

**Kansas Association
of
Biology Teachers**

Volume 39 Number 1 - February 1998

Calendar & Activities

Please mail, e-mail or phone meeting dates and other items of interest to biology teachers to John Wachholz, 2311 Applewood Lane, Salina, Kansas 67401-

Date	Event
February 21, 1998	KABT Board Meeting - Wamego
April 16-19, 1998.....	NSTA National Convention - Las Vegas
May 1-3, 1998.....	Kansas Ornithological Meeting, Medicine Lodge
May 8-9, 1998.....	Spring Meeting & Field Trip - Kanopolis Reservoir Area
September 19, 1998 Tentative	KABT Fall Meeting - Wichita
October 9-11, 1998	KOS Fall Meeting - Lawrence.
November 4-7, 1998.....	NABT National Convention - Reno, Nevada
October 27-30, 1999.....	NABT National Convention - Fort Worth, Texas
March 25-28, 1999	NSTA National Convention - Boston



Brad Williamson who teaches at Olathe East High School is our regional representative to NABT. Contact Brad via Fax at (913) 780-7137 or mail at Olathe East High School, .

Your membership **expiration date** can be found on your mailing label. All dues are now payable on September 1st of each year. If an envelope was enclosed with your newsletter your membership has expired. Please use the envelope to mail your dues and the other information requested. The membership list was last updated on **2/14/1998**. If you sent dues in after that date they had not been recorded before the list for

Check Out The
KABT Web Site
<http://www.midkan.com/kabt>
Send comments to:
jwachholz@midkan.com
NABT Web Site
<http://www.nabt.org>



Where Has Your Newsletter BEEN?

This has been a busy year for your editor. Looking over my computer files it seems that I have exhausted most of the material I have for a newsletter. What is really needed is more materials for publication from our membership. If you have any article or information for our newsletter please send it to me. Thanks in advance.

Publishing Dates For Newsletter

The newsletter is published during the months of September, November, February and April. Manuscripts must reach the editor by the 15th day of the previous month. The KABT Newsletter includes abbreviated minutes of the official meetings, announcements of future activities, brief news notes, and other brief items of interest to biology teachers. Send your contributions to John Wachholz, Editor, 2311 Applewood Lane, Salina, KS 67401 (913) 825-7742. You may send you information for the newsletter to jwachholz@midkan.com.

Newsletter & Journal Information Needed

Articles are needed for the newsletter. Please help with the newsletter. The most helpful occurrence would be for all individuals to send information to the newsletter. Send it via internet to jwachholz@midkan.com or on a disk. If you send it on a disk, any format is acceptable. Your help is appreciated. (PC, Mac, Apple - just send it!) Articles for the Kansas Biology Teacher should be sent to John Richard Schrock, editor KBT, Division of Biology, Box 50, Emporia State University, Emporia, KS 66801-5087. Keep your dues up to date so you will continue to receive the Kansas Biology Teacher.

Outstanding Biology Student Certificates

These are available for students who you feel have completed a biology course under you and have shown outstanding achievement. Send your name and address to KABT Student Certificates, 2311 Applewood Lane, Salina, KS 67401-3707.

Please use these certificates as valuable awards for outstanding students.

NABT Contact Information

Address: 11250 Roger Bacon Drive #19
Reston, VA 22090-5202

Web Site:..... <http://www.nabt.org>

Phones: 703-471-1134; 800-406-0775

Fax: 703-435-5582

E-mail: NABTer@aol.com

1998 Spring Field Trip

KABT Web Site

<http://www.midkan.com/kabt>

John Wachholz, Web Master

Kanapolis & Surrounding Areas

Our 1998 Spring Field Trip will be on Friday, May 8th and Saturday, May 9th. It will be possible to get home on Saturday evening so you can celebrate Mother's Day on Sunday. We will gather on Friday evening, camp and spend the day Saturday exploring the Kanapolis Reservoir area of Kansas. Brad Williamson and John Wachholz, will be the leaders. Complete information and details will be in the April newsletter.

Some of the tentatively planned activities are as follows:

- Collect Lichens, Ferns, Hydra, Liverworts & Planaria
- Explore Caves-Longest Sandstone Caves In Kansas
- Observe Buckeye Cemetery (Sternberg's Burial Site)
- See the Snake Intaglio
- Collect some leaf fossils
- Observe Thompson, Alum and Clear Creeks Areas
- Bird Watching
- Etc.....

Mark your calendar and remember to look for details in the April newsletter. Hope to see you for an enjoyable evening and day.

KABT Spring Field Trip '97

Brad Williamson

May 9,10,11, Belvidere, KS, Leader: Stan Roth

Below is a personal account of the 1997 KABT spring field trip--not an official account .

Pre-field trip:

Two years ago, several KABT officers met at Olathe East High and established long term plans for meetings and field trips. Stan was at that meeting and agreed to lead a trip to the Gyp Hills and surrounding area. I personally was ecstatic. Stan's work with bats (chiroptera), caves, and general field work in this particular part of the state is legendary. TMHe has contributed a great deal to the general knowledge of Kansas flora and fauna with his extensive work. For Stan to share something so dear to him he did have a condition. That is that we would agree not to go back to these sites with our students or on our own. These sites are very sensitive, biologically and on private land. Stan has worked years establishing good landowner relationships and didn't want to see that jeopardized. Any one who has obtained permission to a great fishing spot knows just how Stan feels. We agreed. For this reason there will not be specific references to the actual sites that we visited--just general references.

As we worked out details, we decided that it would be a camping trip and Stan suggested that we stay and headquarter at Belvidere in a free campground.

Friday night:

I left Olathe at 7:00 PM for the 300 mile drive to Belvidere. I was really looking forward to camping in the cool spring night after having several late night work sessions. Of course, leaving at 7:00 meant that I was getting to Belvidere about 12:00 midnight. I traveled down I-35 and the turnpike through the heart of the Flint hills just at sundown. People who complain about the boring Kansas landscape simply haven't been in the Flint Hills in the spring, after the burning, when the new growth is coming on. Can there be a more intense experience of green than these hills. Coupled with the intense blue and clarity of the atmosphere due to a high pressure center, the experience almost overwhelms the senses. I always say to folks that as I drive west

in Kansas I feel my blood pressure and heart rate go down as I mellow. Ernie Brown would explain it as a result of being in "God's country." I think it has to do with space.

I arrived in Belvidere at midnight and found the campground without disturbing too many people. In fact, I don't think anyone woke up. The night turned out to be exceptionally cool for May, 29 degrees F, according to Stan. By the way when I woke up the next morning my heart rate was 46 beats/ minute. The previous two weeks it had been in the upper 50's. (It wasn't all Belvidere. I'd recently raised my running mileage and it takes a while for things to stabilize. But I prefer to think it was Belvidere)

Saturday Morning:

Stan brought us all together about 8:30 and introduced us to Ken Brunson from KS Parks and Wildlife. We established the morning plans and took off north of town to Thompson Creek valley. Thompson creek is fed by springs from the Great Bend aquifer that emerge from Cretaceous aged formations and flows south to join the Medicine river near Belvidere. The creek valley is highlighted by outcrops of Cheyenne Sandstone and for the most part is treeless in the lower valley with some riparian trees in the upper valley. Our purpose was to locate Arkansas River Darters, (*Etheostoma cragini*). These fish inhabit streams like Thompson creek. The breeding males have a bright orange ventral surface. The males we found were in excellent breeding color. We found most of our darters in shallow water with some algae and also in some of the riffles. This small stream also had red-bellied dace. (*Phoxinus erythrogaster*) This seemed strange to me and I asked Ken Brunson if this wasn't about the westernmost record for this fish in Kansas. It turns out that according to Cross and Collins (1975) that there were no records west of the northern Flint hills.

Ken wanted to conduct some survey work for herps and birds. Some of the birds sighted at this site included: Mississippi Kites, Red Headed woodpeckers, Lark sparrows, Ruby-throat hummingbird, house wrens and mostly typical resident birds.

From Thompson Creek we traveled south to outcrops of Cheyenne sandstone to search for herps for Ken's survey. Not many herps were recovered but collared lizards, horned lizards, and one milk snake were collected, recorded and released.

Ate lunch back in Belvidere and then went west of Belvidere to investigate shale outcrops for fossils. Found a bull snake along the creek and spent some time at a prairie dog town looking for Prairie rattlesnakes--no luck. One the way back into town we spotted a couple of blue grosbeaks.

From this site we went south of Belvidere to observe an outcrop of Cheyenne sandstone on top of a hill, known locally as Camel's Hump. Near here in a box canyon the group encountered a porcupine. This canyon was truly a box canyon and the porcupine was in the bottom. As we were looking for a way down Stan said I have to get my porcupine gloves on....I thought he was joking--he wasn't. When we hit the bottom of the canyon that was covered with junipers Stan just took off through the trees. He is like a dog on trail and relentless. He actually captured the porcupine and carried it up to the top of the canyon for others to see. It was a lactating female.

From this site we went to Triple Arch Cave, south of Sun City. This is typical Gypsum Hills cave with two areas that have collapsed (hence the name) and open. In the cave a few bats (*Pipistrelles*) were observed.

After the cave we met at Buster's in Sun City to eat. It was late when we got back to Belvidere and turned in.

Chicken Manure To Cattle!

From ProMed - Excerpted from FSNET:

According to this story, the true extent of the Hudson hamburger contamination will remain a mystery until inspectors know exactly which plants supplied the beef. From there, they will have to investigate further to determine if Hudson's suppliers also sent bad meat to other food companies. The story then says that what is indisputable, however, is that the problems at Hudson represent only one of many threats to the nation's meat supply.

The story cites agriculture experts as saying a slew of new and questionable methods of fattening cattle are being employed by farmers. To trim costs, the story says, many farmers add a variety of waste substances to their livestock and poultry feed -- and no one is making sure they are doing so safely. Chicken manure in particular, which costs from \$15 to \$45 a ton in comparison with up to \$125 a ton for alfalfa, is increasingly used as feed by cattle farmers despite possible health risks to consumers. In regions with large poultry operations, such as California, the South, and the mid-Atlantic, more and more farmers are turning to chicken manure as a cheaper alternative to grains and hay.

Lamar Carter, a cattle farmer near Dardanelle, Ark., is cited as saying that he recently purchased 745 tons of litter scooped from the floors of local chicken houses, stacking it 12 feet high on his farm. After allowing the protein-rich excrement to heat up for seven to 10 days, Carter mixes it with smaller amounts of soybean bran, and feeds this fecal slumgullion to his 800 head of cattle. Carter is quoted as saying, "My cows are fat as butterballs. If I didn't have chicken litter, I'd have to sell half my herd. Other feeds are too expensive."

The story then says that chicken manure often contains *Campylobacter* and *Salmonella* bacteria, which can cause disease in humans, as well as intestinal parasites, veterinary drug residues, and toxic heavy metals such as arsenic, lead, cadmium, and mercury. The story then says that Dr. Neal Barnard, head of the Washington, D.C.-based health lobby Physicians Committee for Responsible Medicine, has a paper due to be published this fall in the journal *Preventive Medicine* that points to the potential dangers of recycling chicken waste to cattle.

The story cites the U.S. Centers for Disease Control and Prevention in Atlanta as saying there may be as many as 80 million incidences of food-borne illness each year in the United States, and about 9,000 deaths.

Salmonella accounts for 4 million cases, of which 500 to 1,000 are fatal. *Campylobacter*, which causes acute gastroenteritis, afflicts between 4 million and 6 million people annually, killing about 100. *E. coli*, the bacteria that was found in the tainted Hudson Foods beef, causes up to 250 fatalities and triggers serious illness in up to 20,000 people annually. At least 17 people have fallen ill from eating contaminated Hudson beef.

The story says that agricultural refuse such as corncobs, rice hulls, fruit and vegetable peelings, along with grain byproducts from retail production of baked goods, cereals, and beer, have long been used to fatten cattle. In addition, some 40 billion pounds a year of slaughterhouse wastes like blood, bone, and

viscera, as well as the remains of millions of euthanized cats and dogs passed along by veterinarians and animal shelters, are rendered annually into livestock feed -- in the process turning cattle and hogs, which are natural herbivores, into unwitting carnivores.

Daniel McChesney, head of animal-feed safety for the U.S. Food and Drug Administration, is cited as saying that new feed additives are being introduced so fast that the government cannot keep pace with new regulations to cover them.

The story says that chicken and turkey droppings can be fed safely if handled properly. This involves correctly stacking the manure for four to eight weeks while the naturally generated heat raises temperatures to 160 to 170 degrees Fahrenheit [71-77C], high enough to destroy bacteria and toxins. The authors of the Preventive Medicine report are cited as saying that studies of manure-feed safety have been conducted largely in controlled environments, not in the casual, unregulated conditions on most farms. Few studies address public health aspects, they argue, and there is an overall dearth of published information.

The story also notes that the contents of animal feed are attracting more attention as a result of the BSE outbreak in Great Britain and concern that similar problems could occur here.

[Since meat and bone meal from cattle is fed back to poultry, this poultry manure issue illustrates an indirect but complete feedback loop for some types of problems. In the UK, any farm animal to farm animal feedback is now forbidden, due to the protein-based disease.(Mad Cow Disease)

Robert A. LaBudde, PhD, PAS, Dpl. ACAFS

The Frog & Scientist

A scientist conducted a test with a frog. First he removed one of the frog's legs, then said, "Frog, jump!" It did. So he wrote in his journal: "One leg removed--frog jumps." Then he removed a second leg and told the frog to jump. It had some difficulty, but managed to jump. The scientist wrote: "Two legs removed--frog jumps." Once again the scientist removed a leg and told the frog to jump. The frog really struggled this time, but finally jumped. The scientist scribbled in his journal: "Three legs removed--frog jumps." Then the scientist took off the fourth leg and said again, "Frog, jump!" The frog just sat there. The scientist wrote: "Four legs removed--frog loses hearing."

From: "The Goldbug Variations"

by Richard Powers

"Dozing in and out of sleep to talk radio, I hear a recent poll claiming that a bare 9 percent of Americans accept evolution. Yet this debate--amazingly still raging--about the origin of wealth beyond conception is irrelevant. It doesn't matter anymore whether a fraction of the race splits off, chooses to return to a child's Eden. It doesn't matter if 91 percent of my countrymen continue to insist that species were created by father, so long as the entire planet instantly unites in acknowledging that they are, right now, being destroyed by child. Conservatively: several thousand species extinct a year. Instant, universal acknowledgment is impossible. In the hundred acres of rain forest destroyed each minute I write this, the earth loses species not yet even described in the catalog."

School To Career

"Dignity and pride in all career paths"

Published by USD #305

Printed with permission to inform others about School To Career.

What is School-to-Career Education?

School to Career is....

- ⇒ Higher academic & technical skills
- ⇒ Real-life application of knowledge
- ⇒ Exposure to many careers, earlier in life
- ⇒ Work-based learning in local business & industry
- ⇒ Better opportunities after high school

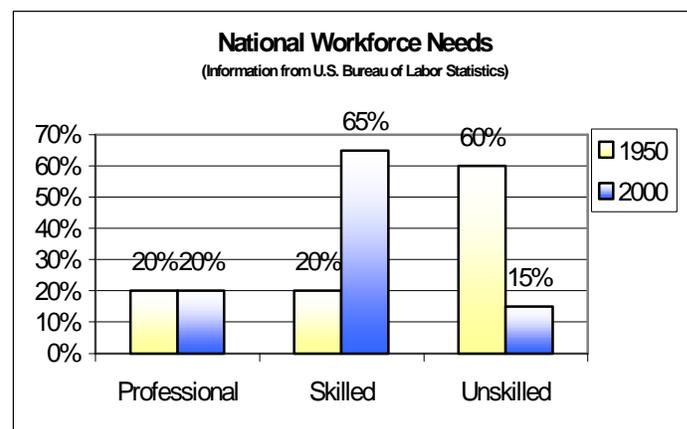
Teachers, parents and the community share a common desire: *to give our young people the best preparation for a successful future.* Toward that common goal, Salina teachers have spent the past two years designing a School-to-Career plan for Salina schools. School-to-Career is an approach to education that improves the way we prepare young people for their future and the changing work force. School-to-Career opens doors for ALL students by increasing their options, exploring possible career choices, and more fully developing their potential in life.

By combining challenging school and work-based learning with greater career exploration and guidance, students will develop stronger skill -- whether they plan to go directly into the work force, enter a technical college, or enroll in a university. School-to-Career shows students the real-life application of the academic knowledge they are learning.

Higher academic and technical skills and a better future for our children are what School-to-Career is all about.

Why is this change needed?

The world today's young people live and work in is becoming more complicated -- technological, computerized, customized



and internationally competitive. A strong academic foundation, technical know-how, and interpersonal skills are necessary in the emerging workplace. The best jobs will go to those who are both well-educated and highly-skilled.

The changing workplace also demands a good work ethic,

problem-solving, critical thinking, communication, leadership, and team work. Students need opportunities to develop in all these academic, technical, and work-readiness areas.

Good Jobs Require Higher Skills

As the graph shows, only 20% of U.S. jobs in 1950 required high-level skills. By 2000, the picture will totally change, with 65% of jobs demanding high skills. Our children must be prepared to meet these demands if they are to have many options for their future. Some further education or training beyond high school will be necessary for most of these skilled jobs of the future.

Preparation: What's Missing

Nationally, as well as in Salina, there is a gap between what is needed in today's work force and how high school graduates are prepared. What was good enough in the past isn't enough in today's workplace.

- ⇒ 43% of high school graduates take the college preparatory programs, but only half of those will complete a degree.
- ⇒ 12% complete a vocational-technical program in high school.
- ⇒ 45% complete a general track diploma program with no particular focus, preparing them for nothing specific beyond high school.

* Source: Digest of Education Statistics 1995, U.S.

Dept. of Education

With the exception of the few vocational-technical students and the best motivated college prep students, most young people graduate from high school ill-prepared for either work or college in today's world.

School-to-Career adds more career planning and skill preparation to help students move smoothly from high school into good jobs, further education, or both.

What Will Change -- What Will Stay The Same?

What remains the same...

- ⇒ Students will still complete the current state and district required courses. (English, math, science, PE/health, computer, social science, etc.)
- ⇒ Advanced placement courses will still be offered.
- ⇒ The college prep program will be maintained and fulfill the requirements for admissions to Kansas Regents Colleges & Universities.
- ⇒ Opportunities for a wide array of electives of the student's choosing will be maintained (art, drama, music, languages, etc.).

What will change....

- ⇒ Beginning in elementary & middle school, students will have more career exploration. In 9th grade, a Career Exploration Course is required.
- ⇒ In 10th grade, students will choose a Career Academy, with opportunities to change their mind

along the way.

- ⇒ A team of teachers in the core subjects will be assigned to each academy to be with the same group of students for the 10th, 11th, and 12th grade years (similar to the middle school teams). This creates a better sense of belonging, yet students will still have a variety of different teachers for electives and classes outside their academy.
- ⇒ During 11th & 12th grade, students will get work-site experiences.
- ⇒ Students will see clearly how their academic work relates to real life through career areas of interest to them -- creating better understanding and higher motivation.
- ⇒ Students will graduate with additional skills & job experience in a career pathway of the student's choosing, above and beyond the general graduation requirements.

What is still to be decided...

- ⇒ Whether or not all the same academies will be offered at both high schools.
- ⇒ Where the students will be assigned for sports and activities.
- ⇒ Which teachers will be assigned to each academy.
- ⇒ The role of the Salina Vo-Tech School in relation to the high schools & academies.
- ⇒ How the Alternative High School will fit into the School-to-Career model.

Academies for Salina High Schools

Seven academy areas have been proposed for Salina High Schools. Many related careers, requiring varied education and experience, are clustered within each academy area.

Students may take classes of their choice as electives outside their academy. For example, a student with interests in art and in science might choose the Communication & Fine Arts Academy, but use electives to take additional science classes beyond those required.

Selecting a career academy in high school does not lock a student into that choice for life -- in fact it is likely that everyone will change careers several times during their life, by choice or by necessity. School-to-Career simply gives students some additional skills, beyond what they currently get with a high school diploma, to open MORE options to them after high school.

Proposed Academies

- ⇒ Business
- ⇒ Career Pathways (for special education students)
- ⇒ Communication & Fine Arts
- ⇒ Health Services

- ⇒ Human Services
- ⇒ SNAP -- Sciences: natural, agricultural, physical
- ⇒ TIME -- Technical, Industrial, Manufacturing & Engineering

Answers To Your Questions

How will students choose & change academies?

During elementary and middle school and during the freshman year students will have much more exposure to a variety of careers through job shadowing, career inventories, and a 9th grade Career Exploration course. In the sophomore year, students will select a career academy, based on their current interests. The academy will expose them to a wide range of career opportunities within that career field.

If a student finds it necessary to change academies, options will be available to do that. However, to reap the ad' benefit of a career academy and graduate with some additional skills in a career area, students will be strongly encouraged to settle on one academy.

Will a strong college prep program be maintained?

Rigorous college preparation will remain an important goal of high school. In fact, we hope School-To-Career changes will encourage more students to complete college or further education of some sort

Requirements set by the Kansas Regents for admission to the state's Regents colleges and universities currently dictate mud' of what students must take in high school. This will not change even as the School-To-Career philosophy is phased into Salina high schools. Students who know they want to attend a Regents school will have to make that decision early in their high school year. Their elective choices will be more limited because of the extra courses required for Regents admission. These students will also have fewer opportunities to focus their career skills in high school.

Students who plan to attend college or some higher training after high school, but not necessarily a Regents school (junior college, technical school or a four year private college) will still be encouraged to prepare for college, but will not have as many required classes as the Regents curriculum They will have more elective opportunities and skills in the career academy they select.

Will the same academies be offered at both high schools?

One recommendation is to offer the same academies at both schools People have strong, historic loyalties to each school and concerns about where sports and activities would be assigned. However, it is more expensive to offer all academies at both schools because of the duplication of equipment and staff that is needed. One other option under discussion is for some academies to be duplicated at both schools, but some academics to be offered only at one building depending on enrollment, equipment and staffing needs Students would go to whatever building offers their academy, even if it's not in their attendance area. This is an issue that is still to be decided.

Where will my child participate in snorts and

activities?

Most likely, regardless of where students go for their academy classes, they would still be assigned to the school in their attendance area for participation in sports and other activities.

Where is the money coming from for school-to-career changes?

Most of the dollars needed are for teacher training and planning for this new organization of teaching and educating our children. Congress has made the development of School-To-Career a national education priority and funds are available to schools through the Educate America Act. Salina received a "School-to-Career Restructuring" grant in 1996-97 for \$94000 that paid teachers for developing USD 305's School-to-Career plan, inservice for teachers on how to make school work more relevant and interesting for students, and visits to schools where School-To-Career has been successfully implemented. Some district curriculum and staff development funds have been used as well. \$158,500 of USD 305's local option budget has been set aside for training planning and implementation of the School-to-Career plan. In addition, grants and partnerships with local business and industry will be critical resources.

Isn't an education about more than getting a job?

Public education has several important purposes in our community and society, and School-To-Career doesn't change these goals:

- ⇒ Schools create citizens who can think and understand their world, behave sociably, and participate in our democratic society.
- ⇒ Schools train productive workers for a strong economy. Consequently, schools must look ahead to the needs and skills of the future workforce.
- ⇒ Schools are a springboard for people to improve their options in life - whether that is a better awareness of the arts and culture, exposure to a variety of ideas and information on, a better standard of living, etc.

Need more information? Call: Steve Williams, Principal Salina High School Central (826-4751) or . Jane Botz, Principal Salina High School South (826-4766)

Note: Since this publication, a new Academic Academy has been added. The program is set to begin next school year with the 9th and 10th grade students. The final implementation is now proceeding. All 9th grade students are taking a careen planning class this school year.

Teacher Licensure

Wednesday January 14, 1998: The Kansas State Board of Education voted 5-5 on Redesign of Teacher Licensure, effectively killing the extension of QPA into university level teacher training. However, it is not correct to characterize this as a conservative-liberal split. There was widespread opposition to the redesign from many teachers, teacher-trainers, and academic groups including the Liberal Arts and Science Deans at the Regents universities, the board of the Kansas

Academy of Sciences and many, many other professional groups with long experience in teacher training. Substantial

negative testimony on "Redesign" was given in Topeka the previous day, with KABT editor Schrock criticizing the science and licensure plan.

The "Redesign" would have eliminated nearly 200 specializations including journalism, chemistry, physics, psychology, theater and debate, and special education disciplines (and more) and decreased the depth of training by forming one-size-fits-all licenses in most fields. In addition, the system used by the KSDE to assure a certified English teacher is teaching the English classes would have become an ambiguous licensure system where administrators would have far less difficulty staffing classes; current genuine teacher shortages in chemistry, physics, biology and special education would go away on paper. Among many school administrators, "Redesign" was seen as a method to eliminate teacher shortages.

The recommendations of the science committee to maintain the science disciplines were ignored until after last year's state board election, when it was apparent there was board opposition to the elimination of specialties. At that time, reading, earth science and biology were "broken out" to gain political acceptance, but most other generalized licenses were kept, including a fused chemistry-physics license. In view of the recent Regents requirement that high school students entering college have completed three sciences to include one physics or chemistry class, this fusion would have made it more difficult for current teachers to gain the fused license, and for small districts to secure new teachers with cross-discipline "second fields."

The defeat of "Redesign" was greeted with relief by both new student teachers who benefit from the new shortage in science teachers, and by teacher-trainers at Kansas universities who would have faced several years of dismantling their strong teacher programs to erect one-size-fits-all generalist programs.

The resurrection of "Redesign" is highly unlikely since most of the no votes are newly elected members who will remain on the KSBE another year; most of the "Redesign" supporters are second or fourth year members whose seats will be up for election this fall.

The Biology of the Brain

The National Association of Biology Teachers and The Massachusetts Association of Biology Teachers Announce The New Biology of the Brain: Learning about Learning.

An exciting symposium celebrating NABT's 60th Anniversary, Brain Awareness Week 1998 and The Decade of the Brain.

Who Should Attend?

The New Biology of the Brain is designed for all teachers who want to enhance their effectiveness through better understanding of the modern science of learning and memory, and for neuroscientists who want to share their knowledge for more effective teaching.

About The New Biology of the Brain

The New Biology of the Brain will be an active and interactive program to integrate our very latest understanding of the biology of learning and memory with the cognitive psychology of the classroom. The symposium will answer the question: How can neuroscience research on the human brain improve our teaching? This interdisciplinary symposium will integrate:

- * state-of-the-art neuroscience lectures
- * working sessions for teachers to explore effective teaching, learning and testing
- * hands-on activities and demonstrations of the most current materials available for teaching about the brain.

Participants will discover and model how to apply cutting edge advances in neuroscience and learning to their classroom teaching and testing. In addition, participants will develop effective assessment models based on the activities of the symposium and will be published in a special issue of The American Biology Teacher.

Speakers include:

- * Dr. David Liskowsky, NASA
- * Dr. Michael Gazzaniga, Dartmouth College
- * Dr. Barry Kosofsky, Massachusetts General Hospital
- * Dr. David Urion, Harvard University Medical School
- * Dr. Lorraine Flaharty, New York Department of Public Health
- * Dr. James Hamos, University of Massachusetts Medical School
- * Dr. Joan Reede, Harvard University

Schedule of Events

Thursday, March 19

7:30 PM-Minds of Our Own (Opening Remarks/Video & Panel Discussion) & Opening Reception

Friday, March 20

8:00 am-Breakfast

8:30 am-Plenary Session: Where We Are & How We Got Here

10:00 am-Small Group Work Session I

11:30 am-Learning Lunch

1:00 PM-Plenary Session: The New Biology of the Brain: What We Are Learning about Learning

2:30 PM-Small Group Work Session II

4:30 PM-Plenary Session: You Are What You Know: The New Genetics of Learning & Memory

Evening Reception

Saturday, March 21

8:00 am-Breakfast

8:30 am-Hands-on Workshops of Model Activities for Learning, Teaching & Assessing Neuroscience

11:30 am-Closing Lunch

What About Travel and Lodging?

The host hotel for the Brain Symposium is the Hyatt Regency Cambridge, 575 Memorial Drive, Cambridge, MA 02139

Special hotel rates of \$129 single/double + tax have been negotiated for symposium attendees who make reservations by February 26, 1998. Contact the Hyatt directly at (617) 492-1234. Be sure to mention you are with NABT to secure discounted rates. Hotel Reservation Deadline: February 26, 1998.

Special airfares have been negotiated with United Airlines. Call NASSP Travel at (800) 974-9393 and refer to the NABT meeting.

Registrants will be notified of transportation options from the airport to the Hyatt Regency.

How do I find out more?

General Information: Call NABT at (800) 406-0775 or e-mail us at NABTer@aol.com

Hotel Reservations: Contact the Hyatt Regency Cambridge at

(617) 492-1234.

Travel Reservations: Call NASSP Travel at (800) 974-9393.

What is the Registration Fee?

The registration fee of \$125 includes Thursday Reception; Friday Breakfast, Lunch & Evening Reception; Saturday Breakfast & Lunch.

How do I Register?

1. Call NABT at 1-800-406-0775
2. Visit NABT on the World Wide Web at www.nabt.org to fill out and download a registration form.
3. Complete the registration form in the January or February issue of *The American Biology Teacher* and fax to NABT at 703-435-5582.

Scientific Integrity

A Position Paper From NABT

The ongoing procedures and processes of science are well-defined within each scientific discipline, including biology. The principles and theories of science have been established through repeated experimentation and observation and have been refereed through peer review before general acceptance by the scientific community. Acceptance does not imply rigidity or constraint, or denote dogma. Instead, as new data become available, previous scientific explanations are revised and improved, or rejected and replaced. Materials, methods and explanations that fail to meet these ongoing tests of science are not legitimate components of the discipline and therefore must not be part of a science curriculum.

Science may appear to conflict with other ways of knowing about the universe, unfortunately leading some groups to see selected theories of science as a threat to their belief systems. This is not the case: science does not, in fact cannot, explain or judge nonscientific issues or supernatural belief systems.

Science is but one way of making sense of the world, with internally-consistent methods and principles that are well described. Among these principles is the notion that proposed causes and explanations must be naturalistic. Any attempt to mix or contrast supernatural beliefs and naturalistic theories within science misrepresents the scientific enterprise and debases other, nonscientific, ways of knowing. These attempts, which commonly result from a misunderstanding of the nature of science itself, have no place in science or in the science classroom or laboratory.

The credibility and utility of science, and therefore biology, depend on maintaining its integrity. NABT has a special obligation to promote this integrity in life science education. The data, concepts and theories of science presented to students must meet the accepted standards of the discipline. To this end, NABT will not support efforts to include in the science classroom materials or theories derived outside of the scientific processes. Nonscientific notions such as geocentrism, flat earth, creationism, young earth, astrology, psychic healing and vitalistic theory, therefore, cannot be legitimately taught, promoted or condoned as science in the classroom.

"To Sin by Silence ..."

Michael Frome - Author and Conservationist
Univ. of Idaho - College of Forestry

Solzhenitsyn came out of the concentration camps to find sanctuary in America. For a time he was quiet; he appeared to

keep his peace. Then, early in 1978, he accepted an invitation from Harvard to speak for the first time in this country. His words stirred criticism, for he struck the needle into American institutions, national complacency and self-satisfaction. He bespoke the need of integrity, of intellect, of deeper conscience and courage. It struck me then, as it does now, that Solzhenitsyn, having experienced and endured the Gulag Archipelago, understands the values of freedom, and the need to live dangerously, better than we.

The ideas of that Harvard speech have been expressed during the course of history by Americans as well. "To sin by silence when they should cry out," as Lincoln said, "makes cowards out of men." Henry David Thoreau could manage a stint in jail when need be in defense of principle. In 1970, four young seasonal employees resigned their positions at Mesa Verde National Park after being warned not to discuss with visitors the effects of the nearby massive Black Mesa strip mining project on the Hopi Indians. "Morally," they declared, "we felt we could no longer work for an agency whose purpose is to protect our cultural heritage, but whose practice is censorship of major environmental problems which ultimately affect the very park in which we were working."

Curiously enough, twelve years later, in an editorial titled "Sunset for the Southwest Parks," published in the September, 1982 issue of *National Parks Magazine*, my friend Paul Pritchard wrote: "There are too few interpreters to help people understand why they should be careful with their parks."

That may be true, but what have interpreters been doing while the sun was setting over the Southwest? That is, besides conducting nature walks, presenting slide shows, and pursuing the syndrome of "professionalism?" Or to ask the question differently, what should interpreters really be interpreting?

"In our society today the role of the naturalist has deteriorated to the point where one of his most common obligations is to say a few words about a piece of land about to die."

That painfully true assessment was made by the late Alfred E. Etter, who served *Defenders of Wildlife* as western field representative during the 1960's and then, until his death in 1978, as naturalist and writer at the Morton Arboretum outside Chicago.

He was ever the vigorous and talented interpreter and advocate of good cases, fighting to the end to save the few remaining patches of forest, prairie, and bog in an area dominated by suburban sprawl and urban decay.

Fairfield Osborn years ago gave humankind telling warnings in such books as *Our Plundered Planet* and *Limits of the Earth*. "The final answer is to be found only through comprehension of the enduring processes of nature," he wrote, "The time for defiance is at an end."

That simple statement lies at the core of valid interpretation in our time. Determining carrying capacity is a relatively simple aspect of public use; but how to make reserves--whether called parks, forests or by any name--into genuine demonstration models of ecological harmony, and how to impart to the visitor an understanding of the natural life-support system represents the greater challenge.

I interviewed Russell E. Dickenson soon after he became Director of the National Park Service. "The biggest problem has

been, and will continue to be, convincing the public of the need for sound management, protection and preservation," he told me. "If we fail to make Americans aware of problems facing national parks, and to involve them in choosing the right solutions to these problems, then we are failing in our responsibility as stewards of these public resources."

If you ask me, interpretation as a profession and interpreters as individuals are failing in their stewardship responsibility. Of course, there are good interpreters with conscience and courage, but they are the minority. Most others are frightened and easily intimidated.

"You don't expect me to put my job in jeopardy, do you?"

"If Old Joe the Pro sticks his neck out and gets fired, he'll be replaced by a political appointee. And wouldn't that be just dreadful?"

I've been treated ad nauseum to all the creaky rationalizations by frightened people willing to sacrifice principle. "Government, even in its best state, is but a necessary evil," wrote Thomas Paine in *Common Sense*, "and in its worst state, an intolerable one." And one of the worst effects is to weaken the individual until he or she can make Thoreau sound more like a lullaby than a battle cry.

That's what comes of a steady paycheck. A modern Tom Paine name I. F. Stone, recognizing the government may be approaching its worst state, has stripped things to bare facts. "The first thing, every government is run by liars, and nothing they say should be believed. That's a *prima facie* assumption. A government finds it hard to absorb intelligence that runs counter to its own preconceptions."

Newton B. Drury was one individual who rose above it all. He had been a writer and publicist before forming the Save-the-Redwoods League and interpreting the California redwoods to the world. In 1940 he became the fourth director of the National Park Service and during World War II resisted abundant pressures to open parks for military purposes. As a consequence, little damage was done and none of it needlessly. Following the war, new threats arose, this time from political pressure to open the parks to mining, logging, grazing and dams--comparable to the pressures of our time. Drury held firm, insisting:

"If we are going to succeed in preserving the greatness of the national parks, they must be held inviolate. They represent the last stands of primitive America. If we are going to whittle away at them we should recognize at the very beginning, that all such whittlings are cumulative and that the end result will be mediocrity."

To follow a course away from cumulative mediocrity, resource professionals must strive to end superconsumerism and waste. Across the planet people must learn to question their own ways of life, and to discard customs that abuse our common environment.

In our own country, Death Valley National Monument offers a lesson in choices ahead. It shows that human restraints, with a change in lifestyle, are essential to the survival of nature reserves as palaces where future generations can observe fragments of the original America.

The heart of Death Valley, set aside to preserve a desert ecosystem, is being plundered by strip mining and open-pit mining authorized under an old law that should have been

revoked years ago. Today's visitor sees a gash in the earth 300 feet deep, 1,000 feet wide and 2,000 feet long. This one site has been mined out of colemanite, a nonrenewable material used in the filament of light bulbs. There are still other holes to be dug, but, like all nonrenewable, the supply ultimately must run out. And the visible scars will last for centuries.

Congress in 1976 established a moratorium on new mining starts in Death Valley. Now the choices are whether to adjust the monument boundaries and reduce it in size to exclude the mines; to allow mining to continue under federal control, or to purchase the mineral claims to several thousand acres. The value of the mineral rights is estimated to be at least \$60 million, but all the options come with high price tags, one way or the other.

The National Park Service should interpret the specific scene as a means of informing the public of its options: either to consider serious changes in lifestyle now, while there is still time, or to face them later, when there is no other way. That is only the material question. The future of Death Valley and other reserves, as Director Dickenson indicated, depends on the awareness, concern and sense of custody of the public they serve. In a democracy we get what we deserve and leave a legacy to reflect ourselves and our time.

The deepening crisis of resource depletion may yet succeed where nuclear weapons have failed in forcing nations to settle quarrels and to join in recognizing the limitations of a fragile earth. Interpreters are uniquely qualified to lead in pledging allegiance to a green, peaceful planet and a global policy based on the concept of husbanding and sharing resources instead of allowing multinational corporations to corner and market these riches. The United States has more to gain than lose, having reached the peak of world power only to find itself at the brink of catastrophe.

"I do not propose to write an ode to dejection," wrote Thoreau, "but to brag as lustily as a chanticleer in the morning, if only to wake my neighbors up." If you ask me (or even if you don't), it's time for interpreters to wake up so they can wake their neighbors.

Outstanding Biology Teacher Award

Sponsored by Prentice Hall

Each year, the National Association of **Biology Teachers (NABT)**, through its *Outstanding Biology Teacher Awards (OBTA)*, attempts to identify an excellent biology instructor in each of the 50 U.S. states; Canada; Washington, DC; Puerto Rico; and overseas territories. Nominations of worthy candidates by NABT members and friends help us to recognize those individuals whose outstanding work in the classroom qualifies them for this award.

Prentice Hall, the OBTA program sponsor, gives each awardee a pair of **precision binoculars, and Leica, Inc.** awards biology laboratory equipment to the recipients. Award winners and their schools also receive certificates, as well as public and professional recognition. Each year, NABT honors Outstanding Biology Teacher Award recipients at a special ceremony in conjunction with its national convention.

Who Is Eligible? ... Current biology/life **science instructors (grades 7-12)** with at least three **years** public, private, or parochial school teaching experience. A major portion of the nominee's career must have been devoted to the teaching of biology/life science. NABT membership is not a requirement. Unsuccessful candidates may be renominated; OBTA winners are ineligible for 10 years after selection.

What Is the Process? ... Candidates will complete a form summarizing their professional experience, academic background, and educational philosophy and provide four recommendations from colleagues familiar with their teaching effectiveness. Classroom observations and/or videotapes are important steps in the evaluation process.

Who Can Make Nominations? ... Colleagues, administrators, students, the teacher/candidates themselves, or anyone competent to judge the candidate's teaching effectiveness.

What Are the Criteria? ... Teaching ability and experience, cooperativeness in the school and community, inventiveness, initiative and student-teacher relationships.

How Do I Participate? ... Fill out the nomination form below or request a form from your OBTA Director or the NABT office. The general deadline for nominations is **March 1, 1998**.



OUTSTANDING BIOLOGY TEACHER AWARD NOMINATION FORM

Name of Candidate: _____

Candidate's School: _____

School Address: _____

School Phone: _____

Your Signature: _____

Your Title/Connection to Candidate: _____

Please complete this form and return by March 1~ to:

Barry Schartz/Science Department
Goddard High School
P.O. Box-189
Goddard, Kansas 07052-0189

FRUIT FLY OBSERVATION PROJECT

By Sandy Collins

West Junior High School, 2700 Harvard, Lawrence, KS 66049

BACKGROUND

Some time ago I was describing to a colleague, Brad Williamson, a project that I did with my freshmen biology students. It was a laboratory investigation in which the students proposed and tested original hypotheses. Brad's succinct comment was essentially, fine, but hadn't I had asked my students to propose hypotheses without allowing them sufficient time to make the initial observations necessary to ask interesting questions. Could he be right again?! Subsequently it also became clear to me that in failing to provide my students with sufficient time to make careful observations, I had denied them the opportunity to begin developing a skill that enhances many experiences - not just those in the science classroom. In an effort to enhance my students' skills in making detailed observations, I now start the year with a Fruit Fly Observation Project. I describe the project in this paper.

My project is a modification of an activity written by M. Nissani, entitled "Dancing Flies". The article appeared in the March 1996, issue of *The American Biology Teacher*. In the original activity, students work through a series of projects in which they observe the behavior of fruit flies and propose and test hypotheses based on their observations. The author summarizes the project as follows: "It fleshes out abstract lectures about life cycles, insect morphology, patterns and causes of animal behavior, and, above all, the nature of science." My objective in this abbreviated version of the original activity is to offer my students the opportunity to improve their observational skills over an extended period of time by observing a culture of *Drosophila melanogaster*.

PROJECT

On the second day of class I distribute a vial containing 8-10 fruit flies (with media) to each of my freshman biology students. Working in small groups, students are asked to record a minimum of 15 observations about their flies. Each group then shares and discusses their observations with the entire class. Usually the groups make fairly general observations and focus primarily on the physical characteristics of the fruit flies. A few of their observations describe behaviors. Next, I ask the class what they would need to do if they were required to make 15 additional observations. They realize that to do this will require more time spent in observing, more thinking about what they see, and more detailed and systematic observations. If the class does not bring it up, I suggest that it may also be helpful to think about the flies as individuals and as part of a dynamic, interacting population. At the end of the class discussion I officially introduce their first Biology Project - "The Fruit Fly Observation Project".

For this project, the students are asked to take home their fruit flies and continue making observations for a period of two weeks. Each day they are to record as many new observations as possible. Drawings of what they have observed are also encouraged. To get everyone off to a successful start, the observations they have made in class can be used as their Day-one observations. At the end of two weeks, they turn in a log of their observations and a paragraph summarizing what they learned from completing the activity.

In order to properly care for the animals at home, the students will need some information that I include in a Student Instruction sheet. Students need to know that the temperature and humidity of their homes affects the health of the flies. If the food becomes too dry, the animals starve. They need to watch for "cracked" and dry food and/or lifeless larvae. If this occurs, adding one or two drops of water will moisten the food and should solve the problem. On the other hand, the environment can

become too humid and the food too moist. In this case the food will become contaminated with fungi, which is also detrimental to the flies. Finally, caution students not to leave the flies in direct sunlight or other extreme environmental conditions.

Four days after the project is started, students will release all the adult flies outdoors so that only eggs and immature stages remain in the vials. Two weeks after taking the vial home they can release all the remaining flies. Remind them to thoroughly wash the vial and the plug ("stopper") and bring both back to school.

Through this activity I was able to give my students the opportunity to practice making detailed observations, a skill that is a hallmark of a good scientist. Making careful observations is a skill that they will continue to use throughout the year as we investigate biology and a skill I hope they will continue to improve upon throughout their lives. Fortunately, several additional "bonuses" accrued by initiating the year with this Fruit Fly Observation Project. None of my students were intimidated by the task and so everyone approached it enthusiastically. Everyone was able to take part in the daily discussions we had as the students asked questions about observations they had made. Since the students had to keep their flies at home, parents had the opportunity to take an interest in what their children were studying in biology. Finally, because I try to use fruit flies to teach genetics later in the year, this project allowed my students to become familiar with the life stages of fruit flies and how to maintain fly cultures before undertaking our genetics study.

TEACHER PREPARATION

Teacher preparation for this project is minimal. Each student needs a vial containing 8-10 adult flies. Ideally, each vial would contain mostly virgin females with a few males. This would enable the students to more easily observe and learn about the life cycle of the flies. The time required to rear and separate the required number of virgin female flies for 110 biology students seemed daunting. Therefore, the vials I provide for my students contain adult flies of various ages and sex ratios. This mixture of flies does not significantly diminish the value of the activity and makes the preparation much easier.

Fruit flies can be obtained from a biological supply company (as Carolina Biological Supply). However, purchasing enough flies to get started can be expensive. Also, in order to have a sufficient number of flies, you will need to begin to rear the animals several weeks in advance. The exact number of weeks required will depend on the number of flies initially purchased and the total number required for starting the project. An easier alternative is to have the flies "donated". I was able to obtain flies "donated" by Dr. William Bell in the Department of Entomology at the University of Kansas. Depending on your location, you may try contacting the biology department of a nearby university or college or a USDA facility.

Additional supplies required are media, plastic vials and sponge plugs or stoppers. All of these supplies can be purchased through a biological supply company or borrowed from someone who works with fruit flies. The commercial media is easily prepared (just add water) and instructions include how much media is required per vial.

Transferring the flies to the vials is not difficult or time consuming. It takes me about 3 hours to transfer the required number of flies to 115 vials. Since an exact number of flies per vial is not critical, I find that if I work quickly the flies do not need to be anesthetized. Simply tap on the container with the flies so that they are knocked to the bottom of the container. Quickly remove the plug from the container and invert it over an empty vial, letting 8-10 flies "escape" into the empty vial. Quickly replace the plug on the original container and place a plug in the vial that now has the desired number of flies.

The Kansas Association of Biology Teachers

Officers - Representatives - Board Members

President

Terry Callender
15960 Snodgrass
Wamego, KS 66547
(785) 456-7924
Wamego High School
801 Lincoln
Wamego, KS 66547
(785) 456-2214 Ext. 123
FAX (785) 456-8125

President Elect

Lisa Volland
2609 SW Morningside Dr
Topeka, KS 66614
(785) 273-1810
Topeka West High School
2001 SW Fairlawn
Topeka, KS 66604
(785) 271-3529

Vice-President

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2728 Bluestem Ct
Lawrence, KS 66047
(785) 838-9606
Southwest Junior High School
2500 Inverness Dr.
Lawrence, KS 66047
(785) 832-5550

Past President

Steven B. Case
University of Kansas
SC-RETC
2021 Dole Center
Lawrence, KS 66045
(785) 864-4471
FAX (785) 864-0704
(785) 832-1629 Home
scase@busboy.sped.ukans.edu

Treasurer and Newsletter Editor

John Wachholz
2311 Applewood Lane
Salina, KS 67401-3707
(785) 825-7742
Salina High School Central
650 E. Crawford Street
Salina, KS 67401-5119
(785) 826-4751
FAX (785) 826-4740
jwachholz@midkan.com

Secretary

Harry McDonald
11917 W 143rd
Olathe, KS 66062
(913) 897-9630
Blue Valley High School

6001 W. 159th Street
Stilwell, KS 66085
(913) 681-4200

Region 1 Representative

Ernie L. Brown
825 Main
Wakeeney, KS 67672
(785) 743-2972
Trego Community High School
1200 Russell Avenue
WaKeeney, KS 67672
(785) 743-2061
FAX (785) 743-2449
ebrown@ruraltel.net

Region 2 Representative

Pat Lamb
3014 Sunnyside
Manhattan, KS 66502
(785) 776-1438
Manhattan High School
2100 Poyntz
Manhattan, KS 66502
(785) 587-2100 Ext. 802

Region 3 Representative

John Tollefson
24015 Loring Road
Lawrence, KS 66044
(785) 749-3280
Highland Park High School
2424 California Avenue
Topeka, KS 66605
(785) 266-7616
jtollfsn@falcon.cc.ukans.edu

Region 4 Representative

Todd Carter
Box 346
Forgan, OK 73938
(405) 487-3547
Seward County Community
College
Box 1137
Liberal, KS 67905-1137
(316) 629-2643
FAX (316) 629-2725
tcarter@sccc.sccc.cc.ks.us

Region 5 Representative

Tyson Yager
1116 Prairie Park
Wichita, KS 67218-3520
(316) 652-0398
Wichita East High School
2301 E. Douglas
Wichita, KS 67211
(316) 833-7012

Region 6 Representative

John Culvahouse
1707 S. Eddy
Fort Scott, Ks 66701
(316) 223-0837
Fort Scott High School
1005 South Main
Fort Scott, KS 66701
(316) 223-0600

Representative At Large

Vacant

Representative At Large

Vacant

KACEE Representative

Pat Wakeman
24549 Sandusky Rd.
Tonganoxie, KS 66086
(913) 845-3208
Tonganoxie High School
Box 179 24-40 Highway
Tonganoxie, KS 66086
(913) 845-2654
FAX (913) 845-3716
pwakeman@nehub.nekesc.k12.ks.us

Journal Editor

John Richard Schrock
1101 W. 18th Avenue
Emporia, KS 66801
(316) 342-3879
Emporia State University
Division of Biology
Box 4050
Emporia, Ks 66801
(316) 341-5614
FAX (316) 341-5997
ksnatur@esumail.emporia.edu

