bio class I have the students make online magazine articles (the class has a general idea and then they create a magazine article about a topic of interest to them (example—my class is right now working on articles that pertain to Biotechnology), we did a "Environmental Info Commercial" on any kind of issue that is going on in our area, last year my class along with another teacher from Sandburg HS created a "Bioterrorism Survival Backpack", we worked on a project with plants that might have been found in the Tinley Park area by our earlier settlers and how they might have been used to treat disease, injury, or sickness. These are just a few of the different things I have done.

I have also worked on a "video" kind of projects. The "Environmental Info commercials" the "music videos" that are generated around some kind of theme. I really like this kind of activity. It is a chance to work with technology and creates a whole different way to do a project and for the students to get their ideas across in a different manner.

I also try to create what I call "online assignments" for each of the different units I teach in Biology. I create the assignment where the student goes out to different websites and then I have them answer questions at the site. A lot of interactive kinds of sites. We do it with DNA, Mitiosis/Meiosis, Genetics, History of Man, etc. My students can then learn by reading the materials in my outdated textbook, I create a discussion with the materials—love to draw pictures on the board to get the materials across, and then the online materials. The students can then learn from a variety of different styles. I also like to take the materials and then try to apply it to real world kinds of problems.

I am also involved with the IABT organization. Again another situation with sharing ideas, hands on kinds of workshops, etc. I think the idea of a "cool websites" is very good and I think it would be very helpful for teachers. I also like the idea of the "creative teachers websites" because again it is a teachers helping teachers idea. The idea of teachers maybe sharing great lessons also really is something I like also. I like it because it is "ready to be used ideas" and could be awesome. How about this for a idea—maybe science teachers getting together and work on a teaching unit complete with rubrics, worksheets, etc—then put them all together on a CD. Kind of like the ENRICH idea.

If any of you are interested in these or similar projects I would like to hear from you! You can reach me at tkearney@D230.ORG

Key Leader Focus is a feature in the Spectrum in which we introduce a Key Leader to our membership. If you are a Key Leader and would like to be featured in an upcoming Key Leader Focus, please contact Diana Dummitt at <ddummitt@uiuc.edu>. Articles can be in the form of an innovative classroom activity, an award, or a forum for sharing interests. Hope to hear from many of you!

Mini Ideas

Pennies in the Classroom
Guided Inquiry Laboratories©

Abour H. Cherif, Ph.D. and Stefanos Gialamas, Ph.D.

DeVry University Office of Dean of Academic Leadership

Jerry Adams, Ph.D.

Columbia College Chicago Science & Mathematics Department

Safety Procedures

Before working with a flame, boiling solution, and/or any chemicals, especially unknown solutions, there are certain safety procedures that should always be remembered and followed!

General Rules:

1. NEVER put your finger inside a test tube, beaker, plastic cup, or on the ends of a glass rod or dropper that has been dipped in an unknown chemical (liquid).

2. NEVER touch or taste any forms of chemicals (solid, liquid, or gas) unless you are instructed to do so by your teacher.

3. TO TEST FOR TEMPERATURE CHANGES without a thermometer, hold a test tube upright in your hand. You should be able to feel a change in temperature through the test tube.

4. To test for gas produced, NEVER BRING A TEST TUBE TO YOUR NOSE! For smelling vapors from a test tube, waft the odors toward you with your hands.

5. Wash your hands after conducting each lab experiment or investigation.

6. Handle all glassware, equipment, and reagents (both solid and liquid) carefully.

7. Use laboratory chemicals with special care: they might stain clothing or skin, and cause irritation, etc.

8. If someone spills a solution on themselves, inform your teacher and wash it immediately with water.

9. YOU MUST follow directions carefully and use caution with flame and boiling solutions.

10. Do you know where the fire extinguisher and other safety equipment are located in this lab/classroom?

Inquiry Lab I: So Many Tarnished Pennies

Read all the procedures before you start the lab experiment.

Inquiry Question:
1. What do you think would happen if you placed an old tarnished penny in a:

A. medicine cup 1/4 full of vinegar and stir for five minutes?

B. medicine cup 1/4 full of bleach and stir for five minutes?

C. medicine cup 1/4 full of 7-Up and stir for five minutes?

D. medicine cup 1/4 full of vitamin C and stir for five minutes?

E. medicine cup 1/4 full of hydrogen peroxide (3%) and stir for five minutes?

F. medicine cup 1/4 full of water and stir for five minutes?

G. medicine cup 1/4 full of vinegar and a pinch of salt and stir for five minutes?

H. medicine cup 1/4 full of bleach and a pinch of salt and stir for five minutes?

I. medicine cup 1/4 full of 7-Up and a pinch of salt and stir for five minutes?

J. medicine cup 1/4 full of vitamin C solution and a pinch of salt and stir for five minutes?

K. medicine cup 1/4 full of hydrogen peroxide (3%) and a pinch of salt and stir for five minutes?

L. medicine cup 1/4 full of water and a pinch of salt and stir for five minutes?

Write down all your predictions; then discuss them with the members of your group. Keep only those predictions that you couldn't eliminate logically and/ or you couldn't come to an agreement about. Use Table 1 to record your agreed upon predictions.

2. What Actually Happened?
Conduct an experiment to find out what actually happens in each case. Use Table 2 to record your observations. To conduct the experiment:

A. Label 6 cups as: vinegar, bleach, 7-Up, vitamin C, hydrogen peroxide, and water and place them on an undisturbed,flat surface.

B. Fill 1/4 of each cup with its corresponding solution.

C. Carefully place in each cup one old tarnished penny and stir.

D. Observe the cups every minute for 5 minutes. After 5 minutes, remove the pennies, dry them, and place them on a clean white paper.

E. Record your what actually happened in Table 2.

Repeat the procedures in 2-1 using new paper cups, a new set of old tarnished pennies, clean plastic medicine cups, and vinegar with salt, bleach with salt, 7-Up with salt, vitamin C with salt, hydrogen peroxide with salt, and water with salt. Record your observations of what actually happened in Table 2. Record additional observations on the other side of the page.

Table 1
Student's Predictions of What Will Happen

Tarnished Penny In	Predictions (What Will Happen)
Vinegar	
Bleach	
7-Up	
Vitamin C	
Hydrogen Peroxide	
Water	
Vinegar and salt	
Bleach and salt	
7-Up and salt	
Vitamin C and salt	
Hydrogen Peroxide and salt	
Water and salt	

Answer The Following Questions

1. How do your predictions agree or disagree with what actually happened?

2. What happened to the tarnished pennies when they were left in the solutions?

3. What happened to the pennies when they were left out to dry outside their corresponding solutions?

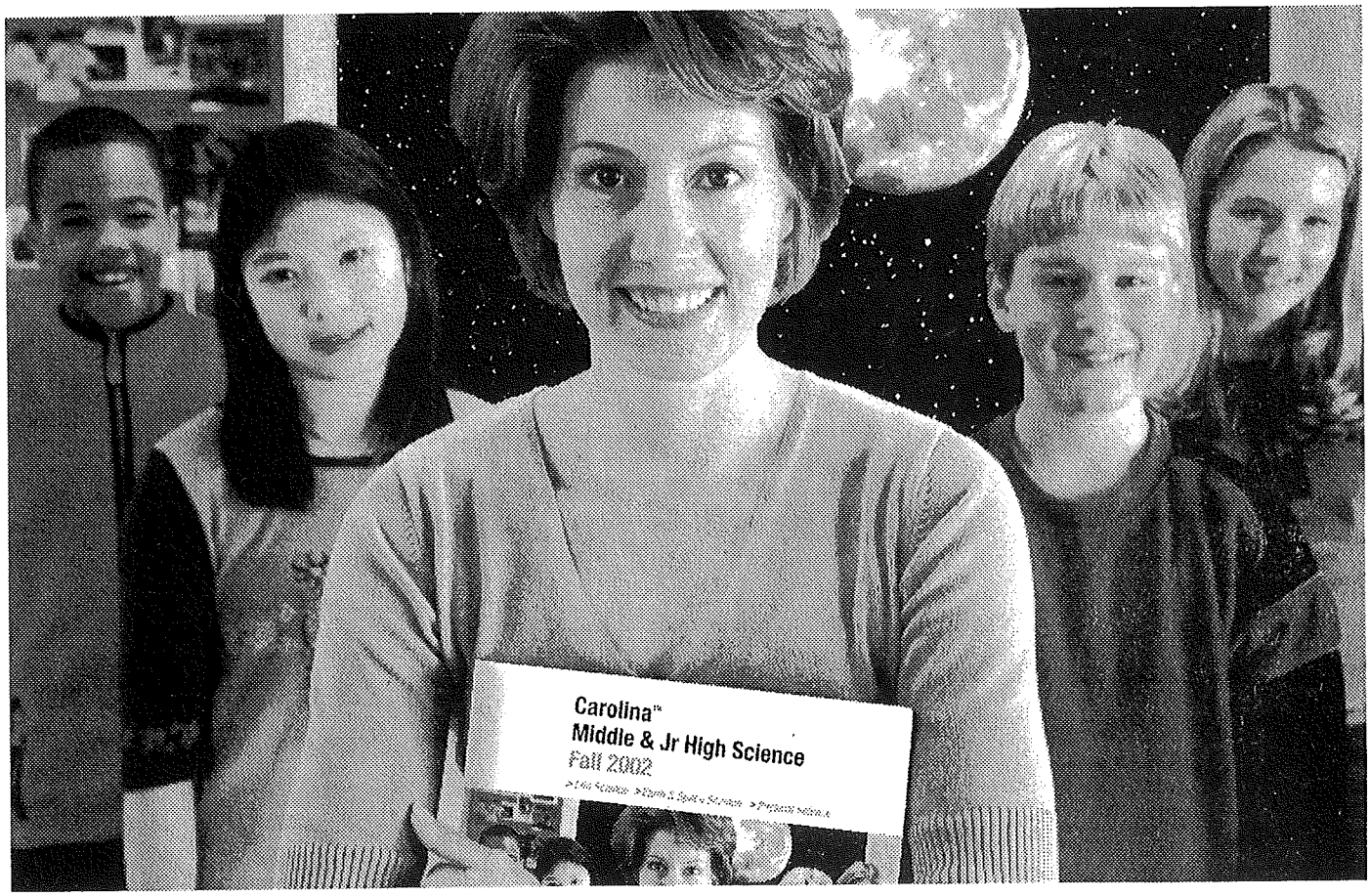
4. How long did each penny stay shiny and bright after you removed it from its solutions?

5. In which liquid or solution did the tarnished penny change its brightness, the first, the second, the third, and so on?

6. In which liquid or solution did the tarnished penny stay shiny and bright the longest period of time?

7. In which liquid or solution did the tarnished penny stay shiny and bright the shortest period of time?

Your classes may be in the middle. But we're bringing them front and center.



Introducing the Carolina Middle & Jr High Science Catalog. Sixty-eight pages full of science products arranged by discipline (life, earth and space, and physical sciences), with a special section for lab equipment. All selected to meet National Science Content Standards for middle schools.

Instead of wading through all-inclusive catalogs, you can now choose with confidence from the one science catalog that's focused exclusively on your middle school needs. You can also count on Carolina Biological Supply Company for the industry's most knowledgeable and helpful staff. So give yourself a break. And give your kids the best. Get your new Carolina Middle & Jr High Science Catalog now by calling 800.334.5551 or visit us online at **www.carolina.com**.

75 Years Serving Educators
CAROLINA
World-Class Support for Science & Math

8. In which liquid(s) or solution(s) did you see no significant change in the brightness or color of the penny?

9. In which liquid(s) or solution(s) did you see additional characteristics of chemical reactions? Identify these additional characteristics or behaviors.

10. What is the composition of American modern pennies?

11. What is the composition of the tarnish of the pennies that were used in the experiment?

12. What is the nature and the composition of each liquid or solution that was used in the experiment? (In terms of acid, base, neutral, salt, chemical composition).

13. What do you think would happen if you placed those pennies (which developed a darker color) into the solutions in which the pennies lost their tarnish? Write down your predictions and then conduct the experiment to find out what actually happens.

14. What do you think would happen if you were to place those pennies (which lost their tarnish into the solutions in which the pennies developed a darker color? Write down your predictions and then conduct the experiment to find out what actually happens.

15. Why and how did some pennies lose their tarnish when placed in their corresponding solution?

Table 2
Student's Observations of What Actually Happened

Tarnished Penny In	What Actually Happened
Vinegar	
Bleach	
7-Up	
Vitamin C	
Hydrogen Peroxide	
Water	
Vinegar and salt	
Bleach and salt	
7-Up and salt	
Vitamin C and salt	
Hydrogen Peroxide and salt	
Water and salt	
Dilute Hydrochloric Acid	

Table 3
Student's Observations of What Actually Happened To The Color of the Pennies

Tarnished Penny in Medicine Cup With	Stays The Same	Developed Darker Color		Becomes Cleaner, Brighter and		
		Dark	V. Dark	Dull	Shiny	V. Shiny
Vinegar						
Bleach						
7-Up						
Vitamin C						
Hydrogen peroxide						
Water						
Vinegar and salt						
Bleach and salt						
7-Up and salt						
Vitamin C and salt						
Hydrogen peroxide & salt						
Water and salt						
Dilute hydrochloric acid						

Table 4
Student's Predictions

What Will Happen If	Predictions (What Will Happen)
What will happen if those pennies which developed a darker color were placed in the solutions in which the pennies lost their tarnish?	
What will happen if those pennies which lost their tarnish were placed in the solutions in which the pennies developed a darker color?	

Table 5
Student's Observations of What Actually Happened

Situation	What Actually Happened
Placing those pennies which developed darker color in the solutions in which the pennies lost their tarnish.	
Placing those pennies which lost their tarnish in the solutions in which the pennies developed darker color.	

Name(s): _____ Date: _____

Table 6
Identified Factors, Investigated Questions, & Student Hypotheses

Potential Factor	Investigated Question	Hypothesis

16. Why did some of the tarnished pennies fail to loose their tarnish when placed in their corresponding solutions?

17. Why and how did some of the tarnished pennies developed a darker color when placed in their corresponding solutions?

18. What role did the salt play in how some pennies changed their appearance?

19. Did the salt play the same role in all the liquids that it was added to?

20. What conclusions can you make from your findings?

Inquiry Lab Investigation II: So Many Tarnished Pennies But So Little Time To Clean

1. Identify a maximum of 6 factors that might affect the outcomes of the experiments that you have just successfully completed. Use Table 6 for your answers.

2. Make an investigative question involving each of the 6 identified factors. List your questions in Table 6.

3. Hypothesize how each potential factor could affect the outcomes of the experiments that you have just successfully completed. Use Table 3 for your answers.

4. Design and conduct an experiment to investigate at least 3 hypotheses and to answer each of your corresponding investigative questions.

5. Using graph paper and colored pencils, illustrate you findings on a line graph for each experiment.

Articles

Students Write Biology Books

Charles L. Siegel

5752 South Kimbark Avenue
Chicago, IL 60637

Writing projects actively involve high school students and they help in the development of a variety of skills. Projects spark enthusiasm and focus the students' attention on the important facts of a subject. Projects help them to organize and express their thoughts. This is as true in a high school biology class as in social studies or English. Following is a description of a very successful book writing project that I have used for several years in biology classes.

Project Goals

- To provide students with a new academic experience.
- To provide an alternative learning opportunity.
- To increase student self esteem through positive reinforcement and recognition.
- To help students acquire skills gained through cooperative learning.
- To do in-depth research on a biological subject.
- To organize a complex writing project.
- To develop an orderly academic process which requires the passage of one stage before progressing to the next.
- To improve research, outlining, and writing skills.
- To produce a high quality, original product in a short period of time.

Project Overview

During the project students worked in small groups to research, organize, and write short books on a biological subject. The books were aimed at any level from pre-school to high school. It was an intensive group project designed to last three weeks. By keeping the duration short it was easier to maintain student enthusiasm and motivation than it would be if the project had stretched out over an entire semester. The students became very involved in and excited about the project.

Each time I conducted the project, I relocated my classes to the library so they would have easy access to a variety of research material. Our librarians have always liked the library put to good use, thus they were eager to cooperate and were very willing to help the students. What students could not find in the school library they could usually find in one of our local public libraries.

Project Details

When designing this project, special consideration was given to the following as the students began to get actively involved.

Assignment Materials — these included instructions, a group signup form, a topic list, and a daily work plan. (These items will be found at the end of the article.) A teacher who wants to do this project can use these items as they are or adjust them for special class characteristics. For instance, the topic list can be altered to match the specific subjects being covered in class.

Book writing teams — Writing teams were made up of 3-4 students. This facilitated group interaction and helped keep groups on task. The teams were arranged jointly by the teacher and the students. If students alone chose their teams, there was always the possibility that feelings could be hurt. Because of the considerable amount of work outside the classroom, it was helpful to encourage students who lived close to each other to work together. This helped to ease some of the transportation difficulties some students faced. Thus it was most effective to choose teams in consultation with the students.

6. How does the result from each experiment of investigative questions agree or disagree with your corresponding hypothesis?

7. What scientific term do we use to describe the factors that effect the results of a given experiment?

8. What scientific term do we use to describe the factors that do not effect the results of a given experiment?

9. What conclusions can you make from your findings?

Coins Throughout History

Answer the Following Questions:

1. When and where did the United States first mint its coin currency?

2. Which coin was minted first and from what kind of metal?

3. What was printed on the two faces of the first coin made in the USA?

4. Do these prints still exist?

5. List the names of all the people whose likenesses are on today's most common U.S. coins.(Sacajawea $1.00, John F. Kennedy $.50, George Washington $.25, Franklin D. Roosevelt $.10, Thomas Jefferson $.05, and Abraham Lincoln $.01).

6. Were all these people presidents of the United States? If not, who were they?

7. Why were these people chosen to be on a coin? Who would you choose and why?

Coin	Student's Prediction	Actual Make Up (Composition)
Quarter		
Dime		
Nickel		
Penny		

Coin	Prediction	What Actually Happened
Quarter		
Dime		
Nickel		
Penny		

Table -2-
Coins and Corrosion

Metal	Corrosion by	Color Change
Iron	Water vapor & Oxygen	From Dark-silver-gray To Reddish brown
Nickel	Oxygen	From Light-silver-gray To Pale blue
Copper	Carbon dioxide Water vapor , & Hydrogen sulfide	From Reddish-orange To Green
Silver	Hydrogen sulfide	From Silver To Black

Homework Assignment

1. Prepare four hard-boiled eggs and four different clean, shiny coins (a quarter, dime, nickel and penny).

2. Peel the four eggs, and then push the first coin half way into the white of the first egg; push the second coin into the white of the second egg, and so on.

3. Wait about 10-15 minutes before removing each coin. Record your observations.

4. Compare your observations and findings to your predictions.

5. Compare your findings to the findings of the other students in your classroom.

6. What does the white part of an egg contain?

7. What is the chemical make up (composition) of each coin you have used in the experiment?

8. Why do you think some coins change their color when they are pushed into the white part of an egg?

9. What is the effect of sulfur compounds on silver?

10. What useful application can you draw from your findings?

For Teachers Only:

The egg white contains sulfur, and silver reacts with many sulfur compounds.

Coins and Corrosion

Coins can be used to introduce corrosion in the classroom. Most students have seen rust and are familiar with the role water plays in causing rust. Most of us have seen and probably dropped coins into water fountains. Why are these coins not rusted? Rust (iron oxide) is the most common form of corrosion that is caused by the reaction of iron and water.

Oxygen (O_2), carbon dioxide (CO_2), hydrogen sulfide (H_2S), and water vapor (H_2O) are known to cause gradual wearing away of some metals, and/or gradual changing of the original color of some other metals. These gases react chemically with some materials and cause distinct physical changes. These processes of change are called corrosion. For example, nickel is corroded by oxygen, copper is corroded by carbon dioxide, water vapor, and/or hydrogen sulfide, and silver is corroded or tarnished by hydrogen sulfide. Ask students to predict what would happened if they exposed the four different coins to oxygen, carbon dioxide, water vapor, and/or hydrogen sulfide. Collect the students' predictions and discuss them with the students. Ask students to design their own experiments that enable them to examine the effects of gases such as oxygen (O_2), carbon dioxide (CO_2), hydrogen sulfide (H_2S), and water vapor (H_2O) on U.S. coins. When copper reacts with carbon dioxide, water, or hydrogen sulfide, for example, its color changes from reddish-orange to green. When silver reacts with hydrogen sulfide, its color changes to black.

Most U.S coins, both old and new, are not made of single, pure elements; instead, they are mixtures of metals called alloys. Alloys are often stronger than pure metals, and can also display other desirable characteristics (like the color and ease of polishing of brass, a combination of copper and zinc). Alloys are not compounds, because the proportions of the elements in the mixture can be varied at will, producing an infinite variety of possible mixtures. Alloys used in U.S. coins (like the copper/nickel alloy used in nickels and the outer shells of dimes, quarters and half dollars) are selected for their toughness and resistance to corrosion, increasing the useful life of the coins.

U.S. Coin Compositions

Pennies

1943 only - steel
1944 and 1945 - copper (shell case)/zinc/tin (bronze).
All other dates to 1982- standard copper/zinc/tin (bronze).
1982 and after - pure copper covering pure zinc.

Nickels

1942 through 1945 - 30% silver, 60% copper, 10% zinc. All other dates - standard copper/nickel alloy.

Dimes

Before 1965 - 91 % fine silver.
1965 and after - copper/nickel on copper (sandwich construct).

Quarters

Before 1965 - 91 % fine silver.
1965 and after - copper/nickel on copper (sandwich construct).

Half Dollars

Before 1965 - 91 % fine silver.
1965 and after - copper/nickel on copper (sandwich construct).

Dollars

Before 1935 - 91 % fine silver.
1971 to 1999 - copper/nickel on copper (sandwich construct).
2000 and after - copper/zinc (brass)

Bibliography

Cherif, A. and M. Wideen (1992). The Problems of Transition From High School to University Science. *B.C. Catalyst.* 36(1): 10-18.

Cherif, Abour (2001). Are You Attracted to Me: Discovering Magnets and Magnetism Lab Investigation. *Spectrum*, 27(2):31-35.

Cherif, Abour H. (1993). *Relevant Inquiry.* The Science Teacher, 60(9): 26-28.

Cherif, Abour H. (1993). Science Education: What's It All About? *Illinois School Research and Development*, 29(3): 12-17.

Cherif, A. Gialamas, S., and Simos, E. (1997). Science and Mathematics: Integrating The Teaching of Science, Math, and Social Studies In Relevant Context. *Spectrum*, 23(3); 20-28.

Dunlop, Michael (1990). Promoting Critical Thinking in the Classroom. *B.C. Catalyst.* 34(1): 14-17.

Freidel, Frank. (1994). *The Presidents of the United States of America.* Washington, D.C: White House Historical Association

Friedl, Alfred (1991). *Teaching Science To Children: An Integrated Approach.* New York: McGraw-Hill, Inc.

Gialamas, Stefanos (1997). *Fundamentals of Mathematics.* Chicago: Parxis and Education Press.

Hughes, Roderick P. (1995). *Fell's United States Coin Book.* Hollywood, FL: Lifetime Book.

Massey, J. Earl (1968). *American's Money: The Story of Our Coins and Currency.* New York: Thomas Y. Crowell Company.

McWhorter and Evans, Alvis J. (19994). *Basic Electronics.* Richardson, Texas: Master Publisher, Inc.

Miller, Charles D., Verm E. Heeren, and E. John Hornsby, Jr. (1990). *Mathematical Ideas.* New York: Harper Collins publishers.

Mims, Forrest M. (1993). *Getting Started In Electroincs.* U.S.A.: Forrest M. Mims, III Publisher.

Moore, Randy (1990). What's Wrong with Science Education & How Do We Fix It? *The American Biology Teacher*, 52(6), 330-337.

Reed, Mort (1972). *Encyclopedia of US Coins.* Chicago: Henry Regnery Company.

Rosenhein, Laurence D. (2001). The Household Chemistry of Cleaning Pennies. *Journal of Chemical Education*, 78(4): 513-515.

Rothenberger, Otis S. and Webb, James W. (2000). *Liberal Arts Chemistry Worktext.* Dubuque, Iowa: Kendall/ Hunt Publishing Company.

Smith, Karl J. (1991). *The Nature of Mathematics.* Pacific Grove, CA: Brooks/Cole Publishing Company.

Staniforth, Sue and Abour Cherif. (1986). Science Education and Society: Call for a Holistic Approach. *Elementary Science Network*, : 2-3.

Taylor, Beverly, James Poth, and Dwight Portman (1995). *Teaching Physics with Toys: Activities For Grade K-9.* New York: TAB Books.

_____ (1975). *Coins: An Illustrated History 665B.C. to Present Day.* New York: Metheun Publisher.

Awards

Attention Environmental Teachers!

Melinda Gray Ardia
Environmental Foundation, Ltd.
PO Box 621
Skaneateles, NY 13152
607-227-0997
mgaef@clarityconnect.com

K-12 teachers worldwide are invited to apply for grants of $1000 to develop or implement environmental curricula that integrates hands-on ecology exercises into the classroom. Curricula that encourage the integration of multiple disciplines (such as integrating art and science), and which include cooperative work with multiple school districts will be given special consideration.

Deadline 4/4/2003.

Info at www.mgaef.org.

Have you Applied for an ISTA Sponsored Award yet? Why Not?

If you are a 7-12 Teacher what could you do with a $10,000 check made out to you? See page 7.

If you a K-8 teacher, how would you and your team at school use an Apple Science Mobile Lab with 10 iBook computers? See page 16.

If you are a high school science teacher, how about $5,000 from the Exxon Mobil Foundation to be used at youir discretion? Applications will be posted by April 1 on the ISTA website.

Apply today!
What are you waiting for?
More information on each of these awards on the ISTA website:
www.ista-il.org

Opportunities

$10,000 Grants Available for High School Invention Teams

The Lemelson-MIT Program for Invention and Innovation will provide 10 grants up to $10,000 each to high school "InvenTeams" in October 2003. These grants are designed to foster inventiveness in high school students. Special care will be taken to select teams nationwide that reflect a range of school settings, student populations, and project proposals.

Details:

- Application process is two tiered, with deadlines May 9 and September 24.
- Grants will be awarded to teams for the purpose of inventing something of value for their schools or local communities.
- InvenTeams - composed of students, teachers and mentors from industry - can be an entire class or an extracurricular activity.
- Applications must be completed by high school science teachers.
- Grant period will be from October 2003 to April 2004.

Teachers interested in receiving a brochure with application materials should send their contact information to Kariuki Thande at kariukit@mit.edu, or download the information from http://mit.edu/invent/www/InvenTeam/.

New Zealand: An Adventure in Nature

July 26th- August 11th 2003

Join fellow educators from throughout the state and around the country, as we venture on the teaching expedition of a lifetime. Hosted by Dr. Marylin Lisowski, ISTA President, your journeys in New Zealand will be filled with real life encounters of classroom content and opportunities to network with educators from a variety of different teaching backgrounds. New Zealand is a geologically young island nation with a high degree of endemism, whose biota developed in the absence of human activity. As a result, the past thousand years or so have seen changes on a scale virtually unmatched around the world. This study tour will immerse educators in a rich program that will foster an appreciation of the social, cultural and environmental issues. It will also be an opportunity to tour the country and enjoy the stunning physical beauty for which New Zealand is justly famous.

The goal of this program is to provide participants with an understanding of New Zealand's educational, environmental, cultural and social issues. It will provide a range of differing perspectives on issues from practitioners in a wide variety of fields.

For full information packet and details email Dr. Marylin Lisowski at cfmfl@eiu.edu or call at 217-581-7830. You may also contact Sandy Doss at 800-396-0763 or sdoss@holbrooktravel.com

WWWWWWWW #8

FOR A WEEK @ UIC, WOW!

With Dewayne Lieneman, Lee Marek, Bob Lewis & Dr. Wade Freeman

http://www.ncusd203.org/north/depts/scie!nce/chem/marek/

Lee Marek
Naperville North High School
899 N. Mill St.
Naperville, IL 60540
Phone 630-420-6513
Lmarek@aol.com or
Lmarek@fnal.gov

If you think you can learn a lot on the WWW, try the WWWWWWWW! Why eight W's? Because we're calling next summer's University of Illinois at Chicago [UIC] Chemistry Institute for high school/junior high teachers the "Who, What, Where, Workshop Week With Weird Science and Wade. This LATEST IMPROVED version of "A WEEK WITH WEIRD SCIENCE & WADE" comes back by popular demand, which is so strong that it will be offered twice (that's 16 W's): full-time for the week July 21-25, 2003 and then again full-time July 28-August 1, 2003.

The course combines demos, labs, computers, make-and-takes, and lectures in chemistry. It's also called Chemistry 572, Teaching Methods in Chemistry, and carries three semester-hours of graduate credit in chemistry. It will have different content/ material from last year and may be repeated for additional credit! Summer '03 topics will revolve around the history of science/chemistry THAT CAN BE USED IN THE CHEMISTRY CLASSROOM— we will have labs, demos, computer "stuff" and content that reflect this theme and others. We will of course again have lots of build-it-yourself stuff!

WEIRD SCIENCE is a series of short, easy and sometimes "weird" demonstrations, labs and ideas on chemical and physical phenomena, designed for teachers of the chemistry/ physical science, primarily at middle school and high school levels. The program presents novel demonstrations, labs, make &a! mp; takes, and sharing guaranteed to hook kids and adults into thinking about science concepts. As Hubert Alyea said "Surprise, humor and truth are the servants of a good lecture." WEIRD SCIENCE entertains while it educates— it is infotainment. It is our job to awaken our student's desire to learn—to keep the students mentally coming back. You cannot communicate with people who are not mentally present. If you want "presence" you have to capture attention.

WEIRD SCIENCE provides tools to capture attention. To keep us at equilibrium we have Dr. Wade Freeman author of the much acclaimed college text *Chemistry: Science of Change*.

In a recent survey published in School Science & Mathematics on "Secondary Science Teacher's Needs," teachers ranked methods to motivate students as their number one concern and identification of sources of peer tested instructional materials as a hi!gh priority.

WEIRD SCIENCE presentations provide both.

For details, contact:
Wade Freeman
Univ. of IL. at Chicago
Chem. Dept.
845 W. Taylor St.
Chicago, IL. 60607
phone; (312) 996-3161
e-mail:
Wfreeman@uic.edu

Free Distance Learning Programs Available From NASA

Kevin Kendall

Educator in Residence
NASA Center for Distance Learning
k.g.kendall@larc.nasa.cov

The NASA Center for Distance Learning (**http://scifiles.larc.nasa.gov**) offers instructional distance learning programs that are research- and standards-based, support the national mathematics, science, and technology standards, and use NASA programs, facilities, and people to establish a "connection" between the math, science, and technology concepts taught in the classroom and the math, science, and technology used every day by NASA researchers. The programs listed below are free and are not copyrighted. Broadcast and off air rights are unlimited and granted in perpetuity. However, educators are required to register for the NASA SCI Files™ and NASA CONNECT™. In an attempt to provide the widest dissemination and use, educators are encouraged to copy and share the lesson guides with their colleagues.

NASA's Kids Science News Network™ (KSNN)

URL: English: http://ksnn.larc.nasa.gov
URL: Spanish: http://ksnnsp.larc.nasa.gov

NASA's Kids Science News Network™ (KSNN) is a research and standards-based, award winning program that (1) uses web- and video-based technology, (2) targets K-2 and 3-5 audiences and (3) is available in both English and Spanish. KSNN explains the everyday phenomena of our world, corrects misconceptions, and answers frequently asked questions about the Earth and beyond. KSNN begins with a 1-minute "streaming" video newsbreak from the KSNN web site and offers a follow-up written explanation, a hands-on activity, related print and electronic resources, and a computer-graded quiz.

The NASA Center for Distance Learning is the home for some of the Agency's most exciting and inspirational K-12 educational programs. Created in 1996 and located at the NASA Langley Research Center's Office of Education, the NASA Center for Distance Learning is committed to enhancing and enriching the teaching and learning of mathematics, science, and technology. The Center offers a variety of distance learning programs that (1) combine the power and strength of several educational technologies to inspire educators and students in grades and (2) help NASA inspire the next generation of explorers. Reach us on the web at **http://dlcenter.larc.nasa.gov**.

NASA LIVE™

URL: http://live.larc.nasa.gov

NASA LIVE™ (*Learning through Interactive Videoconferencing Experiences)* represents a new dimension in education and instruction. NASA LIVE™ is a series of videoconferencing programs that (1) are designed to extend and strengthen NASA's commitment to educational excellence at the K-12 level; (2) provide opportunities for learning, instructional enrichment, and professional development for students and educators by engaging them in an interactive, virtual environment with NASA researchers; and (3) communicate NASA knowledge, foster collaboration, and the exchange of ideas. This program links students and educators to NASA in an interactive, virtual setting. Students and educators across the nation will have the unique experience of visiting NASA experts via videoconferencing without the inconveniences and expenses associated with extended travel.

NASA Resources for Educators

Additional resources for NASA-related materials to support educators are provided on the following Web sites:

http://education.nasa.gov

http://www.nasa.gov/enterprises.html

http://edu.larc.nasa.gov

http://spacelink.nasa.gov

http://quest.nasa.gov

http://NASAexplorers.com/

NASA SCIence Files™

URL: http://sciencefiles.larc.nasa.gov

The NASA SCIence Files™ is a research and standards-based, Emmy® award-winning series of 60-minute instructional programs for students in grades 3-5. Programs are designed to introduce students to NASA; integrate mathematics, science, and technology through the use of Problem-Based Learning (PBL), scientific inquiry, and the scientific method; to motivate students to become critical thinkers and active problem solvers; and to introduce students to careers requiring proficiency in math, science, and technology. The series includes an instructional broadcast, a companion educator's guide, an interactive web site featuring a PBL activity, plus a wealth of instructional resources. The NASA SCIence Files™ airs nationally on Cable Access, ITV, and PBS-member stations and can be taped for later use.

NASA CONNECT™

URL: http://connect.larc.nasa.gov

NASA CONNECT™ is a research- and standards-based, Emmy® award-winning series of mathematics-focused, instructional programs for students in grades 6 - 8. The series includes a 30-minute instructional broadcast, a companion lesson guide, and an interactive web-based application. Programs are designed to establish a connection between the mathematics, science, and technology concepts taught in the classroom to those used every day by NASA researchers. The lesson guide, containing a hands-on activity, and the web-based application reinforce and extend the objectives presented in the program. NASA CONNECT™ airs nationally on Cable Access, ITV, and PBS-member stations and can be taped for later use.

Television Broadcasts

You can get the television broadcasts of the NASA SCI Files™ and NASA CONNECT™ programs by:

- checking your local PBS station listings for broadcast times;
- viewing on the Web through NASA's Learning Technologies Channel

http://quest.arc.nasa.gov/ltc/special/scifiles/scifiles.html

http://quest.arc.nasa.gov/ltc/special/connect/index.html);

- obtaining video copies from the NASA Educator Resource Center in your state

http://education.nasa.gov/ercn

and from NASA Central Operation of Resources for Educators,

http://core.nasa.gov.

Contact NASA CORE for a catalog of multimedia educational materials at NASA CORE, 15181 State Route 58 South, Oberlin, OH 44074, phone: (440) 775-1400, fax: (440) 775-1460,
E-mail: nasaco@leeca.org

Both the NASA Science Files™ and NASA CONNECT™ are closed captioned and their corresponding web sites are 508 compliant.

As part of its program of continuous improvement, NASA's Center for Distance Learning is always looking for feedback from educators. If you do not have internet access, want to register for a program, or want to speak with someone directly about how NASA can help you implement programs in your school, please call (757) 864-6100.

Do you have a successful unit for LinkingScience with Math, the Fine Arts, Language Arts, History, or other disciplines?

Please share your great idea with your colleagues by submitting it to the Spectrum!

Deadline: June 1, 2003

Are you a Shutterbug?

Why not share your photos with us for publication in the Spectrum? Whether they are photos taken at a recent workshop, in your classroom, or an outdoors scene, as long as they are high contast color or black and white, send them in! (Be sure to get clearance to publish from the subjects.)

Are you a current member?

Check the label on the back cover. If it says Dues to 1/2003 this will be the last Spectrum you will receive. Don't Miss Out! Renew today!

ISTA Membership Categories

Option 1: Full Membership Dues- $35.00 Full Membership entitles individuals interested in Illinois science education to the following benefits: a one year subscription to the SPECTRUM, and ISTA ACTION; notification of regional conferences and meetings; invitations to science issues activities; a reduced registration fee for the Annual ISTA Conference; voting privileges; and the opportunity to hold an ISTA Officer position.

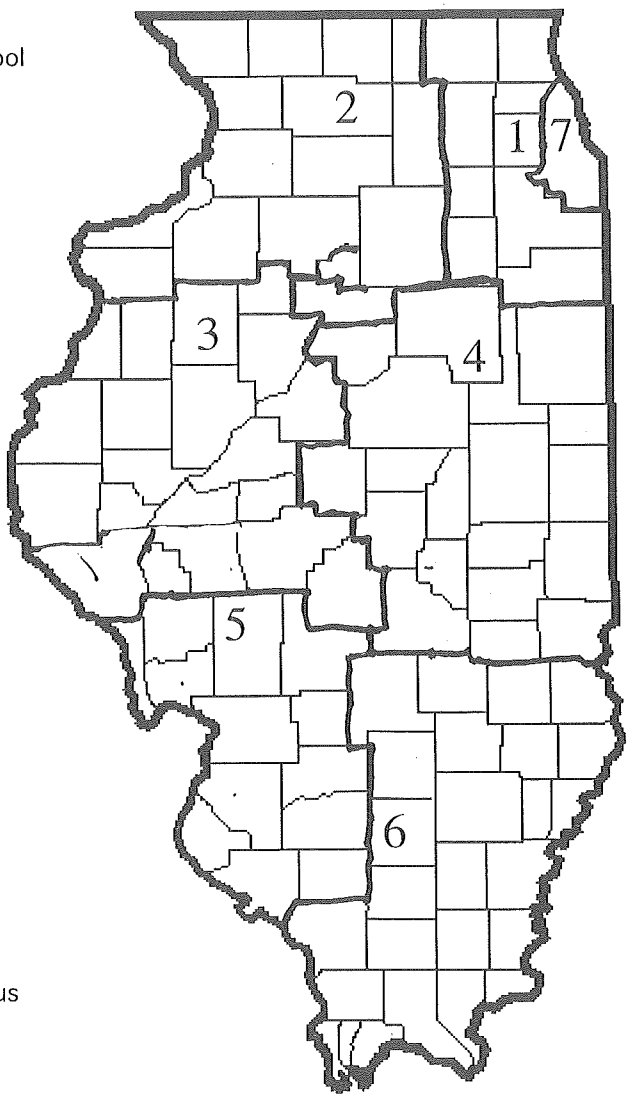
Option 2: Two-Year Full Membership Dues- $60.00 — Two-Year Full Membership entitles member to Full Membership benefits for two years.

Option 3: Five Year Full Membership Dues- $125.00 — Five Year Full Membership entitles member to Full Membership benefits for five years.

Option 4: Associate Membership Dues- $15.00 — For full-time students and to individuals who are on retirement status. Entitles member to Full Membership benefits, with the exception of voting privileges and the opportunity to run for office.

Option 5: Institutional Membership - $75.00 — Institutional Membership entitles the member institution, for a period of one year, to two subscriptions to the SPECTRUM and ISTA ACTION; notification of regional conferences and meetings; invitations to science issues activities; and a reduced registration fee for the Annual ISTA Conference for a maximum of three members of the institution.

ISTA REGIONAL DIRECTORS



REGION II
Larry McPheron
Boylan Catholic High School
Rockford
lamcp@hotmail.com

Dennis Moore
John Deere M.S.
Moline
Travelers99@aol.com

REGION III
Jill Carter
Pekin Comm. H.S.
jcarter@pekinhigh.net

Donald Powers
Curriculum & Instruction
Western Illinois University
DT-Powers@wiu.edu

REGION V
Pam Abbott
RCUSD #1
Roxana
pabbott@madison.k12.il.us

Liza Basden
Highland High School
lbasden@highlandmadison.k12.il.us

REGION VI
Wesley Heyduck
Fairfield Community High School
wheyduck@fchs.wayne.k12.il.us

Jacqueline Meadows
Egyptian Elementary School
Tamms
wbdoodle@yahoo.com

REGION VII
Jim Pudlewski
Chicago
jpudlewski@aol.com

Nancy Grim Hunter
Chicago State University
n-grim@csu.edu

REGION I
Richard Mitchell
Valley View Dist. 365U
Romeoville
mitchellrc@vvsd.org

Anna Zuccarini
Crone Middle School
Naperville
azuccarini@wideopenwest.com

REGION IV
Rebecca Hall
Prairie Flowers
University of Illinois, Urbana/
Champaign
hall@life.uiuc.edu

Susan Golden
Dist. 161
Decatur
sgolden@dps61.org

ILLINOIS SCIENCE TEACHERS ASSOCIATION
2003 MEMBERSHIP APPLICATION

PLEASE PRINT OR TYPE AND FILL OUT COMPLETE FORM

Name	Day phone
Affiliation (School or Organization)	Home phone
Address of above organization	Home address
City, State, Zip Code	City, State, Zip Code
e-mail and/or FAX	County in Illinois

CHECK APPLICABLE CATEGORIES IN EACH COLUMN

o Elementary Level	o Elementary Sciences	o Teacher
o Middle Level	o Life Science/Biology	o Administrator
o Senior High School	o Physical Sciences	o Coordinator
o Community College	o Environmental Science	o Librarian
o College/University	o Earth Science/Geology	o Student
o Industry/Business/ Government	o Chemistry	o Retired
	o Physics	
o Other_____	o General Science	
	o Integrated Science	
	o Other_____	

Send form and check or money order made payable to Illinois Science Teachers Association to: Diana Dummitt, ISTA Membership, College of Education, University of Illinois, 1310 S. Sixth Street, Champaign, IL 61820

MEMBERSHIP OPTION (See page 48)_____

AMOUNT ENCLOSED_____

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

********AUTO**3-DIGIT 625 90 13
DUES TO 1/2005
GARY L. BUTLER
UNIV OF ILL AT SPRINGFIELD
420 S TOWER RD
DAWSON IL 62520-3392