Commission on the History, Philosophy and Sociology of Soil Science
International Union of Soil Sciences
and
Council on the History, Philosophy and Sociology of Soil Science
Soil Science Society of America

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Newsletter

Contents

Soil History Website Editor Needed

Eric Brevik has been maintaining a history of soil science website for S205.1 – Council on the History, Philosophy, and Sociology of Soil Science of SSSA. At the present time Eric is too busy to keep the website updated, and someone willing to take over the upkeep of the website would be welcomed. If interested, please contact Eric at Eric.Brevik@dsu.nodak.edu. Eric can also provide all the current files for the website.

The website is hosted by SSSA at https://www.soils.org/committee/S205.1/.

Photos Wanted for Soil Survey Horizons Profiles in History

The Soil Science Society of America journal Soil Survey Horizons is running a "Profiles in History" feature in each issue. The idea behind "Profiles in History" is to publish a photograph or figure that is significant in the history of soil science along with a short 2-4 sentence explanation of the picture or figure.

Submissions are welcomed from anyone with a relevant picture or figure. Soil Survey Horizons will publish color pictures or figures, and there is no cost for publication. Pictures do not have to

be from the United States; international pictures are welcome. To submit a picture or figure, please send a high-quality jpeg or tiff file and a brief explanation of the figure to Eric Brevik at Eric.Brevik@dsu.nodak.edu or Sam Indorante at Sam.Indorante@il.usda.gov.

The following are three examples of items that have been published in the "Profiles in History" feature:

Many soils workshops were held around the world in an effort to improve soils knowledge and Soil Taxonomy. However, working in exotic locations came with a price! Here, Ernest Schlichting (Germany, left) and Ben Hajek (Auburn University, right) react after receiving inoculations before going into the Brazilian interior for the Eighth International Soil Classification Workshop on Oxisols (ICOMOX), 1986. (Photo courtesy of Stan Buol).

Dr. F. DeConinck, retired from the Geological Institute in Ghent, Belgium, examines a soil profile at the July 2001 International Working Meeting on Micropedology in Belgium. Dr. DeConinck is world-renowned for his work on Spodosols.

Soil Color

This set of standard soil color vials is one of two known sets. Soil color was important soil survey information from the beginning, but naming soil colors and standardizing them was a challenge for many years.

In the 1920s the Committee on Soil Color Standards for the American Association of Soil Survey Workers recommended a distribution of sets of soil samples in small vials. Such vials were carried out to the field for comparisons (see photo of vials).

The Bureau of Soils, USDA, published a list of 32 names for colors in 1914, but standards were not mentioned (see photo of list). Assignment of color was up to the soil surveyor until 1941 when Munsell color charts came into use.

Obituaries

Hans van Baren

1936-2009
Deputy Secretary General IUSS 1990 - 2002
Book Review Editor ISSS/IUSS 1970 – 2008
IUSS Honorary Member 2006

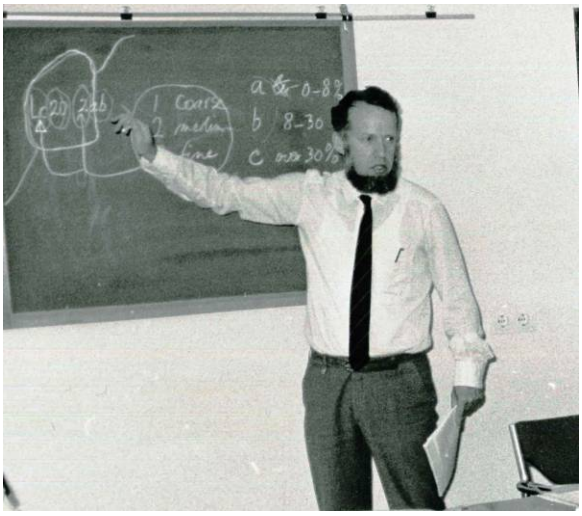
Drs J.H.V. (Hans) van Baren passed away on 27th January 2009. Hans van Baren has been a long-term officer and first class leader in the ISSS and IUSS, has made major contributions to the Soil Map of the World and has been instrumental in the establishment and development of the unique World Soil Museum (ISRIC) in Wageningen.

Hans was born in The Hague, but his formative years were spent in Utrecht. Hans studied geology at the University of Utrecht and followed courses in Wageningen under the guidance of Professor C.H. Edelman. After his graduation, he took the initiative to establish contact with UNESCO, which at that time had a system whereby young scientists were recruited to work in UNESCO projects around the world. With the support of his uncle, Professor F.A. van Baren, Hans went to Paris where he was offered employment. Based in Rome he assisted with the major task to compile the FAO-UNESCO Soil Map of the World. This was a key challenge and its completion in the mid 1970s is by many regarded as an important milestone in soil science.

Hans with his uncle Prof. F.A. van Baren and aunt in Utrecht, late 1960s.

After three years working in the FAO-UNESCO Soil Resources Office, Hans went for FAO to East Pakistan (Bangladesh) where he conducted soil surveys. This posting lasted for two years after which he was sent to Kenya to assist with the development of the national soil survey institute. With his Dutch colleagues, the first soil reconnaissance of the whole country was made followed by detailed mapping of areas of high agricultural potential.

With the experience gained in Rome, Bangladesh and Kenya, Hans was offered a post in the International Soil Museum (ISM, now ISRIC - World Soil Information), which at that time had only recently been set up by the ISSS. Together with his colleagues, he set about collecting and preparing soil monoliths of different soils according to the classification of the FAO-UNESCO Soil Map of the World. These monoliths were the foundation of the unique ISRIC collection of today. He was acting director of the ISM from 1975 to 1978 and deputy director from 1978 to his retirement of ISRIC in 1997.



Hans teaching about the FAO-UNESCO legend in 1984.

The transfer of the International Soil Museum from Utrecht to Wageningen took place in 1978. A sectional building, specially designed for ISM, was constructed containing a lecture room, an exhibition hall (World Soil Museum), offices for staff and laboratories for soil monolith preparation and soil analysis. Under the guidance of Hans the Museum expanded and fulfilled an important role in the exhibition of soils of the world, and the world of the soils. He was much involved in the collection and classification of the soil monoliths.

He started the book review section of the ISSS Bulletin in the early 1970s. Each year the number of reviews grew and in the 1990s Hans reviewed 100 to 150 books annually for the Bulletin. Many readers of the Bulletins have indicated that they found the book review section the most useful and informative part of the Bulletin. In 1990, he was elected Deputy Secretary General of the ISSS and became heavily involved in the day-to-day management of the society including its transformation to a union (IUSS). He has been supportive for national soil science societies, particularly in developing countries and maintained a wide global network of soil scientists. In 2002, he officially retired from his Deputy Secretary General post of the IUSS but he continued to review books for the IUSS Bulletin until 2008. He was made IUSS honorary member in 2006.

Hans at his ISRIC desk in 2000, reviewing books, servicing IUSS members.

Hans was also active in museums and social projects in Wageningen and was knighted (*Ridder in de Orde van Oranje-Nassau*) for all his activities in November 2008. By that time a brain tumor had already been found and he was to start chemo- and radiation therapy. Two months after his knighthood, he passed away. Hans was a modest man, with great humor, insight, work ethics, networking abilities and interests in the world around him. He was a friend of the soil, but most of all a caring and dedicated friend for those who knew him. A friend forever has died.

Hans and the mayor of Wageningen on 20th November 2008, knighted *Ridder in de Orde van Oranje-Nassau.*

Leland Gile
Leland Gile passed away on Sunday, November 15, 2009. Curtis Monger can be contacted at cmonger@nmsu.edu for more information.

Raymond Daniels
Raymond Bryant Daniels, 84, of Midlothian, VA formerly of Raleigh, NC passed away on June 21, 2009. Mr. Daniels was born on February 15, 1925 in Adair, Iowa. In 1957 Mr. Daniels received his PhD in soil geomorphology from Iowa State College. During his career as a soil scientist, Mr. Daniels conducted, and was well known for, his extensive research on soil erosion along the eastern coast of the US.

Bouyoucos Conference

A Bouyoucous Conference was held June 1-3, 2009 focusing on Soils and Food Security in a Changing Climate. The idea behind this conference was to bring together scientists and social scientists from academia, government, and industry to hold in-depth discussions on the conference topic in a small group setting. The conference consisted of presentations by several of the participants and a significant amount of discussion and brainstorming. The major product of the conference to this point has been a jointly issued appeal for soil stewardship. Additional products are planned in the coming months. Funding for Bouyoucos Conferences is provided by the Soil Science Society of America through a grant from G. Bouyousos.

The Bouyoucos Conference Appeal for Soil Stewardship

An Urgent Appeal for Soil Stewardship
From the 2009 Bouyoucos Conference on
Soil Stewartship in an Era of Global Climate Change

Upon viewing the deforested and eroded landscape near Attica, Greece in the 4th century BC, the philosopher Plato vividly described the loss: "What now remains compared with what then existed is like the skeleton of a sick man, all the fat and soft earth having wasted away, and only the bare framework of the land being left." Plato's observation of soil degradation is no less relevant 2400 years later. If the importance of healthy soils for nutritious food and clean water has been known for millennia, why has an enduring commitment to thoughtful soil stewardship proven so elusive to so many and for so long?

Soil is a fundamental source of life. It plays a critical role in providing water, nutrients, and support for plant growth, recycling organic materials and protecting surface and ground waters from contaminants. Soil is the base of the terrestrial food chain, directly or indirectly providing over 97% of the calories that now nourish more than six billion people. This modern bounty was enabled by a providential combination of weathering processes that created fertile soils from inert rock and favorable climates suitable for growing a variety of food plants. At the start of the 21st century we express our deep-felt concern that three of the integral resources of agricultural production, soil, water and climate, are increasingly impaired by human actions with potentially serious consequences for global food security.

We are, each of us, people of the soil. Most indigenous peoples and organized religions have oral or written accounts of human origin or experiences that include a deep reverence associated with the life that springs from the soil. Our cultural traditions acknowledge the significance of soil even if our environmental practices do not. The facts about the current condition of global soil resources are sobering. Recent estimates are that one fourth of the earth's inhabitants already depend on degrading lands. Future generations may be forced to obtain ever more sustenance from decreasingly available productive land. Potential changes in rainfall and temperature patterns and their variability as the global climate changes add yet another challenge. There is a long and tragic correlation between cultures that fail to protect the health of their soil and the demise of those same cultures. Life, as we perceive it, exists only on a planet having soil, as we know it. Soil is the interface between lifeless cosmic rock and all terrestrial life. Healthy soil is itself a living community, containing up to four billion microorganisms in each teaspoon. But soil is also a fragile, finite resource requiring care. Destroying soil is the equivalent of destroying the self-renewing capacity of the Earth.

Too often we forget our shared human history and the reality of our dependence on the soil. Too often we fail to enact our historical and rightful commitment to the land, our home place. We are therefore shirking our inherent responsibility to care for the planet. The poor of the world are those most immediately and dramatically affected by both soil degradation and climate change, therefore, soil stewardship is both an environmental and a moral challenge to society.

What is the way forward? What is our task in the face of this reality, this disconnect between the importance and the condition of our soil? We recognize and affirm a cultural and physical link to soil. We assert a shared obligation to soil stewardship that is based on more than purely utilitarian concerns. We acknowledge that soil degradation is an ethical issue, that science and economics alone will not and can not determine a proper course of action. We cannot therefore ignore the mistreatment of our lands and at the same time escape moral denunciation. Encouraging a more broad and thoughtful soil stewardship ethic is not naïve, idealistic, or

altruistic but rather perceptive, pragmatic, and essential to our societal response to the challenges posed by global climate change and an increasing human population.

Given that our environmental problems stretch beyond the domain of any particular discipline, genuine solutions to these problems will only be found by engaging all facets of the human mind. **We call for soil scientists to humbly and dutifully work across disciplines – including the humanities and the arts, in efforts to engage in a practice of public scholarship with the goal of building new relationships and networks that advance the soil stewardship ethic. We call for the products of such collaborations to be openly communicated to the public and to policy makers, raising awareness and urging proactive action. Finally, we call for the recognition and celebration of successful soil stewardship stories to serve as examples, to inspire, and to lead us forward.**

Conference participants included: **Organizers** Tom Sauer and John Norman, **Keynote Speakers** Cal DeWitt, Fred Kirschenmann, and Michael Nelson, **Participants** E. Scot Blehm, Sebastian Braum, Eric Brevik, Tom Bruulsema, Robert Dobos, Dory Franklin, Anne Hallum, Robert Horton, Amy Kaleita-Forbes, Mary Beth Kirkham, Tyson Ochsner, Jean Steiner, and John Tunink. For more information on the Bouyoucous Conference on Soils and Food Security in a Changing Climate contact Tom Sauer at sauer@nstl.gov.

The Value of Historical Study for Scientists

Letter to the Editor

The following excerpt is from a letter to the editor in THE SCIENTIST, July 2009, p. 14, written by W. R. (Bill) Klemm, a Professor of Neuroscience & Professor of Veterinary Integrative Biosciences in the College of Veterinary Medicine & Biomedical Sciences, Texas A&M University:

"Too many science graduate students are only exposed to recent papers in their field. Nobody seems to care much about the history of a field in general or in the citation history of current "hot papers." While it is appropriate to overlook papers that should have been integrated into common knowledge, too many key papers just get lost. I think it would be helpful if every graduate program had a course in the history of the field and that seminar discussions of current papers include a review of the related history."

Science Education Article

An article in the January 2009 issue of THE SCIENTIST http://www.the-scientist.com/2008/10/1/29/1/ argues: A basic course in the history and philosophy of science should be a compulsory element of an undergraduate degree in any science discipline.

USDA-NRCS Soils Planner

The 2010 NRCS Soil Planner will have soil history as its theme this year. For more information on the planner or to obtain copies contact Maxine Levin at maxine.levin@wdc.usda.gov.

Student Essay Contest Soil Survey Horizons

Soil Survey Horizons is announcing an essay contest for students at the graduate and undergraduate levels. The winner of each category will receive a one year membership to the Soil Science Society of America and their paper will be published in Soil Survey Horizons.

Topic: Any topic related to soils, agriculture, field ecology, soil survey, or history of soils. Topic should be related to the scope of Soil Survey Horizons readers and may be research results or non-research topics. Topics can include:

- Soil survey problems
- Innovative methods and equipment
- Evaluation of the performance of field equipment
- Landscape and soil research studies
- Case studies from consulting work
- Classification issues in soil taxonomy systems
- Profiles in history
- Travelogues from soil expeditions
- Personal essays
- Summer soil survey experiences

A suggested limit is 800 to 2000 words for main body of manuscript (excluding title, captions, references, etc). Also, photos/illustrations/ tables are encouraged. Research papers must follow the typical Soil Survey Horizons format for content (Introduction, Materials and Methods, Results, Discussion, Conclusions) and citations/references.

Scope: Either research results or original information. The article should be the original efforts of the submitter. While faculty members can provide some review and be junior author, the submission must represent the work of the student. The students are requested to have a faculty sponsor to help coordinate the submission if multiple entries per institution. Only one entry per person.

Who: There will be two categories, both undergraduate and graduate.

The article should be written while the student is an undergraduate or graduate student at an accredited institution within the current academic year.

In cases where there are multiple entries from a single institution, sponsoring faculty advisors are requested to help judge local entries. But more than one entry per institution is permitted.

Submitted articles will be evaluated by the editorial board, and winners of each category (as well as runner ups) will be published in Soil Survey Horizons at no cost to the author. Criteria for competition will be originality, creativity, interest, and quality of writing (grammar, punctuation, style, logic, organization).

Deadline: November 1, 2010. Manuscripts are to be submitted electronically to Eric Brevik and can be submitted at any time prior to the deadline

Questions should be directed to Eric Brevik, student contest coordinator, (Eric.Brevik@dsu.nodak.edu), or Lisa Al-Amoodi, Managing Editor (lalamoodi@agronomy.org)

Article

Mentoring of Early United States Soil Scientists by Collier Cobb and Allen Hole

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Note: A more comprehensive version of this article is scheduled to appear in an upcoming issue of the journal "Physics and Chemistry of the Earth" as part of a special issue that resulted from the history session **"**Historical Links Between Soil Science and Geology" organized by Edward Landa and Benjamin Cohen at the joint Soil Science Society of America-Geological Society of America meeting in Houston, Texas, USA in 2008.

Introduction

Organized soil survey efforts in the United States were just getting underway at the beginning of the 1900s and academic programs that trained students to map soils had not yet been established (Helms, 2002). Geologists had the field training to create the needed maps, and were often hired to do so (Coffey, 1911; Helms, 2002). Collier Cobb and Allen D. Hole were geology professors who both noticed and took advantage of this new job market for their students. Both men sent a number of students to the U.S. soil survey program, some of whom went on to become well-known in the field of soil science. Hole also sent some students on to academic soil science positions where they became well-known and respected within their field.

Collier Cobb

Basic Background

Collier Cobb (Figure 1) was born at Mount Auburn Plantation, North Carolina on March 21, 1862 (Prouty, 1936). When he was only 17 years old, Cobb prepared a map of the geology and geography of North Carolina that was adopted by the State Board of Higher Education and used in North Carolina schools for 25 years (Lance, 1937). From 1878-1881 Cobb attended Wake Forest University and the University of North Carolina, after which he started a 5-year career as a secondary education teacher in the North Carolina public schools (Prouty, 1936). In 1886 Cobb enrolled in the Geology program at Harvard (Prouty, 1936; Lance, 1937).

Figure 1. Collier Cobb. Photo from http://museum.unc.edu/exhibits/names/cobb-hall.

Cobb was an assistant to the renowned geologist Nathaniel Shaler while at Harvard. Among other accomplishments, Shaler is well known for his work on soils (Tandarich, 1998). In 1888 Cobb was appointed a teaching assistant at Harvard and in 1889 he received his M.A. degree in Geology. Cobb took an appointment as an instructor of Geology at the Massachusetts Institute of Technology in 1890 (Lance, 1937).

Cobb returned to the University of North Carolina (UNC) in 1892, and in 1893 was made the first head of the Geology Department, a position he held for nearly 40 years before retiring in 1932 (Prouty, 1936). According to contemporaries who wrote professional obituaries, Cobb was most noted for his work in human geography and coastal processes (Prouty, 1936; Lance, 1937). Cobb was also reputed to be a great world traveler, visiting and being highly respected in many foreign countries. He died November 28th, 1934 in Chapel Hill, NC at the age of 72 years.

Professional Life

Cobb published at least 66 items, including journal articles, abstracts, aids for high school teachers, and newspaper articles related to his professional interests (Prouty, 1936; Lance, 1937). Although Cobb was hired as a geologist at the University of North Carolina, evaluation of his publication record seems to indicate that he was more interested in human geography than in geology. He also had an intense interest in the geology and geography of his home state of North Carolina. Cobb's most frequent topics for publication were North Carolina geology/geography (11 publications), human geography (11 publications), coastal processes (9 publications), and eolian processes (6 publications), but Cobb covered many other topics in his professional writings as well. Thirty-five of Cobb's 66 (53%) professional publications were published in the Elisha Mitchell Scientific Society Journal, a periodical published by the North Carolina Academy of Science.

Cobb did not publish his first soils item until 1925, despite identifying soils as a career route for his students as early as about 1900 and offering soils courses at UNC by 1905 (Helms, 2002). All of Cobb's soils publications were in the form of abstracts, and concentrated on soils in aeolian environments. Cobb had a total of five soils-related publications, all abstracts. His final two publications were abstracts on soils in dune sands, both published in 1932.

In 1928 Cobb published an abstract titled "Some American Pioneers in Soil Science" (Cobb, 1928). This abstract provides an interesting look at Cobb's perspective on who had contributed to soil science in the early part of the 1900s. Cobb's selected pioneers were Gerard Troost, Eugene Hilgard, Joseph Killibrew, Milton Whitney, Collier Cobb, and Frank Cameron. Looking at this list from the perspective of some 90 years later, Hilgard, Whitney, and Cameron all remain solid, understandable choices. The author is not familiar with Troost or Killibrew, but from the information given in the abstract (Cobb 1928) Troost appears to have been a geologist and Killibrew a plant breeder. Cobb placing himself on this list is, however, the most interesting entry. At the time Cobb (1928) was written, the sum total of Cobb's contribution to the soil science literature was two abstracts published in the Journal of the Elisha Mitchell Scientific Society, one in 1925 and one in 1927. Cobb had never, to the best of the author's ability to determine, lead a soil survey team, published in a soils journal, or published a full length soil article. In the author's opinion, students of Cobb such as Hugh Hammond Bennett or George Nelson Coffey would have been better choices than Cobb himself. Other individuals who would have been well-known for their work with soils in 1928 and were more deserving than Cobb of being on a list of six American soils pioneers include Thomas Chamberlain, George Merrill,

William J. McGee, Franklin H. King, C.C. Hopkins, Curtis Marbut, and Cobb's own mentor from Harvard, Nathaniel Shaler.

Cobb did, however, make a major contribution to the American soil science community. Cobb started teaching a class titled "Special Course in Soil Investigation" in 1905, followed by other soils courses such as "Origin and Nature of Soils" and establishment of a Bachelor of Science in Soil Investigation degree program at UNC (Helms, 2002). Cobb was also successful in persuading the U.S. soil survey director, Milton Whitney, to allow UNC graduates who were experienced in soil survey, such as George Coffey and Williamson Hearn, to spend time at UNC training UNC students in soil survey techniques (Helms, 2002). Cobb's work to establish the first academic training program expressly in soil survey was immensely valuable to the fledgling U.S. soil survey program.

Soil Science Students

As noted above, Cobb's greatest contribution to American soil science was through the training of and accomplishments achieved by his students. Shortly after the U.S. soil survey was created, Cobb established a Bachelor of Science in Soil Investigation at UNC to train students in the field mapping of soils. Cobb sent at least 7 students to U.S. soil survey by 1902, and sent a minimum of 11 total documented students to the U.S. soil survey program over his career (Helms, 2002).

The two most accomplished of Cobb's students, from a soil survey perspective, were G.N. Coffey and H.H. Bennett. Coffey was the first of Cobb's students to be hired by the soil survey (Helms, 2002). Coffey is widely recognized as being ahead of his time in soil classification (Cline, 1977; Simonson, 1989; Buol et al., 1997; Brevik, 1999; Helms, 2002). Coffey held a number of positions in the U.S. soil survey program, rising as high as Head of Soil Classification and Correlation (Brevik, 1999). Coffey also served as the second President of the American Society of Agronomy and was an early pioneer in soil erosion by water studies (Coffey, 1913a) and worked on early fertilizer trials (Coffey, 1913b).

Bennett began with the U.S. soil survey in 1903. He is best known for his work to control soil erosion, and tended to include information on soil erosion in the soil surveys he worked on. He was the first chief of the U.S. Soil Conservation Service when it was established in 1935 and became known as the "Father of Soil Conservation". Coffey and Bennett met during Coffey's senior year at the University of North Carolina and the two began a life-long friendship (Bureau, 1961).

Williamson E. Hearn and Thomas D. Rice were two other Cobb students who enjoyed long soil survey careers and whose names appear on numerous soil survey reports from the early 1900s (Holman et al., 1939). Both Hearn and Rice worked with Coffey on field soil survey parties (Coffey and Hearn, 1902a; Coffey and Hearn, 1902b; Coffey et al., 1912; Coffey et al., 1915).

In addition to the students he sent on to soil survey careers, Cobb trained several students who went on to careers in soil chemistry and agronomy (Helms, 2002). Cobb's own son, William Battle Cobb, made a career out of soil science. W.B. Cobb started with the soil survey, but like his father continued his schooling and made the majority of his career in the academic world, first at Louisiana State University and then moving to North Carolina State University as a soil scientist in 1924 (Helms, 2002).

Allen Hole

Basic Background

Allen David Hole was born in Bridgeport, Indiana on August 6, 1866. Hole began his career as an educator in 1885 teaching in rural school houses where he had students from several different grade levels in a single classroom. All told, Hole spent eight years between 1885 and 1900 teaching at schools in Indiana, Wisconsin, and Tennessee. In between his teaching jobs, Hole attended Earlham College and worked a variety of jobs including at a horticultural nursery, as a draftsman at an iron works, and as the interim manager of a creamery. Hole attended Earlham College for the first time in 1889-1890 and returned to finish his schooling from 1895-1897. He received his B.S. and M.A. degrees in natural sciences in 1897 and 1901 (Hole, 1991).

Hole began teaching as an instructor at Earlham College in the Fall of 1900 (Figure 2). Within the geology program at Earlham, Hole was mentored by Joseph Moore, who had studied at Harvard University under Louis Agassiz. By 1902, a separate Geology Department had been established at Earlham and Hole's responsibilities were completely within the teaching of geology (Hole, 1991). When Moore died in 1905, Hole became the Curator of the Earlham Museum in addition to his teaching duties.

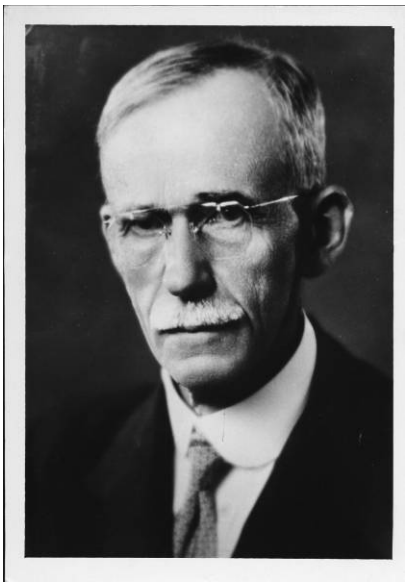


Figure 2. Earlham faculty photograph of Allen D. Hole. Photo courtesy of the Faculty Photograph Collection, Earlham College Archives, Richmond Indiana.

Hole also continued his education while teaching at Earlham. He enrolled in the Geology graduate program at the University of Chicago in 1901, where he worked under Thomas Chamberlain in the area of glacial geology. During his time at the University of Chicago he spent his summers mapping alpine glacial deposits for the U.S. Geological Survey (USGS) in the Rocky Mountains, receiving his Ph.D. in 1910. Unlike Cobb, Hole began working with soils early in his career. During the summer of 1911, Hole was placed in charge of a soil survey covering three Indiana counties on behalf of the Indiana Geological Survey. Hole died on August 23, 1940 in Philadelphia, Pennsylvania at the age of 74 years (Hole, 1991).

Professional Life

Hole's earliest publications were in fluvial and glacial geology, while his most frequent topics of publication throughout his career were glacial geology and soil survey. Other topics of

published research by Hole included paleontology, mass wasting, and economic geology. The most frequent outlets for publication of Hole's work included the Proceedings of the Indiana Academy of Science and the Annual Report of the Indiana Geological Survey.

Hole's primary job at Earlham College was teaching, and it is a charge that he seemed to take seriously. Hole's approach to teaching was to engage his students in a recitation process where the student was confronted with a question that required the students to apply geological principles to situations posed to the class. The ultimate goal of this technique was to push the students to think as opposed to simply have them memorize facts, and Hole was presented with several awards for his teaching (Hole, 1991). Hole also appears to have been a very field-oriented teacher, with field experiences making up an important part of his students' educations. Hole ran short summer sessions on the Earlham campus from 1934-1940 to teach the practical aspects of surveying and topographic mapping. Between 1905 and 1937 Hole also ran 18 field trips to the western United States that exposed students to the geology of the Rocky Mountains and the Grand Canyon (Hole, 1991). Undergraduate research was obviously important to Hole, and students were often included in his field research. These student-assisted projects sometimes resulted in publications (Cross and Hole, 1910; Hole, 1911; Hole 1929).

Hole utilized student assistants in his soil survey activities, giving them practical experience that had the potential to lead to soil survey careers, with seven students gaining experience during the summers of 1911 and 1914 (Hole, 1991). Hole also taught a class in soil survey during five summer sessions, with 20 total students gaining training through that opportunity, and 16 Earlham students did summer internships with the U.S. soil survey including Allen Hole's son, Francis Hole (Hole, 1991; Helms, 2002). More than 12 students trained at Earlham went on to become soil scientists in the U.S. soil survey or to pursue other soils careers, including well-known and respected individuals such as Mark Baldwin, James Thorp, Francis Hole, and Ralph McCracken (Hole, 1991).

Soil Science Students

While Hole did conduct work in soil survey, as with Cobb his greatest contribution to soil science came through the students he trained and sent on to soil science careers. Mark Baldwin had a long soils career that saw him rise to major supervisory responsibility (Helms, 2002) and was first author of the 1938 soil classification system adopted by the U.S. soil survey (Baldwin et al., 1938).

James Thorp served as the USDA liaison in China in the 1930s, which lead to publication of the book "Geography of the Soils of China" (Thorp, 1936). Thorp was also a co-author of the 1938 soil classification system (Baldwin et al., 1938). Upon retiring from the U.S. soil survey, Thorp returned to Earlham and served on the Earlham faculty from 1952-1961 (Hole, 1991; Helms, 2002).

Francis Hole was Allen Hole's son and became a respected researcher and teacher who worked at the University of Wisconsin from 1946 until 1983, attaining the rank of Professor of Soil Science and Geography. He was well known for his use of novel teaching techniques, including songs, poems, and plays about soil carried out to the accompaniment of his violin or puppets (Barak, 2005). Francis Hole also founded the field-based soils journal "Soil Survey Horizons" in 1960 (Helms, 2002).

Ralph McCracken had a long and distinguished career in soil science with the U.S. federal government and academia. His career began at Louisiana State University before he moved to North Carolina State University (NCSU). From NCSU, McCracken moved to the

USDA where he served as the associate director of the Agricultural Research Service before finishing his career as the deputy chief of the Soil Conservation Service (Buol, written communication, 7/15/2004).

Conclusions

One of the most interesting aspects of the careers of both Cobb and Hole were their vast and varied interests within the geosciences. Both men published in wide-ranging subfields of their disciplines as opposed to focusing on narrow areas. It was likely that this interest in and ability to function across broad swaths of their chosen field also assisted these professors in taking a broader view of the potential career paths their students might follow, including careers in the new and rapidly-growing area of soil survey. Cobb and Hole were both trained as geologists but were influenced by renowned soil-geologists during their graduate studies. Both recognized the new U.S. soil survey as an opportunity for their students, established active programs that taught soils at their respective universities, and sought soil survey employment for their graduates. The greatest soils legacy of each is in the students they trained. Collier Cobb and Allen Hole also serve as examples of the deep historical ties between geology and soil science.

References

Baldwin, M., C.E. Kellogg, and J. Thorp. 1938. Soil Classification. *In* Soils and Men, USDA Yearbook for 1938: Washington, D.C., U.S. Government Print Office, p. 979-1195.

Barak, P. 2005. Francis D. Hole. http://www.soils.wisc.edu/~barak/fdh/. Accessed 12/30/2009.

Brevik, E.C. 1999. George Nelson Coffey, Early American Pedologist. Soil Science Society of America Journal 63: 1485-1493.

Buol, S.W., F.D. Hole, R.J. McCracken, and R.J. Southard. 1997. Soil Genesis and Classification, 4th Ed. Iowa State University Press, Ames, IA. 527 p.

Bureau, M.F. 1961. Wooster's Mr. Coffey, Soil Pioneer. Saturday, April 22. The Wooster Daily Record, Wooster, OH.

Cline, M.G. 1977. Historical Highlights in Soil Genesis, Morphology, and Classification. Soil Science Society of America Journal 41: 250-254.

Cobb, C. 1928. Some American Pioneers in Soil Investigation. Journal of the Elisha Mitchell Scientific Society 44: 49.

Coffey, G.N. 1911. The Development of Soil Survey Work in the United States with a Brief Reference to Foreign Countries. Proceedings of the American Society of Agronomy 3:115-129.

Coffey, G.N. 1913a. An Erosion Study. Journal of the American Society of Agronomy 5:230-232.

Coffey, G.N. 1913b. The Purpose and Interpretation of Fertilizer Experiments. Journal of the American Society of Agronomy 5:222-230.

Coffey, G.N., and W.E. Hearn. 1902a. Soil Survey of Alamance County, North Carolina. *In* Field Operations of the Bureau of Soils, 1901. U.S. Government Printing Office, Washington, DC, p 297-310.

Coffey, G.N., and W.E. Hearn. 1902b. Soil Survey of the Cary area, North Carolina. *In* Field Operations of the Bureau of Soils, 1901. U.S. Government Printing Office, Washington, DC, p 311-315.

Coffey, G.N., T.D. Rice, and party. 1912. Reconnaissance Soil Survey of Western Kansas. *In* Field Operations of the Bureau of Soils, 1910. U.S. Government Printing Office, Washington, DC, p 1345-1442.

Coffey, G.N., T.D. Rice, and party. 1915. Reconnaissance Soil Survey of Ohio. *In* Field Operations of the Bureau of Soils, 1912. U.S. Government Printing Office, Washington, DC, p 1245-1372.

Cross, C.W., and A.D. Hole. 1910. Engineer Mountain Folio: Description of the Engineer Mountain Quadrangle. U.S. Geological Survey, Reston, VA, USA.

Helms, D. 2002. Early Leaders of the Soil Survey. *In* D. Helms, A.B.W. Effland, and P.J. Durana (eds.). Profiles in the History of the U.S. Soil Survey. Iowa State University Press, Ames, IA. pp. 19-64.

Hole, A.D. 1911. Terraces of the Whitewater River Near Richmond, Indiana. Proceedings of the Indiana Academy of Science 20:71-81.

Hole, A.D. 1929. The History of the “Hoodoos” Near Mammoth Hot Springs, Wyoming. Proceedings of the Indiana Academy of Science 38: 207-216.

Hole, F.D. 1991. Allen David Hole and Mary Doan Hole: A Biography of Two Hoosier Quaker Educators 1866-1940. The Friend’s Press, Madison, WI, USA.

Holman, H.P., V.A. Pease, K. Smith, M.T. Reid, and A. Crebassa. 1939. Index of Publications of the Bureau of Chemistry and Soils, Originally the Bureau of Chemistry and the Bureau of Soils, 75 Years - 1862-1937. U.S. Government Printing Office, Washington, D.C. 546 p.

Lance, T.D. 1937. Collier Cobb. The Compass 17(4): 189-195.

Prouty, W.F. 1936. Memorial of Collier Cob. Proceedings of the Geological Society of America 47: 189-194.

Simonson, R.W. 1989. Historical Highlights of Soil Survey and Soil Classification with Emphasis on the United States, 1899-1970. International Soil Reference and Information Centre Technical Paper 18. Wageningen, The Netherlands. 83 p.

Tandarich, J. P. 1998. Agricultural Geology: Disciplinary History. *In* Sciences of the Earth: An Encyclopedia of Events, People, and Phenomena, Vol. 1. Gregory A. Good (Ed.). New York: Garland Publishing Inc. pp. 23-29.

Thorp, J. 1936. Geography of the Soils of China. Nanking, China.

The World Congress of Soil Science, Brisbane, 2010

http://www.19wcss

IUSS Division 4 (The Role of Soils in Sustaining Society and the Environment) will have two divisional symposia:

4.1 Why treat soils like dirt?
4.2 Soils and human health

Commission 4.5 (History, Philosophy and Sociology of Soil Science) will sponsor two symposia:

4.5.1 The 'Bio' of soil science: history, philosophy and sociology

The major goals of this symposium are to analyze the increasing importance from past to present of the research on biota in soil science, to review the role played by biota in different agricultural and environmental soil functions (the "biota functionality"). What is the current state of play with respect to bioremediation, biostimulants, bioinoculation - historical developments. Identify the major gaps and challenges for the future.

a) Rhizosphere: roots/exudates and mycorrhizae
b) Soil microbial biomass, diversity and activity
c) Soil fauna (macro- and meso-) biomass, diversity and activity
d) Soil organic matter: forms, functionality and role in fertility and environment
e) Role of soil biota in bioremediation, biostimulants, bioinoculation

4.5.2 Soil and human culture

It has been said that "scientific advances do not truly become the possession of a culture until these discoveries are expressed through that culture's art and poetry". The main objective in the proposed symposium is to present a cultural perspective on soils. Among the topics to be considered:

- human perception of soil in ancient, indigenous, and modern societies-their practices and religious & ethical beliefs
- depictions of soil in art, literature, and elements of popular culture
- use of soil materials as an artistic medium

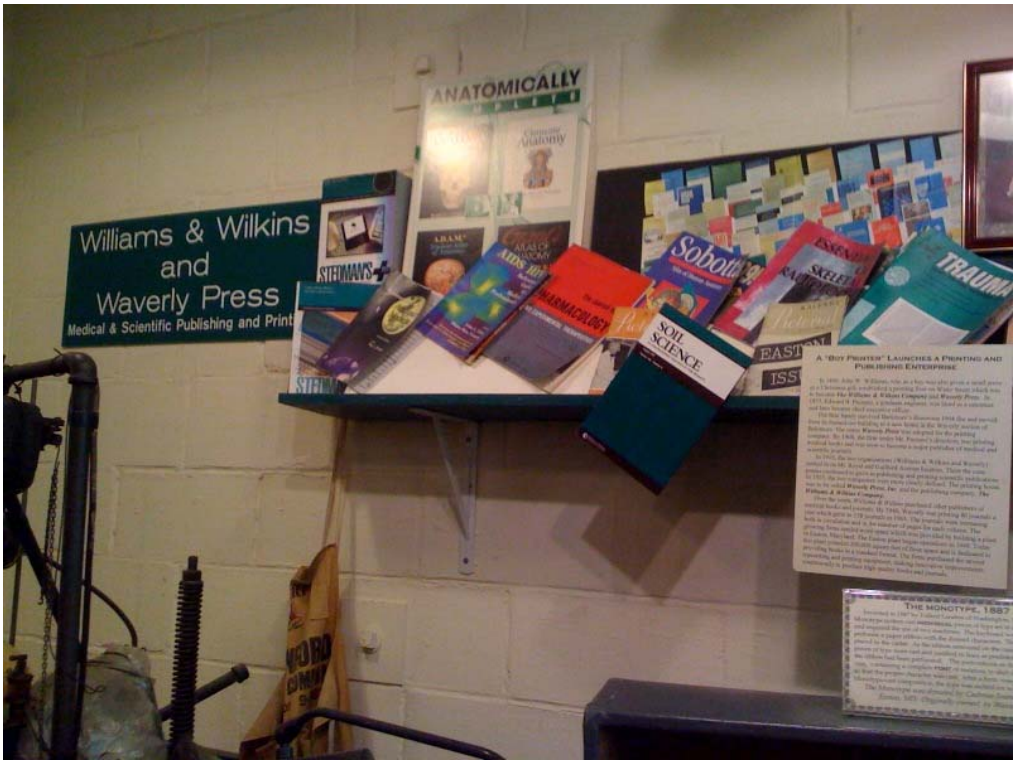
- human interactions with soil in urban landscapes/living space, diet, war, and criminal investigations
- the role of unconscious in the perception of soils and elaboration of scientific theories in soil science

Upcoming SSSA Symposium Plans

The Council on the History, Philosophy, and Sociology of Soil Science is sponsoring a session titled **Perceptions of Soil in Media and the Arts: Integrating the Soil "Medium" into Current Cultural "Media"** at the 2010 Soil Science Society of America meeting in Long Beach, California. The session will examine the use of popular media in teaching, outreach and interdisciplinary research on soils, agronomy and related areas of science, and evaluate its effects. For more information on this session contact Claudia Hemphill Pine at claudia.hemphill.pine@gmail.com.

Williams and Wilkins Press History

The journal *Soil Science* began publication in 1916. For most of its more than 90-year history, *Soil Science* was printed in Baltimore, Maryland by Williams & Wilkins (now Lippincott Williams & Wilkins). Williams and Wilkins also published Selman Wakman's *Principles of Soil Microbiology* (1927) and, along with McGraw Hill, John Wiley and Van Nostrand Reinhold (all in New York City), were the four East Coast publishers that dominated the American agricultural publishing world up until World War II [see Simonson RW and McDonald P (1994) Historical soil science literature of the United States. *In* PM McDonald (ed.) The Literature of Soil Science, Cornell University Press, Ithaca, NY; p. 379-434].



That history and heritage is reflected in this photo from a current exhibit on printing technology at the Baltimore Museum of Industry http://www.thebmi.org/.

2008 SSSA Symposium Abstracts

The Committee on Organic and Sustainable Agriculture (COSA) and the Council on History, Philosophy, and Sociology of Soil Science worked together to organize an all day symposium for the meetings in Pittsburgh on the topic of Human Ecology in Organic Farming Systems http://a-c-s.confex.com/crops/2009am/webprogram/Session6041.html. The symposium addressed the consumer choice/social movement of the organic system that is providing incentives to transition land to organic/sustainable production practices. The symposium also served to announce and celebrate the publication of the new ASA book: "Organic Farming: The Ecological System". There were nine speakers with diverse backgrounds besides agronomists. They included social scientists, historians of science, and an attorney. The symposium attracted an audience of about 100. COSA was challenged to raise funds for five invited non-member speakers for the symposium. We were able to raise funds from various organizations that support organic farming to cover invited speaker expenses. COSA wishes to acknowledge and express appreciation to its supporters: Pennsylvania Association for Sustainable Agriculture, Weston A. Price Foundation, Fertrell, SARE, and the Organic Farming Research Foundation.

Human Ecology and Organic Farming Systems
Tuesday, November 3, 2009: 9:55 AM-5:15 PM
Convention Center, Room 318, Third Floor
Organizer: Joseph Heckman

Perspectives On History, Philosophy, and Sociology of Organic Farming.
***Joseph Heckman**, Foran Hall Rm. 167, 59 Dudley Rd, Rutgers State Univ., New Brunswick, NJ*
Tradition and philosophy within the organic community once guided and self-governed organic farming before there was a USDA-NOP. At its best, organic farming is more than mechanically following a superficial set of rules for certification. Organic is rooted in a traditional husbandry and philosophy articulated in the pioneering works of Albert Howard, Walter Northbourne, Eve Balfour, Weston Price, and Jerome Rodale. These and other pioneers laid a foundation for a system of farming and influenced a social movement. Key cultural practices and concepts in organic farming include: Law of Return, composting, building soil organic matter, complex crop rotations, integration of crops with livestock, food quality linked to soil fertility, protecting foods from unnecessary processing, production of quality on par with quantity, rejection of inappropriate technologies, with processes observed in natural ecosystems to serve as models. The influence of these traditions on organic standards may seem rigid in the face of modern science, but at the same time they lend character, personality, and definition to a system of farming that produces traditional foods for people that care deeply about how their food is produced. As the modern organic movement grows into a significant commercial enterprise, there is a struggle for organic integrity in several areas; especially plant and animal integration, pastured livestock, and freedom to buy unadulterated farm fresh foods. If the abandonment of the organic perspective of nature and the adoption of a patriarchal attitude towards life - a machine to be manipulated and exploited for unrestrained industrial expansion may be characterized as The Death of Nature (Carolyn Merchant); then perhaps the organic movement which arguably holds a more matriarchal perspective – one that nurtures life by emulating natural ecology in the husbandry of soils, plants, animals, food, and people – may be characterized as an attempted Rebirth of Nature.

Engaging Across the Organic/Conventional Binary: Preliminary Results From the ARGOS Programme in New Zealand.

Hugh R. Campbell*, Centre for the Study of Agriculture, Food and Environment, Univ. of Otago, Dunedin, New Zealand*

There has been considerable debate involving both strong supporters and detractors of organic agriculture as to whether broad-scale commercial production of 'certified organic' actually represents a positive move for sustainable agriculture. This paper reflects on this debate from the perspective of the Agriculture Research Group on Sustainability (ARGOS) project. The ARGOS project is a six year social–ecological study of over 100 farms and orchards in New Zealand using either organic, conventional or an 'environmentally oriented' management system. As such, the ARGOS project is studying a paradigmatic group of new 'commercial' organic growers and their competitors. This paper focuses on the interplay between social and ecological findings from the study – exploring the question of whether being certified organic actually signifies any real difference in the social orientation or ecological outcomes on farms?

The early results from ARGOS suggest that being certified organic does make a difference, with social, economic and ecological data showing a range of subtle differences associated with being organic. Going further into the ARGOS social data, some interesting social dynamics can been seen around issues of auditing and certification, and how the idea of being a 'good farmer' is influenced by new audit processes.

The conclusion is that while 'certified organic' does act as a modest market proxy for a range of desirable social and ecological outcomes around sustainable agricultural practice, the analytical and discursive tendency towards mobilising an organic/conventional binary does obscure some of the key complexities that differentiate between producers. While the market-audit category of organics does collapse many complex tendencies under one label, an even more problematic tendency is the obscuring of a very high level of heterogeneity that lies behind the category of 'conventional' production.

USDA-Accredited Certifiers Work with Universities to Improve Implementation and Integrity of the National Organic Program Standards.

Liz Sarno*, 57905 866 Road, Univ. of Nebraska, Lincoln, Concord, NE*

USDA-accredited certifiers can operate nationally and internationally. The NOP sets the regulations for growing, selling or labeling organic products sold in the United States. As organic production has increased so has the number of providers to help facilitate this growth. The numbers of USDA-accredited certifiers have increased giving farmers many choices. Has allowing farmers to certify outside of their bioregion given them an opportunity to be less concerned with integrity issues and concentrate on primarily economics? Do certifiers have staff with the expertise to recommend to farmers the cultural practices and conditions for their area? Collaboration between extension, universities, farmers and certifiers would build sustainable organic practices for their bioregion.

The NOP standards tend to be vague so production practices can be developed by organic farmers within their bioregion that work with accepted regional organic practices. Certifiers need to have sufficient expertise in organic production and implementing NOP standards that are

specific to local conditions. University of Nebraska has formed an “Organic Working Group” team consisting of researchers, educators, brokers, certifiers and farmers that work together on identifying organic production challenges, crop/cover crop varieties that integrate and identify the biodiversity of organic farms within the various bioregions of Nebraska.

For example, NOP 205.203 states farmers ***must*** manage crop nutrients and soil fertility through rotations and cover crops. Universities and extension have the expertise to guide certifiers on what cultural practices, cover crops and rotations are best for these farmers to use within their bioregion. Universities are not economically affected by certification decisions and have experts and outreach capabilities to network with farmers to ensure the integrity of the NOP.

Ecology in Organic Farming: New Book From American Society of Agronomy.
***Laurie Drinkwater**, Cornell Univ., Ithaca, NY, Charles Francis, Agronomy & Horticulture, Univ. of Nebraska, Lincoln, Lincoln, NE, Martin Entz, Univ. of Manitoba, Winnipeg, MB, Canada, E. Anne Clark, Plant Agriculture, Univ. of Guelph, Guelph, ON, Canada, Kathleen M. Delate, Departments of Agronomy and Horticulture, Iowa State Univ., Ames, IA, Joseph Heckman, Foran Hall Rm. 167, 59 Dudley Rd, Rutgers State Univ., New Brunswick, NJ, Matt Liebman, Iowa State Univ., Ames, IA, Rhonda R. Janke, Horticulture, Kansas State Univ., Manhattan, KS, Patricia Allen, Center for Agroecology, Univ. of California, Santa Cruz, Santa Cruz, CA and Nancy G. Creamer, Horticultural Science, North Carolina State Univ., Raleigh, NC*
Organic agriculture is one of the fastest growing sectors of the farming and food system in North America. Increasing concerns about environmental impacts of agriculture have led to the current quest to learn more about the ecological interactions in farming and how knowledge of natural systems can help inform the design of agroecosystems. Research on organic practices and systems design have moved from the farm to the experiment station, with a number of landgrant universities now doing studies on land certified to organic standards. Productivity, economics, environmental impact, and social viability of organic agriculture are explored in a new book from ASA that includes fifteen chapters written by people working with organic methods and systems. Details on the history or organic farming, certification standards, soil fertility and pest management practices, crop rotations, integrated crop/animal systems, economics and marketing are included as major topics. Comprehensive state programs that combine research and education are included, as well as continuing initiatives in the non-profit sector. Substantial research and many farmer innovations have occurred in the twenty-five years since publication of the last book from ASA on organic farming, and the organic approach to agriculture and food is receiving more attention in classroom and Extension education. Ecology,in Organic Farming provides a contemporary update in this dynamic field. Additional authors include J. Van Wart, P. Porter, J.R. Thiessen Martens, R. Weil, F. Magdoff, A.S. Davis, P. Heerly, M. Grieshop, J. Moyer, H.H. Peterson, H. Melcarek, J.P. Mueller, J. O’Sullivan, C. Reberg-Horton, M. Schroeder-Moreno, S. Washburn, L. Hodges, G.W. Bird, and F. Kirschenmann.

Nutrition Science and the Early Organic Movement, 1930-1960.
***Martin Renner**, History, Univ. of California, Santa Cruz, Santa Cruz, CA*
In recent decades, there has been a notable upsurge in scientific work investigating the influence of agricultural methods on the nutritional quality of foods. This research has, on the whole, given support to "organic" and "ecological" farming practices. It is now not unusual, for example, to

see claims regarding the higher antioxidant content of organic fruits and vegetables or the healthier fat profile of pasture-fed beef and dairy. Interest in the nutritional ramifications of agricultural technique, however, is hardly new. During the 1930s and 1940s, discoveries in the nutrition and agricultural sciences dovetailed at many points, and excited some of the best minds in both fields. Moreover, the growing understanding of plant, animal, and human nutrition in that period informed the contemporaneous “ecological agriculture" movement. Hopes for a better food supply, and thus better public health, were linked to visions of agrarian development and soil improvement. It was in this context that the early organic movement, with a particular set of claims to health and wholeness, arose in opposition to the "chemical" and "industrial" status quo. Unfortunately, the basic premises of this debate introduced conceptual problems that often hampered fruitful scientific exchange. During the postwar years, the researchers exploring the connections between soil and food, in particular, got caught in the tumultuous middle ground. Drastic changes in nutrition policy and agriculture, unforeseen in the 1930s, further assured these researchers' consignment to relative obscurity by the 1970s. A longer historical view suggests that the recent growth of interest in the nutritional dimensions of agronomy represents the revival of an older scientific tradition, rather than a new departure.

Mainstreaming Organic Agriculture in the Land Grant System.
***Kathleen M. Delate**, Departments of Agronomy and Horticulture, Iowa State Univ., Ames, IA and Jerald DeWitt, Leopold Center for Sustainable Agriculture, Iowa State Univ., Ames, IA*
Based on citizen demand, Iowa State University (ISU) established the first organic agriculture faculty position at a US land grant university in 1997, as a shared appointment in the departments of horticulture and agronomy, with a 70% Extension and 30% Research split. By 1999, a national survey determined that ISU had reached the upper percentile of organic research, Extension and educational activities at land grant universities. This result was attributed to a series of successful Organic Agriculture Focus Groups, convened to help direct the new organic program by partnering with the Leopold Center for Sustainable Agriculture and the College of Agriculture and Life Sciences. Extensive focus group dialogue with a diverse group of farmers (organic and conventional), agribusiness professionals, and consumers in six agricultural communities across Iowa included the need for organic research at the University level, since the majority of organic farmers (65%) were receiving their information from other organic farmers and non-governmental publications. Paramount in the needs assessment was the establishment of organic research sites across the state to demonstrate the economic and environmental benefits associated with organic farming practices over the long term. Specific outcomes-based Extension needs articulated by clients led to the development of an annual schedule of organic workshops, field days and conferences. As a result of organic farming practices, 90% of survey respondents in Iowa reported an increase in soil quality and 67% reported a 6 to 30% increase in farm income. A survey of land grant university organic programs across the U.S. showed various levels of administrative support, resources, and community involvement in the decision-making process regarding organic research and Extension programs. A discussion on the sociological and political underpinnings of organic agriculture support in the land grant setting will include recommendations for facilitated mainstreaming while developing a specific identity for organic programs.

Organic Agriculture: A Model for Commitment and Change.
***Paul Hepperly**, Rodale Inst., Kutztown, PA*

The formidable change to organic agriculture requires changes in human systems of values. Robert Rodale championed farming systems based on appreciating and promoting underlying biological capacity for supporting life. Healthy soil is the key. Regenerative agriculture extended economic understanding of farming appreciating the values for growing and protecting our natural resource base (soil, water and air quality). The regenerative organic philosophy represents a win-win solution for issues and challenges for individuals, communities, and society. Organic agriculture provides a model for improvement through long term commitment to learning and dynamic change. Research, education and sharing practical knowledge all are key players in the human evolutionary drama. A steadfast philosophical commitment combined with dynamic change form a dynamic duo to promote sustained success. Organic agriculture focuses on utilizing natural biological processes to efficaciously and economically produce food and fiber. Producers accept a core understanding that the environment and natural resources cannot be sacrificed solely for short term profit. Justly valuing our natural resources represents a fundamental change in the dominant world view requiring a change in philosophy and a long term commitment. Transforming philosophical and actions, through organic agriculture requires working with rather than against natural biological processes. Because of this, it also requires more knowledge, longer term commitment and greater flexibility than conventional agriculture does. This new way of valuing resources does not see economic and environmental goals as mutually exclusive, rather mutually dependent. Long term commitment, experimentation, monitoring, and adaptation allow many small short term beneficial incremental changes to add up into integrative synergies of significant portion and impact. Long term vision, commitment, and flexibility to dynamic life long learning journey and being open to change and consistent values only superficially seem contradictory both are critical elements to success and growth in organic agriculture and other areas of endeavor.

The Uses of History: Pioneering Organic Farmers and Old Agricultural Books.

***Laura B. Sayre**, Program in Agrarian Studies, Yale Univ., New Haven, CT*

The history of organic farming has received relatively little attention from historians to date; and the few book-length treatments have tended to consider organic farming primarily as a history of ideas. But if organic farming begins in philosophy it must be elaborated within the specific geographic conditions of individual farms. The relationship between literature and practice has been curiously intertwined in American organic agricultural history from an early period, thanks in part to the dual impulses of J.I. Rodale, sometimes called "the father of the organic movement in America," as both publisher and amateur farmer. Rodale played a key early role in making the writings of Sir Albert Howard, Friend Sykes and other British agriculturists available in the United States in the years after World War II, but it was two or three decades before a recognizable group of U.S. organic farmers would emerge. J.I. Rodale's son, Robert Rodale, in his turn helped usher in a new era of textual production within the organic movement with the founding of *The New Farm*, a magazine by, for and about sustainable and organic producers. But in the absence of meaningful help from existing agricultural institutions, many would-be organic farmers in the 1960s and '70s turned to two alternatives: 1) older neighbors with memories of farming before the wide availability of synthetic fertilizers and pesticides, and 2) old agricultural books. Although both categories are now in danger of being lost or forgotten, they remain critically important. This paper will draw on interviews with senior-level organic farmers to sketch a history of organic farming as it drew not just on ideals, but on the practical knowledge—both oral and written—of previous generations. What emerges is a more

heterogeneous organic tradition engaged in an active repurposing of the "conventional" agricultural past.

You Say You Want A Revolution? Organic Consumers and the Local Farmers They Support Are Forcing A Paradigm Shift in the Way Our Food Is Produced and Consumed.
***David G. Cox**, General Counsel, Farm-to-Consumer Legal Defense Fund, Columbus, OH*

Consumers are fed up with the way their food is produced and distributed. Consumers and the small farmers they support are forcing the food industry to re-think what it means to produce and consume "safe" food. Several models exist that promotes this new food system yet legal hurdles remain. Those legal hurdles are high and strong yet they are weakening under this new system. Consumers involved with rBGH-free milk, raw milk, CSA's, buyer's clubs, raw nuts, and other food stuffs have created innovative arrangements to prohibit government from circumventing the inalienable right to produce and consume the food of one's choice. More people are having access to locally, sustainably produced nutrient dense food, organic and beyond organic, that does not rely on the industrialized, centralized, monopolistic, corporate agriculture model that is favored by government. Government is also exhibiting signs of recognizing the advantages of this new (yet in some sense very old) way to produce food.

Productivity and Quality of Basmati Rice (Oryza sativa) Under Organic Farming of Rice-Based Cropping Systems.
***Mohammadreza Davari** and Shri niwas Sharma, Agronomy, Indian Agricultural Res. Inst., New Delhi, India*
A field experiment was conducted at the research farm of IARI, New Delhi during 2006-08 to find out the suitable combination of organic sources for organic farming of rice-based cropping systems. The treatments consisted of two cropping systems (rice-wheat and rice-wheat-mungbean) in rows and six combinations of organic manures and biofertilizers [farmyard manure equivalent to 60 kg N ha^{-1} (FYM), Vermicompost equivalent to 60 kg N ha^{-1}(VC), FYM + crop residue @ 6 tha^{-1} of rice and wheat and 3 tha^{-1} of mungbean, rice residue was used in wheat, wheat residue in rice in rice-wheat cropping system and in mungbean in rice-wheat-mungbean cropping system (CR), VC+CR, FYM+CR+biofertilizers (B) and VC+CR+B] in columns. Biofertilizers consisted of blue green algae+cellulolytic culture (CC) +Phosphorus solubilizing bacteria (PSB) in rice and *Azotobacter*+CC+PSB for wheat and *Rhizobium*+PSB for mungbean. RWM cropping system gave 7% higher grain yield in the first and 9% in the second year than RW cropping system. Application of FYM, VC, FYM+CR, VC+CR, FYM+CR+B and VC+CR+B increased grain yield over control by 23, 30, 40, 46, 50 and 55% respectively, in 2006 and by 24, 34, 38, 49, 52 and 59% respectively, in 2007.

Rice grain analysis for cationic micronutrients showed a significant increase in the treatments have 2 or more organic amendments over control. Rice grown under RWM cropping system gave significantly higher protein content in rice grain than rice grown under RW cropping system. The protein content in rice grains also increased by application of different combinations of organic manures and biofertilizers and obtained highest (8.5-8.7%) with VC+CR+B and lowest, 7.1% in control both. Different organic manures and biofertilizers slightly improved hulling, milling, head rice recovery before and Length elongation ratio and breadth expansion

ratio after cooking in scented rice. Therefore, organic management practices improve sustain productivity and maintain quality.

Organic Farming History and Certification.

***Justin Van Wart**, Agronomy and Horticulture, Univ. of Nebraska, Lincoln, NE and Charles Francis, Agronomy & Horticulture, Univ. of Nebraska, Lincoln, Lincoln, NE*

The roots of modern organic farming emerge from the parent material of agricultural history, as indigenous systems were de facto organic for millennia. In the middle of the 20th Century the term "organic" began to be used to designate production systems that depended on biodiversity and internal system structuring to manage fertility and pests, in contrast to systems dependent on imported fertilizers and chemical pesticides derived from fossil fuels and other outside inputs. Many organic practices were designed and tested by farmers, while a few noted academics such as Rudolph Steiner in Germany, William Albrecht in Missouri and Albert Howard in India and U.K. began to apply science to understand system mechanisms. Today organic farming systems are a hot topic for research in a number of landgrant universities and private research centers, in response in part to sustained annual growth rates of 20% per year in organic acres farmed in the U.S. over the past two decades. Standardization in official certification began with the International Federation of Organic Agriculture Movements (IFOAM) in 1982, and there are currently a number of national, state, non-profit, and private certification agencies and systems. This includes the U.S. National Organic Program that was officially introduced in October 2002. These programs assure a relatively uniform set of requirements for certification that provide accountability in the production and processing of organic foods and assurance for the consumer. One of the greatest concerns today is the growth of industrial organic production and marketing, known as "Big O", that reduces production costs but moves away from the traditional organic family farm and a social system that is concerned about distribution of benefits from this sector of the food system. Organic farming and food systems are projected to continue to grow as more is discovered about efficient design of farming practices and systems.

Illustrating the Nitrogen Cycle in Organic Farming.

*Joseph Heckman, Foran Hall Rm. 167, 59 Dudley Rd, Rutgers State Univ., New Brunswick, NJ, **Ray R. Weil**, Rm 1103 H.J. Patterson Hall, Univ. of Maryland, College Park, MD and Frederick Magdoff, Hills Bldg. Carrigan Dr., Univ. of Vermont, Burlington, VT*

A figure depicting the practical and cultural aspects of the Nitrogen (N) cycle in organic farming was drawn for the new ASA book: Ecology in Organic Farming Systems. Organic farming focuses on building and maintaining an appropriate level of soil organic matter which provides a reservoir for the slow release of N and other nutrients to crops. Diversified organic farming systems are designed to use crop rotation, perennial crops, legumes, livestock, waste recycling and composting to build soil organic matter content and N fertility. Solar energy and biological processes drive the N cycle in an idealized organic farming system. The transformations within the N cycle are essentially the same as in natural ecosystems and conventional farming, but they are modified by organic cultural practices. The N in organic matter is slowly converted by microbial activity into forms useable by plants at rates that vary with soil temperature and moisture. Most of the N taken up by crops is in the mineral forms ammonium and nitrate, but plants can also utilize some low molecular weight organic compounds. The incorporation of plant residues low in N concentration can cause immobilization by which mineral forms of N are removed from the soil solution for use by

microorganisms. Well managed organic farms can be self-sufficient in N by use of a combination of crop rotation, waste recycling, composting, integrated crop and livestock production, cover cropping, and cultural practices that minimize nutrient losses via erosion, leaching, and volatilization. Regulations do not allow use of industrially manufactured N fertilizers or sewage sludge. Crop residues and manures produced on conventional farms that use either synthetic N fertilizers or sewage sludge, however, are currently allowed on organic farms. A limited amount of Chilean nitrate fertilizer is allowed on organic farms in USA, but not in Europe.

Crop Rotations on Three Certified Organic Farms in Minnesota.

***Paul Porter**, Dept Agro/Plt Gen, Univ. of Minnesota, St. Paul, MN*

So what is your organic crop rotation? Crop rotation, the process of growing a sequence of plant species on a given piece of land over time, is the foundation of successful organic crop production. Ask an organic farmer to define their crop rotation and sometimes you get a straight-forward answer. More often, however, the response is less straight-forward and a complex discussion ensues. Case studies of the crop rotation histories from each field on three certified organic farms in Minnesota are examined over a five-year time span. In evaluating the cropping patterns on these three farms we can begin to understand the complexity of designing a crop rotation – in fact we see that perhaps it is a misnomer to refer to *'a crop rotation'*.

From the perspective of the accredited certification agency and the farmer, *Farm A* consists of 9 fields which range from 25 to 93 ha in size for a total of 484 cropped hectares, *Farm B* consists of 13 fields which range from 4 to 16 ha in size for a total of 129 cropped hectares, and *Farm C* consists of 1 field of 0.5 ha. The two larger farms grows primarily corn, soybean, small grain and alfalfa as cash crops, whereas the smaller farm grows a large number of vegetable crops. In evaluating the crops grown on these different fields over the past five years we realize that there is no distinct pattern of crop rotation common among the 9 fields of *Farm A*, the 13 fields of *Farm B*, or within the one field of *Farm C*.

It is difficult to easily describe *'the rotation'* each of the three case study farms employs. Each uses a multitude of rotations based on the site specific nature of the fields within the farms.

The Healthy Farm Index.

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Meeting the needs of current and future generations demands a reliable food supply, a biologically diverse world, functioning ecosystem services, and strong communities. To ensure that that future farm assessment addresses these components, the University of Nebraska Lincoln is developing a Healthy Farm Index as part of broader research in sustainable and organic agroecosystems. The index assesses farm health based on multiple indicators of farm production, biodiversity, ecosystem services, and quality of life. Initial measures collected during on-farm research in Nebraska and Kansas are used as the basis for the Healthy Farm Index. Ultimately, the index will be a mechanism for integrating and communicating interdisciplinary data toward farm practices and policy that optimize the multiple outputs from farm systems

Transitional Assistance in Organic Farming.

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As demand for organic produce continues to rise, more conventional farmers are interested in transitioning to this profitable market; the current percentage of organic farms, estimated between 1-5% of all farm land in the US, is not ready to meet the demand. The transition to a certified USDA Organic farm involves a minimum time commitment of three years for farms currently using conventional growing practices, and during this time, there is often a large financial hardship for the farm owner. In addition to the costs of certification, farmers must be prepared for investing in the infrastructure of the farm as well as have a business plan in place that includes higher labor costs, a marketing plan for the organic crop, and guidance through the transition, as there is often crop loss to pests and disease as the soil and ecosystems of the farm recovers. Programs and the accompanying funding for promotion of organic farming have historically ignored the transitional farmer, giving little incentive for farms to make the transition, but that is changing. As increasing pollution of the environment is becoming seen more and more as a financial threat, the many benefits of organically produced crops are becoming more attractive to the public. Water use and quality is just one area where we would see economic benefit. Healthy soils retain moisture and hold rainfall, decreasing the need for irrigation and the burden on combination storm water/waste water systems; through decreasing our use of synthetic fertilizers, pesticides, and herbicides, the burden of pollutants leading to dead zones in our waterways, from the Chesapeake to the Gulf of Mexico, would be reduced. This presentation will introduce the importance of transitional funding and assistance to farmers and outline the current programs available, both at the federal and state levels.

Book Review

The History of Snow Survey and Water Supply Forecasting: Interviews with U.S. Department of Agriculture Pioneers. Douglas Helms, Steven E. Phillips, and Paul F. Reich (editors). Historical Notes Number 8, Resource Economics and Social Sciences Division, NRCS. Washington DC. 306 p. ISBN: Not assigned. ASIN: B002YBG1HE.

Copies of this book can be ordered in hardcover form from 1-800-526-3227 (1-800-LANDCARE) while supplies last. It is also available for free download as a pdf file at: http://www.nrcs.usda.gov/about/history/articles/the_history_of_snow_survey_and_water_supply_forecasting.pdf

"History of Snow Survey" is divided into four parts. The first part is an introduction that discusses the earliest organized snow survey work done in the western United States. This work was carried out by Dr. James E. Church, who interestingly enough was not a professor of science or engineering, but a Professor of Classics at the University of Nevada at Reno. Although not scientifically trained, Church developed an intense interest in recording weather conditions on mountain peaks. He organized and help build the first mountain peak weather station in Nevada, lining up funds from various scientific sources. From there, he went on to establish Nevada's soil survey, developing new techniques for soil survey and demonstrating the value of soil survey to others.

Part two is a series of maps for each state that carries out a snow survey, including the locations of both the old snow survey courses and the modern SNOTEL stations. The maps are well done and easy to read, but it would have been nice if the terms “snow course” and “SNOTEL” would have been defined within this section. “SNOTEL” is defined in the Forward, but I did not find “snow course” defined anywhere in the book up to this point. Therefore, the maps lose a little meaning for anyone not familiar with the terms.

Three very nice articles are found in part three of the book. The first two were written by Doug Helms for Western Snow Conference meetings in 1991 and 1992, and are reprinted in the book. The articles give a good background of snow surveying in the western United States. The third article is based on the recollections of R.A. “Arch” Work, one of the original USDA Snow Surveyors when USDA began snow survey work in 1935. Work was promoted to the position of Snow Survey Supervisor in 1944. This final article is interesting for the first-person insight it provides into the earliest days of organized national snow survey in the United States.

The fourth part of the book makes up about 75% of the total printed pages and contains the transcripts from interviews with seven individuals who were involved in the early days of U.S. snow survey. Arch Work is one of those interviewed. The interviews are interesting again for the first-person insight they provide, and may provide a rich source of data-mining for someone interested in studying U.S. snow survey. The book ends with a well-done index that allows rapid location of topics or people of interest.

On the whole, I found “History of Snow Survey” to be a highly interesting book. For one, it is a subject that I knew little about and I wasn’t aware that USDA-NRCS conducted snow surveys. While the book doesn’t directly cover soil science history, melt-water from snow packs is extremely important to agricultural production in the western United States and many other parts of the world, because snow survey information is widely used in irrigation and other water management planning.

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New Publications

New Books

Soil and Culture

Springer Press has released “Soil and Culture” edited by Edward R. Landa and Christian Feller. Soil has been called the final frontier of environmental research. The critical role of soil in biogeochemical processes is tied to its properties and place—porous, structured, and spatially variable, it serves as a conduit, buffer, and transformer of water, solutes and gases. Yet what is complex, life-giving, and sacred to some, is ordinary, even ugly, to others. This is the enigma that is soil. Soil and Culture explores the perception of soil in ancient, traditional, and modern societies. It looks at the visual arts (painting, textiles, sculpture, architecture, film, comics and stamps), prose & poetry, religion, philosophy, anthropology, archaeology, wine production, health & diet, and disease & warfare. Soil and Culture explores high culture and popular culture—from the paintings of Hieronymus Bosch to the films of Steve McQueen. It looks at ancient societies and contemporary artists. Contributors from a variety of disciplines delve into

the mind of Carl Jung and the bellies of soil eaters, and explore Chinese paintings, African mud cloths, Mayan rituals, Japanese films, French comic strips, and Russian poetry. More information can be found at http://www.springer.com/life+sci/agriculture/book/978-90-481-2959-1.

Notes from the Ground: Science, Soil and Society in the American Countryside
The Yale University Press has released "Notes from the Ground: Science, Soil and Society in the American Countryside" by Benjamin Cohen. "Notes from the Ground" examines the cultural conditions that brought agriculture and science together in nineteenth-century America. Integrating the history of science, environmental history, and science studies, the book shows how and why agrarian Americans - yeoman farmers, gentleman planters, politicians, and policy makers alike - accepted, resisted, and shaped scientific ways of knowing the land. By detailing the changing perceptions of soil treatment, Benjamin Cohen shows that the credibility of new soil practices grew not from the arrival of professional chemists/agronomists, but out of an existing ideology of work, knowledge, and citizenship. For more information go to http://yalepress.yale.edu/yupbooks/book.asp?isbn=9780300139235.

Organic Farming
The American Society of Agronomy has released a new book "Organic Farming, The Ecological System", which includes some chapters on history. For more information on this new book go to https://www.agronomy.org/news-media/releases/2009/1103/305/.

Soils and Societies – re-issued
The White Horse Press has re-issued "Soils and Societies", edited by J.R. McNeill and Verena Winiwarter, in both hardback and paperback. Additional details can be found at http://www.erica.demon.co.uk/SS.html.

New Historical, Philosophical, or Sociological Articles

Andréassin V. 2004. Waters and forests: from historical controversy to scientific debate. Journal of Hydrology 291: 1-27.

Blume, H.P. 2008. G. Murgoci and H. Stremme, and the first soil maps of Europe. Romanian National Society of Soil Science, publication no. 36A, p. 25-38. (in English).

Brevik, Eric C., and Alfred E. Hartemink. 2010. History, Philosophy, and Sociology of Soil Science. V. Squires and W. Verheye (Eds.). Encyclopedia of Life Support Systems (EOLSS), Developed under the Auspices of the UNESCO, EOLSS Publishers, Oxford, UK. http://www.eolss.net.

Brevik, Eric C. 2009. The Teaching of Soil Science in Geology, Geography, Environmental Science, and Agricultural Programs. Soil Survey Horizons 50: 120-123.

Brevik, Eric C. 2009. Soil Health and Productivity. *In* Global Sustainable Development, Theme 1.5: Land Use, Land Cover and Soil Sciences. W. Verheye (Ed.). Encyclopedia of Life Support Systems (EOLSS), Developed under the Auspices of the UNESCO, EOLSS Publishers, Oxford, UK. http://www.eolss.net.

Brevik, Eric C. 2009. Soil, Food Security, and Human Health. *In* Global Sustainable Development, Theme 1.5: Land Use, Land Cover and Soil Sciences. W. Verheye (Ed.). Encyclopedia of Life Support Systems (EOLSS), Developed under the Auspices of the UNESCO, EOLSS Publishers, Oxford, UK. http://www.eolss.net.

Helms, D. 2008. Hugh Hammond Bennett and the Creation of the Soil Erosion Service. USDA-NRCS Historical Insights Number 8, 13 p. http://www.nrcs.usda.gov/.

Kastens KA et al. 2009. How geoscientists think and learn. Eos, Transactions, American Geophysical Union 90(31): 265-266. Electronic supplemental material can be found at http://www.agu.org/eos_elec/2009/kastens_90_31.html.

Morgan, P.A. and S.J. Peters. 2006. The foundations of planetary agrarianism. Thomas Berry and Liberty Hyde Bailey. Journal of Agricultural and Environmental Ethics 19: 443-468. http://www.springerlink.com/content/p1778516r184284k/?p=c7081c9bf56249a4a464e4177b551d9e&pi=2.

Sanchez, P.A. et al. 2009. Digital soil map of the world. Science 325: 680-681.

Stoops, G. 2009. Evaluation of Kubiëna's Contribution to Micropedology at the Occasion of the Seventieth Anniversary of His Book "Micropedology" Eurasian Soil Science 42(6): 693–698. (Published in Russian in Pochvovedenie, 2009, No. 6, pp. 744–749)

Stoops, G. 2009. Seventy Years' "Micropedology" 1938-2008: The Past and Future. J. Mt. Sci.6: 101–106.

Yaalon, Dan H. 2008. Classification: Historical Developments. Encyclopedia of Soil Science, 1:1, 1-3. http://www.informaworld.com/smpp/title~content=t713172977.

Other Newsletters

The loess & dust community of the International Union for Quaternary Research (INQUA) http://www.inqua.tcd.ie/ publishes a great newsletter (check out the cover illustrations) out of Nottingham Trent University (UK): *Loess Letter* (LL). LL no. 61 (April 2009) celebrates 200 years since the birth of Charles Darwin, 150 years since the publication of 'Origin of Species', and 30 years of continuous publication of LL (founded in 1979 at the New Zealand Soil Bureau).

Bibliographic Project

World History of Science Online: Databases of Bibliographical and Archival Sources http://www.dhs-whso.org/Home.htm

News Items Wanted

Relevant news items, articles, etc. are always welcomed for publication in the History, Philosophy, and Sociology of Soil Science Newsletter. This includes history, philosophy, or sociology sessions held at meetings of any of the various national soil science societies, new articles or books published in these areas, or anything else you feel might be appropriate. Please send submissions to the newsletter editor, Eric Brevik, at Eric.Brevik@dsu.nodak.edu.

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