

Kansas Association of Biology Teachers

Volume 37 Number 1



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 67401-3707, 913-825-7742 (Home) 913-826-4751 (School). E-Mail: jwachholz@midkan.com

NEWSLETTER

Date	Event
February 8-10, 1996.....	NSTA Regional Convention - Rapid City, SD
March 1, 1996	Deadline for Program Proposals - Fall NABT Convention
March 15-16, 1996.....	Wamego Regional Science & Engineering Fair, Wamego, KS
March 22, 1996.....	Kansas Academy of Science, Emporia State University
March 28-31, 1996.....	NSTA 1996 National Convention - St. Louis, MO
April 4, 1996	KACEE Spring Meeting, Rock Springs Center
April 17, 1996	EARTH DAY 1996
April 18-20, 1996	SWAN, McAllen TX
April 26-28, 1996	KATS KAMP - Rock Springs Center
May 2, 1996	Kansas Junior Academy of Science Spring Meeting - WSU
May 18-19, 1996	KABT Spring Field Trip - Matfield Green & Z-Bar Ranch
	More Information In The April Newsletter - Saturday, Z-Bar Ranch with Paul Willis - Sunday, Visit and Tour Matfield Green
May 25-26, 1996	Kansas Herpetological Society, Field Trip, Cheyenne County
June 7-10, 1996	KABT Special Field Trip
	Pawnee National Grasslands - Briggsdale, CO - More Information in the April Newsletter
September 14, 1996	KABT Fall Meeting - Emporia State University
October 16-19, 1996	NABT Convention - Charlotte, NC
November 2-3, 1996	Kansas Herpetological Society, Fall Meeting, Lawrence H.S.
Spring '97	KABT Spring Field Trip - Gyp Hills

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. If you send your e-mail address, you will receive a notice that your dues and registration have been received. A registration form appears on the last page of this newsletter.

"To the dull mind
all nature is leaden.
To the illuminated
mind the whole
world burns and
sparkles with light."

Ralph Waldo Emerson



Short Notes & Topics

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 jjwachholz@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 sending information to the newsletter to send it via PSINet, INTERNET: wachhol.ksuvm.ksu.edu or on a disk. If you send it on a disk, any format is acceptable. ASCII text is easy for me to work with. 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. If your dues are not up to date you will no longer 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 ding 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

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

Fax: 703-435-5582

E-mail: NABTer@aol.com

KATS now has presence on the World

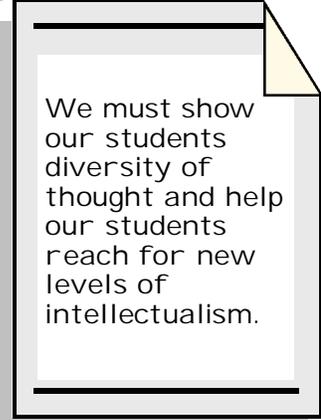
Wide Web!

The Kansas Association of Science Teachers have established a web site for KATS at the following URL address: 199.201.192.20/ugd500/kats.htm.

Annie Is On The Shelf!

I appreciate the interest in the article I wrote for the last newsletter concerning the lawsuit I have been involved in. It seems popular right now to assume that professionals do not have any greater knowledge to judge materials than anyone else has. This attitude exists in an atmosphere of talk show intellect where anyone can have a valid opinion. Library materials need to be selected by the professional librarians who have spent many years dedicating themselves to this particular work. They are educated on the issues and continue to learn and grow within their field. They also have a broad range of professional experience to bring to reviewing materials. These professionals have the growth and welfare of the entire community in mind as they select materials. Because of this, books meeting current selection guidelines are clearly educationally suitable. On the witness stand, school board members were asked if they had any training or experience in media selection and, like most of us, they did not. School districts need to establish policies that would allow the professionals to do their job and would not allow the removal of materials based on the ideas contained within them.

I am happy to report that on November 28, 1995, the Federal District Court in Kansas City, Kansas ruled that the school district and the superintendent unconstitutionally removed the book from the school libraries. The decision of the federal court is a gratifying reaffirmation of the role of the Constitution in our educational system. The school board has decided not to appeal the decision and has returned the books to the shelves of our libraries. During this two year process, I was surprised to learn how frequently this type of censorship was occurring in libraries across the country. As science teachers we need to strongly resist this repression of



We must show our students diversity of thought and help our students reach for new levels of intellectualism.

thought. If we are going to achieve science education reform, science teachers must take some risks. Academic freedom, the Supreme Court has observed, is "a special concern of the First Amendment, which does not tolerate laws that cast a pall of orthodoxy over the classroom." The court, in another case observes, "the classroom is peculiarly the "market-lace of ideas." The Nation's future depends upon leaders training through wide exposure to that robust exchange of ideas which discovers truth, out of a multitude of tongues, [rather] than through any kind of authoritative selection...." As a community of science teachers we need to model what we expect from our students. We must show our students diversity of thought and help our students reach for new levels of intellectualism.

Quiz Card Dissections

Do you hate to think about doing classroom dissections in biology because the students tend to get unruly? Does your room resemble a zoo more than a place where learning is taking place? Do you feel that your students really appreciate the inherent value of the life of the animal that they're dissecting. Do they appreciate the fact that the animal they are dissecting died so that they might learn more about how it lived? Respect for life and learning more about how the organisms lived are important objectives for any dissection. Too often specimens are viewed simply as "pieces of meat" to glibly chop up and discard at the end of the class period.

I have enjoyed great success with a "Quiz Card" approach to dissections for the last several years. I feel that the students learn the material better and appreciate the total functioning organism more completely when they have finished their dissection. The technique can be used with any textbook or lab handout that supplements your dissection activity.

While the students are reading the procedure for the dissection, make a list of all of the organs they are expected to locate and learn about on the chalkboard. Then, write the name of each organ on a separate 3 X 5 card and show the class your "deck of cards". Have the students work in pairs, either determined by the teacher or by the students themselves. After the students have completed the dissection and are confident they know the location and functions of each of the listed organs on their own specimen, they sign up on the chalkboard indicating they are ready for their quiz over the material. Beginning with the first pair of names on

the list, take your 3 X 5 cards to their desk and "make a deal" with them for their quiz. I usually make the quiz worth 20 points total and have each student of the pair pull two cards (face down) from the deck. Each 5 point card identifies the organ that student must locate and discuss without help from his teammate. After the first student has completed his 10 point portion of the quiz, the second student then locates and discusses the two organs on the cards he has selected. Each member of the team receives the composite score from their individual quizzes.

You can vary this activity easily by making the quiz worth more or less than 20 points. You can let each pair of students make their own "deal" by picking any combination of cards/points that meet the total points for the quiz. Sometimes the students like to "go for broke" and pick one card for 10 points or pick five cards for two points each. When students realize that they are going to be required to locate and discuss specific organs in their specimen, they are much more diligent during the dissection. Procedures are read thoroughly and cuts are made carefully leaving organs in place as much as possible rather than being removed and piled on the dissecting tray.

It is the responsibility of each team to conduct the dissection and learn the organs by working together. Even if one member of the team doesn't want to touch the specimen, he is still accountable for using a dissecting needle to point to the organs on his 3 X 5 cards. They can still be involved in the dissection by reading the procedure to the person actually conducting the dissection. By combining the individual quiz scores for a total team score, the students work together to teach each other much better since they each have an investment in the final quiz score. Ernie Brown, Trego Community High School.

Proposed Constitutional Changes

Following are proposed constitutional changes that will be voted on during our spring meeting. These we proposed at the executive board meeting in Salina in January. If you have any questions regarding these please contact any regional representative or KABT board member. The intent of these changes is to make the board more representational.

More about these changes in April newsletter.
Article II

Section 1. The officers of the KABT shall be of

- two kinds, elective and appointive.
- a. The elected officers shall be President, President-elect, Vice-President, Secretary, Treasurer, six District Directors, **and two at-large Directors**
 - b. The appointed officers shall include the Editor of the KABT Newsletter and the **Historian**.
- Section 3. The terms of office for the President, President-elect, Vice-President, Secretary, Treasurer, six District Directors, and two at-large Directors shall be for two years.

Section 6

- b. The **Historian** shall serve as a consultant, archivist, historian, and shall assist the Executive Council as necessary.

Article III. Executive Council

- Section 1. The Executive council shall consist of the President, Past President, President-elect, Vice-President, Secretary, Treasurer, six District Directors, and **two at-large Directors**.

HUGE TURNOVER EXPECTED IN RETIRING BIOLOGY TEACHERS FROM 1994-2000

Kansas currently has approximately 800 secondary teachers teaching at least three classes of biology per day. According to John Richard Schrock at Emporia State University, preliminary estimates indicate that about half of these positions will turn over in the six-year period from the years 1994 to 2000.

Combining a normal career span of 35-40 years, the standard attrition of new teachers, and average input-export of teachers from outside the state, it should take at least 15 years to turn over half our biology teachers. This acceleration to just six years appears due in most part to the large cohort of teachers trained in the late 1960s in NSF-era academic-year and summer institutes. The resulting strong biology teachers that emerged did not undergo the regular dropout rate and have remained in the biology teaching profession to retirement. The first of the NSF-institute teachers began retiring in 1994; the last will reach age 65 in the year 2000. This is not just a Kansas phenomenon, but is

reflected in national trends and surveys reported by Lindauer (also see Lindauer article in January, 1996 *American Biology Teacher*).

As a result, future biology teachers are in short supply. Teaching vacancies in Kansas should soon exceed 80-100 biology positions per year. Total biology teacher production from all Kansas teacher-training institutions is less than half this number. Graduating student teachers who are willing to move are finding jobs immediately, including December graduates entering mid-year positions!

Before biology teachers become too enthralled with more mobility and choice of location, they should remember that the proposed Kansas redesign of teacher education would end the disciplines in science permitting any science teacher to teach "science" and ending this very genuine shortage in talent and knowledge...on paper.

1996 Summer Course for Biology Teachers On Spontaneous Human Combustion, Crop Circles, Bigfoot!

A graduate level course for biology teachers on handling pseudoscience in the classroom is scheduled for July x to August x at E.S.U. The course focuses on securing the actual science facts and preparing materials to effectively counter tabloid pseudoscience, from spontaneous human combustion to crop circles to bigfoot. The course meets from 10 am-12, Monday through Thursday each week on the E.S.U. campus.

1996 Summer Courses of Interest to Biology Teachers

Confirm schedule with university; most have prerequisites.

KANSAS STATE UNIVERSITY

BIOL 526 Human Physiology Lecture (3) 8:40-10:00 am MTWRF June 4-July 26

BIOL 210 General Botany (4) 8:40-10:00am MTWR with Lab 10-12:00 MW June 4-July 26

UNIVERSITY OF KANSAS

BIOL 404-405 Introduction to Genetics & Lab (3+2) MTWR June 4-July 25

BIOL 408 Physiology of Organisms (3) MTWR June 4-July 25

BIOL 300 Human Anatomy Lecture (3) MTWR June 4-July 25 with 301 Observation Lab (2) or 302 Dissection Lab (4); enrollment limited.

WICHITA STATE UNIVERSITY

BIOL 418 General Ecology (4) 7:30-10:20am TR
June 3-July 25

BIOL 640Z Environmental Risk Assessment (3)
1:30-4:00pm MW June 3-July 25

EMPORIA STATE UNIVERSITY

GB 700 Grassland Saga (1) June 21-23

MC 859 Topics in Microbiology (4) MTWR June
10-July 9

ZO 859 Field Zoology (4) July 10-August 8

ZO 362-363 Human Anatomy and Physiology &
Lab (5) June 10-July 9

GB 759 Pseudoscience in Science Classroom (2)
July 10-August 8

FORT HAYS STATE UNIVERSITY

BIOL 707A Topics: Field Study of Prairie Plants (2)
All day June 21, July 26

BIOL 707B Topics: Field Study of Range Plants (2)
All day June 21, July 26

BIOL 707C Topics: Human Heredity (3) 1:10-
3:50pm, MTWR June 4-27

BIOL 727 Ichthyology & Lab (3) 1:10-3:50pm,
MTWR June 4-July 18

BIOL 872A/B/C Upper Midwest Field Trip (3/4/5)
May 19-June 2

PITTSBURG STATE UNIVERSITY

BIOL 802-50 and 602-50 Summer Insects (3) 1-
5:00pm MTWR June 3-20

BIOL 893-50 Grant Writing II (3) 1-5:00pm MTWR
July 8-25

BIOL Microbiology & Lab (5) MTWR June 4-July
25

BIOL Principles of Ecology (3) MTWR June 4-July
25

BIOL Genetics & Lab (5) MTWR June 4-July 25

BIOL Anatomy and Physiology & Lab (5) MTWR
June 4-July 25

NABT Unveils New Statement on Teaching Evolution

As stated in *The American Biology Teacher* by the eminent scientist Theodosius Dobzhansky (1973), "Nothing in biology makes sense except in the light of evolution." This often-quoted assertion accurately illuminates the central, unifying role of evolution in nature, and therefore in biology. Teaching biology in an effective and scientifically-honest manner requires classroom discussions and laboratory experiences on evolution.

Modern biologists constantly study, ponder and

deliberate the patterns, mechanisms and pace of evolution, but they do not debate evolution's occurrence. The fossil record and the diversity of extant organisms, combined with modern techniques of molecular biology, taxonomy and geology, provide exhaustive examples and powerful evidence for genetic variation, natural selection, speciation, extinction and other well-established components of current evolutionary theory. Scientific deliberations and modifications of these components clearly demonstrate the vitality and scientific integrity of evolution and the theory that explains it.

This same examination, pondering and possible revision have firmly established evolution as an important natural process explained by valid scientific principles, and clearly differentiate and separate science from various kinds of nonscientific ways of knowing, including those with a supernatural basis such as creationism. Whether called "creation science," "scientific creationism," "intelligent-design theory," "young-earth theory" or some other synonym, creation beliefs have no place in the science classroom. Explanations employing non-naturalistic or supernatural events, whether or not explicit reference is made to a supernatural being, are outside the realm of science and not part of a valid science curriculum. Evolutionary theory, indeed all of science, is necessarily silent on religion and neither refutes nor supports the existence of a deity or deities.

Accordingly, the National Association of Biology Teachers, an organization of science teachers, endorses the following tenets of science, evolution and biology education:

- The diversity of life on earth is the outcome of evolution: an unsupervised, impersonal, unpredictable and natural process of temporal descent with genetic modification that is affected by natural selection, chance, historical contingencies and changing environments.
- Evolutionary theory is significant in biology, among other reasons, for its unifying properties and predictive features, the clear empirical testability of its integral models and the richness of new scientific research it fosters.
- The fossil record, which includes abundant transitional forms in diverse taxonomic groups, establishes extensive and comprehensive evidence for organic evolution.
- Natural selection, the primary mechanism for evolutionary changes, can be demonstrated with numerous, convincing examples, both extant

and extinct.

- Natural selection--a differential, greater survival and reproduction of some genetic variants within a population under an existing environmental state--has no specific direction or goal, including survival of a species.
- Adaptations do not always provide an obvious selective advantage. Furthermore, there is no indication that adaptations--molecular to organismal--must be perfect: adaptations providing a selective advantage must simply be good enough for survival and increased reproductive fitness.
- The model of punctuated equilibrium provides another account of the tempo of speciation in the fossil record of many lineages: it does not refute or overturn evolutionary theory, but instead adds to its scientific richness.
- Evolution does not violate the second law of thermodynamics: producing order from disorder is possible with the addition of energy, such as from the sun.
- Although comprehending deep time is difficult, the earth is about 4.5 billion years old. *Homo sapiens* has occupied only a minuscule moment of the immense duration of time.
- When compared with earlier periods, the Cambrian explosion evident in the fossil record reflects at least three phenomena: the evolution of animals with readily-fossilized hard body parts; Cambrian environment (sedimentary rock) more conducive to preserving fossils; and the evolution from pre-Cambrian forms of an increased diversity of body patterns in animals.
- Radiometric and other dating techniques, when used properly, are highly accurate means of establishing dates in the history of the planet and in the history of life.
- In science, a theory is not a guess or an approximation but an extensive explanation developed from well-documented, reproducible sets of experimentally-derived data from repeated observations of natural processes.
- The models and the subsequent outcomes of a scientific theory are not decided in advance, but can be, and often are, modified and improved as new empirical evidence is uncovered. Thus, science is a constantly self-correcting endeavor to understand nature and natural phenomena.
- Science is not teleological: the accepted processes do not start with a conclusion, then

refuse to change it, or acknowledge as valid only those data that support an unyielding conclusion. Science does not base theories on an untestable collection of dogmatic proposals. Instead, the processes of science are characterized by asking questions, proposing hypotheses, and designing empirical models.

- Providing a rational, coherent and scientific account of the taxonomic history and diversity of organisms requires inclusion of the mechanisms and principles of evolution.
- Similarly, effective teaching of cellular and molecular biology requires inclusion of evolution.
- Specific textbook chapters on evolution should be included in biology curricula, and evolution should be a recurrent theme throughout biology textbooks and courses.
- Students can maintain their religious beliefs and learn the scientific foundations of evolution.
- Teachers should respect diverse beliefs, but contrasting science with religion, such as belief in creationism, is not a role of science. Science teachers can, and do, hold devout religious beliefs, accept evolution as a valid scientific theory, and teach the theory's mechanisms and principles.
- Science and religion differ in significant ways that make it inappropriate to teach any of the different religious beliefs in the science class.

Opposition to teaching evolution reflects confusion about the nature and processes of science. Teachers can, and should, stand firm and teach good science with the acknowledged support of the courts. In *Epperson v. Arkansas* (1968), the U.S. Supreme Court struck down a 1928 Arkansas law prohibiting the teaching of evolution in state schools. In *Mclean v. Arkansas* (1982), the federal district court invalidated a state statute requiring equal classroom time for evolution and creationism.

Edwards v. Aguillard (1987) led to another Supreme Court ruling against so-called "balanced treatment" of creation science and evolution in public schools. In this landmark case, the Court called Louisiana equal-time statute "facially invalid as violative of the Establishment Clause of the First Amendment, because it lacks a clear secular purpose." This decision--"the Edwards restriction"--is now the controlling legal position on attempts to mandate the teaching of creationism: the nation's highest court decisions in Illinois and California have applies "the Edwards restriction" to teachers

who advocate creation science, and to the right of a district to prohibit an individual teacher from promoting creation science, in the classroom.

Courts have thus restricted school districts from requiring creation science in the science curriculum and have restricted individual instructors from teaching it. All teachers and administrators should be mindful of these court cases, remembering that the law, science and NABT support them as they appropriately include the teaching of evolution in the science curriculum.

References & Suggested Reading

- Clough, M. (1994). Diminish students' resistance to biological evolution. *The American Biology Teacher*, 56, pp. 409-415
- Futuyma, D. (1986). *Evolutionary biology*, 2nd ed. Sunderland, MA: Sinauer Associates, Inc.
- Gillis, A. (1994). Keeping creationism out of the classroom. *Bioscience*, 44, pp. 650-656.
- Gould, S (1977) *Every since Darwin: Reflections in natural history*. NY: W.W. Norton & Co.
- Gould, S. (1994, October). The evolution of life on earth. *Scientific American*, 271, pp. 85-91.
- Mayr, E. (1991). *One long argument: Charles Darwin and the genesis of modern evolutionary thought*. Cambridge, MA: Harvard University Press.
- McComas, W. (Ed.). (1994). *Investigating evolutionary biology in the laboratory*. Reston, VA: NABT.
- Moore, J. (1993). *Science as a way of knowing ¾ The foundations of modern biology*. Cambridge, MA: Harvard University Press.
- National Center for Science Education. P.O. Box 9477, Berkeley, CA 94709. Numerous publications such as *Facts, faith and fairness¾Scientific creationism clouds scientific literacy* by S. Walsh and T. Demere.
- Numbers, R. (1992). *The creationists: The evolution of scientific creationism*. Berkeley, CA: University of California Press.
- Weiner, J. (1994). *Beak of the Finch¾A story of evolution in our time*. NY: Alfred A. Knopf.

**See You At The
Annual Spring
Field Trip**

Outstanding Biology Teacher Awardees - 1962 - 1995

Yr.	Name	School
1962	Gerald Tague	Wichita High School East
1963	John Ransom	Derby High School
1964	George Toland	Salina High School
1965	Sherm Nystrom	Wichita High School West
1966	Stanley D. Roth	Lawrence High School
1967	Sister Stephan McCollum	Luckey High School, Manhattan
1968	Richard Dawson	Shawnee Mission North
1969	Paul Willis	Shawnee Heights H.S., Tecumseh
1970	Gene Hampton	Shawnee Mission South
1971	Lloyd Fugate	Turner High School
1972	Frank Nelson	Emporia Senior High School
1973	Jerry Murray	Shawnee Mission South
1974	Dean Jernigan	Shawnee Mission South
1975	Kermit Daum	Derby High School
1976	Lorraine Davis	Parsons High School
1977	Wendell Mohling	Shawnee Mission Northwest
1978	Ken Bingman	Shawnee Mission West
1979	Ron Fox	Shawnee Mission East
1980	George Ratzlaff	Hutchinson Central Jr. High
1981	NONE	
1982	Marc Linton	Logan Jr. High, Topeka
1983	NONE	
1984	George Creighton	Olathe High School
1985	Barry Schartz	Goddard High School
1986	John Wachholz	Salina Central High School
1987	Myron Schwinn	Manhattan High School
1988	Clarke Schartz	Shawnee Mission North
1989	Brad Williamson	Remington-Whitewater H.S.
1990	Steve Case	Olathe High School
1991	Terry Calendar	Wamego High School
1992	Becky Goodwin	Kansas School for the Deaf, Olathe
1993	James Lockard	Shawnee Mission East
1994	Pat Lamb	Manhattan High School
1995	Ken Highfill	Lawrence High School

Matfield Green

When people, land, and community are as one, all three members prosper; when they relate not as members but as competing interests, all three are exploited. By consulting Nature as the source and measure of that membership, The Land Institute seeks to develop an agriculture that will save soil from being lost or poisoned while promoting a community life at once prosperous and enduring.

The Land Institute's mission statement, above, makes our work at Matfield Green a natural outgrowth of our other research, Nature's ecosystem communities run on sunlight and feature material recycling. They are, therefore, self-renewing and sustainable. We believe human communities should apply the same principles, successful for millions of years. In Matfield Green, Kansas, we are "setting up the books" for a new "ecological community accounting" which will measure, as ecologists do for ecosystems, the flow of energy and materials into and out of the community.

Matfield Green is located in the heart of the scenic Kansas Flint Hills on the banks of the Cottonwood River's South Fork. The river bottom in which the town is located is wooded and is surrounded by rolling and rocky hills, most of which are covered by never plowed prairie. Here, thousands upon thousands of cattle have fattened in summer since the late 1800s.

Matfield was a thriving community at the turn of the century, supporting several small groceries, a butcher, a creamery, a general hardware store, a lumber yard and, at various times, other small businesses. As recently as the early 1970s, the town maintained its own school. Today, however, the school and post office are closed and the population has dropped to 50.

Like other small towns, Matfield has lost much of its population to the cities, where young people can make a living. Yet the quality of life in cities is compromised in important ways: air, water and solid waste pollution literally poison the environment and pose myriad threats to human health. Believing that human health is the product of a healthy landscape and community, The Land Institute is committed to discovering another way. Particularly for those who wish to stay in or return to America's small places, we seek "new" ways to conserve cultural information and ecological capital. Toward that end, we hope to

establish in Matfield Green a sort of rural studies center where participants will engage in the discovery of what it means to live within ecological limits.

This is not a community development project. We do not seek to create a utopia in the Flint Hills, nor do we intend to import "experts" who will impose their ideas on local residents. Rather, we believe that every question, properly posed, contains its own answer. We hope, through conversations with our neighbors in Matfield, to arrive at the proper questions and, again in cooperation, to seek answers which are culturally rich and sustainable.

When we consider the thousands of small towns "going downhill" throughout agricultural America, towns in so many ways like Matfield Green, with their closed buildings, houses, schools, lumberyards, and banks, why shouldn't we require that these long ago cut forests now in the form of 2x4s, 2x6s and 2x8s be saved? That alone will save forests. What if people in small towns begin to examine the carrying capacity of their natural community--the number of humans and the lifestyle which can be supported sustainably? What if they think through newly creative ways to live richly through cultural adaptations rather than with material consumption? This can be done by working in the little paces of the ecological mosaic.

Thus we return to the principles of ecological community accounting which will, we hope, inform our dialogue with and about the community of Matfield Green. We assume, first that communities can be studied as ecosystems. That is, we can impose a mental cube around Matfield, and observe what comes in, what goes out, and what activities happen between. We assume, further, that communities are endowed with "ecological capital" such as timber, minerals, deep soil or, as in Matfield's case, grass. The loss of this "capital" through export or destruction must be accounted for (e.g., the export of nutrients in crops and the loss of topsoil downstream). To create a truly sustainable community, the "books" must eventually be "balanced" so that inputs and outgoes are relatively equivalent and are based primarily on renewable resources like sunlight, water and human or animal muscle power.

The Land Institute owns and has renovated the old lumberyard into a small cafe and bakery. It is open to guests from 8 a.m. to noon, Monday through Friday. We are also developing a meeting center in the old grade school. From this base, and in cooperation with our neighbors, we hope to accomplish the following:

- (1) Develop a historical ecological narrative of human habitation in Chase County, including settlement and land use patterns;

- (2) Learn the story of how people made their living on the land at different times;
- (3) Identify and qualify the key flows of energy and materials into and out of the county, as well as their connections to dominant land use and production regimes;
- (4) Construct a simplified, generalizable model of the narrative--a map of key landscape elements and boundaries and description of the ecological impact and contribution to human needs of various settlement and land use patterns.

Fundamentally, we seek to answer Wendell Berry's question, "what will nature help us do here?" for more information, please call 316-753-3405 or 913-823-5376.
 Article Courtesy The Land Institute, Salina, KS.

So Where Has Your Newsletter Been?

While your editor has been somewhat lazy and not very happy with the newsletters in the past. Consequently he purchase a program that would help to produce a better newsletter - I HOPE! While this is the result. It would be very helpful if any of you had suggestions that you would send them my way. I realize that we do not have a table of contents. That will come. It has taken me some time to learn this program and format the newsletter.

Another problem that we have is that Salina High School Central copies the newsletter at no cost to us. The only stipulation is that it be done at a time when the copy machine is not needed by other teachers. This means that sometimes I have to wait a few days after it is complete. Then comes the labels and insertion. In order to complete this I have students help and they get community service for their biology class.

Well to sum up, if you don't like this newsletter I would be more than willing to let you produce it. If you really would like to help, send me some information and articles. Paper clip them with an e-mail message.

Please send suggestions and ideas. Working together we will all benefit.

By the way, soon this newsletter will probably be available on the internet. Be ready for change!

Wamego Regional

Science & Engineering Fair

Mission:

To enhance the knowledge and understanding of science through competition and scholarship.

What is the Science Fair:

The Science Fair is a collection of exhibits developed and displayed by elementary, junior high and senior high students under the guidance of teachers and other interested persons to demonstrate principles and applications of the sciences.

Why sponsor "The Fair"?

The Fair provides a forum for young scientists to display their creative and critical thinking skills. Over 300 of the area's top students from 48 school districts gather annually to hypothesize, investigate and present a variety of topics. Attendance includes over fifteen hundred friends, families and students interested in the sciences.

Awards:

Some of the awards presented include:

Senior Division - The two Grand Champions receive an expense paid trip to the International Science Fair in Toronto, Canada in May 1995 in addition to a plaque of recognition.

Junior Division - First place will receive a plaque, medal and ribbon.

Second and third places will receive a medal and a ribbon. Fourth and fifth places will receive a ribbon. Winners are eligible to win special awards.

Elementary Division - First place will receive a plaque, medal, and ribbon. Second and third places will receive a medal and a ribbon. Fourth and fifth places will receive a ribbon. Winners are eligible to win special awards.

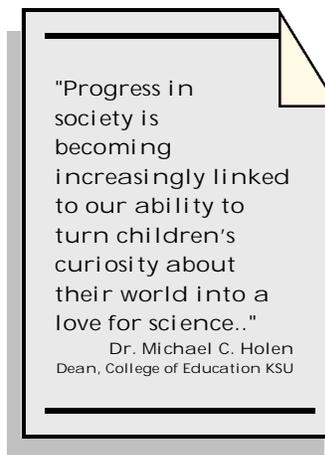
All contestants will be awarded ribbons and a Certificate of Participation.

Competition:

Divisions include Biology, Chemistry, Computer Science, Earth and Space Science, Mathematics, Physics, and Social Science.

Geographical Region:

Students from Brown, Clay, Dickinson, Geary, Jackson, Jefferson, Lyon, Marshall, Morris, Nemeha,



Osage, Pottawatomie, Riley, Shawnee and Wabunsee counties may participate.

Sponsorship:

The Fair is an activity of the Wamego Public Schools, USD 320. Funds for operation of the program are contributed by corporations, private and professional organizations and individuals. The Fair is conducted by volunteers such as teachers, scientists, business persons and professionals. Donations are tax deductible. For more information contact Terry Callender, your KABT President Elect.

**Pawnee Grasslands
June Trip To Colorado**

On June 7, 1996 we will car pool in Salina and head out to the Pawnee National Grasslands in Northeastern Colorado. We will camp at the National Forest Campground near Briggsdale, CO.

For five summers I assisted Ed Butterfield, who with the Denver Audubon Society and University of Northern Colorado, sponsored a Grassland Institute. Presently Ed is setting up some events for us and also plans to be their to assist us with presentations. Ed is currently retired from the Aurora Public Schools and is past president of the Colorado Biology Teachers.

We will hike the Pawnee Buttes, observe Mountain Plovers, longspurs, falcons, study the ecology, visit ranchers and other activities to learn first hand about the short grass prairie. Look for complete details in you April newsletter.

**Z-Bar and Matfield Green
Spring Field Trip & Meeting**

Dates:..... May 18-19, 1996

Place: Z-Bar Ranch & Matfield Green

Time:10:00 AM Saturday at Z-Bar Ranch

Events:

Paul Willis will lead us on a tour of the Z-Bar Ranch. Wildflowers, ecology, birds, etc.

Camping will be available in the area for Saturday night.

Sunday we will spend time in Matfield Green and be given a tour by The Land Institute.

Read about Matfield green in this newsletter. We will have complete details on the Spring Trip in the April Newsletter. If you have any questions concerning the trip please call Steve Case or John Wachholz.

Top 10 Reasons To Go Organic

Excerpted from an article by Sylvia Tarwse, and donated by Alfalfa's Markets in Boulder, Denver, and Vail, Colorado.

- 1. Protect Future Generations** - The average child receives four times more exposure than an adult to at least eight widely used cancer-causing pesticides in food. Food choices you make now will impact your child's health.
- 2. Prevent Soil Erosion** - The Soil Conservation Service estimates more than 3 billion tons of topsoil are eroded from the United States croplands each year. That means soil erodes seven times faster than it's built up naturally.

Soil is the foundation of the food chain in organic farming. However, in conventional farming, the soil is used more as a medium for holding plants in a vertical position so they can be chemically fertilized. As a result, American farms are suffering from the worst soil erosion in history.
- 3. Protect Water Quality** - Water makes up two-thirds of our body mass and covers three-fourths of the planet. The Environmental Protection Agency (EPA) estimates pesticides--some cancer causing--contaminate the groundwater in 38 states, polluting the primary source of drinking water for more than half the country's population.
- 4. Save Energy** - American farms have changed drastically in the last three generations, from family-based small businesses dependent on human energy to large-scale factory farms. Modern farming uses more petroleum than any other single industry, consuming 12% of the country's total energy supply. More energy is now used to produce synthetic fertilizers than to till, cultivate and harvest all the crops in the United States.

Organic farming is still based on labor-intensive practices such as hand weeding and green manure and crop covers instead of synthetic fertilizers to support soil.
- 5. Keeping Chemicals Off Your Plate** - Many pesticides approved for use by the EPA were registered long before extensive research linking these chemicals to cancer and other diseases had been established. Now the EPA considers 60% of all herbicides, 90% of all fungicides and 30% of all insecticides carcinogenic. A 1987 National

Academy of Sciences report estimated that pesticides might cause an extra 4 million cancer cases among Americans. The bottom line is that pesticides are poisons designed to kill living organisms and can also harm humans. In addition to cancer, pesticides are implicated in birth defects, nerve damage and genetic mutations.

6. Protect Farm Workers - A National Cancer Institute study found that farmers exposed to herbicides had six times more risk than nonfarmers of contracting cancer. In California, reported pesticides poisonings indicate farm workers suffer the highest rates of occupational illness in the state. Farm worker health is also a serious problem in developing nation, where pesticides use can be poorly regulated. An estimated 1 million people are poisoned annually by pesticides.

7. Help Small Farmers - Although more and more large-scale farms are making the conversion to organic practices, most organic farms are small, independently owned family farms of fewer than 100 acres.

It's estimated the United States has lost more than 650,000 family farms in the past decade. And with the U.S. Department of Agriculture predicting that half of this country's farm production will come from 1% of farms by the year 2000, organic farming could only be one of the few survival tactics left for family farms.

8. Support a True Economy - Although organic foods might seem more expensive than conventional foods, conventional foods prices don't reflect hidden costs borne by taxpayers, including nearly \$74 billion in federal subsidies in 1988. Other hidden costs include pesticides regulation and testing, hazardous waste disposal and cleanup, and environmental damage. For instance, if you add in the environmental and social costs of irrigation to a head of lettuce, its price would range between \$2 and \$3.

9. Promote Biodiversity - Mono-cropping is the practice of planting large plots of land with the same crop year after year. While this approach tripled farm production between 1950 and 1970, the lack of natural diversity of plant life has left the soil lacking in natural

minerals and nutrients. To replace the nutrients, chemicals fertilizers are used, often in increasing amounts.

Single crops are also much more susceptible to pests, making farmers more reliant on pesticides. Despite a tenfold increase in the use of pesticides between 1947 and 1974, crop losses due to insects have doubled--partly because some insects have become genetically resistant to certain pesticides.

10. Tastes Better and Is Better for You - There's a good reason why many chefs use organic foods in their recipes--they taste better. Organic farming starts with the nourishment of the soil, which eventually leads to the nourishment of the plant and ultimately to the nourishment of our own bodies. Can you imagine growing beautiful food from organic nourishing soil, preparing the food the food and presenting it on the table--then taking a can of bug killer and lightly spraying it on the food before eating? Do you think it would affect the taste? Do you think it would affect your body? Imagine if that pest killer was part of what made the plant grow.

From [Healthy School Lunch Action Guide](#) by Susan Campbell & Todd Winant

"A nation of youth who take responsibility for Earth's well-being by making choices and taking actions which promote health for themselves, Earth and its inhabitants."

Vision Statement For Healthy School Lunch Program - Taken From Healthy School Lunch Action Guide by Susan Campbell & Todd

Lab Activity: **Bacterial Growth & Antiseptic Techniques**

Purpose: To discover the presence of bacteria and test the effectiveness of various aseptic techniques or methods.

Materials: Five sterile petri dishes of nutrient agar — Labeling marker - fine point — Dial anti-bacterial soap — Sterile alcohol wipe — Hot/cold water — 2.25% Clorox solution

Procedure:

- ⇒ Label dishes: 1) unwashed, 2) washed in warm, 3) washed in warm with soap, 4) wiped with alcohol, and 5) dipped in Clorox (2.25%). Mark the dishes using a permanent fine point marker.
- ⇒ Touch the first dish with the tips of your fingers for 2 seconds.
- ⇒ Wash hands with warm water and allow to air dry. This may take some time. Try not to shake the hand. **DO NOT USE A PAPER TOWEL AND DO NOT SHAKE OR MOVE HANDS WHILE AIR DRYING!** Touch the second dish in the same manner.
- ⇒ Wash hands with hot water and soap. Next allow them to air dry the same manner. Touch the third dish.
- ⇒ Wash hands with a sterile alcohol wipe. Clean under the fingernails also and allow to air dry as above. Touch the fourth dish.
- ⇒ Dip your hands in a 2.25% Clorox solution and allow to air dry. Touch the fifth dish.
- ⇒ Incubate over night at 98.6 degrees Fahrenheit (37 degrees Celsius). Be sure to incubate the plates upside-down to avoid condensation.
- ⇒ Count the bacterial colonies from all fingerprints for all the plates and record results. (See Sample Data Table)

Data Table:

	Touched With Unwashed Fingers	Touched With Washed Fingers - Warm Water	Touched With Fingers Washed In Warm Water and Soap	Touched With Fingers Wiped With Sterile Alcohol Wipe	Touched With Finger Tips Dipped In 2.25% Clorox Solution
Finger	No. of Colonies	No. of Colonies	No. of Colonies	No. of Colonies	No. of Colonies
1					
2					
3					
4					

Construct a graph of your results using graph paper. You may have to count colonies using a stereo microscope.

Questions:

- ◆ Will the bacteria counts vary if the experiment was performed at different times of the day?
- ◆ Why is it important to not dry your hands with a paper towel before touching the agar?
- ◆ Does alcohol kill the bacteria on your hands? Why or why not? Explain your answer.
- ◆ What do you think the effect would be if you used bacterial versus anti-bacterial soap?
- ◆ How can you tell if bacteria, yeast or mold is growing on the dishes?
- ◆ What do bacteria need for growth?

Results and Conclusions:

Write five questions concerning this lab and give two methods that could be implemented to improve the procedure for this lab.

This activity involves collecting data, graphing the data, analysis, and numerous laboratory techniques. The concepts and discussion topics from this lab are broad. Topics from populations to culturing can be discussed. Variations to this lab allow for considerable interaction between students and the instructor.

We have had good success with this activity. It creates more questions for further study. It is definitely an open ended investigation. All students are interested in bacterial growth and transfer.

This activity was developed with the aid of two independent study students, Jill Fisher and Jill Covert who now attend KU. Jim Schuth of HACH Company assisted with advice and in answering questions.*As an added note you can divide the dishes in half using a marker and use each half as a separate test. This will save materials and cut the cost of the activity. John Wachholz, Salina High School Central, 650 E. Crawford Street, Salina, KS 67401-5119

I fully realize that I have not succeeded in answering all of your questions. . .

Indeed, I feel I have not answered any of them completely. The answers I have found only serve to raise a whole new set of questions, which only lead to more problems, some of which we weren't even aware were problems.

To sum it all up . . . In some ways I feel we are confused as ever, but I believe we are confused on a higher level, and about more important things.

One should read this to their students at the end of the school year.

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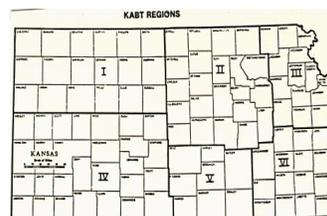
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KABT Membership Application - Renewal - Form

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Enclosed Dues For KABT \$10.00 / Year - Life Membership Available For \$200

Yearly Due Date is September 1st. - Make Check Payable To KABT - Tax ID #: 48-0945206

Send Dues & Information To:

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