

# The Annals of Iowa

Volume 70, Number 4  
Fall 2011



A QUARTERLY JOURNAL OF HISTORY

## In This Issue

JAMES RODGER FLEMING, professor of science, technology, and society at Colby College, examines Iowa's entry into the space age through the early career of State University of Iowa scientist James Van Allen. Fleming's telling of the story sheds new light on Van Allen's discovery and disruption of the near space environment for scientific and military purposes and casts Van Allen in a new light.

ANGIE GUMM, an independent scholar in Wichita, Kansas, traces the emergence and persistence of the resource recovery plant in Ames, Iowa, from the 1970s to the present, setting its history in the context of environmental and technological debates during those years. Gumm argues that Iowans' commitment to farmland preservation combined with the city's acceptance of engineering efforts and goals created a unique situation that has enabled the resource recovery plant to carry on for all of these years.

## Front Cover

Dr. James A. Van Allen (center), joins Dr. William H. Pickering (left) and Dr. Wernher von Braun (right), to celebrate the successful launch on January 31, 1958, of *Explorer 1*, which discovered the radiation belts that circle the Earth and were later named for Van Allen. Source: NASA JPL Image P8485, from GRIN.

## Editorial Consultants

Rebecca Conard, Middle Tennessee State University  
Kathleen Neils Conzen, University of Chicago  
William Cronon, University of Wisconsin-Madison  
Robert R. Dykstra, State University of New York at Albany

R. David Edmunds, University of Texas at Dallas  
H. Roger Grant, Clemson University  
William C. Pratt, University of Nebraska at Omaha  
Glenda Riley, Ball State University  
Malcolm J. Rohrbough, University of Iowa  
Dorothy Schwieder, Iowa State University

# The Annals of Iowa

Third Series, Vol. 70, No. 4  
Fall 2011  
Marvin Bergman, editor

---

## Contents

- 301 Iowa Enters the Space Age:  
James Van Allen, Earth's Radiation Belts,  
and Experiments to Disrupt Them  
*James Rodger Fleming*
- 325 "A Small Town with a Pretty Big Idea":  
How Ames, Iowa, Came to Have the  
Most Enduring Resource Recovery Plant  
in the United States  
*Angie Gumm*
- 358 Reinterpreting the Life and Art of Grant Wood:  
A Review Essay  
*Travis E. Nygard*
- 368 Book Reviews and Notices
- 393 New on the Shelves
- 399 Index
- 

A QUARTERLY JOURNAL OF HISTORY FOUNDED IN 1863  
Copyright 2010 by the State Historical Society of Iowa  
ISSN 0003-4827

## Review Essay

- 358 R. TRIPP EVANS, *Grant Wood: A Life*, by Travis E. Nygard

## Book Reviews and Notices

- 368 CARL J. EKBERG, *A French Aristocrat in the American West: The Shattered Dreams of De Lassus de Luzières*, by Thomas J. Lappas
- 369 PETER J. KASTOR, *William Clark's World: Describing America in an Age of Unknowns*, by David A. Walker
- 371 FRITIOF M. FRYXELL, *Ferdinand Hayden: A Young Scientist in the Great West, 1853–1855*, by Michael D. Severs
- 372 LAWRENCE H. LARSEN AND BARBARA J. COTTRELL, *Steamboats West: The 1859 American Fur Company Missouri River Expedition*, by Paul F. Paskoff
- 374 STACEY M. ROBERTSON, *Hearts Beating for Liberty: Women Abolitionists in the Old Northwest*, by Barbara Cutter
- 375 RICHARD W. ETULAIN, ED., *Lincoln Looks West: From the Mississippi to the Pacific*, by Patricia Ann Owens
- 377 ERIC J. MORSE, *Hinterland Dreams: The Political Economy of a Midwestern City*, by Kathleen A. Brosnan
- 379 BRUCE L. MOUSER, *For Labor, Race, and Liberty: George Edwin Taylor, His Historic Run for the White House, and the Making of Independent Black Politics*, by David Brodnax Sr.
- 381 MARK DUGAN, *The Brilliant Bandit of the Wabash: The Life of the Notorious Outlaw Frank Rande*, by John E. Hallwas
- 383 ROD EVANS, *Palaces on the Prairie*, by Mary Anne Beecher
- 384 CELIA MALONE KINGSBURY, *For Home and Country: World War I Propaganda and the Home Front*, by Barbara Jean Steinson
- 386 L. GORDON MCLESTER III AND LAURENCE M. HAUPTMAN, EDs., *A Nation within a Nation: Voices of the Oneidas in Wisconsin*, by Renee J. Zakhar
- 388 MIKE CHAPMAN, *Triumph and Tragedy: The Inspiring Stories of Four Football Legends, Fred Becker, Jack Trice, Nile Kinnick, Johnny Bright*, by Sarah Jane Eikleberry
- 389 Chia Youyee Vang, *Hmong America: Reconstructing Community in Diaspora*, by Joseph Andrew Orser
- 391 DAVID P. REDLAWSKI ET AL., *Why Iowa? How Caucuses and Sequential Elections Improve the Presidential Nominating Process*, by Norman E. Fry

# Iowa Enters the Space Age: James Van Allen, Earth's Radiation Belts, and Experiments to Disrupt Them

JAMES RODGER FLEMING

THE SPACE AGE or, more accurately, the satellite age officially began on October 4, 1957, with the dramatic and historic launch of *Sputnik 1* by the Soviet Union. Space exploration, however, has deeper roots in early twentieth-century rocketry and remote sensing. Those roots can be traced to Iowa through the work of space scientist James Van Allen. Van Allen became internationally famous for discovering new features of Earth's magnetic field: the eponymous Van Allen Belts. Coverage of his work by the press and in a recent biography has been overwhelmingly positive. But he also earned the less well-known and dubious distinction of having eagerly participated in top secret military experiments to disrupt the magnetosphere using nuclear weapons.<sup>1</sup>

A close examination of Iowa's entry into the space age through the early career of Van Allen sheds new light on his dis-

---

1. "James Van Allen," Faculty/Staff Vertical File, various dates, RG 01-15-03, University of Iowa Archives, University of Iowa Libraries, Iowa City; Abigail Foerstner, *James Van Allen: The First Eight Billion Miles* (Iowa City, 2007). Foerstner employs archival materials and personal interviews but discounts the nefarious nature of the nuclear tests, linking Van Allen's role only to the need to ban above ground nuclear testing.

The research for this article was funded in part by a State Historical Society of Iowa Research Grant.

THE ANNALS OF IOWA 70 (Fall 2011). © The State Historical Society of Iowa, 2011.

covery and disruption of the near space environment for scientific and military purposes, a move he later regretted. This story is relevant today because nuclear explosions in space by the United States and the Soviet Union constituted some of the earliest attempts at geoengineering, or intentional human intervention in planetary scale processes.<sup>2</sup> Exploring Van Allen's early career provides an opportunity to tell the story of the emergence of the space age as a gradual evolution of capabilities rather than its usual telling as a reaction to *Sputnik*. His story also calls attention to the scientific-military nexus at the heart of the early space program. The result, in turn, casts Van Allen in a new light.

EXPLORATION of space was really only a dream until the twentieth century, when some key technical advances made it more of a possibility, even likely. In the 1920s rocket pioneer Robert H. Goddard developed functioning liquid-fueled rockets and used them for weather photography. At about the same time, miniaturized radio transmitters attached to instrumented sounding balloons, or radiosondes, were developed to collect weather data to altitudes of up to 10 miles. In 1935 Russian scientist Sergei Vernov launched balloon-borne Geiger counters to take cosmic ray readings at high altitudes and to map variations in Earth's magnetic field. A German V-2 rocket reached an altitude of 56 miles in 1942, high enough to be considered the edge of space.<sup>3</sup> These applications are direct predecessors of Van Allen's later work with sounding rockets and satellites.

After World War II, Van Allen participated in launches of captured V-2 rockets outfitted with scientific instruments to measure cosmic radiation at extreme altitudes. He chaired the influential V-2 Panel, formally known as the Upper Atmosphere Rocket Research Panel.

---

2. James Rodger Fleming, *Fixing the Sky: The Checkered History of Weather and Climate Control* (New York, 2010).

3. V. A. Dergachev, "Scientific Activity of Academician Sergei Vernov in Apapity (Kola Peninsula) and Leningrad during the Years 1968–1982," *Astrophysics and Space Science Transactions* 7 (2011), 137–44, accessible at doi:10.5194/astra-7-137-2011; Smithsonian National Air and Space Museum, "50 Years of the Space Age: 1940s: Vengeance Weapon 2: The V-2 Ballistic Missile," at [www.nasm.si.edu/events/spaceage/vengeance.htm](http://www.nasm.si.edu/events/spaceage/vengeance.htm) (accessed 6/15/2011).



*The Bumper V-2 was the first missile launched at Cape Canaveral on July 24, 1950. Source: NASA Kennedy Space Center Image 66P-0631, from GRIN.*

JAMES ALFRED VAN ALLEN (1914–2006) was born and raised in Mount Pleasant, Iowa, graduated at the top of his high school class, and attended Iowa Wesleyan College, where he studied physics, graduating *magna cum laude* in 1935.<sup>4</sup> His mentor there, Thomas Poulter, introduced him to the study of terrestrial magnetism and instructed him in the use of instruments borrowed from the Carnegie Institution of Washington's Department of Terrestrial Magnetism (DTM). While still an undergraduate, Van Allen established a small magnetic observatory on campus, conducted a magnetic survey of Henry County, and provided his measurements to the DTM. He also helped set up stations to measure the luminous trails of meteors in the atmosphere and prepared scientific instruments for Professor Poulter,

---

4. The following biographical paragraphs are based on David DeVorkin, "Van Allen, James A.," *Complete Dictionary of Scientific Biography*, 26 vols. (Detroit, 2008), 25:118–26; and "James Van Allen," Faculty/Staff Vertical File, ca. 1958.

who was senior scientist on the second Byrd Antarctic Expedition in 1933–1935. Van Allen's undergraduate education gave him a taste of authentic scientific fieldwork and provided him with a strong foundation for a long and successful career studying Earth magnetism.

Both of Van Allen's advanced degrees were in experimental physics, which remained his forte. In graduate school at the State University of Iowa, Van Allen grew single crystals of pure zinc and measured their mechanical properties, earning a master's degree in 1936. He remained at Iowa to study nuclear physics, measuring hydrogen and deuterium interaction cross-sections for his Ph.D., which he earned in 1939. Here was a very bright Iowa boy, who had flourished in Iowa schools, now at the cutting edge of observation and experimentation, poised to enter the space age.

Van Allen accepted a postdoctoral fellowship at the DTM in Washington, D.C., where he continued to experiment on measuring and counting elementary particle interactions, especially nuclear gamma rays. There he was introduced to new ideas and opportunities involving the interaction between experimental nuclear physics and geophysics, especially those involving Earth's electrical and magnetic fields. Building on his undergraduate experience, and following the advice of geophysicist and DTM research associate Sydney Chapman, Van Allen compiled and analyzed observations of the fluctuations of Earth's magnetic field.

As the United States entered World War II, so too did Van Allen. He worked with the DTM and later with the Applied Physics Laboratory (APL), a new organization located in Silver Spring, Maryland, and managed by The Johns Hopkins University. There he designed radio-proximity fuses that detonated bombs, rockets, and shells when they were close to their targets. Making those sensitive devices, which contained vacuum tubes, rugged enough to withstand battle conditions was Van Allen's job, which he performed in conjunction with engineers from the Raytheon Corporation. Commissioned as a lieutenant in the U.S. Naval Reserve, Van Allen was assigned to the Pacific Fleet in November 1942 to test the new devices in the field and instruct gunnery teams in their use in combat. He received three



combat stars and attained the rank of lieutenant commander by the end of the conflict. He later thought that his wartime experiences working with people and equipment under stressful and uncertain conditions helped prepare him for the intense pressures of the space race. Shooting electronic devices out of cannons was actually much harder than launching them on rockets.

After the war, married to Abigail Halsey and with a first child on the way, Van Allen returned to the APL, where he organized and supervised the High Altitude Research Group, a team tasked with designing instruments and experiments to fly on captured V-2 missiles. He also developed a new generation of small rocket research probes, later called Aerobees, which could be launched either from land or from ships. The army was launching the V-2s and Aerobees from White Sands, New Mexico, on its own schedule, so Van Allen's team had to move fast to have their instruments and devices — cosmic ray detectors, spectrographs, gas samplers, temperature monitors, flight data recorders and transmitters, and even parachute recovery systems — ready for launch.<sup>5</sup> This hectic pace was also characteristic of the military-industrial nature of the later space age. Launching rockets from naval vessels gave Van Allen's team more control and more flexibility, since they could conduct high altitude geophysical research at various latitudes, including near the poles. One navy ship that launched Aerobee missiles for Van Allen in 1949 and 1950, the USS *Norton Sound*, would feature prominently later in the Argus atomic bomb tests in near space.

The groundwork for an important development was laid on April 5, 1950, when Sydney Chapman gave a lecture at the APL and that evening was the guest of honor at a dinner party at the home of James and Abigail Van Allen in Silver Spring, Maryland. According to legend, after dinner geophysicist Lloyd V. Berkner proposed and Chapman supported the idea of a third international polar year. This subsequently became the International Geophysical Year (IGY) of 1957–58, a coordinated effort, managed largely by Berkner and Chapman through the International Council of Scientific Unions, in which 67 nations conducted

---

5. James A. Van Allen, "Cosmic Ray Observations at High Altitudes by Means of Rockets," *Sky and Telescope* 7 (1948), 171–75.

research at both poles, around the globe, and in outer space.<sup>6</sup> The IGY provided opportunities for Van Allen to expand his research program using sounding rockets, while developing the new satellite program.

In 1951 Van Allen accepted the chairmanship of the State University of Iowa's physics department. Prior to moving to Iowa he completed a Guggenheim Fellowship at Brookhaven National Laboratories, where he studied the interrelations of high-energy physics and geophysics. He also took a research leave to work on fusion reactor design at Princeton University, a position that required that he obtain a top secret "Q" clearance, but nuclear fusion was not his main interest.

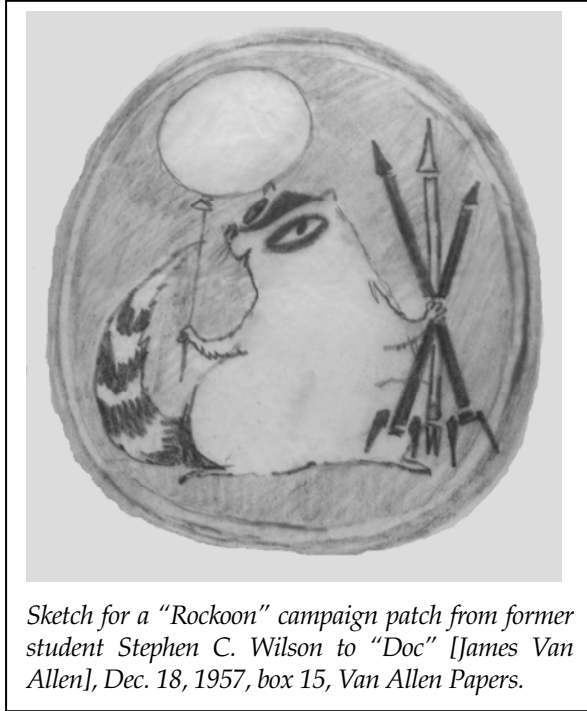
With modest support from the Office of Naval Research, the Atomic Energy Commission, and the U.S. Navy, Van Allen was able to maintain a field program to launch instrumented sounding rockets from high-altitude balloons — the so-called Rockoon program — by which he was able to take relatively inexpensive scientific measurements of cosmic ray intensity and the geomagnetic field at altitudes of 60 miles or more. Rockoons could be fired at will in all latitudes, anywhere the navy agreed to take him. From 1952 to 1957, Van Allen and his team traveled the world on naval vessels, using them as launch stations for rockoons. This was done for several hundred dollars per shot, compared with thousands or tens of thousands of dollars for an Aerobee or V-2 rocket launch.

Anticipation of the capabilities of a future Earth satellite ran high in the early 1950s. At a symposium on space travel held at New York's Hayden Planetarium in 1954, U.S. Weather Bureau research director Harry Wexler lectured on the possibilities of observing Earth's weather from a satellite vehicle both as a "storm patrol" and also as a potentially revolutionary new scientific tool with global capabilities.<sup>7</sup> A year later the United States announced that it would launch a scientific Earth satellite during

---

6. Gregory A. Good, "Sydney Chapman: Dynamo behind the International Geophysical Year," in *Globalizing Polar Science: Reconsidering the International Polar and Geophysical Years*, ed. Roger D. Launius, James Rodger Fleming, and David H. DeVorkin (New York, 2010), 185–88; Allan A. Needell, "Lloyd Berkner and the International Geophysical Year Proposal in Context," *ibid.*, 205–6.

7. James Rodger Fleming, "Polar and Global Meteorology in the Career of Harry Wexler, 1933–62," in *Globalizing Polar Science*, 233–35.



the upcoming IGY through its Vanguard program, a hybrid military-civilian effort spearheaded by the navy, supervised by the Department of Defense, and funded by the National Science Foundation. The satellite would use modified Viking and Aerobee sounding rockets. Excited by the opportunity, Van Allen and his graduate student George Ludwig prepared "A Proposal for Cosmic Ray Observations in Earth Satellites" for the National Academy of Sciences. Van Allen also edited a book on the scientific uses of Earth satellites.<sup>8</sup> According to Van Allen, the early rocket and rockoon flights revealed the presence of "the [electrons] that produce aurorae" and inspired the instrumentation for the first U.S. satellites.<sup>9</sup>

8. James A. Van Allen to Joseph Kaplan, 9/28/1955, "A Proposal for Cosmic Ray Observations in Earth Satellites," Satellite Experiments file, folder 32.1, Archives of the National Academy of Sciences: IGY USNC; James A. Van Allen, ed., *Scientific Uses of Earth Satellites* (Ann Arbor, MI, 1956).

9. James A. Van Allen, "Early Days of Space Science," *Journal of the British Interplanetary Society* 41 (1988), 11–15.

The launch of *Sputnik 1* in October 1957, however, diverted the world's attention from scientific concerns and focused American perceptions on a "missile gap" and possible national security threats from space. The launch of *Sputnik 2* the following month further fueled these fears, as did the spectacular failures of the U.S. Vanguard rocket program. The very first satellite launches garnered widespread attention and also resulted in important new scientific discoveries. Although *Sputnik 1* carried no remote sensing instruments, its orbital decay provided information about the density and dangers of the near-space environment. The operation of its two radio transmitters also provided clues regarding the electron density of the ionosphere and indicated that the satellite's pressurized nitrogen compartment had not been punctured by micrometeorites. *Sputnik 2* was primarily a biological experiment aimed at providing life support systems and telemetry for its doomed passenger, the dog Laika, but it also carried a cosmic ray experiment designed by Vernov.<sup>10</sup> During the *Sputnik* launches Van Allen was "out of town and out of touch" on the USS *Glacier* en route to Antarctica, launching his small rockoons as part of the IGY's Operation Deep Freeze.<sup>11</sup>

IN RESPONSE to the *Sputnik* space spectacles and the languishing Vanguard program, the U.S. Army Ballistic Missile Agency, with the help of the Jet Propulsion Laboratory, launched a four-stage modified Jupiter C military missile, designated Juno 1, on January 31, 1958. It carried the first U.S. satellite, *Explorer 1* (satellite 1958 alpha), into orbit with an instrument package designed by Van Allen and hastily modified by George Ludwig to fit into the new satellite. An identical satellite, *Explorer 2* (1958 beta), failed to reach orbit on March 5, but *Explorer 3* (1958 gamma), with improved instruments, successfully orbited the Earth on March 26.

---

10. M. I. Panasyuk, "Cosmic Ray Physics in Space: The Role of Sergey Vernov's Scientific School," *Astrophysics and Space Science Transactions* 7 (2011), 151–56, accessible at doi:10.5194/astra-7-151-2011.

11. David DeVorkin and Allan Needell, "Oral History Interview with James A. Van Allen" (Washington, DC: Smithsonian National Air and Space Museum Oral History Program, 1981), 253; Dian Olson Belanger, *Deep Freeze: The United States, the International Geophysical Year, and the Origins of Antarctica's Age of Science* (Boulder, CO, 2006).



*The three men most responsible for the success of Explorer 1, America's first Earth satellite, launched January 31, 1958: Dr. William H. Pickering (left), former director of the Jet Propulsion Laboratory, which built and operated the satellite; Dr. James A. Van Allen (center) of the State University of Iowa, who designed and built the instrument on Explorer that discovered the radiation belts that circle the Earth; and Dr. Wernher von Braun (right), leader of the army's Redstone Arsenal team that built the modified Redstone rocket that launched Explorer 1. Source: NASA JPL Image P8485, from GRIN.*

*Explorer 1's* launch date was a very happy day for Van Allen — so happy in fact that in a photograph he and his colleagues are shown with the satellite hoisted above their heads in a triumphant stance. He later recalled,

It was a kind of a public media event as it turned out, because we were sort of helping rescue the honor of the United States. . . . We were like the heroes who raised the flag over Iwo Jima, sort of temporary heroes, rescuing the honor of the United States in this great cold war with Russia, by having had a successful satellite. This was especially because of the really humiliating failures of

the Vanguard program, which had been our bid for national recognition and achievement.<sup>12</sup>

Early results retrieved from the satellites were inconclusive but eventually turned out to be scientifically spectacular. *Explorer 1* sent back intermittent data where cosmic ray intensity information was expected. Van Allen and his team thought the gaps were due to a machine malfunction.

Well, first of all, the *Explorer 1* data was very meager. . . . There were just little bits and pieces of data, and it was terribly hard to tell what was going on. . . . So it accumulated pretty slowly, and you couldn't get the picture. The only picture we got was that there's something funny going on here. We considered the apparatus was malfunctioning in some very puzzling way, but we were reluctant to believe that because . . . we had a very conservative design.<sup>13</sup>

The instruments on *Explorer 3* returned about 100 times more information than those on *Explorer 1*. This is because they were connected to a magnetic tape recorder that recorded the data from an entire orbit, then, on command, played it back to a receiving station. By the first week of April 1958, Van Allen and his group — George Ludwig, Carl McIlwain, and Ernie Ray — realized that the instruments on both satellites were functioning properly and that they had encountered some “real physical phenomenon.”<sup>14</sup>

On May 1, 1958, at the National Academy of Science, Van Allen announced that Geiger-Müller counters aboard *Explorers 1* and 3 had been swamped by high radiation levels at certain points in their orbits, indicating that powerful radiation belts, later known as the Van Allen Belts, surround Earth in a donut-shaped torus. This was a stunning new discovery, the first of the space age. Van Allen recounted the discovery of “great bands of corpuscular radiation,” belts of high-energy particles a thousand

---

12. DeVorkin and Needell, “Oral History Interview with James A. Van Allen,” 266.

13. Ibid.

14. Ibid., 272; J. A. Van Allen, G. H. Ludwig, E. C. Ray, and C. E. McIlwain, “Some Preliminary Reports of Experiments in Satellites 1958 Alpha and Gamma,” *IGY Satellite Report Series* no. 3 (1958), 73–92; James A. Van Allen, “Radiation Belts around the Earth,” *Scientific American* 200 (March 1959), 39–47.

times more intense than cosmic rays, that were temporarily trapped in Earth's magnetic field. He likened the phenomena to "bees in a hive."<sup>15</sup> James Van Allen of Mount Pleasant and Iowa City was now an internationally famous man, snagging a personal invitation to dine with the Eisenhowers at the White House on February 4, 1958, and reaching the cover of *Time* magazine twice: once all by himself in 1958 and once in a group of scientists named "men of the year" in 1961.<sup>16</sup>

ON THE VERY SAME DAY that Van Allen announced his discovery of Earth's radiation belts to the world, he agreed to join Project Argus, a top secret military test aimed at detonating atomic bombs in space to generate an artificial radiation belt, disrupt the near space environment, and possibly intercept enemy missiles. According to Van Allen, "We had been selected or entrusted with doing the primary satellite experiment for observation of the Argus tests. That all happened in the first few days of May, '58. That was all settled, in fact, already in late April. We had a go-ahead on the same day I gave the National Academy lecture on the 1st of May."<sup>17</sup> As was the case with *Explorer 1*, Van Allen was proud to be working for the U.S. government in its attempts to outdo the Soviet Union in space.

On April 5, 1958, with the Geiger counter returns coming in from *Explorers 1* and 3, Van Allen's assistant Ernie Ray had written ominously on the blackboard in the Iowa physics department, "Space is Radioactive." Now the military wanted to make space even more radioactive by nuclear and, later, thermonuclear detonations that in times of war could disrupt enemy radio communications from half a world away and damage or destroy enemy satellites and intercontinental ballistic missiles. Van Allen eagerly participated in A-bomb and even larger H-bomb detonations in space in Project Argus and Project Starfish Prime with no misgivings. "I certainly never resisted the oppor-

---

15. J. A. Van Allen, "A Great New Field of Endeavor: The Investigation of Outer Space," typescript, box 406, Van Allen Papers.

16. *Time Magazine*, 5/4/1958, 1/2/1961.

17. DeVorkin and Needell, "Oral History Interview with James A. Van Allen," 277.

tunity," he admitted. "I was keen and eager to do it [Project Argus]. I didn't have any doubt in my own mind that I wished to do it, so it was an almost immediate agreement. . . . I didn't really know much about the bomb business. I thought, if they were going to make a test, [space] was a good place to make one, as far as absence of fallout goes and adverse effects."<sup>18</sup> Such were the early links between early space science and planetary scale engineering — or "geoengineering."

On May 10, 1958, Van Allen attended a meeting on the Argus Project in Pasadena, California, with high-level representatives from the Jet Propulsion Laboratory, the Army Ballistic Missile Agency, and the Naval Research Lab. There, according to his meeting notes, it was "Agreed: SUI will coordinate payload assembly!" for a new satellite, *Explorer 4*, to be launched into orbit just prior to the bomb tests. The university was awarded a contract for \$123,000 for its participation.<sup>19</sup>

*Explorer 4* was announced as part of a peaceful IGY satellite program, but the design and construction of the instrument package was top secret, and it was used for military purposes. Working under intense time pressure, Van Allen and his team assembled the devices in the university's basement physics labs, with the rationale that it was a perfect cover, since no one, including Soviet spies, would expect to find classified work being done at a midwestern state university, and a casual visitor to the lab would see only a mass of tangled wires and vacuum tubes. However, the Atomic Energy Commission and the Department of Defense monitored every shipment and every movement of supplies and equipment. Van Allen chafed at the paperwork but was glad to play a central role in the project. He did not reveal the project's military objectives to his team members, just that they were making a new set of instruments, the fourth installment in the series.<sup>20</sup>

---

18. *Ibid.*, 281.

19. James Van Allen, handwritten meeting notes on Project Argus and contract for Design and Development of Radiation Detection Devices, box 89, Van Allen Papers. SUI refers to the State University of Iowa, now known as the University of Iowa.

20. J. A. Van Allen, "The Argus Experiments," typescript, box 406, Van Allen Papers; James A. Van Allen, Carl McIlwain, and George Ludwig, "Satellite Observations of Electrons Artificially Injected into the Geomagnetic Field," *Journal of Geophysical Research* 64 (1959), 877–91.





*Van Allen plants a bon voyage kiss on a scientific payload of Explorer 4 as it leaves the State University of Iowa physics building for Huntsville, Alabama, and Cape Canaveral, Florida. With Van Allen are Carl McIlwain and George H. Ludwig, research assistants who designed and assembled the space radiation apparatus for the newest IGY satellite launched by the army as part of the International Geophysical Year Program sponsored by the National Academy of Sciences. Source: Van Allen Papers, University of Iowa, July 1958, ES-159.*

High-altitude nuclear testing was well under way in 1958 in the Hardtack I test series. In April the U.S. military detonated a small atomic bomb, "Yucca," 16 miles above Enewetak Atoll in the Pacific Ocean as a test of its antiballistic missile defense program. In July and August, the U.S. military tested two much larger hydrogen bombs high above Johnston Island in the Pacific Ocean. "Teak," a 3.8-megaton blast set off at an altitude of 46 miles, was visible across the Pacific. The shot triggered an artificial aurora that filled the sky with brilliant colors 2,000 miles away in Samoa, and, because it severely disrupted the ionosphere, blacked out radio communications as far away as

Australia and New Zealand for as long as six hours. This was precisely what the military had hoped the test would do. The fireball was clearly visible from Hawaii, where air traffic was grounded for several hours. One air force officer watching the display fantasized that this is what a nuclear war might look like. After a radio silence lasting eight hours, and worried that the test shot may have knocked out the base, the Pentagon sent a message to Johnston Island asking, "Are you still there?"<sup>21</sup> Less than a fortnight later, an equally powerful bomb, "Orange," was detonated in the stratosphere at an altitude of 27 miles, too low to generate an appreciable aurora or black out radio communications, but perfect for tracing fallout patterns as they circled the globe. Although the military had requested additional shots, in mid-August President Eisenhower announced a one-year moratorium on nuclear testing to take effect on October 31, 1958.<sup>22</sup> Because of the new deadline, the Argus Project went into high gear.

The Argus space shots consisted of three atomic bombs, each of 1.7-kiloton yield, detonated at altitudes of 120, 150, and 288 miles above the South Atlantic Ocean on August 27, August 30, and September 6, 1958. *Explorer 4*, although publicly announced as part of the IGY, had been purpose built for these shots. It carried four shielded Geiger counters, each with different, yet all very high counting rates, since astronomical numbers of bomb particles were expected and were indeed encountered. The goal, as reported by Van Allen a year later, was to probe the natural Van Allen belts by giving them a shock to see if artificial radiation belts could be created and monitored. But something much more pernicious was afoot.

The idea of detonating bombs in near space had been proposed in 1957 by Nicholas Constantine Christofilos, a physicist at Lawrence Berkeley Lab.<sup>23</sup> His hypothesis, which was pursued by the Department of Defense's Advanced Research Projects Agency (ARPA) and tested in Project Argus and other nuclear

---

21. *Defense's Nuclear Agency 1947-1997* (Washington, DC, 2002), 140, at [www.dtra.mil/documents/aboutdtra/DefensesNuclearAgency.pdf](http://www.dtra.mil/documents/aboutdtra/DefensesNuclearAgency.pdf) (accessed 6/15/2011).

22. *Ibid.*, 141-43.

23. Alan A. Needell, "Christofilos, Nicholas C.," *Complete Dictionary of Scientific Biography*, 17:166-68.

shots, held that the debris from a nuclear explosion, mainly highly energetic electrons, would be contained within lines of force in Earth's magnetic field and would travel almost instantly as a giant current spanning up to half a hemisphere.<sup>24</sup> Thus, if a detonation occurred above a point in the South Atlantic, immense currents would flow along the magnetic lines to a point far to the north, such as Greenland, where they would severely disrupt radio communications; a shot in the Indian Ocean might, then, generate a huge electromagnetic pulse (EMP) over Moscow. In addition to providing a planetary "energy ray," nuclear shots in space, Christofilos thought, might also disrupt military communications, destroy satellites and the electronic guidance systems of enemy ICBMs, and possibly kill any military cosmonauts participating in an attack launched from space.<sup>25</sup>

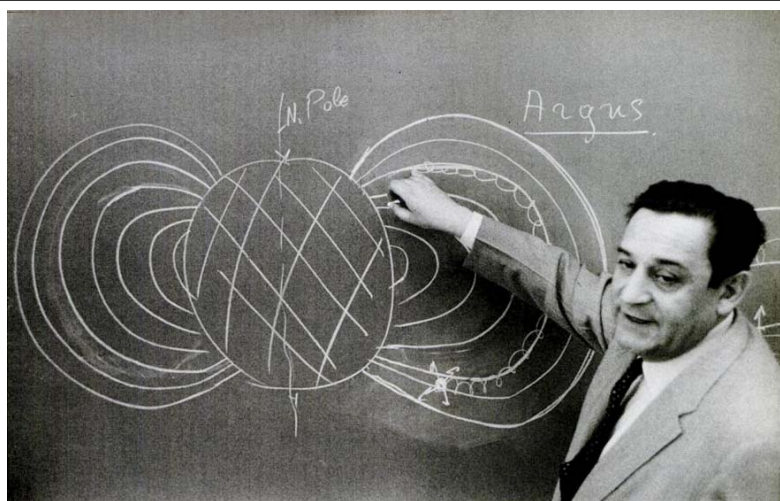
In the event of a nuclear attack, Christofilos proposed launching thousands of nukes to make a space shield. So Project Argus was initiated by the ARPA and the Air Force Special Weapons Program to test the "Christofilos effect" and to see if nuclear tests in space could be detected by remote sensing. Because of the need for secrecy (and deniability) and the accompanying need for a remote location, and due to geomagnetic considerations as well, a nine-vessel naval convoy conducted the tests in the South Atlantic Ocean. The guided missile ship *USS Norton Sound*, a converted World War II-era seaplane tender that had launched Aerobee missiles for Van Allen over the years, was designated to fire the three-stage, solid fuel, nuclear-tipped missiles. The aircraft carrier *USS Tarawa*, equipped with radar and antisubmarine reconnaissance planes, tracked the launches and searched for Russian submarines in the area.

*Explorer 4* (satellite 1958 delta), launched on July 26, 1958, was in orbit for both the Teak and Orange detonations and made multiple passes through the artificially induced radiation belts generated by the Argus shots. High-altitude sounding rockets were also used to monitor the Argus blasts. The U.S. Air Force

---

24. N. C. Christofilos, "The Argus Experiment," *Journal of Geophysical Research* 64 (1959), 869.

25. Similar but smaller-scale projects are discussed in Christopher J. Bright, *Continental Defense in the Eisenhower Era: Nuclear Antiaircraft Arms and the Cold War* (New York, 2010).



*Original Caption: "Explaining Argus: Christofilos shows how magnetic field encompasses the Earth (center). When nuclear bomb is detonated (symbol at lower right) some of its radiation is trapped and travels along lines of magnetic force to point at opposite end of the line. Then it spreads around the Earth in a thin shell of electrons." Source: William Trombley, "Triumph in Space for a 'Crazy Greek': Theory of Boston-born maverick scientist led to sensational Project Argus," Life Magazine 46 (3/30/1959).*

Special Weapons Center at Kirtland Air Force Base, New Mexico, supervised the launch of 19 solid fuel rockets sent to altitudes of 480 miles to measure decay products of the bombs. This was called Project Jason.<sup>26</sup>

What were the lessons of Argus? The project demonstrated that, with interservice and scientific cooperation, a top secret nuclear test series could be conducted surreptitiously and in short order; just ten months elapsed from concept to execution. It was also the first launch of a nuclear-tipped missile from a ship and the only nuclear operation ever conducted in the Atlantic Ocean. The bombs generated temporary artificial radiation belts that were too weak to verify Christofilos's theory about interfering

26. L. Allen Jr., J. L. Beavers II, W. A. Whitaker, J. A. Welch Jr., and R. B. Walton, "Project Jason Measurement of Trapped Electrons from a Nuclear Device by Sounding Rockets," typescript report, U.S. Air Force Special Weapons Center, Kirtland Air Force Base, New Mexico, n.d., copy in box 200, Van Allen Papers.

with communications and destroying incoming enemy missiles, but were promising enough to fuel speculation that more bombs or more powerful bombs in space could still do the job.<sup>27</sup>

The Argus shots were supposed to remain classified, but their status quickly changed when the *New York Times* broke the story on March 20, 1959, with no less than seven articles in that day's edition. The front-page story focused on weapons research and the attempt to halt enemy missiles; an editorial on page 30 said that the participants had called Argus "the greatest scientific experiment of all time" and speculated that it might "lead to peace among the nations of the world"; but the Pentagon's press conference on Project Argus quickly put the lie to these claims when Deputy Secretary of Defense Donald Quarles was unable to answer the reporters' questions, especially when asked how the tests fit with the peaceful purposes of the IGY. Quarles replied, "I would like to make it clear that we do not represent this to be solely a scientific experiment any more than the first reactor that went critical near Chicago was solely a scientific experiment." A reporter then commented, "Sir, we have been here more than an hour and we still don't know what your basic purposes were in the [experiment]." <sup>28</sup>

Van Allen, although he was enjoined not to discuss the military implications of Argus, was also quoted in the *Times* that day in response to a hypothetical question. "If a host of neutrons could be released at great altitude, could they split the nuclei of a missile warhead and detonate it?" a reporter asked. "Yes — if there were enough of them," the University of Iowa scientist replied.<sup>29</sup> According to an official review of the episode, "The public controversy over Argus . . . had less to do with testing *per se* than with the nuclear agencies' deliberate failure to keep Congress informed of their plans. The implication, disquieting in light of the ongoing test ban negotiations, was that tests conducted in outer space could go entirely undetected."<sup>30</sup>

---

27. Herbert F. York, *Making Weapons, Talking Peace: A Physicist's Odyssey from Hiroshima to Geneva* (New York, 1987), 149; *Defense's Nuclear Agency 1947–1997*, 146.

28. *New York Times*, 3/20/1959.

29. *Ibid.*

30. *Defense's Nuclear Agency 1947–1997*, 154.

Van Allen put a neutral spin on the Argus shots by reporting on their experimental rather than military nature. He emphasized that they allowed Earth's magnetic field to be rung like a bell, to be plotted experimentally for the first time, and that a known quantity and intensity of electrons injected by the blasts would help scientists understand natural processes, including radio transmission. The hybrid civilian/military nature of *Explorer 4* is clearly seen in Van Allen's final report of the radiation measurements, in which he credits assistance by the "US/IGY Project 32.1 of the National Academy of Sciences and the National Science Foundation; by the U.S. Army Ordnance Department; and by the Office of Naval Research and the Atomic Energy Commission."<sup>31</sup>

Argus demonstrated that a state university in the American heartland and an IGY satellite planned for peaceful exploration could be co-opted for the cold war. Although most of the direct monitoring of the explosions was conducted by the military from the surface and by sounding rockets, the four hardened Geiger counters on *Explorer 4* were purpose built by Van Allen and his team out in the open in the basement of the Iowa physics department. The Jet Propulsion Laboratory (JPL), which top administrators wished to shield from weapons-related work, eagerly accepted contracts from the Army Ballistic Missile Agency for studies on the survivability of missiles reentering Earth's atmosphere. The JPL also built the *Explorer* series of satellites, initially planned for the peaceful and scientific study of the planet, but used as well to monitor top secret nuclear tests in space.<sup>32</sup> The tests reinforced Van Allen's inestimable value to the, by then, highly militarized space program. His top-level security clearance, held since World War II, was indeed well placed, allowing him to mix freely in civilian and top secret circles.

---

31. J. A. Van Allen, C. E. McIlwain, and G. H. Ludwig, "Radiation Observations with Satellite 1958 Epsilon," Department of Physics, State University of Iowa, n.d., copy in box 405, Van Allen Papers.

32. *Defense's Nuclear Agency 1947-1997*, 143-46; Erik M. Conway, "From Rockets to Spacecraft: Making JPL a Place for Planetary Science," *Engineering & Science* 4 (2007), 2-10.

ON AUGUST 31, 1961, the Soviet Union announced that it was ending the moratorium on atmospheric nuclear testing. It detonated an 11-kiloton device in the stratosphere on September 6 and a massive 50-megaton weapon, the Tsar Bomba, on October 30 at an altitude of only 2.5 miles over the Novaya Zemlya test range. The Soviets went on to detonate three more relatively small space-bombs that year and three larger devices in 1962, between October 22 and November 1 — the height of the Cuban Missile Crisis. The EMP from one of the tests over Kazakhstan short-circuited electrical systems and destroyed telephone lines, in one case igniting a fire that burned down a power plant.

On July 8, 1962, almost four years after Project Argus, a 1.4-megaton hydrogen bomb designated Starfish Prime was carried aloft by a Thor missile and detonated 240 miles above Johnston Island. The blast, nearly a thousand times more powerful than the Argus explosions, generated an artificial aurora in low latitudes that scientists referred to as the “Aurora tropicalis.” In Honolulu, 700 miles away, the explosions were front-page news. “N-Blast Tonight May Be Dazzling: Good View Likely,” the *Honolulu Advertiser* proclaimed. Hotels held what they called “Rainbow Bomb Parties” on rooftops and verandas. When the bomb burst, people told of blackouts and strange electrical malfunctions, like garage doors opening and closing on their own. But the big show was in the sky.<sup>33</sup> The blast disrupted the natural Van Allen belts, knocked out radio communications across the Pacific, destroyed several communication satellites (notably Telstar, whose solar cells were damaged), and generated a massive EMP that set off burglar alarms and air-raid sirens and damaged about 300 streetlights in Hawaii. Earth currents and magnetic field disturbances propagated throughout the world. Scientists later estimated that if a bomb the size of Starfish Prime were to be detonated over the continental United States, where Earth’s magnetic field is stronger, EMP would be about 2.4 times stronger and would burn out circuits across the entire nation.<sup>34</sup>

---

33. Robert Krulwich, “A Very Scary Light Show: Exploding H-Bombs in Space,” National Public Radio, 2010, [www.npr.org/templates/story/story.php?storyId=128170775](http://www.npr.org/templates/story/story.php?storyId=128170775) (accessed 6/15/2011).

34. J. Robertson, “U.S. Seeks Answers to A-blast Oddity,” *Electronic News* 30 (Oct. 1967), 22.

A *New Yorker* cartoon depicted a serious-looking technocrat questioning a colleague in a high-tech laboratory setting: "But how do you *know* destroying the inner Van Allen belt will create havoc until you try it?"<sup>35</sup> British radio astronomer Bernard Lovell, along with the International Astronomical Union, issued a formal protest: "No government has the right to change the environment in any significant way without prior international study and agreement."<sup>36</sup>

Although the effects of the 1958 Argus tests were short-lived, the Starfish Prime shot of 1962 created a new radiation belt that persisted for ten years, problematizing further study of the natural radiation belts. Nevertheless, during this period Van Allen and his Iowa team designed and built *Explorer 15* (1962) and the *Injun* series of solar-powered satellites (1961–1974) to study the artificial radiation belt. Van Allen admitted that because of the longer-than-expected persistence of the artificial belts, experiments to solve "some nice little scientific questions" about the natural inner belt will be "hopelessly fouled up for some time." He had predicted that the effects would last a year. When asked about his inaccurate forecast, Van Allen stated, "It's the difference between intuitive expectations and actual observations." With U.S. astronauts and Soviet cosmonauts in orbit at the time, he also believed that the Starfish Prime shot "had increased the potential danger for manned space flights."<sup>37</sup>

The upper atmosphere bomb blasts by the Soviets and the Americans were failed attempts to harness Earth's natural processes for strategic purposes. A military report on Starfish Prime, declassified in 1989 (a full 27 years after it was written), acknowledges this fact within the first three pages: "As an aid to penetration for incoming missiles by disrupting enemy anti-missile radars, Starfish Prime was not as effective as anticipated. Deto-

---

35. *New Yorker*, 5/26/1962, 31.

36. Dudley Seward, *Bernard Lovell: A Biography* (London, 1984), 243.

37. James A. Van Allen, "The Starfish Test," *Nuclear Information* 5 (Jan. 1963), 1–12; James A. Van Allen, L. A. Frank, and B. J. O'Brien, "Satellite Observations of the Artificial Radiation Belt of July 1962," *Journal of Geophysical Research* 68 (1963), 619–627; "High-Belt Radiation Fouls Experiments," newspaper clipping, 3/16/1963, Iowa Press Clippings Bureau, Van Allen Papers; J. Flansburg, "No Ivory Tower for Iowa's Van Allen," *Des Moines Morning Register*, undated (1965), *ibid.*



nation degradation of communications and radar surveillance capabilities were found to be appreciably less than expected.”<sup>38</sup> According to the report (from which many pages and paragraphs are redacted), Starfish Prime had the following major “scientific” objectives:

1. Evaluation of missile kill mechanisms produced by a high-altitude nuclear detonation.
2. Evaluation of the effects of a high-altitude nuclear detonation on electromagnetic surveillance capability.
3. Evaluation of the effects of a high-altitude nuclear detonation on long-range communications.
4. Investigation of the basic characteristics of a high-altitude nuclear detonation and the physical basis of the effects.
5. Evaluation of high-altitude nuclear detonation weapon diagnostic techniques.
6. Evaluation of high-altitude nuclear detonation detection systems.

The Christofilos effect, although still of interest, was not mentioned in the redacted report, but a diagram indicating that space blasts could be used for offensive purposes was missed by the censors. The unredacted figure shows the use of a “precursor shot” at about 250 miles altitude to knock out the enemy’s anti-ICBM radars — this to be followed by an ICBM attack.

AT THE START of his career James Van Allen proved that he was a leading experimentalist with interests in both radiation physics and electrical and magnetic geophysics. He helped develop the proximity fuse, a device that ranks, with radar and the atomic bomb, among the top three inventions of World War II. With a Ph.D. in physics, naval reserve officer status, and a life-long security clearance, Van Allen had ready access to early V-2 missiles and other sounding rockets and rockoons of his own design. He was present at the genesis of the IGY, or at least host of the dinner at which it was hatched. When the space age formally began, Van Allen had the first instrument flying on the first U.S. satellite. It was a Geiger counter seeking to measure “cosmic rays” — or at least that was the cover story, since elec-

---

38. Francis Narin, comp., “A ‘Quick Look’ at the Technical Results of Starfish Prime” (Washington, DC, 1962; declassified 1989).

tromagnetic theory had long predicted basic features of Earth's magnetosphere, and Christofilos was certainly not the only scientist to expect that clouds of charged particles might be found there.

Van Allen was a space scientist, a mid-twentieth-century example of what we might call an "Earth systems scientist." He knew that Earth processes work together and influence the whole planet.

The substance of space science is not a well-defined scientific discipline. Rather it is a loose federation of the traditionally defined and somewhat overlapping disciplines of atmospheric and ionospheric physics and chemistry, magnetospheric physics, geophysics, geology, oceanography, planetary magnetism, solar astronomy, radio astronomy, planetary astronomy, stellar and galactic astronomy, and the physics of the interplanetary medium, the interstellar medium, and other plasma physical systems. Certain aspects of biology and medicine are also included.<sup>39</sup>

Nevertheless, by participating in a project to detonate bombs in outer space aimed at disrupting and militarizing the magnetosphere, he was behaving quintessentially as a product of the mid-twentieth-century cold war. His actions, admittedly miscalculations, rendered the scientific study of a newly discovered planetary feature difficult if not impossible for over a decade.

Van Allen distrusted the Soviets and regretted their reaching space in advance of the United States. He also realized that his notable discovery of the radiation belts was fortuitous and could have been made by the Russians had they been faster in interpreting their own data. He knew that *Sputnik 2* carried a Geiger counter with the ability to transmit evidence of cosmic radiation in the magnetosphere back to Earth, and his Soviet counterpart Sergei Vernov could have scooped him in the discovery if his equipment had worked properly.

When Van Allen visited the Soviet Union in the summer of 1959, he learned, firsthand, that scientific cooperation and information exchange between countries was not entirely free flowing, yet the Russian scientists were worthy of grudging respect. He once told a reporter, "I'm not fond of the Soviet way

---

39. Van Allen, "Early Days of Space Science," 11–15.

of life. But there is a very strong journalistic tendency to say that the Russians won't tell us anything. It is part of our political bias. We must give the devil his due."<sup>40</sup> After his return from the Soviet Union, government agents, most likely from the CIA, debriefed him. They asked him to describe in detail any recent significant developments in cosmic ray research and to note any incidents in which the Soviets appeared to be evasive or secretive about any aspect of their work. His responses were vague but not misleading or inaccurate.

Van Allen had learned how to play the game: there were certain things better not to be discussed. Many of Van Allen's associates from his time in the military were now senior officers, and he realized that his ability to fly his experiments in space was a byproduct of military developments, combined with good luck, hard work under crushing deadlines, and a dose of gamesmanship: "By virtue of the Explorers I and III and then the IV success, our little group [at Iowa] had a lot of clout in the system. In other words, almost anything we judged was reasonable to do, we had a very good chance of doing."<sup>41</sup>

James Van Allen still holds a deservedly solid reputation as a good Iowan, family man, and space scientist, but his halo now has a decidedly nuclear glow. He was uniquely poised as a scientist to experiment on the whole Earth in an age when everything was possible, even urgent, given the state of the cold war. Because of him Iowa joined the space age. He prepared scientifically in the 1930s and '40s and recorded many significant accomplishments in high-altitude and near space research before 1957. His was not just a knee-jerk reaction to *Sputnik*, but a life-long engagement with space.

For several years, from 1958 to 1962, Van Allen was a geo-engineer. He discovered and participated in the disruption of the magnetosphere, a major planetary feature. He wrote about the science of it all, but he eagerly participated in the military aspects as well. After projects Argus and Starfish Prime were

---

40. G. Sperling Jr., "Birth of IGY: Radiation Finds Studied," typescript, Van Allen biographical file, University of Iowa Archives; this article later appeared in the *Christian Science Monitor*, 2/2/1959.

41. DeVorkin and Needell, "Oral History Interview with James A. Van Allen," 294.

over, he stated, “[Science] is subjective. It’s done by humans. The outcome is objective because it must withstand the test from all the people of the world.”<sup>42</sup> Unfortunately, his experiments with bombs in space, like many cold war-era interventions, raise troubling questions about his legacy.

I know of no more dramatic historical example of the discovery of a new phenomenon by a scientist who immediately agreed to cooperate with the military in an act aimed at disrupting it. Of course intervention is part of scientific practice, but the disruption of the magnetosphere constituted a purposeful and quite reckless intervention in a hitherto unknown and poorly understood global feature; that is, it constituted what we now call geoengineering. Astronomer Bernard Lovell accused the military scientists of taking a series of “huge gambles” with the planet: “The Earth is so minute on the cosmic scale and its environment is controlled by the delicate balance of such great natural forces that one must view with dismay a potential interference with these processes before they are investigated by the delicate tools of the true scientist.”<sup>43</sup>

Today, climate engineers wishing to cool the planet several degrees are also proposing to tinker with its geophysical systems. Their vague ideas include injecting sulfate aerosols or high-tech nanoparticles into Earth’s stratosphere or adding iron to the oceans to generate massive algal blooms to sequester carbon dioxide — this, with little or no idea of the consequences. Thus, in Baconian terms, a modicum of understanding should immediately be leveraged, some geoengineers believe, to gain power over and control of nature for “useful” purposes, even if this involves disrupting the phenomenon.<sup>44</sup> Similarly, nuclear bomb tests in outer space were “useful” to Van Allen, Iowa’s first space scientist and one of the world’s first geoengineers.

---

42. Flansburg, “No Ivory Tower.”

43. Seward, *Bernard Lovell*, 242.

44. Fleming, *Fixing the Sky*, 225–68.

# “A Small Town with a Pretty Big Idea”: How Ames, Iowa, Came to Have the Most Enduring Resource Recovery Plant in the United States

ANGIE GUMM

ON JULY 13, 1979, more than a week after President Jimmy Carter had mysteriously disappeared to Camp David, trying to discover the root of America’s problems — energy and other — the *Des Moines Register*’s Donald Kaul wrote,

Two months ago, you hardly ever heard of synthetic fuel; now you hear of little else. Congressmen are knocking each other down to get in the forefront of those in support of ‘synfuels’ as they are called. President Carter is said to be on his way down from the mountaintop with a crash program to develop a synthetic-fuels industry. It seems to be an idea whose time has come — which is a fair indication of what rotten times we live in. Synthetic fuels is a rotten idea. It’s the modern version of the medieval search for the Philosopher’s Stone, a mythical method of turning lead into gold, and about as practical.<sup>1</sup>

---

1. *Des Moines Register*, 7/13/1979.

I thank the State Historical Society of Iowa for the research grant that made this project possible; Lorrie Hanson, John Pohlman, Rob Weidner, and the Arnold O. Chantland Resource Recovery Plant; Alan Spohnheimer and the Ames Historical Society; the clerks at the City of Ames; Iowa State University Special Collections; the participants in the 2008 WHEATS Workshop at Kansas State University; Marvin Bergman and the anonymous reviewers of the *Annals of Iowa*; and especially Pamela Riney-Kehrberg, Charles Dobbs, John Monroe, Amy Bix, and Julie Courtwright, my wonderful dissertation committee.

THE ANNALS OF IOWA 71 (Fall 2011). © The State Historical Society of Iowa, 2011.

In what came to be known as his "Malaise Speech," Carter did not talk about synthetic fuels. Instead he focused on the crisis of confidence America was experiencing at the end of the decade. The country that had put a man on the moon exactly ten years earlier had grown doubtful of its future thanks to a decade filled with political corruption, shortages, excessive consumerism, and an onslaught of technological failures, especially in the previous year.<sup>2</sup> Even though he did not mention it, the president did plan a massive funding of synfuel research and development along with numerous associated technologies, including over \$2 billion for waste-to-energy efforts.<sup>3</sup>

Kaul's objections to the high-tech fuels, which turned oil shale, coal, tar sands, and possibly garbage into oil and gas, were shared by environmental groups like the Sierra Club, which called the president's plan a "disaster."<sup>4</sup> To opponents, synfuels had the potential to cause environmental harm; used too many other precious resources such as water and land; were too expensive and risky; and did nothing to encourage voluntary conservation, which was the easiest and cheapest way to save energy. The meaning of Carter's support despite all of these problems offended environmentalists the most: that energy production trumped all other concerns about resources and the environment.

That was not the case for most Americans during the 1970s, however. A study of the issue of solid waste management reveals that most environmental attitudes during that decade were not polemical ideologies entrenched at far ends of a spectrum. Instead, during the 1970s a wide range of people and groups accepted the general supremacy of technology and the market but believed that they could be guided by a conservationist ethic that acted in humanity's best long-term interests.

---

2. During the year before the speech, Love Canal was declared a national disaster, Three-Mile Island had its meltdown, Flight 191 crashed, and Skylab was about to fall from the sky.

3. "Federal Programs Impacting Urban Waste Problems," Carter Presidential Staff Offices, Cabinet Secretary Office Ed Helminski, box 190, Urban Waste Management/Resource Recovery, Jimmy Carter Presidential Library and Museum, Atlanta, Georgia.

4. "A Time to Choose: Synthetic Fuels and the American Future," *Sierra Club National News Report*, 7/27/1979.

Resource recovery was the embodiment of this cooperative, technology-centered environmentalism. Resource recovery plants came in a variety of types, but all of them extracted resources that could be recycled and sold in the market and converted the rest of the waste into some form of energy. By the time Carter unveiled his plan, failed and abandoned resource recovery plants were sprinkled across many major cities of the United States, and the Environmental Protection Agency had decided to drop future efforts from its plate. Resource recovery was too high tech and expensive, officials had decided. European mass-burn facilities, which had fewer parts and produced only energy, were simpler, cheaper, and more reliable.

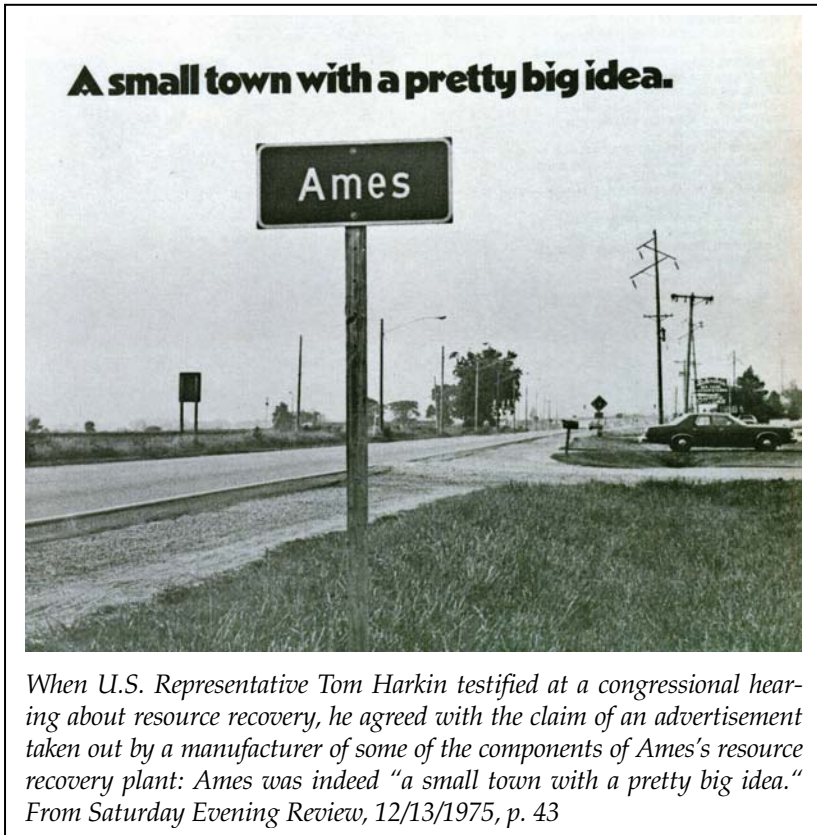
The goal of turning waste into energy, however, did not win over the environmentalists who had accepted the compromises of the more conservation-minded resource recovery. Carter's plan was not fully implemented, and many cities abandoned their waste-to-energy (WTE) plants when they lost federal support in the 1980s. In fact, American solid waste management has progressed little since the 1970s; by 1995 every state either exported or imported (or both) waste, and by 2000, 32 million tons of trash were being transported from one state to another.<sup>5</sup>

Only one of the highly technical resource recovery systems would survive from the 1970s to the present day. Ames, Iowa, alone has persisted in its resource recovery efforts even in the face of high prices and international controversy, all the while clinging to old conservationist values that have lost and regained popularity through the decades. Iowans' esteem of farmland combined with the city's acceptance of engineering efforts and goals created a unique situation that has enabled the resource recovery plant to carry on for all of these years. Its story offers a rare case study that shows us the unforeseen issues that can emerge when a city not only pursues an alternative energy but commits to it.

In 1973 *The American City* magazine ran a story titled "Solid-Waste Disposal — Five Years to Doomsday." It compared the garbage situation to the "nuclear clock of the atomic scientists which warned civilization that only five minutes remained be-

---

5. Martin Melosi, *Garbage in the Cities: Refuse, Reform and the Environment* (Pittsburgh, 2005), 215.



fore extinction." Should cities simply do nothing because local governments cannot reach any consensus, the article asked. "The little Iowa city of Ames doesn't think so," the author wrote. "Ames is unafraid. It has agreed to receive refuse from nine other nearby municipalities. It will use this refuse as a fuel to generate electricity in its municipally owned power system, sulfur free, incidentally."<sup>6</sup> By the time the plant opened, Ames was touting itself as a "small town with a pretty big idea."<sup>7</sup>

6. William S. Foster, "Solid-Waste Disposal — Five Years to Doomsday," *The American City*, July 1973, 8.

7. Tom Harkin, Hearing before the Subcommittee on the Environment and the Atmosphere of the Committee on Science and Technology, U.S. House of Representatives, 94th Cong, 2nd sess., 4/7/1976, 4/8/1976, 4/12/1976, 4/13/1976, 48.



THE IDEA for the plant germinated at a city council meeting in October 1971 when councilman Ray Fisher suggested that Ames look into an "experiment in waste disposal" he had recently seen that might save the city some money.<sup>8</sup> Regulations against feeding garbage to pigs and the open burning of dumps caused municipal solid waste across the country to accumulate at greater rates in the 1960s than ever before, as did the nation's affluence. By 1970, the Ames landfill contained 6,000 junked cars, the byproduct of a society so rich that it was more likely to throw away than to fix up something even as expensive as a car. Even after the city removed the vehicles, the landfill was expected to be full by 1975, so Mayor Stuart Smith assembled a solid waste task force to start looking for new sites very early in the decade.<sup>9</sup>

A new landfill would have to meet the standards established by the recently founded federal Environmental Protection Agency (EPA). The city estimated that the cost to dispose of trash would increase from \$1.50 to \$2.50 per ton in a regulated landfill. Ames was not the only city running out of landfill space. Neighboring communities were also out of room and not yet prepared to site or fund new landfills. Before hiring the consulting firm of Gibbs, Hill, Durham and Richardson in October 1972, Ames had implemented a "stop gap" solution earlier that year, agreeing to take all of Story County's garbage for \$3 per ton. It was not surprising that area leaders readily agreed to the expensive, temporary solution. By the middle of the decade, the new regulations and increasing environmental awareness would cause most of the country's mayors to declare that solid waste disposal was their "number one headache."<sup>10</sup>

The *Ames Daily Tribune's* editorial board endorsed Fisher's "experiment," noting that a new landfill could cause water pollution and would take "enormous amounts of space."<sup>11</sup> The ex-

---

8. Minutes, Ames City Council, 10/19/1971, Ames City Hall, Ames.

9. *Ames Daily Tribune*, 11/11/1970; "Ames Pioneers with New Solid Waste System," *Key to the City* (City of Ames newsletter), August 1973, 6, Ames Historical Society, Ames; *Iowa State Daily*, 5/18/1973.

10. *Iowa State Daily*, 5/18/1973; Minutes, Ames City Council, 10/10/1972; *Ames Daily Tribune*, 11/18/1971; Tom Redburn, "The Tug-of-War over Waste," *Environmental Action* 22 (May 1976), 3-4.

11. *Ames Daily Tribune*, 10/22/1971.

periment was a resource recovery plant — the great hope for solid waste disposal in the late 1960s and 1970s. The EPA spent millions of dollars funding demonstration grants for a handful of cities to build resource recovery plants that other cities could study. Although many local governments were interested in resource recovery, it was mostly large cities that actually pursued the plants. Even with government aid, the costs were so high and the technology so uncertain that municipal solid waste resource recovery projects were usually only worthwhile for cities that had a lot of people and little available land.

In Ames, a small city with a rapidly growing population (but still under 50,000) and plenty of available land, planners projected that the disposal fee would be \$2.69 per ton with the plant, with hopes that it would drop to a mere 60 cents per ton in about a decade. Area leaders devised a plan for all participating communities to pay the same price, so other Story County communities were getting a small bargain compared to their previous agreement.<sup>12</sup> While Ames had some immediate and local reasons to consider resource recovery, a new environmental ethic along with the national energy and farmland crises that occurred before construction began in October 1973 would become more important than price issues and provide the city with lasting justifications for the plant.

Just as the growing piles of garbage caused Americans to worry about pollution and waste in the 1960s, works like Rachel Carson's *Silent Spring*, Garrett Hardin's "Tragedy of the Commons," and Paul Ehrlich's *The Population Bomb*, also alerted Americans to the threats posed by chemicals and scarcity.<sup>13</sup> The extent of the country's environmental concern became apparent after the wildly popular first Earth Day on April 22, 1970. Iowans were also considering their role in environmental issues during this period. When the U.S. Foreign Policy Association issued a pamphlet titled "Man and His Environment — What Price Survival?" the *Ames Daily Tribune* reported that "scores of Iowa programs dealing with this universal challenge are gaining mo-

---

12. *Iowa State Daily*, 5/18/1973.

13. Rachel Carson, *Silent Spring* (Boston, 1962); Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (1968), 1243–48; Paul R. Erlich, *The Population Bomb* (New York, 1971).

mentum. The press, radio and television are giving it major play. Pastors are emphasizing the Ecological Crisis. Youth are finding handles to take hold of in tackling the proposition. Leaders in industry are recognizing that 'the first responsibility of business is to operate for the well-being of society.'"<sup>14</sup>

Ames was certainly no exception to this evolving environmental consciousness. The local paper was full of articles about environmental issues and even featured a series on world hunger. In October 1971 alone, two speakers came to Ames to discuss population and the earth's carrying capacity. One of the speakers, agricultural expert and former Iowa State University (ISU) student and professor William C. Paddock, visited his alma mater to warn about the pending food crisis. Paddock said that a food crisis in 20 or 30 years was "unavoidable."<sup>15</sup>

Paddock's worry was also a political concern in the early 1970s. When famine hit desperate countries around the globe, seeming to offer proof of the pending environmental calamity, U.S. Secretary of Agriculture Earl Butz encouraged farmers to grow as much as possible, reversing a decades-long policy of discouraging agricultural overproduction, dating back to the Great Depression. The United States could profit from the exports economically and, by providing aid to the Soviet Union in the cold war climate, could display technological one-upmanship. On the other hand, as historian Tim Lehman has noted, concerns about soil erosion and fuel shortages became prevalent just as farmers were being called upon to feed the world. "This volatile mixture of political, economic, demographic, and environmental change," he writes, formed the backdrop for a serious "attempt to plan for the use of American farmland."<sup>16</sup> In light of the growing needs and tightening constraints, it seemed foolish and wrong to turn good farmland over to garbage.

Another of the decade's serious problems, the energy crisis, began in 1973, just as construction of the Ames resource recovery plant started. A substantial portion of the city's energy came

---

14. *Ames Daily Tribune*, 10/8/1971.

15. *Ames Daily Tribune*, 10/12/1971, 10/29/1971.

16. Tim Lehman, *Public Values, Private Lands: Farmland Preservation Policy, 1933–1985* (Chapel Hill, NC, 1995), 44.

from coal, while the crisis was linked to the 1973–1974 oil embargo. But as other cities and states also started switching to coal, the fact that Iowa imported about 98 percent of its energy from other states became more of an issue, especially when the price of coal jumped 50 percent from 1974 to 1976.<sup>17</sup> Promoters of the Ames resource recovery plant offered the energy crisis as further justification that the plant ought to be built. Researchers hoped that Ames would be an example to the rest of the state of the potential to use waste for fuel, and many believed that the state might become completely energy self-sufficient by turning agricultural waste into energy.<sup>18</sup>

One of those true believers was state senator and poultry farmer Hilarius Heying. When Heying received notice that his Dyersville gas supply was in jeopardy in 1974, he teamed up with a Des Moines company called Sunny Time Energy to turn the manure from his farm's 160,000 chickens into a continuous supply of energy for his farm. The \$75,000 system, called POOP 4, received a \$50,000 grant from the state energy department council. ISU professors offered to work with Heying to develop a five-year plan of study of the conversion of methane to energy. Like most alternative energy efforts of the 1970s, mechanical difficulties caused the plant to fail, and it lost its government funding.<sup>19</sup> Heying unsuccessfully continued to push the state to invest in turning waste — of all sorts — into energy. He asked his colleagues in the state senate to picture that “every community could be self-sustaining if all the hidden energy in our wastes were frugally recycled. I have made a couple of years study of this — I have spent some fifty thousand dollars for worthless

---

17. *Iowa State Daily*, 12/13/1973; *Public Power* (official publication of the American Public Power Association), September–October 1974, 28; *Changing Scene* (newsletter of the Ames Laboratory), vol. 2, no. 89, p. 1, Special Collections, Iowa State University (ISU) Library, Ames.

18. *Changing Scene*, vol. 2, no. 89, p. 1.

19. Larry Murphy, “Methane Making Electricity at West Union,” undated clipping from the *Des Moines Register* in Hilarius Heying Papers, MS 250, Special Collections, ISU Library, Ames; R. J. Smith, assistant professor, Iowa State University, to Senators T. Riley and H. L. Heying, 4/19/1974, *ibid.* An article by George Anthan, “The Ingenious Iowan: Beer Cans, Chicken Droppings Provide Energy,” in the *Des Moines Register*, 5/12/1980, describes some of the solar, wind, and battery-powered energy-saving efforts of the decade.

equipment, but I have learned a great deal. Now that we are running out of landfills and now that the sewage is creeping up from the ocean bed onto our eastern and western seashores, we must be motivated to action."<sup>20</sup>

Because most state and local governments could not, however, afford to finance experimental energy projects, the federal government began funding resource recovery demonstration programs. The goal was to let one city learn from and tinker with the technological mishaps that would inevitably arise with any plant scale-up, so that other communities could invest in technology that was no longer experimental.<sup>21</sup> As all of the demonstration plants failed by the end of the 1970s and the federal government began the switch to European-style waste-to-energy plants, the lesson most cities took away was not to invest in resource recovery. The city of Ames had jumped on the bandwagon early, however, before some of the demonstration plants were even funded, let alone failed. The city surveyed several resource recovery systems and decided to model its on the first demonstration plant, the St. Louis-Union Electric plant, which began operating in 1972.

In the St. Louis system, a hammer shredded municipal solid waste (MSW) that was then fed into an air separator. The heavy material, which usually was non-combustible, dropped down to a magnetic belt and was separated into ferrous and non-ferrous materials that would be recycled or sent to a landfill. The lighter material went into a "cyclone separator," where it was separated once more. The remaining MSW, the light material, was stored and then packed into semi trucks, which hauled the waste to a Union Electric power plant, where it could be fired with coal to provide energy for the city. The product was called refuse-derived fuel (RDF). This process was the most appealing to the city of Ames, which hoped to build its facility near its municipally owned power plant and install a pneumatic tube to transfer the waste. The full-sized St. Louis plant was never built because Union Electric backed out after difficulties

---

20. Senator Hilarius Heying, speech for state senate about Senate File #1126, Hilarius Heying Papers.

21. Angie Gumm, "Looking for the Good in Garbage: Bill Compton Builds Wichita a Pyrolysis Plant," *Kansas History* 31 (2008), 216.

siting transfer stations and new laws regarding utility research and development made the plant unaffordable, according to the company.<sup>22</sup> The Ames plant was unusual in that it was to be owned and operated by the city rather than a utility or technology company. Consequently, it would never be subject to the whims or economic needs of a private corporation that had to answer to stockholders.

Upon the recommendation of the consulting firm, the city proceeded with the RDF plant and put out calls for bids for the plant's numerous parts in 1973. The initial expected cost was \$2.8 million, which would be funded primarily through general obligation bonds that did not require a vote by citizens. The plant apparently had plenty of local support, however. Mayor Stuart Smith considered the plant one of his highest priorities, and City Manager J. R. Castner claimed, "In nearly 25 years in local government I've never been involved with a project that everyone in town thinks is the greatest thing that has come down the tube since the toothbrush. People stop me on the street and at cocktail parties to ask how the plant is coming along and when they can go through it."<sup>23</sup> The Ames League of Women Voters undertook a major study, which supported the plant. ISU and the Story County communities that had been using the Ames landfill all agreed to 25-year contracts to use the Ames plant for all of their solid waste disposal needs. Both mayoral candidates and several of the city council candidates in 1973 also expressed pride in the plant.<sup>24</sup> There is one clue that

---

22. H. Lanier Hickman Jr., *The History of Solid Waste Management in the United States* (Santa Barbara, CA, 2003), 223–24; L. J. Shannon et al., *St. Louis Refuse Processing Plant: Equipment, Facility, and Environmental Evaluations* (Washington, DC, 1975), 5, 8; Daniel M. Doran, *Energy from a Wasted Resource: The Ames Experience* (Ames, 1996), 4.

23. *Ames Daily Tribune*, 5/17/1973; J. R. Castner, "The Ames, Iowa Resource Recovery Story," *Nation's Cities*, August 1975, 30.

24. "League of Women Voters Endorses Heat Recovery and Recycling as Waste Disposal Methods," folder 9, box 14, League of Women Voters of Ames Records, MS 341, Special Collections, ISU Library; Laura Miller, "Contemplating Conservation, Aldo Leopold," *Leopold Letter* 21, no. 1 (Spring 1992), at [www.leopold.iastate.edu/pubs/nw1/2009/2009-1-leoletter/leopold.html](http://www.leopold.iastate.edu/pubs/nw1/2009/2009-1-leoletter/leopold.html) (accessed 3/28/2011); Terry V. Sprenkel, "Development of the Ames System—Incentives to Solve a Problem," *Proceedings of the Solid Waste to Energy Conference — The Ames Experience* (Ames, 1978), 43; *Iowa State Daily*, 10/25/1973, 10/26/1973, 11/1/1973.

some Ames residents had reservations, however. Council candidate Dennis Sweeney, who claimed to base "his opinions entirely on the views of the people in the third ward," told the Iowa Student Public Interest Research Group (ISPIRG), "The solid waste disposal program has some good possibilities, but not without further research and a Federal funding program."<sup>25</sup> That is the only negative comment about the plant found in the local paper during the early years.

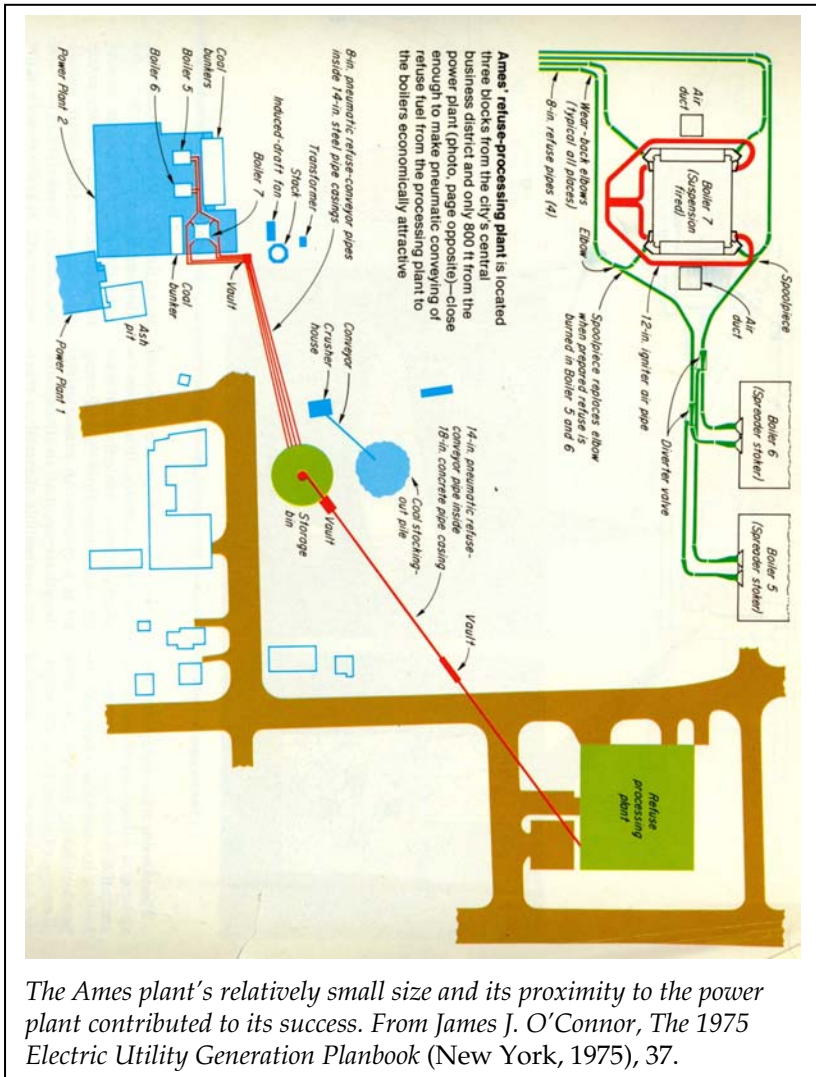
There may have been little local resistance, but there was also little national attention or federal support, even though, increasingly, as the St. Louis plans began to unravel, it seemed likely that Ames would have the first full-scale implementation of the RDF technology. Ames was building the first municipally operated waste-to-energy plant, yet it did not qualify for a demonstration grant because it was using technology from the St. Louis plant. While the EPA provided multi-million-dollar funding to the ten demonstration plants that would soon fail, the agency only gave Ames a \$600,000 grant to buy degritting, dust collection, and sprinkler systems. The EPA also provided a \$750,000 grant to the city, which distributed it to ISU to fund professors and students as well as the Ames Laboratory to study the "Ames Experience" for three years. The study included environmental, technical, economic, and political aspects of the plant.<sup>26</sup>

The city of El Cajon, California, was working on another type of resource recovery, a pyrolysis plant for which it had received demonstration plant money. The disposal technique was quite different, but the size of the plant and the community it would serve were both similar to the Ames plant. Both cities were taking risks to provide trash service for the same number of people, so it did not seem fair, at least to the *Ames Daily Tribune* editorial board, that El Cajon was getting so much government assistance and attention. "It may be that El Cajon has a

---

25. *Ames Daily Tribune*, 11/2/1973.

26. "Gibbs, Hill, Durham and Richardson Memorandum of Understanding dated May 10, 1977," Minutes, Ames City Council, 11/11/1977; *Engineering News Record*, 9/5/1974, 13; S. Keith Adams, "The Economics of Solid Waste Resource Recovery — Analysis of the Ames System," *Proceedings of the Solid Waste to Energy Conference*, 73.



better publicity system than Ames," the board wrote. "But so far little has been made of the efforts here. But it remains that on paper, the Ames operation is more impressive than the more-publicized California plan."<sup>27</sup>



JUST AS the *Tribune* had said, the Ames plant was impressive. Haulers entered a 30-foot-high room and dumped their trash on a tipping floor. A worker in a machine called a loader mixed the material, combining wet and dry trash at a ratio to encourage combustion of all the waste. The mixture was then put on a conveyor belt called a feeder and entered the primary shredder. At that stage the garbage was ripped to shreds by 48 130-pound hammers with a 1,000-horsepower motor. It then passed through the degritter, where small pieces of waste were captured by disc screens and the larger pieces continued on through the process. The degrittled material, typically non-combustible, ended up in the landfill. The large items were put on an electromagnet conveyor, to remove 90 percent of the ferrous metals. The remaining waste then passed through a secondary shredder, where it was torn into two-inch pieces. At that point the material entered the air classification system, similar to St. Louis's cyclone. As the waste went into the air classifier, the heavy materials fell to the bottom, while the lighter waste floated up in the air and was sucked into a pneumatic tube and carried to the RDF storage bin over at the nearby power plant. Conveyors then sent the material into one of two coal boilers, where it was cofired with coal at a ratio of about 70–80 percent coal to 30–20 percent RDF.<sup>28</sup>

The plant could process up to 200 tons of waste per day. Its relatively small size was an asset. Larger utilities usually fired 100 percent coal during their peak hours, reducing the amount to 30–40 percent at night. They bought the rest of their power from a pool, thus avoiding wasting fuel that was not needed. When cofiring coal with RDF, however, the off-time slackening could not occur because the flow of RDF to the boiler could not be reduced; the ratio of coal to waste had to be maintained evenly. An RDF system was, therefore, more expensive for larger utilities to adopt. Consequently, Ames became “the first and the big major contributor to [RDF] technology.” In May 1976 Jerry Temple, the plant's superintendent, informed U.S. Representative Tom Harkin, “We feel we have a solution to a problem and hope more people will look into recovery and do it.”<sup>29</sup>

---

28. Doran, *Energy from a Wasted Resource*, 3–4, 13.

29. Al Joensen, ISU professor of mechanical engineering, who studied the plant under the grant funded by the EPA, interview with author, 7/28/2009, Ames;

The Ames plant was not without its own problems, however. Inflation and unexpected costs caused the plant's start-up cost to soar. Its final total cost was \$6.3 million, nearly two-and-a-half times original estimates. Then, instead of dropping to 60 cents per ton or even producing a profit of over \$2, as the city had ambitiously predicted in the early years, the plant's disposal fee went through the roof. In 1977 the cost of disposal was \$11 per ton, while the rest of Iowa was paying between \$4 and \$7 per ton for landfills. The town of Gilbert paid \$8,000 per year to use the Ames facility, ten times the amount it would have cost to use the Boone County landfill 20 miles away. Story County communities that had signed 25-year contracts began to question their decision. When the power plant increased its rates, many people argued that the city should sell it to another utility provider and replace the costly resource recovery plant with a landfill.<sup>30</sup>

Nearly all resource recovery plants across the country tended to cost more than expected because of mechanical or marketing problems, or a combination of both. Another issue was that people were not producing as much trash as cities had predicted. Landfills last longer when less trash is produced, but more trash allows resource recovery plants to lower their costs. The Ames plant had enough trash to fulfill its role in the co-firing process, but resource recovery plants also made money from the separated resources that were sold to recycling companies. Ames expected to receive nearly 55,000 tons of trash in 1975. In its first three months of operation, the city shipped 542 tons of ferrous metals, bringing in over \$44,000; 120 tons of wood chips were sold for \$15 per ton; and a relatively short-lived motor oil container held up to 10,000 gallons of used oil, which was expected to sell for ten cents per gallon. When some Ames citizens complained that paper was just being wasted in

---

Harkin, Hearing before the Subcommittee on the Environment and the Atmosphere, 4/7/1976, 4/8/1976, 4/12/1976, 4/13/1976, 56.

30. Petros Gheresus, S. Keith Adams, John C. Even, and Robert A. Olexsey, "Resource Recovery from Solid Waste: The Ames System Experience with Economics and Operation," National Waste Processing Conference, 1980, at [www.seas.columbia.edu/earth/wtert/sofos/nawtec/1980-National-Waste-Processing-Conference/1980-National-Waste-Processing-Conference-44.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/nawtec/1980-National-Waste-Processing-Conference/1980-National-Waste-Processing-Conference-44.pdf) (accessed 6/6/2011); *Ames Daily Tribune*, 4/8/1971; John Pohlman, interview with author, 5/6/2009, Ames.

**The garbage we get  
at Ames  
has a big bouquet  
in it.**



  
**American**  
**PULVERIZER COMPANY**  
5548 WEST PARK, ST. LOUIS, MISSOURI 63110

*The American Pulverizer Company, which supplied parts for the Ames plant, advertised the city's efforts in national magazines. From American City & County, May 1978, p. 23.*

the recovery process, the city built a paper recycling annex next to the plant. The paper was sold for up to \$40 per ton or burned depending on the economic markets.<sup>31</sup>

The city's willingness to seek markets for even seemingly worthless types of material demonstrated a true conservationist ethic. A plaque on the door of the plant, a reminder of its purpose, read, "Dedicated to the Reuse of our Resources and the Protection of our Environment."<sup>32</sup> Extracting recyclable materials was also an economic necessity. When lighter packaging and an eco-

31. "Summary: Ames Solid Waste Resource and Recovery Plant April 15, 1976," p. 3, scrapbook 1, Arnold O. Chantland Resource Recovery Plant, Ames.

32. Al Joensen interview.

conomic recession curbed consumerism and waste, the city's expectations of waste generation fell short in 1977, decreasing to just 48,500 tons. The result was higher costs. Diminished or unreliable income on the material recovery side was another reason the EPA began to favor the shift to the European mass burn technologies. By 1981, only 2 percent of the country's MSW was being processed in resource recovery plants.<sup>33</sup>

RESPONDING TO OBJECTIONS to the high cost of the plant, Ames Public Works Director Arnold Chantland, for whom the plant would later be named, stated, "We need to put some price on the value of land. This system doesn't use up land as in landfills."<sup>34</sup> Once the energy crisis had passed, most other cities with resource recovery saw no other environmental good to justify their plants. Resource recovery did decrease the need for landfill space and risks of groundwater pollution, but environmentalists increasingly worried more about dangers from air pollution than land-related issues. While scarcity fears earlier in the decade had caused public discussion about farmland preservation, the only federal response was to promote more production through increased land use. During his visit to the Iowa State Fair in 1976, presidential candidate Jimmy Carter called farmers the "first and foremost environmentalists" and stated that "one of the greatest tragedies of the last eight years is the way the administration has cut back on farm conservation efforts. As a companion to building production and stable prices, we must also have conservation programs, to build back the land."<sup>35</sup>

Some areas of Iowa, including Story County, were working on such programs. The county instituted farmland conservation measures during the decade to save what was "widely regarded as some of the most fertile corn land in the nation."<sup>36</sup> In 1977 the county implemented a zoning plan based on a "corn suitability

---

33. Oscar Albrecht, "What Happened to the Gold in Garbage?" *American City and County*, August 1981, 48, 47; *Iowa State Daily*, 6/25/1981.

34. *Iowa State Daily*, 6/25/1981.

35. Joel Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, OH, 1996), 50; Jimmy Carter, Remarks at Iowa State Fairgrounds, 8/25/1976, 3, box 404, Jimmy Carter Papers, Jimmy Carter Presidential Library.

36. *Des Moines Register*, 7/15/1979.

rating." Planners wanted to stop urban sprawl from eating up cropland, so they rated parcels of land on a scale of 1 to 100 based on their conduciveness to growing corn. The county found that it could meet expected growth through the year 2000 by only allowing the development of land that scored 62 or less on the scale, even though 93 percent of the county's land scored higher than 62.<sup>37</sup>

Not everyone bought into the farmland conservation arguments, including Earl King, the president of a rural power co-op called Allied Power, which in 1979 was trying to find a town in central Iowa willing to host its power plant. King said there was a "bit of phoniness" in the farmland preservation efforts. He pointed to ISU's new football stadium, where, he said, "they play six home-games a year and they don't even use it for practice. They park thousands of cars around there for 20 hours a year to watch a couple of teams play football."<sup>38</sup>

Many people, in fact, shared King's skepticism. Many studies about the nation's rapidly diminishing supplies of farmland had been released in the early 1970s, but, as geographer Michael Bunce points out, "Little evidence was produced to show that the overall level of agricultural output or the integrity of the agricultural economy was being seriously affected." Bunce adds that farm problems in the 1980s were the result of "overproduction and global competition rather than land shortages."<sup>39</sup>

As with other environmental fears — overpopulation for instance — the fact that the dire predictions did not come to fruition within a certain period of time did not mean people stopped being concerned. With these kinds of issues, if conditions did not worsen by a certain point, critics could always argue that society had been spared this time but trouble was still on the horizon if ways were not changed. Another possibility was to find new justifications for the same cause. That is what happened as Ames began to use farmland preservation as an argument for the resource recovery plant.

---

37. Ibid.

38. Ibid.

39. Michael Bunce, "Thirty Years of Farmland Preservation in North America: Discourses and Ideologies of a Movement," *Journal of Rural Studies* 14 (1998), 234.

Bunce argues that the three main non-production justifications to preserve farmland were ecology, "local amenity protection," and agrarianism. In addition to saying that its land was needed for corn production, the city of Ames relied on all three of the other justifications.

The ecological position found its roots largely in the "land ethic" first espoused by conservationist Aldo Leopold, who advised people to "quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." Many environmentalists had problems with modern agricultural practices, but turning farmland into a landfill for garbage would have been even worse for a "biotic community." As Leopold said, "The less violent the man-made changes, the greater the probability of successful readjustment in the pyramid." (This was a kind of food-chain pyramid with soil on the bottom; on each layer above that rested species that relied on the layer below it for food.)<sup>40</sup>

If local resources are considered a kind of amenity, then Ames's second non-production justification for farmland preservation becomes clear. After a 1974 National Energy Task Force meeting in Washington, D.C., Juanita Vetter, chair of the Iowa League of Women Voters' Board of Environmental Quality, reported, "Iowa and Missouri were reproached for our reluctance to mine coal, in spite of its high sulfur content and its small pocket type deposits. We explained our concern for the good agricultural earth so vital to the food supply. The plains-mountains representative chorused 'we're being raped so the rest of you can have energy. We're going to look like the moon surface with nothing usable left!'"<sup>41</sup> Iowa did not have oil or good coal. The best thing that Iowa could offer a country wor-

---

40. Ibid., 237-43; Aldo Leopold, *A Sand County Almanac* (New York, 1970), 262, 257, 252.

41. Juanita Vetter, chair, Board of Environmental Quality, League of Women Voters, to Iowa branches of the League, 12/12/1974, on Energy Task Force Conference (November 1974, Washington, DC), League of Women Voters Records, Special Collections, ISU Library.

ried about the future of its resources was farmland. Saving the land gave the state the ability to maximize its contribution to the nation.

In the late 1970s, farmers, trying to emphasize the importance of the nation's, and their own, global contributions, adopted the slogan "a bushel of wheat for a barrel of oil."<sup>42</sup> Agriculture did account for one-fifth of U.S. exports and offset 62 percent of the trade deficit caused by oil imports, but it could not compete toe to toe with oil.<sup>43</sup> Plenty of other countries could supply oil exporting nations with food, but not many other countries could supply oil to the United States. In addition, the United States was willing to pay almost anything for oil, as Assistant Secretary of Agriculture Dale Hathaway noted in 1979, but "no one is willing to pay \$20 for a bushel of corn."<sup>44</sup> Agriculture's dependence on oil, which had proliferated by the end of the decade, further weakened the argument that food should have the same standing as energy. By 1980, it took 1.13 barrels of oil to grow a ton of grain.<sup>45</sup> Some economists and businesses argued that choosing between farm and energy interests should be based solely on which was more profitable. In a five-part series called "Vanishing Acres," written for the *Des Moines Register* in July 1979, reporter George Anthan quoted a USDA economist who opposed that idea: "According to that kind of reasoning," Anthan said, "we should be taking land out of food production so we can save oil and natural gas. Then we could all sit down and eat oil and natural gas."<sup>46</sup>

That kind of thinking is a mix between the amenity idea and agrarianism. In some cases, converting farmland to other uses might have been a better economic choice. Some farmers, for example, might have been choosing to sell their land to developers. But in agricultural states such as Iowa, the idea that farmland was inherently valuable was a natural one, whether or not economic analyses or actual behavior supported that thinking.

---

42. *Des Moines Register*, 7/1/1979.

43. Lehman, *Public Values*, 60, 150.

44. *Ames Daily Tribune*, 7/13/1979.

45. Lehman, *Public Values*, 62.

46. *Des Moines Register*, 7/12/1979.

It was an acceptable idea to many other Americans as well. Even though no food production shortage was in sight, a Louis Harris public opinion poll in 1980 showed that over half of all Americans surveyed considered the loss of good farmland to be a "serious problem."<sup>47</sup> City officials would use the inherently valuable status of farmland as a justification for its resource recovery plant over the next three decades.

DURING THE 1980s the plant worked out many of the mechanical difficulties most other resource recovery plants across the country never survived to solve. The Ames plant also benefited from its proximity to ISU with its strong engineering focus. Arnold Chantland started out as a city engineer and became the director of engineering services by the late 1960s, working for the city for 30 years. Well into his retirement he stated, "Engineers believe in taking science and doing something useful with it. Hopefully, the public will accept it and think it's useful."<sup>48</sup> His pragmatic attitude was typical of engineers, who seek to apply knowledge to problems. The town's mind-set, combined with an unusually high employee retention rate, allowed the Ames plant to build up a body of workers with the knowledge to anticipate trouble and, through much trial and error, to largely eliminate the flaws in the plant's operating system.

The last major mechanical difficulty of the decade occurred in 1987, when a propane tank exploded in the shredder. As plant superintendent John Pohlman recalled, the blast "took the wall off of the South side of the building, and almost blew it out onto Lincoln Way." After that, the plant announced that it would take propane tanks for free, so that people would bring them in rather than attempt to hide them in their trash.<sup>49</sup>

---

47. Mark Friedberger, "The Rural-Urban Fringe in the Late Twentieth Century," *Agricultural History* 74 (2000), 507, 508; Frank Schnidman, *Agricultural Land Preservation: Serious Land Policy Concern or Latest 'Public Interest' Ploy*, Lincoln Institute Monograph #81-1 (Cambridge, MA, 1981), 1.

48. "How Ames Garbage Helps Heat and Light Your Home," *Ames Tribune* (online feature), 9/30/2010, <http://greentogether.amestrib.com/2010/09/30/how-ames-garbage-helps-heat-and-light-your-home/>.

49. John Pohlman interview; Rob Weidner, lead operator of the Ames resource recovery plant, interview with author, 5/8/2009.



The Ames plant operated in the red for over 20 years, sometimes costing four times the expected amount. Over that time, however, employees worked out the kinks in the plant. As a city spokesperson told the *Tribune* in 1995, during those years of deficit, the plant “saved nearly 800,000 tons of garbage from being deposited on more than 80 acres of farmland — enough rubbish to fill Hilton Coliseum 400 times.”<sup>50</sup>

While the Ames resource recovery plant chugged along, plans for the European-style waste-to-energy (WTE) plants looked promising for the rest of the country in the first half of the 1980s. That enthusiasm would not last more than a decade, though, and the number of plants peaked at 146 in 1996. Plans for 248 plants had been scrapped from 1982 to 1990, and by the end of the twentieth century there were only 109 plants left. WTE proponents had been optimistic about the 1978 Public Utilities Regulatory Policies Act (PURPA), which guaranteed that alternative energy producers would get paid the same amount for their fuel as suppliers of traditional fossil fuels did. When fears of the energy crisis subsided in the 1980s, fossil fuel prices plummeted, and so did the revenue that WTE suppliers received.<sup>51</sup> As the Ames plant was municipally owned, its existence did not depend on such profits. When the RDF was worth less, the city could just raise the fees it charged Story County citizens to use the plant.

The second major cause of the WTE letdown in the 1980s was the 1986 Tax Reform Act. Under that law, cities had to pay taxes on bonds for projects that were not entirely publicly funded. That was a devastating blow to the WTE industry; the National Solid Waste Management Association said that taxing the bonds

---

50. Joan Bundy, “Talkin’ Trash: Ames Sets the Pace,” Update ‘95, a supplement to the *Ames Daily Tribune*, 2/10/1995.

51. H. Lanier Hickman Jr., “A Brief History of Solid Waste Management in the US During the Past 50 Years,” *Waste Management*, Nov.–Dec. 2001, available at [www.mswmanagement.com/november-december-2001/solid-waste-management-2.aspx](http://www.mswmanagement.com/november-december-2001/solid-waste-management-2.aspx) (accessed 3/29/2011); Randall Curlee, *Waste-to-Energy in the United States: A Social and Economic Assessment* (Westport, CT, 1994), 4; Louis Bloomberg and Robert Gottlieb, *War on Waste: Can America Win its Battle with Garbage?* (Washington, DC, 1989), 141; “Refinements Bolster Trash Plants; But Tax Laws Threaten Multibillion-Dollar Market,” *Engineering News-Record*, 2/23/1984 (accessed on Lexis-Nexis).

was “really mandating a return to landfilling through tax policy.”<sup>52</sup> Again, because Ames was entirely municipally owned, it was not affected. But even the Ames plant could not escape the third major blow to the push for WTE: a growing environmental sensitivity, especially the increasingly prevalent belief that some high technology threatened environmental health.

IN 1992, four years after the EPA had set a 25 percent recycling goal for the nation’s waste, Ames was considering whether or not to continue operating the resource recovery plant, which at the time was diverting 60 percent of Story County’s waste and 82 percent of Ames’s from a landfill.<sup>53</sup> The plant’s supporters related their opinions about recycling to the most controversial issue of that election year. In an *Ames Daily Tribune* story, Plant Superintendent Kenny Moravetz said that Ames was “pro-choice” when it came to garbage. It was up to Ames residents whether they wanted to sort materials for recycling or just chuck it all. “In most communities,” Moravetz said, “you don’t have that choice. . . . We want residents to not feel guilty when they throw something away.” At least a few Ames environmentalists objected to the amount of materials recycled and to Moravetz’s “pro-choice” statement. Ames resident Nancy Treu wrote a guest opinion for the *Tribune* calling the idea “absurd.” “It has been and is our selfish and wasteful overconsumption of resources that has gotten us into this problem in the first place,” she wrote. “We SHOULD feel some guilt anytime we use up a resource, especially a non-renewable one.”<sup>54</sup>

Specific worries about health aspects of the plant also began to arise. “I shudder every time I put a number six or seven plastic container in my trash,” resident Peggy Murdock wrote. “I know we don’t recycle this grade of plastic because it is too hazardous for the people working in the plants that do that. Can it be any healthier for us to burn it six blocks from my home?” Murdock reversed her position after Merlin Hove, the

---

52. “Refinements Bolster Trash Plants,” 22.

53. Arnold O. *Chantland Resource Recovery System 1996* (Ames, 1997), fig. 3; *Ames Daily Tribune*, 7/30/1992.

54. *Ames Daily Tribune*, 9/26/1992, 10/1/1992.

municipal electric system director, contacted her, but her letter showed that fears about air pollution were gaining ground on the farmland conservation issue, even in Ames.<sup>55</sup>

In addition, the plant had yet to show any promise of ever turning a profit. At a community forum to discuss the MSW disposal plans, some residents called the city "ignorant" for using the "incinerator." Paul Wiegand, director of public works in the early 1990s, called the plant a "17-year experiment" and said that when Ames developed a new solid waste plan, recycling would probably be "the number one thing."<sup>56</sup>

The day after Wiegand's statement appeared in the paper, R. W. Beck and Associates, the consultants the city hired to help create its next 20-year solid waste plan, appeared at the city council meeting to recommend that the city keep the plant but adopt a more integrated waste management system that included some type of recycling. When the city council finally held a community forum to decide the plan, the debate focused exclusively on the resource recovery plant rather than recycling. Ultimately, recycling legislation would not happen in Ames. WTE plants operating before 1989 did not have to adhere to the EPA's 25 percent recycling rule, and the city council decided against the shift on the basis of market demand. The council decided that paper and plastics, which made up 27 percent of the waste stream, were more valuable as fuel for the power plant than as recyclables. In addition, there was no need to regulate metals, because the current system already separated and recycled them. "Council members agreed that there was no point in subsidizing a recycling program when the city pays for the resource recovery plant."<sup>57</sup>

THE DEBATE over recycling versus burning did not occur in a vacuum. Pollution concerns about resource recovery plants had existed since the early 1970s. The early fears usually dealt with sulfur dioxide, particulate matter, or bacteria. Testing on European-style mass burn incinerator emissions at the end of the

---

55. *Ames Daily Tribune*, 7/9/1992, 7/31/1992.

56. *Ames Daily Tribune*, 10/12/1992.

57. Minutes, Ames City Council, 10/13/1992; *Ames Daily Tribune*, 3/25/1993.

decade, however, had revealed hazardous forms of dioxins, which were often created by plastics and chlorine. The plastics industry had boomed after World War II; by 1985, the United States was consuming 39 billion pounds of plastic per year. Unlike waste that was burned earlier in the century and often deemed a "nuisance," plastic garbage when burned produced toxic chemicals, including dioxins.<sup>58</sup> Although the evidence was "inconclusive," problems believed to be associated with dioxins included "increases in cancer, birth defects, psychological damage, liver damage, cardiovascular deterioration, and degeneration of the endocrine system . . . disturbances in the responses of the peripheral nervous system . . . severe weight loss and chloracne, a disfiguring and persistent form of acne growth."<sup>59</sup>

The threat of dioxins was debated, as was the threat of the other air pollutants — including lead, mercury, beryllium, nitrogen oxides, polycyclic organic compounds, carbon monoxide, and hydrogen chloride — which many feared resource recovery plants were releasing. Many in the waste industry did not agree that the level of concentrations released carried such risks, but when a chemical plant in Italy had an explosion that released a "few pounds" of dioxin into the ambient air, leading to an area evacuation, to regular citizens "the extraordinary toxicity of dioxin was widely appreciated, if still poorly understood."<sup>60</sup>

When area residents complained about the bad smells from the resource recovery plant in Hempstead, Long Island, the recent concern about dioxin in European plants caused officials to test emissions. The Hempstead tests revealed "significant amounts" of dioxin in the plant's emissions. According to biologist and environmental activist Barry Commoner, "An intense controversy erupted, first among technicians about the

---

58. Barry Commoner, *Making Peace with the Planet* (New York, 1990), 110; Carl A. Zimring, *Cash for Your Trash: Scrap Recycling in America* (New Brunswick, NJ, 2006), 145; Martin Melosi, *Sanitary City: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore, 2000), 398–99.

59. Bloomberg and Gottlieb, *War on Waste*, 98.

60. *Ibid.*, 100; Walter M. Shaub, "Disposing of Waste-to-Energy Facility Ash," in *Waste-to-Energy as a Part of Municipal Solid Waste Management*, vol. 2, *Selected Papers from the Proceedings of SWANA/GRCDA Meetings 1987–1990* (SWANA Publication no. GR-WTE 0401, February 1991), 98, 99; Commoner, *Making Peace*, 110.

validity of the results, and later in the community about their significance."<sup>61</sup>

The controversy over the Hempstead plant gave citizens pause over existent plans for eight new WTE plants. The first was going to be built in the Brooklyn Naval Yard and was supposed to process 3,500 tons of waste per day. Once worries over dioxins broke out, the plant became set on a long course of derailment thanks in large part to the efforts of Commoner. In a scene that would seem familiar 20 years later in Ames, a public relations battle over the Brooklyn plant ensued, with residents wanting to know how dangerous dioxins were and how much would be emitted. The Department of Sanitation (DOS) argued first that there was no risk of dioxins and later that the plant would burn the trash at such a high temperature that it would eliminate any dioxins in the garbage.<sup>62</sup>

Commoner, who began his career as an anti-nuclear scientist in St. Louis, now led the Center for the Biology of Natural Systems (CBNS) at Queens College. He and his crew became involved in New York as scientific experts educating the community about complex scientific issues. CBNS faculty attended public meetings about the WTE plants and provided test results from European plants that countered the DOS arguments. "It became clear," Commoner later wrote, "that the public acceptance of the proposed incinerator would stand or fall on the expected effect of the dioxin emissions on the people exposed to them." As he pointed out, these types of evaluations are particularly difficult because they involve so many different kinds of science: chemistry, physics, physiology, biochemistry, and biology. The engineering firm that the DOS hired to measure the danger of dioxin levels found the risk to be an extra 0.13 deaths per million people. The EPA's acceptable risk level was one extra death per million people. CBNS immediately attacked the study for

---

61. Commoner, *Making Peace*, 110. The city of Hempstead had contracted the plant in late 1974, and it opened in 1979 at a cost of \$140 million. It could process 320,000 tons of waste per year and made enough energy to power itself and 20,000 nearby homes. The contract for the plant ran 17 years, but because of the dioxin concerns it only operated for one. *New York Times*, 3/30/1987; available at [www.nytimes.com/1987/03/30/nyregion/idle-trash-plant-blown-up-to-clear-site-for-incinerator.html?pagewanted=1](http://www.nytimes.com/1987/03/30/nyregion/idle-trash-plant-blown-up-to-clear-site-for-incinerator.html?pagewanted=1) (accessed 3/20/2010).

62. Commoner, *Making Peace*, 111.

assuming that the dioxins would be ingested by breathing, leading to a deceptively low risk level. The center conducted its own study and found the risk to be an extra 29 deaths per million, while an outside group estimated the risk at 5.9 per million.<sup>63</sup>

CNBS's most important assertion was that incineration created dioxins. Dioxins did exist in products like plastics, as well as paper and PVC pipes, which used chlorine in production. WTE promoters argued and Commoner agreed that burning materials at certain temperatures could help eliminate dioxins. The problem, Commoner argued, was that the process of incineration itself created new dioxins that did not originally exist in the materials. He said that dioxins were an emergent property of the process of incineration. WTE plants, which Commoner referred to exclusively as "incinerators" or worse, were another example, like nuclear power, of new technology creating new problems. Even if plants got better at controlling emissions, the anti-WTE groups argued that the dioxins present in the remaining ash would be extra potent. Because the process "created dioxin," it was inherently unsafe.<sup>64</sup>

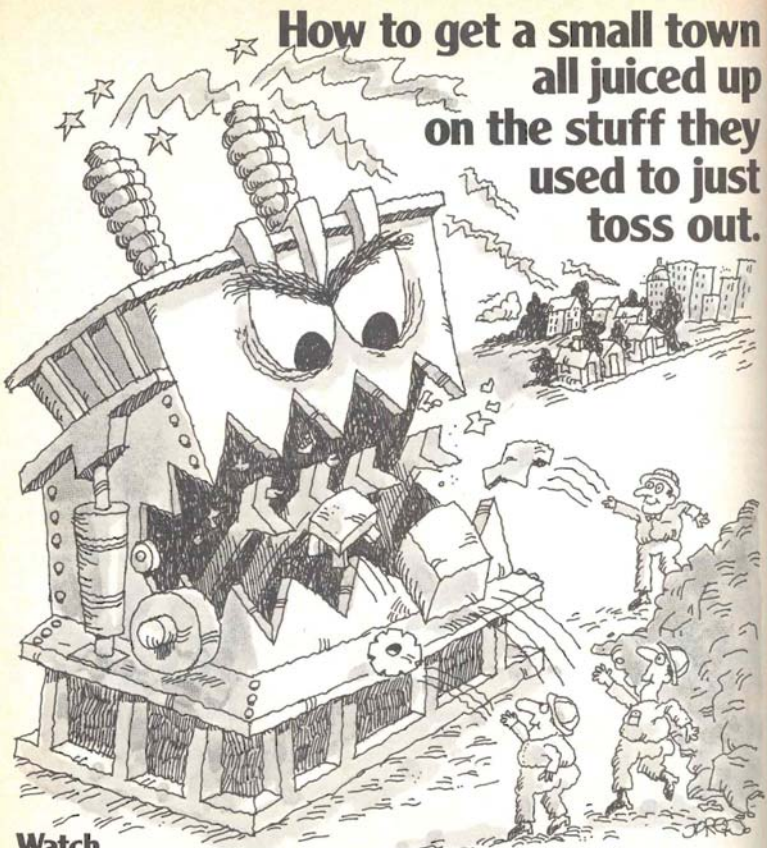
While the national debate was brewing, back in Ames plant employees were emphasizing the recycling side of resource recovery. A subtitle on a *Daily Tribune* story titled "Talkin' Trash: Ames Sets the Pace" read, "Recycling is a household word here." The story stated, "As the recycling rage sweeps the nation, Mid-Iowans can smile to themselves in the knowledge that they were ahead of their time." The reporter brushed over the more controversial energy production side, writing, "Lest environmental purists begin shouting that burning garbage cannot possibly be good for the environment . . . consider that the trash

---

63. Michael Egan, *Barry Commoner and the Science of Survival: The Remaking of American Environmentalism* (Cambridge, MA, 2007), 47, 48, 178; Commoner, *Making Peace with the Planet*, 111–13.

64. Commoner, *Making Peace with the Planet*, 119, 118. Resource recovery and WTE proponents consider the term *incinerator* a derisive one, as it does not incorporate the positive, or engineering, aptitude that turns something unwanted into something wanted. Environmentalists, in turn, often object to the terms *resource recovery* and *waste-to-energy*, seeing them as euphemisms for processes that entail the destruction and loss of resources and overall waste of energy. See Richard Firstman, "High-Stake Risk on Incinerators," in *Rush to Burn: Solving America's Garbage Crisis* (Washington, DC, 1989), 14.


How to get a small town  
all juiced up  
on the stuff they  
used to just  
toss out.



**Watch Ames, Iowa.** They're about to make usable fuel out of the refuse generated by a population of only 40,000. A solid waste disposal and energy recovery system that works. In a town the size of a suburb.

Ames has installed two of our big two-stage municipal waste shredders. They're teaming them up with two magnetic separators, an air density separator, a trommel screen, necessary boiler modifications, plus a few other components. Not only to make fuel for electricity, but also ease the energy crunch, reduce air pollution, reduce refuse and eliminate costly landfills.

How will it all shake out? A prominent magazine featured the Ames story and published the projections in its September '74 issue: By 1985, a bottom line net cost, after fuel value and resource recovery credits, of only 80¢ a ton. If squeezing that much juice and other good things out of a few old cans and the like sounds interesting to you, please squeeze us for the full details.



**American**  
**PULVERIZER COMPANY**  
1249 MACCLIND AVE., ST. LOUIS, MISSOURI 63112

*The Garbage Monster, along with Reggie the Recycler (a cat), has endured as a mascot for the Ames plant. From The American City, June 1975, p. 162.*

provides enough energy to heat more than 4,600 homes each year.”<sup>65</sup>

65. Ames Daily Tribune, 2/10/1995.

Most Ames residents seemed to accept that argument and the plant. It is not surprising that burning unmarketable waste would be less controversial in a city with a high proportion of engineers. Environmental engineers generally accept that any type of environmental management will have some cost, an assertion that may be less acceptable to the general public.

Once it had decided to retain the plant, the city's support did not waiver. It invested over \$6.5 million in 1995 and 1996 to replace worn equipment, add new technologies, and build a shredder room outside the main building to avoid future incidents like the propane tank fire. Starting in 1996, the city even began counting the per capita fee it charged for trash service as revenue, allowing the plant to operate in the black for the first time in 1998.<sup>66</sup> Soon, however, Ames would be directly confronted with the dioxin controversy and its leading protagonist.

In 2001 Barry Commoner and the North American Commission for Environmental Cooperation (NACEC) came out with a study on dioxins in North America. Commoner and the NACEC had been studying causes of cancer among the Inuit Indians who live in Canada's Nunavut territory in the Arctic Circle. Although they are far removed from most industry, the Nunavut Inuit have an average of five to ten times the amount of dioxins in their bodies as other citizens of Canada and the United States. Using a computer-generated model, the NACEC determined that there were about 44,000 sources of dioxin emissions in Mexico, the United States, and Canada, and that due to weather patterns the Arnold O. Chantland Resource Recovery Plant in Ames was the very worst polluter, causing the most dioxins to move north and get trapped in the Arctic Circle. Dioxins do not usually reach the Arctic by air but instead get into water systems, where fish eat contaminated algae. The fish are ultimately consumed by animals with a high body fat content, like the seals that the Inuit rely on for subsistence, in which dioxins can accumulate.<sup>67</sup>

---

66. Council Action Form, "Subject: Resource Recovery System Analysis and Bid Recommendation," Item # 17 a+b, 11/1/1994, 1, 2, 4, Ames City Hall; *Arnold O. Chantland Resource Recovery System 2000* (Ames, 2001), fig. 3.

67. *Ames Daily Tribune*, 11/15/2000; Bruce E. Johansen, "The Inuit's Struggle with Dioxins and Other Organic Pollutants," *American Indian Quarterly* 26 (2002), 480.



ISU professor Robert C. Brown became the local authority to answer Commoner and his study. Brown had taught mechanical, chemical, and biological engineering at ISU since 1983. He was a popular instructor who had gained notoriety because of his study of biofuels and was appointed director of the school's Center for Sustainable Environmental Technologies in 1996.<sup>68</sup> The last time that the Ames plant's stack emissions had been tested was in 1981. Although the test had come back negative for emissions, Brown said that result was based on old technology and that any new test was certain to come back positive. At the time of Commoner's criticism, the EPA did not have any standards for an RDF plant like the Ames one, so any determination about how many dioxins would be too much would have to be decided by a lay city council. Brown said that was a game that the council did not want to get into because it would be highly unlikely that the city would be able to satisfy the critics no matter how much money they spent. The city was going to ask the Kansas City firm Midwest Research Institute to test their equipment, a process expected to cost about \$80,000. Brown, however, offered to do a study for just \$5,000. The local scientist said the problem with paying for a more extensive test for the plant's furnace and cooler was that even if the results came back satisfactory, Commoner could say that the dioxins must be coming from somewhere else in the facility.<sup>69</sup>

This kind of debate among scientists is common for issues with subjective values but frustrating for the lay public. Political scientist Sylvia Noble Tesh has studied the issue and found that scientific proof about dioxins is often inconclusive, but emotions have often been powerful enough to change policies. She writes that "extrapolating [risks] from high to low doses . . . depends more on political judgment than on scientific data." In the past, testing dioxins on animals (to the degree that was effective, which Tesh said it was not) did not provide any better scientific proof of the dangers of dioxins. As she states, "All the data on humans suggest that people can tolerate considerably higher

---

68. See biographical statements on the ISU website at [www3.me.iastate.edu/rcbrown/](http://www3.me.iastate.edu/rcbrown/) and [www.iprt.iastate.edu/centers/bio\\_brown.html](http://www.iprt.iastate.edu/centers/bio_brown.html) (accessed 3/18/2011).

69. *Ames Daily Tribune*, 4/25/2001, 5/8/2001.

doses [than lab rats] before being harmed.”<sup>70</sup> On the other hand, chemist Paul Connett, who worked with Commoner to stop the proliferation of incinerators in the 1980s, asserted that the scientists cited by industry were “working for the industry,” while “most other scientists don’t know anything about it because they don’t have any incentive to study the issue. . . . So our biggest problem is not being attacked by fellow scientists, but rather not having fellow scientists with enough time, energy, commitment or motivation to find out who the hell is right.”<sup>71</sup> No industry or profit motive was involved in the Ames resource recovery plant, but the relationship between Brown, the local researcher, and the city was too cozy for Commoner.

Commoner and his crew said that the dioxins were a local danger as well as a problem for those in the nether regions of Canada. The danger, he said, was that the dioxins, which can cause cancer, got into food supplies and would build up in consumers of the food. Any livestock being raised anywhere close to Ames — specifically, Wisconsin dairy cows — would carry on contaminants to consumers. Mark Cohen, the scientist who developed the computer model for the NACEC, said that within two weeks dioxins could have gone numerous different directions, “leaving North America ‘awash’” in them.<sup>72</sup> Commoner’s two solutions were to speed up the cooling-off phase, so there would be less time for the dioxins to form, or to ban “incinerators.” The plant’s long-standing argument had been that dioxins could not form in the 2,800-degree temperatures at which it burned its garbage.<sup>73</sup>

Before he began his study, Brown accepted Commoner’s counter to the plant’s argument: that dioxins could form in higher temperatures or at least in the cooling-off phases of recovery. He did not accept much else. In his report, Brown called Commoner’s conclusions “grossly inaccurate.” Commoner had

---

70. Sylvia Noble Tesh, *Uncertain Hazards: Environmental Activists and Scientific Proof* (Ithaca, NY, 2000), 29, 28.

71. Edward Walsh, Rex Warland, and Clayton Smith, *Don’t Burn it Here: Grass-roots Challenges to Trash Incinerators* (University Park, PA, 1997), 23.

72. Janet Raloff, “Even Nunavut Gets Plenty of Dioxin,” *Science News* 158 (10/7/2000), 230.

73. *Ames Daily Tribune*, 11/15/2000.

claimed that the Ames plant was producing 58 grams of dioxins per year; Brown said that number was 400 times too high. Commoner's lumping of the power plant with "incinerators" particularly irked Brown, as the facility was a pulverized coal boiler. Only 20–30 percent of the burned material was garbage, and most metals were taken out before burning. In addition, plant proponents believed that cofiring with coal helped to remove toxins such as sulfur dioxide. Brown said that Commoner "found the worst type of combuster and used it [as a model] for Ames. . . . It was the absolute worst. . . . It in no way represents the facility in Ames."<sup>74</sup>

The exchange between the two scientists involved not only different ideas about methods but starkly different ideologies. Brown said that Commoner was advocating rather than doing science. Commoner, for his part, did not believe that the two actions were mutually exclusive. Historian Michael Egan has traced the entwined relationship between Commoner's activism and his science. Commoner believed that scientists' social responsibility was more important than the pursuit of science for its own sake. His entire career had been devoted to fighting against what he saw as technological overkill with inadequate knowledge of consequences.<sup>75</sup> Brown, however, believed that Commoner's activist platform caused him to create bad scientific analysis. He accused Commoner of having an answer he wanted to arrive at before he even began his research. Besides, Commoner had never studied the Ames plant in person but instead tried to figure out how much pollution the plant produced based on the type of equipment he believed the plant to have and the amount of waste the facility's staff had said was being processed. That, Brown said, was "calculating on the basis of assumptions."<sup>76</sup> Brown also pointed out that the only peer review that Commoner had for his findings was a review by his own staff. Commoner responded that his staff gave the paper "far more scrutiny than any peer-reviewed paper would normally get" and called Brown's conclusions "distorted," "puerile," "un-

---

74. *Ames Daily Tribune*, 7/14/2001.

75. Egan, *Barry Commoner and the Science of Survival*, 57.

76. *Ames Daily Tribune*, 5/14/2001.

ethical," and "foolishness." He said that Brown "did his job" by saving the city most of the \$80,000 that an environmental test would have cost.<sup>77</sup>

Despite the rancor, there was no lasting conflict after the debate, and the city accepted Brown's report as the final word on dioxin concerns.<sup>78</sup> One reporter said that he remembered seeing Barry Commoner on the St. Louis Walk of Fame and suggested that Ames should build its own Walk of Fame and "include Commoner, if only because he's really given [the city] — not to mention me — some interesting work to do."<sup>79</sup> An underground opposition group called the Ames Quality of Life Network was formed, but it apparently made very little effort to affect the council's decision.<sup>80</sup> A couple of months later a columnist in a Nevada, Iowa, paper was lamenting the lack of a conservation ethic in her community. "I know [the city's] trash goes over to the Resource Recovery Center in Ames to generate energy," she wrote, "but I'm worried about the talk of dioxins at the plant. I recently read that babies get their lifetime supply of dioxins from six months of breast feeding."<sup>81</sup> The columnist no doubt expressed a sincere concern, but her words hardly sounded like they were coming from a community with highly mobilized protestors.

TEN YEARS after the debate and 40 years after Ray Fisher first suggested it, the Arnold O. Chantland Resource Recovery Plant abides. It withstood the national death of resource recovery and the push to synfuel production and waste-to-energy plants. It survived shifts in federal policies, a propane explosion, two decades of debt, the recycling movement, and vociferous attacks by one of America's most famous environmental activists. In 2004 consultants suggested that the city close down the power

---

77. Ibid.

78. Council Action Form, "Approval of Expenditure for Combustion Ash Testing," item 9, 6/14/1994, 1, 2, Ames City Hall.

79. *Ames Daily Tribune*, 5/14/2001.

80. Michael S. Carolan and Michael M. Bell, "No Fence Can Stop It," in *Science and Politics in the International Environment*, ed. Neil E. Harrison and Gary C. Bryner (Lanham, MD, 2004), 286–87.

81. *Nevada Journal*, 8/17/2001.

and resource recovery plants. Renovation costs for the power plant alone were estimated to be as much as \$157 million.<sup>82</sup> The plant survived again, however, as city officials decided for the time being to pay for improvements as necessary rather than abandon the facilities. The “small town with a pretty big idea” has used its savvy to advertise the plant to fit the changing times, but it also has become an anomaly by steadfastly clinging to its original environmental values: a pragmatic faith that technology can be used to solve environmental problems and the belief that the preservation of finite resources like land ought to be a priority. In the face of everything, the Ames plant has demonstrated what Donald Kaul said the country needed during the alternative energy experiments of the 1970s: “Courage to carry out the old solutions.”<sup>83</sup>

---

82. *Ames Daily Tribune*, 10/9/2004.

83. *Des Moines Register*, 7/9/1979.

# Reinterpreting the Life and Art of Grant Wood: A Review Essay

TRAVIS E. NYGARD

*Grant Wood: A Life*, by R. Tripp Evans. New York: Alfred A. Knopf, 2010. xii, 402 pp. Illustrations, notes, bibliography, index. \$37.50 cloth.

R. TRIPP EVANS'S new biography of Grant Wood is a provocative book about Iowa's most celebrated artist. As the most thorough examination of Grant Wood's psyche ever written, the book is intellectually engaging. It also embeds Wood's story in the history of gender and sexuality in America.

Evans's thesis is that Wood "attempted to present himself and his work as the reflection of 'authentic' American manhood — conceived as heterosexual, hardworking, wholesome, and patriotic — precisely because he believed he had fallen short of this model himself" (6). Readers are likely to disagree with specific points in Evans's analysis, but this is not a shortcoming. Indeed, asking readers to wrestle with new interpretations of material from the past is a hallmark of historical writing that is worth reading.

Evans is an eclectic scholar and a talented storyteller. He previously published a book on how ancient Mayan art was understood during the nineteenth century, recounting the often amusing histories of explorers and scholars. He now claims to be working on a history, spanning thousands of years, of a plot of land in Providence, Rhode Island, where he lives. Sandwiched

between these radically different intellectual projects is the biography of Grant Wood at hand. It is being marketed to a general audience. Evans uses accessible language and does not assume prior familiarity with scholarship on Wood. The book's production values are high, with many illustrations, including color plates. The index is done well and is easy to use. Scholarly citations and a bibliography are included at the back of the book.

A NEW BIOGRAPHY of Wood was overdue, and this book will no doubt remain a standard reference. Biography has been a time-honored way to approach art history, beginning with the first art history book — Giorgio Vasari's *Lives of the Artists* (1550). That said, as a biography Evans's book is nontraditional. Rather than framing Wood as an anomalous creative genius, he paints the artist as the product of specific training and circumstances. Rather than focusing on Wood's public façade, he emphasizes how he was a misfit who hid his opinions about the world.

What writing about Wood, then, does this book compete with for attention? The first major biography of Wood, written by the journalist Darrell Garwood, is 67 years old. Although it remains valuable, scholars today treat it cautiously. It was written in a frenzy during the two years following Wood's death in 1942, based on records of the artist's life and interviews with most of the people who knew him best. Despite such strong source material, Grant Wood's sister, Nan Wood Graham, considered the book a gossip exercise that "wasn't fit to spit on" (quoted in Evans, 300). Nan, who understood herself to have been the guardian of Grant Wood's reputation, subsequently wrote her own biography, *My Brother, Grant Wood*, which is profoundly insightful, but also fragmented and biased. It is composed as a series of personal remembrances, and its tone is consistently celebratory. The last biography worthy of note is *Grant Wood and Marvin Cone: Artists of an Era* (1972), by Hazel Brown, a personal friend of the two artists named in the title. As could be expected, her book took the form of a tribute filled with anecdotes.<sup>1</sup>

---

1. Darrell Garwood, *Artist in Iowa: A Life of Grant Wood* (1944; reprint ed., Westport, CT, 1971); Nan Wood Graham, with John Zug and Julie Jensen McDonald, *My Brother, Grant Wood* (Iowa City, 1993); Hazel E. Brown, *Grant Wood and Marvin Cone: Artists of an Era* (Ames, 1972).

Evans has provided a valuable service by synthesizing key facts of Wood's life recounted in these earlier biographies and presenting them in one volume. But his book does much more than simply repackage well-known information. This is the first book-length biography of Wood written by a scholar with critical distance from the artist. It is also the first biography published since Nan's death in 1990. Thus, Evans clearly felt more free to speak openly about Wood's shortcomings and life challenges than earlier authors.

DEFINITIVE HISTORICAL STUDIES are, by necessity, built through the drudgery of archival research, and Evans did his fair share. It is particularly notable that he was able to exploit the previously unknown papers of Sara McClain Sherman — Grant Wood's wife from 1935 to 1939 — including her unpublished memoirs. He revisited materials on Grant Wood in the Smithsonian Institution's Archives of American Art — most importantly a set of scrapbooks that were compiled by Nan — as well as information in the collections of the State Historical Society of Iowa. He also conducted interviews and corresponded with individuals who had valuable insights. These efforts significantly enhance his book.

In terms of reliability, Evans has accurately recounted the unambiguous facts of Grant Wood's life story. I have read the scholarship on Wood and used many of the archives that Evans relied on. My own research on Wood — a doctoral dissertation — was not biographical; instead it framed several of Wood's works of art within the broader story of American farming.<sup>2</sup> Although I had different questions in mind when researching Wood than Evans did, I would have noticed glaring historical errors if they were present.

This book is sure to be contentious, however, because of its analysis. Rather than perceiving Grant Wood as an open book, Evans believes that the artist obscured his core identity. In particular, Evans asserts that Wood hid ambivalent feelings toward

---

2. Travis Earl Nygard, "Seeds of Agribusiness: Grant Wood and the Visual Culture of Grain Farming, 1862–1957" (Ph.D. diss., University of Pittsburgh, 2009), available online at <http://etd.library.pitt.edu/ETD/available/etd-12102009-160845/>.



his father and the fact that he himself was gay. To recover a more complete understanding of Wood, Evans combed textual material for clues about his mindset. He also interprets Wood's art as a window into his subconscious. He makes use of some psychoanalytic theory — especially ideas developed by Sigmund Freud — but the narrative remains mostly free of psychological jargon.

Using psychoanalysis to access the minds of long-dead people is a questionable methodology, as it is difficult to test assertions made thereby. Psychoanalytic interpretation is, however, respected by some who work in the humanities. In the case of art history, it began with Freud himself, who wrote an essay about Leonardo da Vinci.<sup>3</sup> In the case of Grant Wood, the scholar Sue Taylor has explored his psyche in award-winning work.<sup>4</sup> Do such psychoanalytic interpretations, in Evans's words, go "too far — destroying the innocence of the artist's intentions?" He says no, emphasizing that it is important to pay attention to "the psyche's raw and anarchic operations" (277). But what do these operations consist of?

When discussing hidden and subconscious aspects of Grant Wood's life and work, Evans's prose becomes titillating. Because Wood made art that is overtly straitlaced, readers will be surprised to encounter words such as "penetrative gaze," "cock ring," "seminal release," "incestuous relationship," "phallic shape," and "castration" (115, 119, 253, 278, 281). Such carnal language is jarring, and I suspect that Evans was cunning in his choice to use it. He wants us to abandon any preconceived notions we may have of Wood as a sexless one-dimensional bumpkin. To place such language in context, an example of one of Evans's new interpretations is in order.

During the process of writing this review essay I showed Grant Wood's art to a friend of mine who is an art therapist, Jacqueline Lindo. She has a special interest in serving lesbian, gay, bisexual, and transgendered people, and she has become a prominent leader of the queer community in Milwaukee. We

---

3. Sigmund Freud, *Leonardo da Vinci and a Memory of His Childhood* (1910; reprint ed., New York, 1990).

4. Sue Taylor, "Grant Wood's Family Album," *American Art* 19 (2005), 48–67; idem, "Wood's American Logic," *Art in America* 94 (2006), 86–93.

discussed Evans's interpretations of several landscapes, including *Stone City* (1930). Evans explains how *Stone City* came into being as an image that overtly celebrates a location in rural Iowa to which Wood had some sentimental attachment. Evans then reveals that the image also may contain overtones of sex acts.

Although Wood may have disguised the sexual nature of his landscapes, even to a certain degree from himself, the object of his desire is only partially abstracted in these works — for in the undeniably erotic curves of *Stone City*, we register the muscular outlines of a powerful male body. The artist's autobiography routinely describes Iowan scenery in stereotypically male terms. The land is raw, solid, thrusting, and active; through its 'rounded, massive contours, [it] asserts itself through everything that is laid upon it.' *Stone City* similarly suggests the land's virility and sexual potency. From his broadly stroked sketch to the work's final, polished execution, the artist transforms his composition into the rigid smoothness of an erect penis — and even includes, in the work's foreground, a seemingly endless battalion of ejaculatory corn sprouts (134).

Most surprisingly, Evans detects an interest in anal eroticism in the image.

Not only does Wood reveal his reverence for the male body in *Stone City*, but he also suggests its potential for penetration. In the curiously clefted hill that appears in the painting's upper-right-hand corner, the viewer registers a pair of rounded, passively upturned buttocks. Firmly belted by an encircling road, they are penetrated at their base by a felicitously placed tree (135).

Lindo and I were fascinated by Evans's ideas. Ultimately, however, we decided to be cautious about endorsing his highly specific, sexual, and masculine reading of the land. We agreed that his paintings of rolling hills are appealing, in part, because the curves evoke bodies. We were unable, however, to agree about specifics of anatomy or gender.

Evans acknowledges his potential for fallibility, noting that "not only will we never know the full extent of the artist's unconscious motivations, but as author and reader we inevitably bring our own psychological histories and perspectives to these images" (277–78). Given the ambiguity that we found in the images, it is probable that Evans has projected some of his own

mindset onto them. Regardless of whether that is the case, such radical new interpretations have value, in that they force us to ponder what may be present in the images that is not immediately apparent.

For readings of Wood's art that focus on overt rather than subconscious content, I recommend referring to several previously published books. Monographs by Wanda Corn, James Dennis, John Zug, Brady Roberts, James Horns, and Helen Parkin remain valuable. These authors carefully contextualize the imagery at its moment of creation. The total message of each work of art is emphasized, as supported by visual details. Similarly, for treatment of Wood's decorative arts, the catalog assembled by Jane Milosch with the assistance of Wanda Corn, James Dennis, Joni Kinsey, and Deba Foxley Leach is the standard reference. For discussions of murals and drawings, one should refer to the work of Lea Rosson DeLong, who worked with Henry Adams, Sally Parry, Kent Ryden, Warren Madden, Olivia Madison, Lynette Pohlman, and Wendy Wintersteen to produce a definitive study. Lastly, for treatments of Wood's most iconic painting, *American Gothic*, books by Steven Biel and Thomas Hoving are filled with rich commentary.<sup>5</sup>

OVER THE COURSE of Evans's biography, readers will come to see Wood as an eccentric individual, unafraid to break social norms, who savored physical pleasures. We learn of his love of being nude outdoors — skinny-dipping throughout his life. As a young man, he would shed his clothes during summer thunderstorms to enjoy the sensations of water gliding across his body — a practice he called “shower baths” (33). He also loved

---

5. Wanda M. Corn, *Grant Wood: The Regionalist Vision* (New Haven, CT, 1983); James Dennis, *Grant Wood: A Study in American Art and Culture* (New York, 1975); John Zug, ed., *This Is Grant Wood Country* (Davenport, 1977); Brady Roberts et al., *Grant Wood: An American Master Revealed* (San Francisco, 1995); Jane C. Milosch, ed., *Grant Wood's Studio: Birthplace of American Gothic* (Cedar Rapids and New York, 2005); Lea Rosson DeLong, *Grant Wood's Main Street: Art, Literature and the American Midwest* (Ames, 2004); idem, *When Tillage Begins, Other Arts Follow: Grant Wood and Christian Petersen Murals* (Ames, 2006); Steven Biel, *American Gothic: A Life of America's Most Famous Painting* (New York, 2005); Thomas Hoving, *American Gothic: The Biography of Grant Wood's American Masterpiece* (New York, 2005).

the intoxicating effects of alcohol. We learn of shocking levels of excess consumption, such as drinking two bottles of scotch per day. Despite a willingness to deviate from convention and live in the spotlight, there is one aspect of Wood's life that he kept private — his sexuality.

Evans adamantly wants us to see Wood as a closeted gay man with a robust libido. Such framing provides narrative and analytical continuity in the biography. It is also in accordance with the general consensus emerging among art historians working on Grant Wood, including me, that he probably had some level of erotic interest in men.<sup>6</sup> The most compelling evidence in regard to Wood's sexuality is visual. Making generalizations about Wood's body of work is dangerous, given that no one has ever compiled a catalogue raisonné. Extrapolating from the major monographs, however, it is clear that he rendered at least seven images of the male nude in his lifetime. Those nudes ranged from academic to sensuous to humorous. It is a short jump from this observation to concluding that Wood was sexually interested in male bodies — especially given that he seems never to have created any female nudes at all.

Evans merits praise for writing a gay and lesbian history that takes place in rural Iowa before the sexual revolution of the 1960s. To the best of my knowledge, this is the first book-length study to take on such a topic, and it was no doubt challenging to complete. There is some scholarship on minority sexual iden-

---

6. Works that discuss Wood's sexuality include John E. Seery, "Grant Wood's Political Gothic," *Theory & Event* 2 (1998), pars. 1–23; Taylor, "Wood's American Logic," 86–93; idem, "Grant Wood's Family Album," 48–67; James H. Maroney Jr., *Hiding in Plain Sight: Decoding the Homoerotic and Misogynistic Imagery of Grant Wood* (Leicester, VT, 2006; self-published book, available online at [http://jamesmaroney.com/Art/Grant\\_Wood/Hiding\\_in\\_Plain\\_Sight\\_full.pdf](http://jamesmaroney.com/Art/Grant_Wood/Hiding_in_Plain_Sight_full.pdf)); Jonathan Weinberg, *Male Desire: The Homoerotic in American Art* (New York, 2005), 76–77; Biel, *American Gothic*, 25, 53; Hoving, *American Gothic*, 122; Robert Hughes, *American Visions: The Epic History of Art in America* (New York, 1997), 194; Dennis Domer, "Homeplace in Life and Art," in *Remembering the Family Farm: 150 Years of American Prints*, ed. Stephen H. Goddard (Lawrence, KS, 2001), 17; Nygard, "Seeds of Agribusiness," 268–69; Jonathan Katz and David C. Ward, "Arnold Comes of Age," in *Hide/Seek: Difference and Desire in American Portraiture* (Washington, DC, 2010), 112–13. Henry Adams began scholarly debates about Wood's sexuality in a presentation titled "The Truth about Grant Wood," given at the College Art Association conference on February 24, 2000.

tity in the broader region.<sup>7</sup> Needless to say, however, more research remains to be done. Indeed, because of the existence of anti-sodomy laws and social stigma, much of the subculture would have been clandestine.

The examples Evans uses to enrich our understanding of this subculture extend beyond Wood. We learn of a lesbian couple in Cedar Rapids, one of whom (Frances Prescott) was a school principal where Wood worked and the other (Dr. Florence Johnston) was a medical anesthesiologist. We learn that Wood organized a summer art school in Stone City, along with the openly gay artist Adrian Dornbush. We see how Wood's colleague and friend, the artist Thomas Hart Benton, perceived the artist community as being filled with gay men. We even learn how gay men gathered to socialize in houses such as Wood's before the widespread establishment of businesses catering to the queer community. With this culture reconstructed, we can imagine that Wood had a life within it that was personally satisfying.

In some ways Grant Wood makes a great hero for gay people of the twenty-first century. He resisted the social pressure to establish a traditional heterosexual nuclear family with children, instead embracing a broader network of relatives, friends, and colleagues for companionship and support.

It is important to note, however, that specifics about Grant Wood's sexuality are elusive. If Wood was sexually active with other men, then he obscured the fact well. No one has ever firmly identified a man with whom Wood was romantically involved or having sex. The only man that Evans pinpoints as having been *perceived* to be a lover of the artist is Park Rinard — Wood's personal secretary. On this topic, Evans builds on an analysis by Joni Kinsey. According to minutes of a meeting at the University of Iowa, Wood's colleagues thought that his arrangement with Rinard was "strange."<sup>8</sup> Unfortunately, the document does not indicate the nature of this strangeness, leaving our imaginations free to ponder the innumerable possibilities — sexual, financial, intellectual, professional, and so forth.

---

7. See, for example, Will Fellows, *Farm Boys: Lives of Gay Men from the Rural Midwest* (Madison, WI, 1996).

8. Joni Kinsey, "Cultivating Iowa: An Introduction to Grant Wood," in Milosch, ed., *Grant Wood's Studio*, 284.

A reporter from *Time Magazine* nearly reported on the incident, intending to frame it as a homosexual scandal. Was there truth in the allegation? Evans ultimately concludes that it is unlikely that Wood and Rinard were romantically involved because Rinard was a heterosexual man.

What is clear is that some of Wood's colleagues at the University of Iowa *perceived* him to be gay, and innuendo suggests that his wife and others did too. The most direct written evidence of Wood's homosexuality is the testimony of his former wife, Sara Sherman. Although she did not comment on Wood's sexual orientation directly, in her unpublished biography she noted that he suffered from a "war within the individual" comparable to that of Oscar Wilde's (quoted in Evans, 308). It was common knowledge that Wilde, a nineteenth-century author, was publicly prosecuted for sodomy. As such, the comparison is telling.

Given that direct testimony about Wood's bedroom romps is thin, it will remain possible to see Wood's sexuality in many ways. Evans mentions dissenting perspectives on the issue, although these are only glibly analyzed. Readers can thus choose whether to wholeheartedly accept Evans's claim that Wood was gay or to focus on ambiguous evidence.

One possibility is that Wood may have had satisfying erotic relationships with women. Even if he ultimately identified as a gay man, Wood could have experienced transient bisexual yearnings throughout life. Evans acknowledges that Nan tells several stories about Grant Wood's dating of women in her book *My Brother, Grant Wood*, but Evans considers her to be either mistaken or lying. To the best of my knowledge, no one who knew Nan personally ever accused her of spinning yarns about the artist's relationships with women, so it is possible to take her claims at face value. She tells us that Wood canoodled with an American expatriate woman named Margaret in Parisian cafés, that he nearly fell for another woman in Iowa, and that his marriage to Sara Sherman would have been happy if it were not for struggles over money. In light of Wood's willingness to marry Sherman, it is probable that he explored the possibility of other relationships with women.

It is also possible that Wood had a low sex drive or was fully asexual — another interpretation that Evans gives a nod to. In

his autobiography, the heterosexual novelist MacKinlay Kantor recounted an in-depth conversation with Wood about his erotic consciousness — the only such conversation on record — that took place during heavy drinking that lasted all night.<sup>9</sup> Kantor claimed that Wood explained “how the whole sexual problem was a closed book to him, and why.” Kantor further explained that “people who did not know [Wood] well, and read about him or met him casually . . . whispered that he was a homosexual.” Kantor viewed these rumors as erroneous, claiming that Wood was “nothing of the kind. He was simply asexual” (quoted in Evans, 284–85). A glance at photos of Wood reveals that he was a slightly overweight person who retained his baby fat — features typical of male bodies without much testosterone, such as eunuchs. I can therefore imagine that the artist’s libido was weak. Ultimately, the question of whether Wood can best be understood as gay, straight, bisexual, asexual, or something else entirely will remain open for debate.

TAKING EVANS’S BIOGRAPHY as a whole, we might ask if this is the last word on Grant Wood. I don’t think so. The many new interpretations of art, new facts discovered, and new questions raised will engender new debates about the artist in the coming years. Evans’s book will likely become a definitive reference for questions about Wood’s gendered and sexual identity, but many topics remain to be fleshed out by others. I, for one, would like to see scholars further interrogate Wood’s politics, religion, and finances. I thus look forward to reading the next batch of books and articles about one of the twentieth century’s most intriguing artists.

R. Tripp Evans won the State Historical Society of Iowa’s Benjamin F. Shambaugh Award, recognizing *Grant Wood: A Life* as the most significant book on Iowa history published in 2010.

---

8. MacKinlay Kantor, *I Love You, Irene* (Garden City, NY, 1972).

## Book Reviews and Notices

*A French Aristocrat in the American West: The Shattered Dreams of De Lassus de Luzières*, by Carl J. Ekberg. Columbia: University of Missouri Press, 2010. xix, 236 pp. Plans and maps, illustrations, notes, index. \$44.95 cloth.

Reviewer Thomas J. Lappas is associate professor of history at Nazareth College. His Ph.D. dissertation (University of Indiana, 2003) was "'A Victim of His Own Love': Sébastien Racle, Native Americans, and Religious Politics in Eighteenth-Century New France."

Carl J. Ekberg, scholar of the colonial and early national Midwest, has produced a two-part volume on Pierre-Charles de Hault de Lassus de Luzières (1738–1806). Part one is a brief biography of De Luzières. Part two is a collection of 36 documents by or about De Luzières, which Ekberg compiled primarily from archives in France and Missouri.

The biography tells the story of a monarchist who fled France in 1790 with his family in the midst of the French Revolution in order to make a new fortune in land speculation and commercial agriculture. He settled in the Ohio Valley, ultimately moving west of the Mississippi and founding New Bourbon in 1793 in Spanish Illinois. There he attempted to create an agrarian paradise in the valley by introducing European farming techniques, establishing mills to process grains, and even constructing a boat yard for river-going vessels to ship the produce down to New Orleans. He attempted, with some success, to recruit Americans to come and populate the settlement. He also dreamed of attaining a respectable place in the political hierarchy of a royal colony. He fulfilled that goal, ultimately being appointed commandant of the New Bourbon District in 1797. Unfortunately for De Luzières, history was against him. The Spanish transferred Louisiana to Napoleon, who, in turn, sold it to the republican government of the United States. The political experiment that forced him from his homeland eventually caught up with him, and he died under the type of government that he had always despised.

His personal story is one of disappointment and declining fortunes; as told by Ekberg, however, the story provides a narrative through which the reader learns about important but often hidden themes of the early national period in the midwestern United States. We learn of the diversity of the French habitants, Indian relations before and after



the watershed conflict of the Battle of Fallen Timbers in 1794, and the opportunism among noble families who crossed national lines in their quest for survival, wealth, and positions of authority in the New World.

The documents that Ekberg has collected, translated, and edited are a welcome gift for those interested in the history of the Midwest. They are invaluable for understanding the social and political history of the Illinois Country, revealing the material conditions and culture of settlers in the region, the interactions between Europeans and Native Americans, and the role of slavery in the territory.

One quibble with the book is that in the biography portion Ekberg resorts to Wikipedia for some background information and even one quotation (16 n.16; 82 n.26). Although the information is likely accurate and verifiable in other more academically accepted sources, these citations will likely be jarring to those readers who have been conditioned to be suspicious of the site.

*William Clark's World: Describing America in an Age of Unknowns*, by Peter J. Kastor. Lamar Series in Western History. New Haven: Yale University Press, 2011. ix, 360 pp. Illustrations, maps, notes, bibliography, index. \$45.00 cloth.

Reviewer David A. Walker is professor of history at the University of Northern Iowa. This fall he is teaching an undergraduate seminar: Exploring the American West.

William Clark is emerging from the historical shadow of Meriwether Lewis. Since 2004, readers have seen, among others, two biographies, a study of Clark as Indian diplomat, a compilation of letters to his brother Jonathan, and now a book that places Clark in the forefront as Americans learn more about the trans-Mississippi West.

According to Peter Kastor, an initial key to understanding the West was the 1814 publication of Clark's hand-drawn *Master Map of the North American West*. It was based on a review of existing maps, his expedition field notes, his surveying and celestial navigation skill, and conversations with native people. "The result was a map of unprecedented detail and technical accuracy that continues to amaze cartographers to this day" (151). Sources describing the West, in addition to maps, included travel narratives, regional histories, and portrait and landscape paintings. The descriptions influenced federal land policy, Indian relations, and decisions of individual settlers.

The highly accurate work of colonial surveyors and mapmakers showed topography, county boundaries, and land grants along the eastern seaboard. Kastor points out that depictions of the trans-

Appalachian West were, by contrast, much simpler, often reflecting an absence of geographical knowledge to convince people they were accurate. John Filson, an early settler and land speculator, exemplified several individuals who helped create a vision of expansion and conquest of Indian land. His *History of Kentucke* (1784) included a somewhat imaginative map with generous boundaries for an area that was then politically part of Virginia. Although depicting the region as an empty, savage place, this work became an early and very important example of promotional literature that lured settlers into the "Near West" as vanguards of a civilized society.

Following the Louisiana Purchase in 1803, Thomas Jefferson expressed growing frustration with the lack of specific boundaries. Encouraged by the president, Congress funded five expeditions to determine what actually had been acquired from France. Jefferson's June 1803 instructions to Meriwether Lewis set an important precedent expressing the "need for cartographic knowledge . . . , demographic knowledge of the residents over whom the United States now claimed sovereignty, and environmental knowledge about the land where Americans might someday live" (90). As Lewis and Clark traveled to the mouth of the Columbia River and returned to St. Louis, Jefferson sent William Dunbar and George Hunter up the Ouachita River while Thomas Freeman and Peter Custis explored the Red River. Zebulon Pike was first dispatched to find the source of the Mississippi River before heading west along the Arkansas River.

Jefferson's explorers kept written records and journals that included maps of the region traveled. They were fulfilling their instructions, but at the same time they knew that the reports would be published for the reading public. Newspaper accounts were often the first source of information about the West for most Americans. Consistent threads appeared through all of these publications: the men diplomatically represented the United States; overcame extreme hardship; portrayed the flora and fauna and the economic potential of the land and its resources; and depicted a land presenting tremendous danger yet great challenges and opportunities. They did not, however, follow the pattern of exuberant boosterism exemplified by the work of John Filson. Throughout these published reports, maps and narrative descriptions depicted a West of vague or nonexistent international boundaries, offering no claim to additional territory.

By the 1820s and 1830s, maps remained the dominant visual representation of the American West. However, a diverse group of individuals contributed to merging portrayals of the West with a public attitude that was increasingly supportive of expansion. Cartographer

and engraver Henry Schenck Tanner produced an atlas placing the Oregon Country within the United States while it was still jointly occupied with Great Britain. Artist George Catlin depicted Indians he was convinced were doomed to extinction. Novelist James Fenimore Cooper portrayed the western landscape in a more romantic fashion, while powerful Missouri Senator Thomas Hart Benton supported aggressive westward expansion with multiple objectives: sovereignty, commerce, and slavery. Each in their diverse way “successfully convinced thousands of Americans that the West was safe, that the land was fertile, and that opportunities abounded” (253).

William Clark’s historical legacy, his map and journals, remains important. For Kastor, the power of this visual record ingrained the West in the American imagination. Although a somewhat difficult read for a general audience that followed Lewis and Clark through Stephen Ambrose’s *Undaunted Courage*, this is an outstanding scholarly work, based on a thorough reading of a wide variety of primary sources and all the appropriate secondary sources. The narrative is enhanced by numerous illustrations; most valuable are 25 contemporary maps. It deserves its place in the important Lamar Series in Western History.

*Ferdinand Hayden: A Young Scientist in the Great West, 1853–1855*, by Fritiof M. Fryxell; edited by Richard C. Anderson, Phil Salstrom, and Paul Salstrom. Rock Island, IL: Augustana Historical Society, 2010. xx, 281 pp. Illustrations, maps, notes, bibliography, index. \$19.95 paper.

Reviewer Michael D. Severs is a Ph.D. candidate in the history of science and technology at Iowa State University. He has researched and written about nineteenth-century midwestern state geological surveys.

Ferdinand Hayden is best remembered for his geologic survey of Yellowstone National Park or as director of the U.S. Geological Survey or maybe even for his position as chief medical officer in Phil Sheridan’s army during the Civil War. However, this prestigious career, like most, had its humble and insecure beginnings. Fritiof Fryxell explored those beginnings — the early events and relationships that shaped Hayden’s career — in this monograph on Hayden, which Fryxell originally intended to be the first of many volumes. The posthumously completed monograph explored the ambitions, choices, and direction of Hayden’s early career through extensive quotations of his own letters and writings. Perhaps it is only a quibble, but readers would have benefited from more of Fryxell’s own insights in addition to his extensive quoting from Hayden’s many writings.

Fryxell's monograph achieved more than just a snapshot of Hayden's early career. It also presented a much larger picture of American science in the 1850s. Its narrative and analysis of the relationships and ambitions of naturalists in the Midwest was perhaps its most valuable contribution to the history of American science. Hayden's writings, and Fryxell's brief analysis, brilliantly addressed the processes and challenges that these naturalists faced throughout the Midwest. The monograph is an excellent source for historians of western and mid-western history because it exemplifies the challenges and ambitions of these early naturalists as they attempted to impose their professional ambitions on the unstudied regions of places like Iowa, South Dakota, and Missouri.

*Steamboats West: The 1859 American Fur Company Missouri River Expedition*, by Lawrence H. Larsen and Barbara J. Cottrell. Western Lands and Waters Series. Norman, Oklahoma: The Arthur H. Clark Company, an imprint of the University of Oklahoma Press, 2010. 256 pp. Illustrations, map, table, index. \$34.95 cloth.

Reviewer Paul F. Paskoff is professor of history at Louisiana State University. His most recent book is *Troubled Waters: Steamboat Disasters, River Improvements, and American Public Policy, 1821–1860* (2007).

Well-written accounts of exploration generally make for compelling reading, and *Steamboats West* is no exception. Lawrence H. Larsen and Barbara J. Cottrell have written a narrative history of an expedition by steamboat to the country bordering the Missouri River undertaken by the American Fur Company in 1859. At the core of their narrative are extended, well-chosen entries from the journals of Charles Henry Weber, one of the passengers on the expedition, and Elias Marsh, its medical officer. The Missouri River's economic and political significance in 1859 extended about 1,000 miles above its junction with the Mississippi. A major reason for the American Fur Company's expedition that year was to move that point upriver and to demonstrate the possibilities that lay along the river's upper reaches.

In a 44-page introduction, Larsen and Cottrell describe the topography of the land along the Missouri River, steamboat navigation on the river, and the American Fur Company's interests along the Missouri and how it prepared for its ambitious expedition. The introduction concludes with a page-long explanation of how "from start to finish [the book's narrative] unfolds chronologically, with the journal entries [of Weber and Marsh] interspersed throughout the text" (44). Excerpts

from letters and diaries of earlier travelers augment the narrative and journal entries by Weber and Marsh.

Although the book has little in it for readers interested specifically in Iowa history, it will nevertheless increase their understanding of the Missouri River's important role in the state's development, particularly of its western section, including Council Bluffs. Omaha, just across the river, receives more attention from both those on the expedition and Larsen and Cottrell, probably because it was already the bigger place in 1859.

That year, the impending Civil War was far from most people's thoughts. Instead, much of the country, particularly Americans living in the Mississippi River valley and along the lower reaches of the Missouri River, watched with enthusiasm as advances in the means of transportation, especially railroads and steamboats, opened up ever more territory for settlement. That enthusiasm greeted the launching of the 1859 expedition and hailed its successful conclusion.

Crew and passengers boarded the expedition's two steamboats, the 356-ton *Chippewa* and the far larger *Spread Eagle*, which, at 556 tons, would have made it one of the largest boats on the Mississippi River, where most of the nation's largest steamboats were to be found. Their voyage from St. Louis to Fort Benton, in what is now Montana, and back totaled some 6,200 miles and took more than four months. Apart from surviving river hazards, mishaps, and disease and making valuable observations on the weather, fauna, flora, and people encountered, all recorded in journals and diaries, perhaps the explorers' greatest achievement was their demonstration that steamboat travel on the middle and upper stretches of the Missouri River was practical. That accomplishment had the ultimately unrealized potential to open the lands along the river to settlement and commercial development.

Larsen and Cottrell rightly point out that steam navigation was the vanguard of settlement and development, or, as the *Scientific American* asserted on March 9, 1850, "Where the steamboat goes, there the wilderness disappears." But the authors also note that the founding of towns along the upper reaches of the Missouri "remained limited until the arrival of railroads" after the Civil War (81). In the end, the railroad eclipsed the steamboat on the Missouri, just as it did along the Ohio and Mississippi.

*Steamboats West* is a useful addition to a large and growing body of literature on inland steam navigation in the United States. The narrative is engaging, and well-selected drawings, a table, and a map depicting the sights along the course of the expedition nicely complement the text.

*Hearts Beating for Liberty: Women Abolitionists in the Old Northwest*, by Stacey M. Robertson. Chapel Hill: University of North Carolina Press, 2010. xiv, 320 pp. Illustrations, maps, notes, bibliography, index. \$39.95 cloth.

Reviewer Barbara Cutter is associate professor of history at the University of Northern Iowa. She is the author of *Domestic Devils, Battlefield Angels: The Radicalism of American Womanhood, 1830–1865* (2003).

No one could accuse historians of neglecting the abolitionist movement in the United States, yet most studies of the movement have focused primarily on the Northeast, and much of the work that has been done on abolition in the West has concentrated on male leaders of the movement. This limited approach, Stacey Robertson suggests, has given historians an incomplete picture of the nature of antebellum antislavery activism. Her book, *Hearts Beating for Liberty*, is an effort to address this gap by exploring the work of female abolitionists in the Old Northwest. Robertson uses evidence from the lives of these grassroots female activists to question assumptions in the existing historiography. Specifically, she examines the importance of the conflicts between Old Organization Garrisonians, New Organization abolitionists, and political abolitionists in the West, and investigates how western abolitionists navigated those divisions. She concludes that conflicts between these groups of abolitionists mattered much less in the West than they had in the East, and that in the Old Northwest “abolitionists created a distinct approach characterized by cooperation and flexibility,” in contrast with the “discordant” abolitionism of the East (2).

Robertson also explores the wide variety of roles women abolitionists played in the Old Northwest, and recounts the ways their antislavery work reshaped their identities. She charts the development of midwestern female antislavery societies, the rise of the Liberty Party and midwestern women’s roles in that organization, their involvement in the free produce movement and antislavery fairs, their work as antislavery lecturers, and the connections between women’s antislavery work and their growing commitment to women’s rights.

Robertson has created a rich and detailed narrative of women in the abolitionist movement in parts of the Midwest. Given the parameters of this study — the Old Northwest — readers of the *Annals of Iowa* will rightly assume that Iowa abolitionists are not featured in the book. Less predictable is that only periodic references are made to female abolitionists in Michigan, Indiana, and Illinois; and there is little if any mention of Wisconsin. Readers looking for an account of antislavery in these areas may be somewhat disappointed, as the vast majority of material in the book is focused on Ohio. That said, the abolitionist

movement was extremely vibrant in Ohio, and this expansive study of female abolitionists in that state is a significant addition to the field. Robertson also adds to the historiography on antebellum gender ideology and women's public activism by confirming some of the more recent scholarship in that area that stresses the flexibility of the concept of woman's sphere. She finds that women abolitionists saw themselves as acting within their proper sphere as guardians of morality, by fighting against the sinful institution of slavery, even as many of their detractors accused them of venturing outside their proper sphere. She also does an excellent job of linking female abolitionists in Ohio with their counterparts in the Northeast; for example, in her chapter on the free produce movement (which advocated a boycott of goods produced by slave labor), she shows the central role of Ohio Quaker abolitionists in the revival of a Philadelphia reform paper, the *Non-Slaveholder*, which championed the cause of free produce.

Her argument, however, is less persuasive where she differentiates between what she describes as the pragmatic, cooperative abolitionism of the West and the discordant abolitionism of the East. First, much of her material is from Ohio, and virtually none is from territories or states west of the Mississippi River, which constituted a key part of the West for abolitionists by the 1850s. Second, the notion that the abolitionist movement was fragmented in the 1840s has been significantly complicated by recent scholarship focusing on grassroots abolitionists rather than the movement's leaders, as well as cultural history approaches to the topic. For example, in *The Great Silent Army of Abolitionism: Ordinary Women in the Antislavery Movement* (1998), which focused largely on the northeastern United States, Julie Roy Jeffrey argued that divisions in the national organizations often mattered little to women in grassroots antislavery groups. Finally, one might have hoped to see more material on African American women abolitionists in the Midwest. There are some intriguing references to African American women fighting against slavery and racism, but a fuller picture of their activities would have been welcome. Overall, this book is a valuable addition to the scholarship on women and abolition in the United States.

*Lincoln Looks West: From the Mississippi to the Pacific*, edited by Richard W. Etulain. Carbondale and Edwardsville: Southern Illinois University Press, 2010. xi, 262 pp. Notes, bibliography, index. \$34.95 cloth.

Reviewer Patricia Ann Owens teaches history at Wabash Valley College. Her Ph.D. dissertation (Southern Illinois University Carbondale, 1986) was "Wyoming and Montana during the Lincoln Administration."

One score and seven years ago, when I was doing my dissertation research on Wyoming and Montana during the Lincoln administration, people scoffed, looked at me quizzically, and pointed out that nothing happened "out there" at that time. Of course I knew they were wrong. There were gold strikes in Montana, emigrants on the overland trails, military encounters with Native Americans, and the Republican politics of governing the western territories. This volume brings together 12 essays that explore the topic of Lincoln and the West.

Readers of the *Annals of Iowa* are no doubt familiar with Lincoln's visit to Council Bluffs in August 1859, when he delivered a speech at Concert Hall and met with railroad engineer Grenville M. Dodge. Later that same year, Lincoln visited Missouri and eastern Kansas. Although Lincoln's forays to the West were few, as president he was keenly aware of its importance to his Republican Party and the importance of its mineral wealth to a nation fighting a civil war.

In the preface of *Lincoln Looks West*, editor Richard Etulain writes, "This volume attempts what no other book has done. . . . This book introduces readers to the two decades of Lincoln's major involvements with the West" (ix). That mission is accomplished. In an introductory essay Etulain presents an extensive overview of Lincoln and the trans-Mississippi West. Seven of the subsequent essays are reprints from a variety of historical journals and cover a wide range of topics. Mark E. Neely (*Civil War History*, 1978) explores Lincoln's opposition to the Mexican War. Earl S. Pomeroy (*Pacific Historical Review*, 1943), Vincent G. Tegeder (*Mississippi Valley Historical Review*, 1948), Daren Earl Kellogg (*New Mexico Historical Review*, 2000), and Robert W. Johannsen (*Washington Comes of Age: The State in the National Experience*, 1992) delve into Lincoln's patronage appointments in the West. Larry Schweikart (*Western Humanities Review*, 1980) investigates Lincoln's connections to the Mormons, and David A. Nichols (*The Historian's Lincoln: Pseudohistory, Psychohistory, and History*, 1988) writes about his study of Lincoln and the Indians. Two new essays were written specifically for this volume: Michael G. Green surveys the politics of the 1850s and Lincoln's attitudes toward the West during those years; and Paul M. Zall presents a biographical sketch of Lincoln's friend Anson G. Henry, a physician and politician whom Zall describes as "Lincoln's Junkyard Dog." The book concludes with a bibliographical essay by Etulain and a bibliography of significant books and articles about Lincoln and the West.

This compilation of essays provides a wide range of topics, brings together a plethora of research, and demonstrates that the West was never far from Lincoln's mind, although during his presidency the war took his full attention. For those readers not well acquainted with



Lincoln and the West, this volume is a great place to start and to discover that there really was a lot happening west of the Mississippi River during and even before the Civil War.

*Hinterland Dreams: The Political Economy of a Midwestern City*, by Eric J. Morser. American Business, Politics, and Society Series. Philadelphia: University of Pennsylvania Press, 2011. xvi, 264 pp. Illustrations, notes, index. \$55.00 cloth.

Reviewer Kathleen A. Brosnan is associate professor of history and associate dean of the College of Liberal Arts and Social Sciences at the University of Houston. She is the author of *Uniting Mountain and Plain: Urbanization, Law, and Environmental Change in the Denver Region, 1858–1903* (2002).

In *Hinterland Dreams*, Eric Morser relates the origins and development of La Crosse, Wisconsin, as a means to understand urbanization in the larger Midwest. He challenges the frontier narrative of independent white pioneers offered by Wisconsin's native son, Frederick Jackson Turner, and the revisionist versions of later scholars who emphasize geography, entrepreneurs, and market revolutions to explain the success of metropolises like Chicago. Understudied hinterland communities, Morser argues, played crucial roles in the region's commercial growth while government — at local, state, and federal levels — created an environment that allowed such communities to emerge and thrive. "La Crosse's history," he writes, "was a tale of economic choices conditioned by the American state" (xv).

In the first section of the book, Morser explains how government initiatives facilitated the founding and maturation of La Crosse's businesses. By establishing forts and launching explorations that revealed resources ripe for exploitation, the federal government maintained a presence and gave white Americans confidence in the region's economic possibilities. Treaties placed Indians in a dependent status that allowed early traders to prosper, and subsequent policies ensured Indians' removal as the white population became more numerous. While federal land policies often favored speculators, new preemption laws in the 1840s gave less wealthy migrants access to real property. "A legal culture . . . provided entrepreneurs with powerful rights and protections that bolstered risk taking in southwestern Wisconsin and elsewhere. State and federal policy, as much as personal genius or dedicated work, helped La Crosse lumbermen become wealthy and powerful" (72).

In part two, Morser explains how government policies, particularly at the state and municipal levels, empowered La Crosse residents

to finance and police private businesses, sometimes by circumventing the letter of the law. Aware that neighboring states' investments in railroads resulted in crippling indebtedness, Wisconsin lawmakers prohibited funding for such improvements in the state constitution. As the need for rail connections became critical to developing towns in the 1850s, however, legislators transformed another constitutional provision — their power to regulate municipal taxation, assessment, and borrowing — to grant cities such as La Crosse the authority to sell bonds or otherwise invest public money in private companies. "Local aldermen, much like their fellows in Boston and many large metropolises, embraced a political economy of public works based on assertive municipal power bridling private economic energy in the civic interest and remaking La Crosse into a thriving modern community at century's end" (130).

In part three, Morser contends that the American state provided an arena for new actors (specifically workers and women) to reshape political discourse. While the pro-labor mayor was unable to use municipal power to achieve concrete gains, such as workplace safety or shorter hours, a growing working-class consciousness challenged the accepted wisdom that business elites were best able to govern the city's economy and forced mainstream politicians to heed workers' needs. In the later nineteenth century, courts and legislators chipped away at coverture, but it was the denial of the vote, Morser argues, that somehow empowered women. They challenged accepted gender norms by channeling energies into extrapolitical activities.

*Hinterland Dreams* is rich in primary sources, and Morser masters a diverse historiography; endnotes cover 65 pages. This book is essential reading for those interested in the Midwest's political economy — the relation between government and commerce. The focus on a smaller city expands our understanding of urbanization in the region and reminds us that local actors used a variety of tools to foster economic opportunities within a broader political context. The policies that shaped La Crosse affected development across the Midwest, although it is unclear whether these were part of a coherent state enterprise or a haphazard collection of actions.

This book is part of a larger effort to bring the state back into American historical debates. Morser does this most effectively in the first two sections, where he shows how La Crosse entrepreneurs and officials used government initiatives to recruit settlers, clear pine forests, and forge railroad links, although he overstates the impact of municipal police powers. Officials regulated some safety issues within the city, but could not affect ticket prices, freight rates, or timetables. De-

spite local protests, the Milwaukee and St. Paul Railway chose to build a bridge over the Mississippi outside the city. However, this does not mean the state was absent. Government worked in partnership with railroads, too. Similar questions might arise regarding the chapters on workers and women. Legal traditions and the political structure perhaps did not provide the sort of opportunities Morser suggests, but they did create a framework that forced these actors to find alternatives for political expression.

Readers would benefit from a clear regional map earlier in the book and a bibliographical note identifying archives and abbreviations from the notes, but these are minor issues in a cogent, well-crafted study that appropriately places government at the center of the western narrative.

*For Labor, Race, and Liberty: George Edwin Taylor, His Historic Run for the White House, and the Making of Independent Black Politics*, by Bruce L. Mouser. Madison: University of Wisconsin Press, 2011. xxi, 253 pp. Illustrations, notes, index. \$24.95 cloth.

Reviewer David Brodnax Sr. is associate professor of history at Trinity Christian College. His biographical article on Judge George Grover Wright appeared in the *Yale Biographical Dictionary of American Law* in 2009.

Decades before Shirley Chisholm, Jesse Jackson, or Barack Obama ran for president, an Iowan became perhaps the first African American to do so. The life of George E. Taylor has been largely forgotten in the century since then, however, in part because he was an outsider during his lifetime. Bruce L. Mouser's biography seeks to restore Taylor as an important figure in midwestern politics, a bridge between populism and civil rights, and an example of the alternative political paths explored by the black community.

Mouser has made extensive use of newspapers to write this biography, but other sources about Taylor still prove elusive; for instance, although the politician was married three times, the fate of his first two wives is unknown. Perhaps to compensate for this lack of evidence, Mouser also explores Taylor from a psychological perspective: his sense of being an outsider, his chronic feelings of betrayal, and his willingness to take risks through new locations, jobs, and organizations.

The story begins during the Civil War in La Crosse, Wisconsin, where Taylor was raised by a black foster family and became a pro-labor journalist and political activist in Democratic and third-party organizations. He largely ignored racial issues, though, until he moved in 1891 to Oskaloosa, Iowa, whose black population was 24 times as large as La Crosse's. There, Mouser argues, Taylor "narrowed his focus

from biracial cooperation to self-help issues important only within the black community" (58). In his search for the best platform to advance his ideas, Taylor operated the *Negro Solicitor* newspaper, joined numerous organizations, and regularly changed his political affiliations, in large part because he, like some other African Americans, felt that the Republicans were no longer dedicated to civil rights. In 1892 he served as Iowa's only black delegate to the Republican National Convention, but in 1896 he endorsed the Democratic ticket, and in 1904 he ran for president as the candidate of the National Negro Liberty Party (NNLP), which endorsed pensions for former slaves and an end to "class legislation." Taylor likely hoped, Mouser contends, to show that black voters could not be ignored or taken for granted, although he probably also knew that he was destroying his political career. The NNLP was so underfunded, though, that it could not even get on the ballot in Iowa or most other states. He was unable to attract black Republicans or Democrats or even to unify the black third-party movement; he was ignored or ridiculed by the press; and he received fewer than 2,000 votes. Taylor spent the last 15 years of his life in relative obscurity in Florida, working in journalism and black community organizations while avoiding direct political activity.

Ultimately, Mouser sees Taylor not only as a remarkable success story but also as a reflection of postbellum black politics. As African Americans debated voting allegiances and civil rights tactics, Taylor emerged as "one of the few who could fuse the language of labor agitator to that of Washingtonian 'uplift' and make it address the needs of the common folk" (154). By the time he ran for president, though, southern disenfranchisement and northern indifference meant that black voters, like his campaign, were largely ignored. He was also unable to overcome his marginal status within the black community, caused by his humble beginnings and rural, grassroots ideology. Finally, like many other African Americans, he eventually responded to racism by turning inward toward community institutions.

The mere fact that George E. Taylor ran for president is enough to make him a historical curiosity but not enough to warrant a biography unless there is more to the story. Mouser's short but thoughtful manuscript succeeds by enhancing our understanding of the complicated dynamics involving black elites, white laborers and farmers, and those who sought to build bridges between these groups. He also illustrates the historiographical links between scholarship on Populists and African Americans in Iowa. Furthermore, Mouser shows that in addition to Iowa's well-known cadre of staunch black Republicans, there were also vibrant groups of black Democrats and third-party supporters

who influenced the political discussion. His analysis would have benefited, however, from further explanation of how Taylor's racial ideology developed in Iowa, possibly by more closely examining other local black leaders and the political and cultural environment in Oskaloosa and Ottumwa. Additionally, because the book focuses on eastern and central Iowa, we are left to wonder about possible connections to western black Iowans such as Nodaway Valley farmers or Sioux City laborers. As Mouser himself admits, additional research in the archives of the State Historical Society of Iowa in Des Moines might have proved useful, but so might have a look further west. Finally, further explanation of why most African Americans remained loyal to the Republican Party would better show the obstacles that Taylor faced in his efforts to highlight other options. These issues aside, Mouser has written an excellent biography of a forgotten but important leader.

*The Brilliant Bandit of the Wabash: The Life of the Notorious Outlaw Frank Rande*, by Mark Dugan, with Anna Vasconcelles. DeKalb: Northern Illinois University Press, 2010. xi, 201 pp. Illustrations, notes index. \$22.95 cloth.

Reviewer John E. Hallwas is Distinguished Professor Emeritus at Western Illinois University. His books include *Dime Novel Desperadoes: The Notorious Maxwell Brothers* (2008) and *The Bootlegger: A Story of Small-Town America* (1998).

This biography of outlaw Frank Rande is a welcome addition to our understanding of nineteenth-century lawbreakers in the Midwest. Even though he was notorious in the 1870s and early 1880s, Rande has received no previous modern attention, other than a three-part newspaper series and a three-part magazine series a half-century ago.

*The Brilliant Bandit of the Wabash* is well researched, if narrowly focused, and provides long-needed information on Rande's background. Born in 1839 and raised in Pennsylvania, he left home at age 20 but soon rejoined his family, which had emigrated to Fairfield, Iowa, in 1860. The authors chronicle his two marriages, his several years as a trapper in Minnesota, and then his career of burglaries and killings (launched in Iowa but covering several states in the upper Mississippi valley) that stretched from 1871 until his capture late in 1877. Tried in Galesburg, Illinois, in 1878, and convicted of murdering a posse member at Gilson in that county (Knox), he was sentenced to life in prison at Joliet, where he was an unruly inmate. After attacking and almost killing a deputy warden on March 1, 1884, he was found hanged in his solitary confinement cell six days later, an apparent suicide.

The most notable shortcoming of the book is the lack of context. What was small-town Iowa, especially Fairfield, like in the 1860s? The authors do not say — they don't even indicate the town's population. Did Rande leave Iowa for the wilds of Minnesota to avoid service in the Civil War? Rande is a young man in the early 1860s, but the war's outbreak is not mentioned and the authors never consider its potential impact (it spawned an upsurge of outlawry). Likewise, Rande's law-breaking career coincides with one of America's great depressions, which started in 1872, and which greatly increased the amount of burglary by wandering, out-of-work tramps like Rande, but that is also never mentioned.

And Rande's psychological makeup is not well explored. Did the public attitude toward outlaws — who were often admired for their self-assertion and toughness — have any impact on Rande, who so obviously wanted to be celebrated? The authors assert that he was affected by "dime novels" (x), but they fail to explore this matter. Actually, outlaw heroes do not appear in dime novels until 1881 (when Billy the Kid, Jesse James, and the Maxwell brothers all appear for the first time), but that was after Rande was already in prison.

Rande obviously had mental problems, but the authorities never took his condition seriously, as was common during that era. Wouldn't the harsh conditions at Joliet (solitary confinement, the silence rule, eleven-hour workdays six days a week, often abusive guards, and Rande's meager bread and water diet in solitary "till he was so weak that he was no longer able to stand up" [159]) probably have made his mental condition worse? In fact, like the psychologically uninformed officials of that era, the authors simply assert, "It was evident that Rande was feigning insanity" (157). That seems unlikely, considering his mental issues from childhood, his inability to develop any lasting relationships, and the various later accounts of "his foolish talk" that was both "rambling and disconnected" (165).

And what does the contemporaneous commentary on Rande reveal about how public attitudes shaped his career? The authors tend to accept whatever newspapers from that era had to say about Rande without critiquing their often shallow, sensationalized, and sometimes inaccurate writing. Moreover, Rande was the subject of a short book that appeared in the decade after he died, Frank Hitchcock's *A True Account of the Capture of Frank Rande, "The Notorious Outlaw"* (1897), but the authors never discuss the perspectives and shortcomings of that book — or even indicate that it appeared.

In fact, the authors never display any interest in the issues inherent in the story, issues that would provide greater insight into Rande, law

enforcement and penitentiaries during that era, and American culture during the post-Civil War period that spawned many of our country's most noted outlaws. Their bibliography, which lists only four books published in the twentieth century, also reflects their failure to contextualize the life of this long-overlooked midwestern outlaw.

*Palaces on the Prairie*, by Rod Evans. Fargo: North Dakota Institute for Regional Studies, 2009. iii, 241 pp. Illustrations, notes. \$29.95 cloth.

Reviewer Mary Anne Beecher is associate professor of architecture at the University of Manitoba. Her research and writing have focused on vernacular architecture, especially roadside architecture.

Whether considering the popularity of Seattle's 1962 Space Needle or Herzog and de Meuron's more recent Beijing National Stadium known as The Bird's Nest, the public's fascination with architectural spectacles is undeniable. With Rod Evans's recent book on the corn, bluegrass, coal, flax, grain, alfalfa, cotton, and sugar beet "palaces" that sprang up across the Midwest in the late nineteenth and early twentieth centuries, we learn the history of such obscure American structures and the events that coincided with them. The role of such architectural oddities in local boosterism and regional competitiveness (and the occasional cooperation that emerged among communities as well) is articulated in the careful detail with which Evans documents the history of each unique structure.

This book is essentially an encyclopedia of the palaces clad in grain, corn, and various other types of crops produced across the prairie and plains states in the late nineteenth century. Eager to show off their productivity to the world while celebrating their cultural sophistication and the arrival of modern conveniences such as electric street lighting, the townspeople of such places as Sioux City, Iowa; Grand Island, Nebraska; and Waco, Texas, concocted plans and raised funds to build novel exposition structures as a way of gaining regional or national attention. The structures ranged in size from something equivalent to today's double garage to grand edifices that surpassed 40,000 square feet in area at heights of more than 100 feet. Such structures were usually built and rebuilt annually since crops or coal make rather temporary cladding. The only corn-clad exposition building that still survives is in Mitchell, South Dakota, and it remains a well-known local attraction for travelers still willing to take a little detour from Interstate 90. Evans documents at least 23 such "palaces" that were constructed (and reconstructed) in small to medium-sized cities in Iowa, Nebraska, North and South Dakota, Missouri, Texas, Wyoming, and Illinois in the late 1880s

and into the 1890s. Iowans will be especially interested in Evans's careful documentation of the successive corn palaces of Sioux City, Creston's bluegrass palaces, Forest City's flax palaces, and Ottumwa's coal palaces — all of which date to the period 1887–1893.

The book is well illustrated with exterior and interior photographs of the palaces. A sampling of newspaper excerpts from the period and the author's extensive use of quotations from journalistic sources add vividness to his narrative. The shortcoming of the text is its allegiance to description. It would have been helpful if Evans had provided a greater sense of the larger cultural context for these buildings and events to help explain the appeal of this strategy for boosterism and the meaning of the use of produce to represent communities in these rural places at the time of the palaces' short-lived popularity. Historian Pamela Simpson has also written about corn palaces, for instance, in an effort to discuss the mediation of racial issues in the late nineteenth century. Evans's careful reconstruction of the processes that led to the construction of the palaces seems like an opportunity to gain insight into the dynamics of local politics and perhaps a better understanding of the relationships between commercial and agricultural production at the time the palaces were in development. It would also be interesting to know more about how the palaces were actually built. Explaining how ears of corn or chunks of coal were attached to the surfaces — especially with regard to some of the detailed interior treatments — would add a dimension to this history that has yet to be thoroughly addressed.

*For Home and Country: World War I Propaganda and the Home Front*, by Celia Malone Kingsbury. Studies in War, Society, and the Military. Lincoln: University of Nebraska Press, 2010. 309 pp. Illustrations, notes, index. \$45.00 cloth.

Reviewer Barbara Jean Steinson is professor of history at DePauw University. She is the author of *American Women's Activism in World War I* (1982).

Celia Malone Kingsbury's *For Home and Country: Propaganda and the Home Front* explores wartime popular literature, cover art, commercial illustrations, and government posters produced in the Allied nations. Although the poster art is familiar to students of World War I, the author contributes engaging interpretive summaries of little-known pro-war fiction that will undoubtedly spur those interested in wartime popular culture to read some of those works in their entirety. Focusing on the ways women and children "become both a major focus of and a major tool of social manipulation" (10), Kingsbury develops this theme in chapters on food and domestic science, women's war service and



fiction, literature aimed at children of all ages, and the use of innocents to rouse fear of the Germans. Unlike the valuable essays in *Picture This: World War I and Visual Culture* (2009) that illuminate crucial differences in Allied poster art, Kingsbury blurs national boundaries and regional differences within nations, asserting that because “propaganda imagery overlaps, and because Iowans and Alsatians, Londoners and Parisians, wealthy matrons and scullery maids were all united in their hatred of Germany,” she will not limit her study to “specific nationalities or social classes” (6). *For Home and Country* draws most of its evidence from United States sources directed at the middle class, however, and this review will not address its more cursory treatment of other nations.

Kingsbury deftly presents connections between domestic science, the Herbert Hoover-led Food Administration, and food production corporations in a media campaign that she claims allowed the United States to avoid food rationing. Given the short duration of American participation in the war, this attributes too much influence to the “food will win the war” propaganda. Ignoring wartime funding of USDA home and agricultural extension programs that had a major impact in several states, Kingsbury also fails to address Hoover’s contemptuous treatment of the Woman’s Committee of the Council of National Defense, which its leaders contended seriously hampered the food drives. The Food Administration’s propaganda emphasized that middle-class women’s service should take place within their own kitchens, so it is not surprising that its leader had little use for women activists.

Kingsbury’s two chapters on wartime fiction directed at young women and adolescents provide compelling evidence that modernism did not dominate wartime magazine articles and novels, and that although feminine virtues triumphed, there were places for women to serve outside the home. The “good” women or teens in these works of fiction served their family and state, either through home front activities or war service or by sacrificing the men in their lives. Those who refused to sacrifice threatened both family and state, and those who volunteered only for appearance sake were false patriots. Kingsbury suggests that literature aimed primarily at adolescents provided potentially empowering role models. In the Ruth Fielding and Somewhere series published in the United States, the heroines were “strong but unassuming,” took care of themselves and those they loved, and conveyed “the notion that anything is possible” (134). The lively summaries of this American literature constitute a major strength of this book.

Kingsbury is more critical of propaganda directed at children. Readers may wonder if materials produced in other countries were as

fierce in their didactic patriotism as that in the United States. Although she notes Margaret Higonnet's conclusion that some French children's literature was ambiguous, Kingsbury moves quickly from this point to emphasize the jingoism that sought to "undermine the socialization" that tempered "childhood cruelty lurking beneath the surface" (171). She concludes that children's literature encouraged children to play war games, save their money, tattle on slackers, and "hate everything Germany" (169). Kingsbury overreaches when she contends that youngsters reading a particular flier "might well have been terrified that their lack of cooperation could result in a German invasion of their own territory or even to their own orphaning" (182). In addition to materials aimed at children, images of children served as emotional clubs to persuade adults to support the war effort. One poster, for example, depicted a beautiful naked toddler urging Americans to "Save Your Child from Autocracy and Poverty." Noting that this image "cannot help but loosen the purses of patriotic Americans" (191), the author reveals a tendency to conflate prescription or intent of propaganda with actual behavior. In addition, contrary to recent French scholarship, Kingsbury does not question the extent to which propaganda percolates from the ground up through rumors and exaggeration rather than from the top down. Not surprisingly then, George Creel, head of the Committee on Public Information, emerges in her conclusion as one of "history's villains" (263).

*A Nation within a Nation: Voices of the Oneidas in Wisconsin*, edited by L. Gordon McLester III and Laurence M. Hauptman. Madison: Wisconsin Historical Society Press, 2010. xi, 293 pp. Illustrations, maps, index. \$34.95 cloth.

Reviewer Renee J. Zakhar is a Ph.D. candidate in the urban studies program at the University of Wisconsin–Milwaukee.

Historians and anthropologists often describe American Indian groups east of the Mississippi River as assimilated or acculturated because of their long contact with Europeans, resulting in disruption of their traditional cultural practices. *A Nation within a Nation: Voices of the Oneidas in Wisconsin* counters this misconception through this collaborative set of essays by academics and tribal members. The essays show that native traditionalism is more than dress and ceremony; it is a broad category that includes leadership skills, experience, travel, and alliances.

*A Nation within a Nation* is the fourth book chronicling the migration of the Oneida Nation from their homelands in New York to a new settlement in Wisconsin. All four books were edited by tribal historian

Gordon McLester and history professor Laurence Hauptman (the first also with Jack Campisi) and underwritten by the Oneida Nation of Wisconsin, which approved funding for a series of history conferences organized by McLester over the past 25 years to stimulate scholarship on Oneida history. This final volume focuses on the years between 1900 and 1975, when Oneidas lost the majority of their 65,000-acre land base in the state and struggled to retain their sovereignty and sense of community. McLester and Hauptman have assembled a set of memoirs and articles describing the power and tenacity of Oneida leadership in the effort to establish a strong tribal government, reverse land loss, and promote their own unique cultural heritage.

The book is divided into four sections, with essays on community maintenance, alliances, the affect of federal policies on the Oneida, and portraits of Oneida leadership. The first section consists of accounts of community experiences both on and off the reservation, such as lace-making, cherry-picking, and language preservation. In the second section, veterans' memoirs remind readers of the Oneida tradition of military service and sacrifice for American ideals that overlap with native warrior customs. Section three treats the Oneida response to federal policies such as Roosevelt's "Indian New Deal," termination, and land claims. The last section offers biographies of Wisconsin Oneida leaders who have worked under shifting political conditions to maintain and reinvigorate the tribe's ability to self-govern.

The last two sections in particular speak to the thesis of a nation within a nation. Oneida leaders such as Irene Moore, Robert Bennett, and Ernie Stevens Sr. have educational and professional experience that provide information, influence, and federal money for the nation's future security and growth. We see, too, that although the tribe often disagrees about the best way to achieve independence, tribal response to federal policy through those leaders does not waver in its desire to find the path that will lead to autonomy and control. Former tribal attorney Loretta Webster's essay demonstrates the paradoxical and contradictory relationship of Indian groups to American federal policy-makers: traditional chiefs received little respect from the American government, but governmental reorganization under the New Deal created a legacy of paternalism; the Great Depression devastated America but actually lifted the income of the Wisconsin Oneida through Works Progress Administration jobs; Americans want to honor the treaties that bear the mark of their founders but have found that doing so often clashes with business interests and popular opinion and aggravates still potent local grievances. Tellingly, Webster emphasizes that economic security is closely tied to tribal ownership of a land base.

McLester and Hauptman's series of books using the community history method are a rare and successful collaboration between academic scholarship and community memory. They have refined their approach with each succeeding book.

*Triumph and Tragedy: The Inspiring Stories of Four Football Legends, Fred Becker, Jack Trice, Nile Kinnick, Johnny Bright*, by Mike Chapman. Newton: Culture House Books, 2010. 159 pp. Illustrations, notes, bibliography. \$26.95 cloth.

Reviewer Sarah Jane Eikleberry is a Ph.D. candidate in sport studies at the University of Iowa. She is the author of "A 'Chief' Year for the 'Iowa Braves': Mayes McLain and the Native American (Mis)appropriation at the State University of Iowa" in the *Annals of Iowa* (Spring 2011).

In *Triumph and Tragedy*, publisher, author, and public speaker Mike Chapman adds to the body of popular writing on intercollegiate athletics in Iowa. His latest work jettisons the single-institution approach in exchange for vignettes of four celebrated competitors whose impressive lives were cut short. Chapman pays tribute to four great men, chronicling their origins, accomplishments, and honors and the memories that Iowans hold of the departed. As in his *Iowa History Journal*, Chapman attempts to deliver a historical product that is both educational and entertaining.

Chapman's finest contribution to Iowa's historical record comes in the first chapter, where he resurrects Iowa's first All-American athlete, Fred Becker. After two years (1915–1916) at the University of Iowa, the Waterloo native enlisted in the U.S. Marine Corps in 1917, later falling in combat at the Battle of Chateau-Thierry. American Legion Post 138 in Waterloo took his name, and in 2009 the University of Iowa Athletics Hall of Fame recognized him for his athletic performances.

Next, Chapman retells the recruitment and brief career of Iowa State University's Jack Trice. Trice, an Ohio native, followed his high school football coach, Sam Willaman, to Iowa State University in 1922, breaking the color line as the school's first African American football player. Trice died days after suffering fatal on-field injuries in his second intercollegiate contest. Trice is the only African American in the United States to have a college football stadium named in his honor.

Chapman's third chapter revisits the life of the University of Iowa's 1939 Heisman recipient, Nile Kinnick, an Iowa native. Kinnick's Heisman acceptance speech and letters to loved ones help readers understand how the entire nation swooned over the pride of Iowa, who tragically perished in a training mission in 1943.

The last athlete in the series is Drake University's power runner Johnny Bright. Bright received national attention for his athletic endeavors and for the extreme abuse he suffered during a contest at Oklahoma A&M in 1951. Although no penalties were assessed, photographers from the *Des Moines Register* garnered a Pulitzer Prize for capturing the abuse. After graduating, Bright prospered for 12 years in the Canadian Football League before working as an esteemed educator and public speaker in Edmonton. Bright died from anesthetic complications during a knee surgery at age 53. Several schools in Edmonton and the field at Drake Stadium are named in his honor.

Chapman's project benefits from his large array of experiences, his familiarity with regional publications, and personal contacts with his subjects' friends and fans. Unfortunately, he compensates for limited evidence by using spurious detail, extrapolation, and conjecture. He often makes baseless parallels between the athletes, and chapters conclude with clumsy assemblies of commemorative quotes. *Triumph and Tragedy* may appeal to book-buying sports enthusiasts with a penchant for drama, but most historians will be disenchanted by the book's meritocratic maxims, purely descriptive chronicles, and lack of engagement with scholarly literature.

*Hmong America: Reconstructing Community in Diaspora*, by Chia Youyee Vang. The Asian American Experience Series. Urbana: University of Illinois Press, 2010. xxii, 200 pp. Illustrations, maps, notes, index. \$75.00 cloth, \$25.00 paper.

Reviewer Joseph Andrew Orser is visiting assistant professor of history at the University of Wisconsin—Eau Claire. His dissertation (Ohio State University, 2010) was "American Family, Oriental Curiosity: The Siamese Twins, the Bunker Family, and Nineteenth-Century U.S. Society."

Chia Youyee Vang's volume is grandly conceived and precisely executed. Covering the period since the U.S. retreat from Vietnam — a retreat that left America's anti-Communist Hmong allies hanging precariously in Communist Laos — *Hmong America* frames the experiences of the more than 130,000 Hmong who came to the United States as political refugees via the lens of diaspora. Its true focus, though, is the experience of the Hmong community in Minneapolis and St. Paul, what some call the "Hmong capital of the world" (58).

Using extensive interviews and observations, Vang moves beyond official narratives of immigration and forced migration to get to know refugees "as people rather than as subjects" (4). Vang is well positioned to do this; she was resettled in Minnesota in 1980 at the age of nine after fleeing Laos with her family in 1979. *Hmong America* is the first

book-length history to emerge from the Hmong community, and Vang credits her knowledge of the language and culture for her ability to write a study that non-Hmong scholars could not. "Insider status increases the researcher's access to information that marginalized groups . . . may not feel comfortable sharing with an outsider" (xv). As a result, Vang authors a complex analysis that highlights the agency of the Hmong community in the Twin Cities.

Agency appears in Vang's discussion of the strategies refugees pursued in reconstructing an ethnic community in the United States. Hmong strategies of resettlement differed markedly from federal policies that tried to disperse the Hmong throughout the country. Officials believed that isolation from large concentrations of Hmong would allow individual families to assimilate into mainstream American culture more effectively. Instead, Hmong found the isolation alienating and used kinship and extended family ties to embark on internal migrations that resulted in heavy concentrations in Minnesota and Wisconsin. By 2007, those two states had the largest concentration of Hmong in the country.

Within ethnic communities, Hmong engaged in a process of reinvention. On the one hand, relationships between clans that were rivals in Laos were renegotiated, fostering an atmosphere of mutual support. On the other hand, divisions along religious lines grew as some Hmong became Christians while others adapted traditional shamanism to their new home. Ironically, both groups felt more American as a result; Christians believed that they were behaving like Americans while non-Christians believed that the ability to practice their own religion meant they belonged in the United States. Similarly, generational conflicts resulted in competing cultural expressions. Rival celebrations of the Hmong New Year emerged: some attempted to hold on to Hmong tradition; others celebrated a fluid Hmong American culture. "In sum, Hmong people have made sense of their lives within their disparate American communities by utilizing traditions from the place they left behind to maintain some continuity and inventing new practices in their new homeland" (153).

This book could have done more to place its actors in the larger global community. Vang makes provocative statements about the relationship between Hmong in America and in the rest of the diaspora but does not pursue the implications. For instance, Vang contends that there is a growing feeling among Hmong in other countries that Hmong in the United States are too Americanized and less authentically Hmong, a fascinating observation that demands further discussion. Nonetheless, Vang has skillfully charted the strategies for building community that have shaped Hmong America.

*Why Iowa? How Caucuses and Sequential Elections Improve the Presidential Nominating Process*, by David P. Redlawsk, Caroline J. Tolbert, and Todd Donovan. Chicago: University of Chicago Press, 2011. xvii, 315 pp. Charts, tables, figures, notes, references, index. \$27.50 paper.

Reviewer Norman E. Fry recently retired from teaching American history and government at Southeastern Community College, West Burlington, Iowa.

*Why Iowa?* is a collective endeavor by David Redlawsk, Caroline Tolbert, and Todd Donovan to update the scholarly literature on the Iowa caucuses and the presidential nominating process. The uniqueness of their research, according to the authors, is that it does what no one else has done before: put together all the pieces of the caucus nominating process. The caucus process is an intricate mix of factors: caucus rules, candidate campaigns, voter turnout and participation in the caucuses, analysis of candidate performance, the effect of the caucuses on subsequent primaries, voter participation in online (internet) and offline (in person) political events, and public opinion on the nomination process.

The focus of the book is the Iowa caucuses and how they affect subsequent primaries and caucuses. The Iowa caucuses matter because of their timely position as first in a sequence of primaries and caucuses. Iowa is the first state to set in the mind of the voting public an evaluation of Democrat and Republican candidates, and Iowa begins the winnowing process that eventually separates the winners from the losers. It is the sequence of various nominating venues and the dynamics of those events that are important in understanding the process, but being first has made the Iowa caucuses more significant than they might be otherwise.

The authors use an array of surveys and statistical methods to interpret the vast amount of data on the Iowa caucuses. Among the surveys are a large one of the Super Tuesday primaries, a small survey of the Pennsylvania primary, the University of Iowa Hawkeye Poll, and several telephone surveys of Iowa caucus attendees. These surveys are supported by multivariate statistical methods to measure the significance of responses to several questions on various aspects of the caucuses and the nominating process. The book has four appendixes with statistical analysis of the questions posed to participants in the surveys. The statistical tables are multivariate in that they take into consideration several factors, such as education, age, income, gender, and ethnicity in some cases.

The authors begin by summarizing the results of the 2008 caucus nominating process and follow this summary with three sections, each detailing different aspects of the process. They conclude that Iowa definitely matters in the nominating process. The Iowa caucuses gather

media attention, and it is the media that gives significance to the Iowa caucuses. Candidates who learn the lessons of campaigning in Iowa and perform well can come out of Iowa with momentum, favorable public opinion, and further media attention. Events in Iowa trigger a chain reaction of sorts that works its way through the sequence of primaries that follow the Iowa caucuses.

*Why Iowa?* is written for political scientists who understand statistical methods. The authors claim that they have presented their work in a format that is accessible to readers without a background in statistics, but the tables are sure to be a challenge to anyone not used to reading statistical tables. The authors subtly qualify their own thesis in two ways. First, they observe that the caucuses have become a media event, and it is the media's subjective interpretation of the caucuses that determines their influence on later primaries and caucuses. Second, in any given year the New Hampshire primary or Super Tuesday might be more important than the Iowa caucus. If so, the outcome in primaries after Iowa might result far more from the influence of the media than from the rules of the Iowa caucus game.

The merits of *Why Iowa?* outweigh any of its potential weaknesses. The authors' use of surveys and statistical methodology open up a treasure trove of ideas, data, and insights into the Iowa caucuses and the presidential nominating process. Ultimately, the authors make a strong case for Iowa's importance in the nominating process. They also make a contribution to the scholarly work of the last 30 years on the caucuses and the nominating process, making *Why Iowa?* a valuable resource for anyone interested in the Iowa caucuses and the presidential nominating process.



## New on the Shelves

"New on the Shelves" is a list of recent additions to the collections of the State Historical Society of Iowa. It includes manuscripts, audio-visual materials, and published materials recently acquired or newly processed that we think might be of interest to the readers of the *Annals of Iowa*. The "DM" or "IC" at the end of each entry denotes whether the item is held in Des Moines or Iowa City.

### Published Materials

*Note:* Once per year, in the Fall issue, we list separately in this section all of the books processed since the last such listing about specific locales (towns or counties), schools, and churches, listed alphabetically by town or school name. Full publication data will be included for local and school histories; only the names of churches and the years covered will be included for church histories.

#### Local Histories

Bedford. *Through the Years, 1853–1953: A Historical Pageant Especially Written for the 1953 Bedford, Iowa Centennial Program*, by Bruce E. Mahan. [Bedford?: Pageant Committee?, 1953]. 4 pp. IC.

Brown County, Indiana. *Life in the Hills: Images of Brown County and its People*. Marceline, MO: Heritage House Pub., 1997. 127 pp. DM.

Brown County, Indiana. *Otto Ping: Photographer of Brown County, Indiana, 1900–1940*, by W. Douglas Hartley. Indianapolis: Indiana Historical Society, 1994. 94 pp. DM, IC.

Bur Oak. *Hanging Out in Bur Oak: During the 1930's Depression, Bootleggers, the Draft and World War II*, by Neal Smith. North Liberty: Ice Cube Books, 2009. 162 pp. DM, IC.

Cedar Rapids. *The History of Czechs in Cedar Rapids*, vol. 2, 1942–82. Cedar Rapids: Czech Heritage Foundation, 1982. 112 pp. DM, IC.

Chariton. *An Architectural & Historical Survey of the Central Business District of Chariton, IA*, by Molly Myers Naumann. [Chariton?]: Chariton Historic Preservation Commission, 2002. 50 pp. DM.

Chariton. *Preservation Planning in Chariton, Iowa: Preliminary Recommendations: Final Report*, by Tracy A. Cuning. Iowa City: Tallgrass Historians, 1998. 60 pp. DM, IC.

Cherokee. *The Historic Commercial Heritage of Downtown Cherokee, 1870–1948*, by James E. Jacobsen. [Des Moines]: History Pays!, 1998. 97 pp. DM, IC.

Clinton. *100 Years of Community Leadership: Clinton Chamber of Commerce, 1872–1972*. Clinton: Clinton Chamber of Commerce, [1972]. 21 pp. IC.

Colfax. *Spring City: A Pictorial History of Colfax, Iowa*, compiled and edited by Larry Ray Hurto. Marceline, MO: Heritage House, 2009. 128 pp. DM, IC.

Davis County. *History of Davis County, Iowa, Read at Bloomfield, July 4, 1876*. Bloomfield: Moore & Ethell, 1876. 24 pp. IC.

Deep River. *Our Town — Deep River, IA: Celebrating 125 years*. [Deep River?: History Book Committee?, 2009?]. 331 pp. DM.

DeWitt. *They Call Me Mr. DeWitt*, by William D. Homrighausen. DeWitt: DeWitt Observer, 2008. *Recollections of life in De Witt; newspaper columns reprinted from the De Witt Observer*. IC.

Dubuque. *Dubuque Terquasquicentennial: People, Places and Events Shaping our City's First 175 Years*. [Dubuque]: Telegraph Herald, [2008]. 239 pp. DM, IC.

Dubuque. *Dubuque the Key City: Architectural and Historical Resources of Dubuque, Iowa, 1837–1955: Phase II Historical and Architectural Survey Report*, by Molly Myers Naumann and James E. Jacobsen. Des Moines: History Pays!, 2002. IC.

Dubuque. *Scenic Dubuque*. [Dubuque: Voelker Realty Co., ca. 1910–1920?]. 14 pp. IC.

Grinnell. *Grinnell's Entrepreneurial and Philanthropic Pioneer: A Biography of Claude W. Ahrens*, by Judith W. Hunter, edited by Julie P. Gosselink. Grinnell: Claude W. and Dolly Ahrens Foundation, 2009. xv, 165 pp. DM, IC.

Henry County. *Henry County Map of Red Ball Route and Blue Grass Road: R.B.R.T., B.G.R.D.* Mount Pleasant: Henry County Bicentennial Commission, 1976. 15 pp. DM, IC.

Henry County. *Reconnaissance Level Historical and Architectural Survey of East Half of Salem Township, Henry County, Iowa*, by Rebecca Lawin McCarley. Davenport: SPARK Consulting, 2008. 155 pp. DM, IC.

Iowa City. *Melrose Avenue Street and Bridge Reconstruction: Phase I and II Architectural History Survey, Iowa City, Iowa*. Minneapolis: BRW Elness Architects, 1995. IC.

Keokuk. *An Intensive Level Architectural/Historical Survey of the Park Place/Grand Avenue Residential District in the City of Keokuk, Iowa Final Report*, by Karen Bode Baxter. [Keokuk?: Keokuk Historic Preservation Commission?], 1999. IC.

Lake Mills. "Hinterland or Heartland: The Survival of Small-Town Lake Mills, Iowa, 1850–1950," by Jan R. Olive Full. Ann Arbor, MI: UMI Dissertation Services, 2007. xiii, 308 pp. IC.

Maquoketa. *Portrait of Maquoketa*, by Rose Frantzen. [Maquoketa]: Old City Hall Press; distributed by Old City Hall Gallery, 2009. 100 pp. IC.

Marengo. *Marengo 1859–2009, Community Then and Now: Businesses, Schools, Organizations, Churches, Government, Features*. Marengo: Marengo Sesquicentennial History Committee, 2009. vi, 330 pp. DM, IC.

Marengo. *Marengo 1859–2009: Families Then and Now Who Made It Their Town during the Past 150 Years*. Marengo: Marengo Sesquicentennial History Committee, 2009. iv, 354 pp. DM, IC.

Mars Hill. *Mars Hill: A Living Legacy*, by Michael W. Lemberger and LeAnn Lemberger. Ottumwa: PBL Ltd., 2008. 173 pp. DM, IC.

Melrose. *Items from the Bluegrass*, by Evelyn Sinclair Tierney. Ottumwa: PBL Limited, 2007. 113 pp. *Newspaper columns, mostly from the Albia Union-Republican, reflecting on life in the Irish community of Melrose*. IC.

Mount Pleasant. *Once Upon a Time: A Local History Project by the 7th Grade Social Studies Classes of the Mt. Pleasant Community Schools*. Mt. Pleasant: Mt. Pleasant Community Schools, 1975. 62 pp. IC.

Mount Pleasant. *The Way it Was: A Local History Project by the 7th Grade Social Studies Classes of the Mt. Pleasant Community Schools*. Mt. Pleasant: Mt. Pleasant Community Schools, 1975. 52 pp. DM, IC.

Ruthven. *Ruthven, Iowa: Preserving the Past, Building the Future: 1884–2009*, by Ruthven Quasquicentennial History Book Committee. Rich Hill, MO: Bell Books, 2009. 176 pp. DM, IC.

Solon. *Solon Snapshots: A Visual Reflection of an Iowa Community 1850–1950*, compiled by the Solon History Group. Cedar Rapids: Eagle Book Bindery, 2010. 151 pp. IC.

Williamsburg. *The History of Williamsburg, Iowa, 1854–2007*. 2 vols. [Williamsburg]: Williamsburg Historical Commission, 2007–2010. DM, IC.

Winfield. *Intensive Level Historical and Architectural Survey I in Winfield, Henry County, Iowa*, by Rebecca Lawin McCarley. Davenport: SPARK Consulting, 2009. 149 pp. DM, IC.

Wright County. *From Here to There: A History of Transportation in Wright County, Iowa*, by Adrian D. Anderson for the Wright County Historical Commission. Jewell: Cecada Systems, Inc., 1999. iv, 116 pp. DM, IC.

## School Histories

Ames High School. *Ames High Alumni Directory: 1878–2001*. Ames: Ames High Alumni Association, 2001. 247 pp. DM.

Central University. *The Central University of Iowa: Its Origin and Present Condition, by a Member of the Board*. Providence: A. Crawford Greene, 1873. 12 pp. DM, IC.

Central University. *History of the Educational Work of the Baptist Denomination of Iowa*. [Pella: Board of Trustees of the Central University of Iowa, 1874]. 12 pp. DM, IC.

John Fletcher College. *John Fletcher College*. [University Park: John Fletcher College, 1934]. 20 pp. DM.

Loras College. *Loras College, 1839–1964: 125th Anniversary Program*. Dubuque: Loras College, 1964. 36 pp. IC.

Salem High School. *Salem High School: 1903–1959 Alumni*. N.p., [1996]. 52 pp. IC.

Tipton Consolidated School. *School Centennial Program: Tipton Consolidated School*. [Tipton, 1942.] 3 pp. IC.

University of Iowa. *The University of Iowa Guide to Campus Architecture*, by John Beldon Scott and Rodney P. Lehnertz. Iowa City: University of Iowa Press for the Office of the President, 2006. xxvii, 262 pp. DM, IC.

University of Iowa. *The First Century at the University of Iowa*, by the University News Service and the Alumni Office. [Iowa City]: University News Service, [1947]. 18 pp. IC.

University of Iowa. *The University of Iowa School of Music, 1906–2006: Celebrating 100 Years*, edited by Kristin Thelander. Iowa City: University of Iowa School of Music, 2006. 86 pp. DM.

University of Iowa. *Trial Lessons by Mail Given Free by the State University of Iowa School of Short-Hand*. 9th ed. Iowa City: Reporter's Bureau, 1886. 24 pp. IC.

### **Church Histories**

Callender. Our Saviour's Lutheran Church, 1871–1971. DM, IC.

Cosgrove. St. Peter's Catholic Church, 1878–1978. DM, IC.

Cumming. St. John Parish, 1892–1982. IC.

## Announcements

THE IOWA HISTORY CENTER at Simpson College seeks nominations for the outstanding master's thesis in Iowa history for 2012. Selection will be based on contribution to the knowledge of Iowa history; originality of the subject matter or methodology; use of sources; and written expression. Nominees must have completed their master's degree between July 1, 2011, and June 30, 2012.

The winner will be announced in fall 2012 and receive a \$1,000 cash prize and an award plaque. Three copies of the thesis and a brief letter of nomination from the thesis advisor, which includes contact information for the nominee, should be submitted to Bill Friedrichs, Director, Iowa History Center, Simpson College, 701 North C Street, Indianola, IA 50125. Application deadline is June 30, 2012.

For further information, contact Linda Sinclair, 515-961-1528 or [linda.sinclair@simpson.edu](mailto:linda.sinclair@simpson.edu).

A CONFERENCE, *The Plains Political Tradition: South Dakota's Political Culture*, will be held at the McGovern Center at Dakota Wesleyan University on November 14, 2011. Senator George McGovern will speak on his new book to be released on November 10. A new book, *The Plains Political Tradition: Essays on South Dakota Political Culture* (SDSHS Press, 2011), will also be released at the conference.

THE SOUTH DAKOTA STATE HISTORICAL SOCIETY (SDSHS) Press invites chapter proposals on all aspects of the political culture of South Dakota from the territorial period to the present. Political culture should be broadly construed to mean any and all aspects of life, culture, and economics of

South Dakota that relate to the organization and disposition of civic affairs.

Interested parties should consult *The Plains Political Tradition: Essays on South Dakota Political Culture* (South Dakota State Historical Society Press, 2011), which will serve as a model for the future volume and a building block for future research.

The deadline for proposals is January 2, 2012. Successful proposals will need to be followed with completed manuscripts of approximately 25 pages (plus notes) by January 2, 2013.

Accepted manuscripts will appear in a volume to be edited by Jon K. Lauck, John E. Miller, and Donald C. Simmons Jr. and published by the SDSHS Press in 2014.

Potential areas of political culture for discussion include, but are not limited to: agrarianism, urban history, ethno-cultural histories, American Indian politics and reservation life, religion, transportation, the environment, general politics, important political figures, legal history, demographic analyses, comparative analyses (South Dakota vs. other states), sport and recreation, labor history, state government, economics, and folk culture.

Proposals (and queries) should be submitted to Martyn Beeny, Associate Editor, at South Dakota State Historical Society Press, 900 Governors Drive, Pierre, SD 57501. Proposals should be accompanied by a professional résumé or curriculum vitae.

## Index to Volume 70

- Able Hobo Society, 30  
 accidents, workplace, 217, 223  
 accreditation, of Regents' home economics programs, 145–47, 149–50, 154, 159  
*Acts of Conscience: World War II, Mental Institutions, and Religious Objectors*, reviewed, 96–98  
 Adams Ranch, 229  
 Addams, Jane, 21–22  
 Adelphian Literary Society, 7, 16–17, 23, 29  
 Adrian, Lynne M., book review by, 280–81  
 Aerobee rockets, 305  
 Aesthesian Literary Society, 7, 18, 29  
 African Americans, 8, 121, 127–28, 129, 215  
 Afrika Korps, 225, 232  
 Agricultural Adjustment Administration, 239  
 Agricultural Emergency Labor Association, 237  
 agricultural labor, 226–29, 236–46, 249–53, 255  
 agricultural production, 343  
 Agriculture, U.S. Department of, 343  
 air pollution, 340, 347–56  
 Alethean Literary Society, 7, 18–19  
 Algona, Iowa, 226  
 Allaway, Robert, 51, 54  
 Allen, E. L., 51, 52–53; illustration of entry in Ames mural competition, 52  
 Allied Power, 341  
 Alpha Literary Society, 9, 13, 18, 20, 24  
 alternative fuels, 325–57  
 Ambrose, Jennifer, book review by, 191–94  
 Ames, Gregory, book review by, 182–83  
 Ames, Iowa, 36–39, 48–66, 325–57  
 Ames High School, 39  
 Ames Laboratory, 335  
 Ames Quality of Life Network, 356  
 Amphicyton Literary Society, 7, 8, 9, 10, 15, 23  
*Anamosa Penitentiary*, reviewed, 98–99  
 Andelson, Jonathan G., book review by, 80–82  
 Anderson, Peg, 150  
 Anfinson, John O., book review by, 190–91  
 Anthon, George, 343  
 Aonian Literary Society, 6, 7  
 Applied Physics Laboratory, 304–5  
 Apps, Jerry, books by, reviewed, 90–92  
 Argus (Project), 311–12, 314–18, 323  
 Aristotelian Literary Society, 7, 34  
 Armil, Jim, 125  
 Army, U.S., 225, 235  
 Arnold O. Chantland Resource Recovery Plant, 325–57  
 art, public, 36–66  
 Art Institute of Chicago, 39–40  
 Artley, Bob, and Rob Artley, book by, reviewed, 284–86  
 arts and crafts, 233  
 assimilation, Indian, 114–18  
*Asylum: Inside the Closed World of State Mental Hospitals*, reviewed, 276–78  
 Athena Literary Society, 7  
 Athletic Control, Board of, University of Iowa, 120, 130  
 Athletic Council, University of Iowa, 120  
 athletics, intercollegiate, 8, 111–31  
 Atkins, Annette, and Deborah L. Miller, book edited by, reviewed, 78–79  
 Audubon, Iowa, 238  
 Baker, H. Robert, book review by, 267–69  
 Balgeman, Jean, 244  
 Ball, George, 247–51, 253

- Bankers Life building, Des Moines, mural at, 47  
*Barns of Wisconsin*, reviewed, 91–92  
*Beauty Shop Politics: African American Women's Activism in the Beauty Industry*, reviewed, 288–90  
 Beckenbaugh, Terry L., book review by, 75–76  
 Beecher, Catherine, 135  
 Beecher, Mary Anne, book review by, 383–84  
 beer, 234–35  
 Belich, James, book by, reviewed, 258–60  
 Belting, Paul, 119–20, 130  
 Bennett, Richard E., et al., book by, reviewed, 264–65  
 Benton, Thomas Hart, 45  
 Beorlage, J., 244  
 Beranek, Jamie, book review by, 278–79  
 Bergman, Marvin, book review by, 78–79  
 Berkner, Lloyd V., 305  
 Berrier, Galin, book reviews by, 72–73, 167–68  
 Berry Seed Co., 251  
*Beyond the American Pale: The Irish in the West, 1845–1910*, reviewed, 171–72  
 Biddle, George, 46  
 Big Ten Conference, 111, 118, 120, 121, 128–30  
 Binkowski, Frederick P. *See* Kline, Kathleen Schmitt  
 Birmingham, Robert A., book by, reviewed, 161  
*Birth Control on Main Street: Organizing Clinics in the United States, 1916–1939*, reviewed, 92–94  
 Black, Dennis H., book by, reviewed, 168–69  
 Black, Susan Easton. *See* Bennett, Richard E.  
 blacksmiths, 216  
 Blackwell, Marilyn S., and Kristen T. Oertel, book by, reviewed, 271–73  
 Blair, Alma R., book reviews by, 161–63, 264–65  
 booming, 209  
 Boone County landfill, 338  
*Border War: Fighting over Slavery before the Civil War*, reviewed, 265–67  
 Bosworth, Walt, 242  
 Boynton, Virginia R., book review by, 87–89  
 Brenner, Anita, 41  
*The Brilliant Bandit of the Wabash: The Life of the Notorious Outlaw Frank Rande*, reviewed, 381–83  
 Britten, Thomas A., book review by, 270–71  
 Brodnax, David, Sr., book review by, 379–81  
 Bronfenbrenner, Urie, 152–53  
 Brookhaven National Laboratories, 306  
 Brosnan, Kathleen A., book review by, 377–79  
 Brown, Ken, book review by, 292  
 Brown, Robert C., 353–56  
 Bruce, Edward, 47, 49  
 Bruch, Ronal M. *See* Kline, Kathleen Schmitt  
 Brush, Frank, 22  
 Buckaloo, Derek N., book review by, 187–88  
 Buenker, John D., book review by, 179–80  
 Burgstahler, Herbert, 29  
 Butz, Earl, 331  
 Camp Algona, 230–47, 253–55  
 Camp Clarinda, 230–57; photo of, 230  
 Camp McCoy, 246, 249  
 cancer, 354  
 Cannon, Donald Q. *See* Bennett, Richard E.  
 Carlisle Indian School, 114–15  
 Carnegie Institution of Washington, 41, 44, 57, 59  
 Carson, Rachel, 330  
 Carter, Jimmy, 325–27, 340  
 Carver, Holly, book review by, 189–90  
 Castner, J. R., 334  
 Catholics, Roman, 215  
*Catlin's Lament: Indians, Manifest Destiny, and the Ethics of Nature*, reviewed, 69–70



- Cedar Rapids, Iowa, federal courthouse, mural at, 47
- Center for Sustainable Environmental Technologies, Iowa State University, 353
- Chantland, Arnold, 340, 344
- Chapala, Mexico, 41
- Chapman, Mike, book by, reviewed, 388–89
- Chapman, Sydney, 304, 305
- Charlot, Jean, 41–43, 45, 46, 61–63; illustration of mural by, 42
- Cherokee Nation, 112–14
- Chichen Itza, 41, 43, 59, 61, 63
- Chief Illiniwek, 130
- “A ‘Chief’ Year for the ‘Iowa Braves’: Mayes McLain and Native American (Mis)appropriation at the State University of Iowa,” 111–31
- child development, 142
- Chrestomathian Literary Society, 6, 7
- Chrichilles, Ted, 245
- Christ, Mark K., book by, reviewed, 75–76
- Christofilos, Nicholas Constantine, 314–15, 322; photo of, 316
- Christofilos effect, 315, 321
- Ciceronian Literary Society, 7
- Civil Rights Act (1964), 142
- Civil War Arkansas 1863: The Battle for a State*, reviewed, 75–76
- Clarinda, Iowa, 226, 230
- Clinton, Iowa, 238
- Clisophic Literary Society, 7; photo of, 16
- coal, 337, 342
- Cochran, Robert, book by, reviewed, 176–78
- Cohen, Mark, 354
- Cohen, Ronald D., book by, reviewed, 186–87
- cold war, 309, 318, 322–24, 331
- Collegian*, 20
- Collins, James M., book review by, 161
- commencement exercises, 15–16
- Commoner, Barry, 348–56
- Connett, Paul, 354
- Connolly, M. Caren, and Louis Wasserman, book by, reviewed, 275–76
- conservation, farmland, 327, 331, 340–43
- construction workers, 210
- corn: detasseling, 229, 255; picking, 251; shucking, 228
- Cornell College, 1–35; literary societies, photos of, 24, 35
- Cornellian*, 20
- Corps of Engineers, U.S. Army, 230–31
- Cottrell, Barbara J. *See* Larsen, Lawrence H.
- Coyoacan, Mexico, 42
- Cresco, Iowa, post office mural, 38, 55
- Cuban Missile Crisis, 319
- “‘The Cultivation of Corn in Mayan and Modern Times’: Lowell Houser’s Winning Design for the Ames Mural Competition,” 36–66
- Cutter, Barbara, book review by, 374–75
- Daily Iowan*, 122, 125, 127; illustrations from, 124, 126
- Danielson, C. H., 245
- The Dark Star of Itza*, illustration of frontispiece for, 48
- Dawes Commission, 113
- Dayton, Edith, 29
- Debate League, 23; Women’s, 23
- debates, collegiate, 9–10, 13, 17, 22–23
- Debating League, 10, 23
- DeKalb Agricultural Association, 228–29
- Delphian Literary Society, 7
- Delta New Hand Fraternity, 29
- Denial, Catherine J., book review by, 67–69
- Depression, Great, 36–39, 48–66, 140–41
- detasseling, corn, 229, 255
- Dewey, Melvil, 134
- Diedrich, Mark, book by, reviewed, 165–66
- dioxins, 348–56
- disease, 217
- Dobson, Melanie, book by, reviewed, 80–82

- Dodge, L. Mara, book review by, 98–99
- Donovan, Todd. *See* Redlawsk, David P.
- Douglas, Bill R., book review by, 273–75
- Drahtpost*, 246
- drama, 18–20
- Dramatic Club, University of Iowa, 20
- DuBois Club, 8
- Du Buque Visitor, 222
- Dubuque, Julien, 204
- Dubuque, Iowa, 201–24
- Dugan, Mark, book by, reviewed, 381–83
- Dunleith, IL, 202
- Earth Day, 330
- East Dubuque, IL, 202
- Eaton, Gordon, 150
- education: higher, 1–35, 132–60; women's, 132–60
- Ehrlich, Paul, 330
- Eikleberry, Sarah Jane: article by, 111–31; book review by, 388–89
- Eisenhower, Dwight David, 311, 314
- Ekberg, Carl J., books by, reviewed, 67–69, 368–69
- El Cajon, CA, 335–36
- Elliott, Kate, book review by, 69–70
- Emergency Farm Labor Office, 255
- Emmons, David M., book by, reviewed, 171–72
- Employment Service, U.S., 228, 236
- energy crisis, 330, 331–32, 345
- energy production, 325–57
- engineering, 344, 352, 353
- Environmental Cooperation, North American Commission for, 352
- Environmental Protection Agency, 327, 329, 335, 340, 346, 347, 349–50, 353
- environmentalism, 326–27, 330, 340–42, 347–56
- Erodelphian Literary Society, 5, 7, 8, 13, 18, 20, 21, 22, 33
- Etler, Vernan, 51
- Etulain, Richard W., book edited by, reviewed, 375–77
- Eulalian Literary Society, 7
- Evans, R. Tripp, book by, reviewed, 358–67
- Evans, Rod, book by, reviewed, 383–84
- The Evolution of Corn*, 36–66; preliminary sketch, 38; photo of, 53
- Explorer* 1, 308–10, 323
- Explorer* 2, 308
- Explorer* 3, 308, 310, 323
- Explorer* 4, 312, 313 (photo), 314, 315, 318, 323
- Explorer* 15, 320
- Extension Service, 139, 140–41, 228, 236–37, 238, 249
- family and consumer science. *See* home economics
- Farm Bureau, 239
- farm labor shortages, 226–29, 236, 240, 249
- farmland crisis, 330
- farmland preservation, 327, 331, 340–43
- Fausnaugh, Jean Leaneagh, 255–56
- Fellows, Samuel, 9
- feminism, second-wave, 144
- Ferdinand Hayden: A Young Scientist in the Great West, 1853–1855*, reviewed, 371–72
- Fisher, Ray, 329, 356
- Fisher Theater, Detroit, 44; photo of, 45
- Fitzpatrick, Jim, 242–43
- flax, 239
- Fleming, James Rodger, article by, 301–24
- flour mills, 217
- food crisis, 331
- football, 111–31
- For Home and Country: World War I Propaganda and the Home Front*, reviewed, 384–86
- For Labor, Race, and Liberty: George Edwin Taylor, His Historic Run for the White House, and the Making of Independent Black Politics*, reviewed, 379–81
- For the Freedom of Her Race: Black Women and Electoral Politics in Illinois, 1877–1932*, reviewed, 87–89
- Forensic Council, 23; Women's, 23

- Forensic League, 23; Women's, 23  
 Fort Cook, NE, 253–54  
 fraternities, college, 8, 26–33  
 Freed, Ernest, 52, 54  
 Fremont County, 228, 238, 250, 252–53  
*A French Aristocrat in the American West: The Shattered Dreams of De Lassus de Luzières*, reviewed, 368–69  
 Fritz, Eugene, 124  
 "From Pioneer Days to the Dawn of Industrial Relations: The Emergence of the Working Class in Dubuque, 1833–1855," 201–24  
*Frontier Feminist: Clarina Howard Nichols and the Politics of Motherhood*, reviewed, 271–73  
 Fry, Norman E., book review by, 391–92  
 Fryer, Heather, book by, reviewed, 94–96  
 Fryxell, Fritiof M., book by, reviewed, 371–72  
*Fugitive Justice: Runaways, Rescuers, and Slavery on Trial*, reviewed, 267–69  
 garbage disposal, 325–57  
 Garland, Hamlin, 34  
 Gates, R. F., 38  
 Geneva Prisoner of War Convention, 226, 232, 248  
 geoengineering, 324  
 George-Barton Act (1946), 140  
 George-Reed Act (1929), 140  
 German immigrants, 214–15  
 German prisoners of war, 225–47, 252–57  
 gerontology, 142  
 Gilbert, Iowa, 338  
 Gill, Tiffany M., book by, reviewed, 288–90  
 Gillette, Guy M., 230  
 Gish, John, 228  
*Gladys Black: The Legacy of Iowa's Bird Lady*, reviewed, 189–90  
 Glassgow, Will, 125  
 Goddard, Robert H., 302  
 Goitia, Francisco, 41  
*Good, Reliable, White Men: Railroad Brotherhoods, 1877–1917*, reviewed, 83–85  
 Grant, H. Roger, book by, reviewed, 182–83  
*Grant Wood: A Life*, reviewed, 358–67  
 Great Society programs, 142  
 Greeley, CO, 253  
 Grell, Louis, 40  
 Gumm, Angie, article by, 325–57  
 Haas, Gerald, 243  
 Haines, Richard, 38, 54; illustration of entry in Ames mural competition, 54, 56  
 Hajo, Cathy Moran, book by, reviewed, 92–94  
 Hale, Susan, 9  
 Hallwas, John E., book review by, 381–83  
 Hamlin Garland Literary Society, 6, 7, 33–34  
*Hamlin Garland, Prairie Radical: Writings from the 1890s*, reviewed, 175–76  
 Hamre, James S., book review by, 173–74  
 Hannibal, MO, 238  
 Hardin, Garrett, 330  
 Harkin, Tom, 328, 337  
 Harlan, Iowa, post office mural, 38  
 Harper, Katherine, book review by, 281–82  
 Harrold, Stanley, book by, reviewed, 265–67  
 Harstad, Peter T., book by, reviewed, 269  
 Haskell, Dudley C., 114  
 Haskell Institute, 111, 114–18, 129  
 Hathaway, Dale, 343  
 Hauptman, Laurence M. *See* McLester, L. Gordon, III  
 Hausdoerffer, John, book by, reviewed, 69–70  
*Hearts Beating for Liberty: Women Abolitionists in the Old Northwest*, reviewed, 374–75  
 hemp, 229, 239  
 Hempstead, Long Island, 348–49  
 Hendrickson, Gordon O., book review by, 80

- Herring, Clyde, 235  
 Hesperian Literary Society, 5–6, 7,  
 13–14, 19, 20, 22, 25; poster of, 15  
 Hevel, Michael S., article by, 1–35  
 Heying, Hilarius, 332  
 higher education, 1–35, 132–60  
 Hilton, Helen LeBaron, 145  
*Hinterland Dreams: The Political  
 Economy of a Midwestern City*,  
 reviewed, 377–79  
 history painting, 39–40, 49, 57, 59  
*Hmong America: Reconstructing Com-  
 munity in Diaspora*, reviewed, 389–  
 90  
*Hoboes: Bindlestiffs, Fruit Tramps, and  
 the Harvesting of the West*, reviewed,  
 280–81  
 Hodson, Elmer, 251  
 Hofsommer, Don L.: book by, re-  
 viewed, 278–79; book review by,  
 71  
 Holz, Rose, book review by, 92–94  
 home economics, 132–60  
 Home Economics Association,  
 American, 135, 144–47, 149, 154  
 Home Economics, Bureau of, 140  
*Homer Croy: Corn Country Travel  
 Writing, Literary Journalism,  
 Memoir*, reviewed, 281–82  
 Homeric Literary Society, 7  
 Hopley, Wayland, 244–45  
*Horse-Drawn Days: A Century of Farm-  
 ing with Horses*, reviewed, 90–91  
 Houser, Lowell, 36–66  
 Hove, Merlin, 346–47  
 Hughes, Henry, 123  
 Hurt, R. Douglas, book review by,  
 171–72  
 “‘If it did not exist, it would have to  
 be invented’: Home Economics in  
 Transition at Iowa’s Regents Insti-  
 tutions,” 132–60  
 Illinois Central Railroad, 202  
 immigrants and immigration, 212,  
 214, 236  
 incinerators, 350, 354  
 Independence, Iowa, post office mu-  
 ral, 38  
 Independence, MO, 238  
*Indian Art of the United States*, 58  
 Indians: American, 38–39, 52, 111–31;  
 Inuit, 352; Mexican, 40. *See also*  
 Mayan art and culture  
 Ingwerson, Burton, 118, 120, 129, 130  
*Injun* satellites, 320  
 International Geophysical Year, 305–8,  
 312, 314, 317, 318, 321  
 Inuit Indians, 352  
 “Iowa Enters the Space Age: James  
 Van Allen, Earth’s Radiation Belts,  
 and Experiments to Disrupt Them,”  
 301–24  
 Iowa State Agricultural College. *See*  
 Iowa State University  
 Iowa State College. *See* Iowa State  
 University  
 Iowa State Fair, 340  
 Iowa State Normal School. *See* Uni-  
 versity of Northern Iowa  
 Iowa State Teachers College. *See*  
 University of Northern Iowa  
 Iowa State University, 39, 46, 133–35,  
 137, 139, 143, 146, 147, 149, 155–60,  
 331, 332, 334, 335, 341, 344, 353  
 Iowa Student Public Interest Re-  
 search Group, 335  
 Iowa Wesleyan College, 303–4  
 Irish immigrants, 214  
 Irving Institute, 7, 13, 20, 21, 22, 28,  
 34; posters of, 27  
 Irving Literary Society, 7  
 Italian prisoners of war, 229  
 Ivy League football, 118  
 Iwai, Ernest N., 122  
 Jack, Zachary Michael: book edited  
 by, reviewed, 281–82; book review  
 by, 290–91  
 Jackson, Everett Gee, 40–41, 43  
 James, Rea, 51  
 Janik, Erika, book by, reviewed, 179  
 Japanese prisoners of war, 246–53,  
 256  
 Jason (Project), 316  
 Jergenson, Becky, 243  
 Jergenson, Constance, 243  
 Jessup, Walter, 119  
 Johnson, Dorothy, 241, 243, 256  
 Jones, Harry Donald, 47, 51  
 Jones, Howard, 119  
 Juno 1 missile, 308

- Kahn, Albert, 44  
 Kaib, Edward, 233  
 Kastor, Peter J., book by, reviewed, 369–71  
 Kaul, Donald, 325–26, 357  
 Kay, Gwen, article by, 132–60  
 Keesecker, Andrew, 221–22  
 King, Earl, 341  
 Kingsbury, Celia Malone, book by, reviewed, 384–86  
 Kline, Kathleen Schmitt, et al., book by, reviewed, 80  
 Knock, Michael, book review by, 165–66  
 Knox College, 22  
 Kossuth County, 227–28, 233, 237, 239  
 Krehbiel, Albert H., 40  
 Ku Klux Klan, 127–28  
  
 labor, 201–24  
 labor shortages, 226–29, 236, 240, 249  
*Lagerzeitung*, 246  
 Laika, 308  
 Lake Placid Club, 134  
 landfills, 329, 334, 338, 340, 346  
 Langfitt, Merrill, 249, 255  
 Langworthy, Lucius, 205  
 Laning, Edward, 47  
 Lappas, Thomas J., book review by, 368–69  
 Larsen, Lawrence H., and Barbara J. Cottrell, book by, reviewed, 372–73  
 Larsen, Sarah A., and Jennifer M. Miller, book compiled by, reviewed, 187–88  
 Lass, William E., book review by, 163–65  
 Lathrop, Alan K., book by, reviewed, 181–82  
 Lauck, Jon K., book by, reviewed, 76–78  
 Lawrence Berkeley Lab, 314  
 Lawrence, KS, 114  
 lead mining, 203–8; illustrations of, 206, 207  
 League of Women Voters: Ames, 334; Iowa, 342  
 Lecture Bureau, University of Iowa, 21  
*Legal Executions in the Western Territories, 1847–1911*, reviewed, 169–71  
 Leopold, Aldo, 342  
 Levi, George, 117  
 Liberty, MO, 238  
 libraries, college, 16–17  
*Lincoln Looks West: From the Mississippi to the Pacific*, reviewed, 375–77  
 Linn, Frank J., 59  
 Literary Klub, Cornell College, 28  
 literary societies, 1–35  
*Little Paul: Christian Leader of the Dakota Peace Party*, reviewed, 165–66  
 Lobdell, Arthur, 241, 253, 254, 255  
 Lochrie, Elizabeth, 52  
 Loewenberg, Gerhard, 153, 154, 155  
 Lord, Isabel Garland, book by, reviewed, 83  
 Lorenzsonn, Axel S., book by, reviewed, 71  
 Loss, Mike, 242  
 Lotchin, Roger W., book review by, 94–96  
 Louick-Thrams, Michael, 246  
*Louise Pound: Scholar, Athlete, Feminist Pioneer*, reviewed, 176–78  
*Love Finds You in Homestead, Iowa*, reviewed, 80–82  
 Lovell, Bernard, 324  
 Lovoll, Odd S., book by, reviewed, 173–74  
 Lubet, Steven, book by, reviewed, 267–69  
 Ludwig, George, 307, 308, 310; photo of, 313  
 Lyftogt, Kenneth L., book review by, 168–69  
 Lynch, Mignon Wray, 51  
 Lyons, Stephen J., book by, reviewed, 191–94  
  
 MacLean, George, 2  
*Making Capitalism Safe: Work Safety and Health Regulation in America, 1880–1940*, reviewed, 85–87  
*The Man Who Wrecked 146 Locomotives: The Story of "Head-On Joe" Connolly*, reviewed, 89–90  
 manufacturing, 213  
 Margaret Fuller Ossoli Literary Society, 7  
 Marty, Gayla, book by, reviewed, 290–91

- Mary Church Terrell Club, 8  
*The Massacre in the Main Temple*, 42  
 mass-burn waste-to-energy plants, 327, 333, 340, 345, 347–48  
 Materson, Lisa G., book by, reviewed, 87–89  
 Matthias, Bill, book by, reviewed, 292  
 Mayan art and culture, 38–39, 43–44, 47, 52, 56–61, 64–65  
 Mayan Corn God, illustration of, 60  
 McAndrew, Malia, book review by, 288–90  
 McCullough, Joseph B., book review by, 175–76  
 McFarland, Marion, 9  
 McIlwain, Carl, 310; photo of, 313  
 McLain, Levi, 114  
 McLain, Martha, 114  
 McLain, Mayes, 111–31; photo of, 112; newspaper image of, 126  
 McLester, L. Gordon, III, and Laurence M. Hauptman, book edited by, reviewed, 386–88  
 Mechanics' Institute, 220–21  
*Memories of a Farm Kitchen*, reviewed, 284–86  
*Memory of Trees: A Daughter's Story of a Family Farm*, reviewed, 290–91  
 Men's Forum (Iowa State Normal School), 7, 34  
 Mergenthal, Rebekah M. K., book reviews by, 258–60, 265–67  
*The Methodist Experience in America: A History*, reviewed, 273–75  
 Metropolitan Museum of Art, New York City, 46  
 Mexican art, 39–48, 63  
 Mexican immigrants, 236  
 Mexico City, 43  
 Miller, Deborah. *See* Atkins, Annette  
 Miller, Jennifer M. *See* Larsen, Sarah  
 Miller, Judith, book by, reviewed, 80–82  
 mills, 209, 211, 217  
 Miltonian Literary Society, 7, 11, 23; photo of, 14  
 Miner, Craig, book by, reviewed, 262–64  
 Miners Bank, Dubuque, 203; illustration of currency of, 204  
*Miners' Express*, 203, 222  
 mining, lead, 203–8; illustrations of, 206, 207  
*The Minneapolis & St. Louis Railway: A Photographic History*, reviewed, 278–79  
*Minnesota Architects: A Biographical Dictionary*, reviewed, 181–82  
*The Mississippi: A Visual Biography*, reviewed, 190–91  
*The Missouri Mormon Experience*, reviewed, 161–63  
*Monster Fire at Minong: Wisconsin's Five Mile Tower Fire of 1977*, reviewed, 292  
 Moravetz, Kenny, 346  
 Morgan, Hans, 230  
 Morgan, Robin, 144  
 Morgans, James Patrick, book by, reviewed, 72–73  
 Morley, Sylvanus Griswold, 43, 44, 57, 60; illustration from article by, 60  
 Morrill Land Grant Act (1862), 133  
 Morris, Ann Axtell, 43  
 Morrow, Dwight, 46  
 Morser, Eric J., book by, reviewed, 377–79  
*A Most Magnificent Machine: America Adopts the Railroad, 1825–1862*, reviewed, 262–64  
 Mount Pleasant, Iowa, 303–4  
 Mouser, Bruce L., book by, reviewed, 379–81  
 Mull, Carol E., book by, reviewed, 167–68  
 Mulnix, Ione, 25  
 murals, 36–66  
*Murals of Iowa, 1886–2006*, reviewed, 282–84  
 Murdock, Peggy, 346–47  
 Murphy, J. Thomas, book review by, 269  
 Murphy, June, 150  
 music, 17–18, 235  
 Mutel, Cornelia F., book edited by, reviewed, 191–94  
 Naegele, Daniel, book review by, 275–76  
 Nagurski, Bronko, 125–26; newspaper image of, 126

- Narber, Gregg R., book by, reviewed, 282–84  
*A Nation within a Nation: Voices of the Oneidas in Wisconsin*, reviewed, 386–88  
 National Collegiate Athletic Association (NCAA), 129–39  
 nativity scene, 233  
*The Nauvoo Legion in Illinois: A History of the Mormon Militia, 1841–1846*, reviewed, 264–65  
 Neotrophian Literary Society, 7  
 Nevada, Iowa, 356  
 New Deal art projects, 36–39, 46–66  
 Newlin, Keith, book edited by, reviewed, 83  
 newspapers: campus, 20–21, 122–27; German POW, 246  
 Nichols, S. A., 65  
 Nitz, L. A., 239  
 Noe, Marcia, book review by, 83  
*The Normal Eyte*, 21  
 Normal Schools, Inter-State League of, 23  
 Normille, John, 53  
*North Country: The Making of Minnesota*, reviewed, 163–65  
 Norton, Dick, 242  
*Norwegian Newspapers in America: Connecting Norway and the New Land*, reviewed, 173–74  
 Nu Omicron Nu sorority, 30  
 nurseries, 252  
 Nussel, Jill M., book review by, 284–86  
 nutrition, 140, 142  
 Nygard, Travis E., review essay by, 358–67  
  
 Oberg, Dora, 65  
 Octave Thanet Literary Society, 6, 7  
 Oertel, Kristen T. *See* Blackwell, Marilyn S.  
*The 1,000-Year Flood: Destruction, Loss, Rescue, and Redemption along the Mississippi River*, reviewed, 191–94  
 Operation Deep Freeze, 308  
 “Orange” bomb, 314  
 Oratorical Association, 23  
 Orio Literary Society, 7; photos of, 16, 19  
 Orozco, José Clemente, 41, 45, 46, 47  
 Orrick, MO, 238  
 Orser, Joseph Andrew, book review by, 389–90  
 Orwig, Louise, 37, 53, 54, 55  
 Owens, Patricia Ann, book review by, 375–77  
  
 Paddock, William C., 331  
 Page County, 227–28, 235, 237–38, 239, 242, 249, 250, 252, 253, 255  
 Painting and Sculpture, U.S. Treasury Department Section of, 36–39, 48–66  
*Palaces on the Prairie*, reviewed, 383–84  
 Panic of 1837, 203  
 Pape, Oran, 125  
 paper recycling, 339, 347  
 Parmenian Literary Society, 7  
 Parratt, Catriona, book review by, 176–78  
 Paskoff, Paul F., book review by, 372–73  
 Passet, Joanne, book review by, 271–73  
 Patrick, George, 21  
 Pawley, Christine, book by, reviewed, 286–88  
 Payne, Christopher, book by, reviewed, 276–78  
 Peairs, Harvey B., 115, 116  
 Peat Marwick, 154–57, 159  
*People of the Sturgeon: Wisconsin's Love Affair with an Ancient Fish*, reviewed, 80  
*Perimeters of Democracy: Inverse Utopias and the Wartime Social Landscape in the American West*, reviewed, 94–96  
 Peterson, Fred W., book review by, 181–82  
 Pfeifer, Michael J., book review by, 169–71  
 Phillips, C. A., 230  
 Philomathean Literary Society, 5, 6, 7, 10, 11, 13, 18, 20, 22, 24, 34  
 Pi Beta Phi sorority, 28  
 Pickering, William H., photo of, 309  
 Pittman, Von, book review by, 184–85  
 Pizer, Donald, book edited by, reviewed, 175–76

- planing mills, 211  
 plastics, 347, 348, 350  
 Pohlman, John, 344  
 pollution, air, 340, 347–56  
 poor relief, 218  
*The Population Bomb*, 330  
 post office murals, 36–39, 50–66  
 Poulter, Thomas, 303–4  
 poverty, 218  
 powwows, 117  
*Prairie Republic: The Political Culture of Dakota Territory, 1879–1889*, reviewed, 76–78  
 Pratt, Richard Henry, 115, 116  
 preservation, farmland, 327, 331, 340–43  
 prisoners of war, 225–57  
 Pritchard, Linda K., book review by, 260–62  
*Profiles of Valor: Iowa's Medal of Honor Recipients of the Civil War*, reviewed, 168–69  
 Promethian Literary Society, 7  
 Pryor, OK, 113  
 public art, 36–66  
 "Public Displays of Student Learning: The Role of Literary Societies in Early Iowa Higher Education," 1–35  
 Public Utilities Regulatory Policies Act (1978), 345  
 Public Works of Art Project, 46–47  
 Purnell Act (1925), 140  
 Quarles, Donald, 317  
 racism, 111–31, 247–51  
 radiation belts. *See* Van Allen Belts  
 radio, 33  
*Radio's Hidden Voice: The Origins of Public Broadcasting in the United States*, reviewed, 184–85  
 rafting, 209; illustration of, 210  
 Randolph, Scott E., book review by, 262–64  
 Rashid, Bob. *See* Kline, Kathleen Schmitt  
 Rasmussen, Chris, book review by, 89–90  
 Ray, Ernie, 310, 311  
*Reading Places: Literacy, Democracy and the Public Library in Cold War America*, reviewed, 286–88  
 recycling, 325–57  
 Redlawsk, David P., et al., book by, reviewed, 391–92  
 refuse management, 325–57  
 Regents, Iowa Board of, 132, 138–39, 149, 150, 154–57, 159  
 "Reinterpreting the Life and Art of Grant Wood: A Review Essay," 358–67  
 Reisdorff, James J., book by, reviewed, 89–90  
 religion, 215, 233  
*Replenishing the Earth: The Settler Revolution and the Rise of the Anglo-World, 1783–1939*, reviewed, 258–60  
 resource recovery, 325–57  
 Rhoterian Literary Society, 7  
 Richards, Ellen Swallow, 134, 136  
 Richey, Russell, et al., book by, reviewed, 273–75  
 Rienow, Robert E., 128  
 Riney-Kehrberg, Pamela, book review by, 90–91  
 Ringgold County, 251  
 river rafting, 209; illustration of, 210  
 Rivera, Diego, 45, 46, 47  
 Roberts, Brian, book review by, 186–87  
 Robertson, Breanne: article by, 36–66; book review by, 282–84  
 Robertson, Stacey M., book by, reviewed, 374–75  
 Rockefeller Center, 46, 47  
 Rockoons, 306–7  
 Rogers, Donald W., book by, reviewed, 85–87  
 Rohrer, S. Scott, book by, reviewed, 260–62  
 room and board rates, 219  
 Roosevelt, Theodore, 116  
 Rowan, Edward B., 37, 50, 54, 55, 56, 62, 63, 66  
 Rowe, Kenneth E. *See* Richey, Russell  
 Sac County, 229  
 St. Louis, MO, 333, 335  
 Sanford, Horatio W., 212



- sawmills, 209  
 Scharnau, Ralph, article by, 201–24  
 Schittges, Wilhelm, 244  
 Schmidt, James D., book review by, 85–87  
 Schmidt, Jean Miller. *See* Richey, Russell  
 Schmidt, Kimberly D., book review by, 96–98  
 School Lunch Act, National (1946), 140  
 Scott, Quinta, book by, reviewed, 190–91  
 Seerley, Homer, 31  
 Severs, Michael D., book review by, 371–72  
 Sexton, David Warren, 52  
 Shakesperean Circle, 7, 18, 34  
 Shenandoah, Iowa, 252  
 Sherman Nursery, 237  
 Shey, Jean Balgeman, 244  
*A Short History of Wisconsin*, reviewed, 179–80  
 Shortridge, James R., book review by, 91–92  
 Sierra Club, 326  
*Silent Spring*, 330  
 Simonsen, Jane, book review by, 276–78  
 Slotten, Hugh Richard, book by, reviewed, 184–85  
 “‘A Small Town with a Pretty Big Idea’: How Ames, Iowa, Came to Have the Most Enduring Resource Recovery Plant in the United States,” 325–57  
 smelting, lead, 207  
 Smith, C. L., 65  
 Smith, Stuart, 329, 334  
 Smith, Thomas G., 129  
 Smith-Hughes Vocational Act (1917), 133, 139  
 Smith-Lever Act (1914), 139  
 Snavelly, Richard, and Steve Wendl, book by, reviewed, 98–99  
 Solid Waste Management Association, 345–46  
*Somewhere to Belong*, reviewed, 80–82  
 sororities, college, 8, 26–33  
 Soviet Union, 301, 302, 308, 311, 312, 319, 320, 322–23, 331  
 space research, 301–24  
 Spencer, Oliver, 8  
 Spencer, Thomas M., book edited by, reviewed, 161–63  
 Spinden, Herbert, 58  
*Spirits of Earth: The Effigy Mound Landscape of Madison and the Four Lakes*, reviewed, 161  
 sports, 8, 111–31, 233–34  
*Sputnik*, 301, 302, 308, 322, 323  
 Stagg, Amos Alonzo, 130  
 Star Literary Society, 7, 17, 23  
 Starfish Prime (Project), 311, 319–21, 323  
 State University of Iowa. *See* University of Iowa  
*The State We’re In: Reflections on Minnesota History*, reviewed, 78–79  
*Stealing Indian Women: Native Slavery in the Illinois Country*, reviewed, 67–69  
*Steam and Cinders: The Advent of Railroads in Wisconsin, 1831–1861*, reviewed, 71  
*Steamboats West: The 1859 American Fur Company Missouri River Expedition*, reviewed, 372–73  
 Steinson, Barbara Jean, book review by, 384–86  
 Stickroth, Harry I., 40  
 Stone, Larry A., and Jon W. Stravers, book by, reviewed, 189–90  
 Story County, 329–30, 334, 338, 340, 345, 346  
 Stowe, Harriet Beecher, 135  
 Strathe, Herman, 244  
 Stravers, Jon W. *See* Stone, Larry A.  
*Students’ Offering*, 20  
 Styery, Wilhelm D., 250  
*A Summer to Be: A Memoir by the Daughter of Hamlin Garland*, reviewed, 83  
 Summers, Felix, 51, 54  
 Sunny Time Energy, 332  
 Sweeney, Dennis, 335  
 synfuels, 325–26  
 Tabor, Richard B., 38  
 Taillon, Paul Michel, book by, reviewed, 83–85  
 Tax Reform Act (1986), 345

- Taylor, Joan Bessman, book review by, 286–88  
 Taylor, Steven J., book by, reviewed, 96–98  
 Taylor, William Edwin, 128  
 “Teak” bomb, 313–14  
 Temple, Jerry, 337  
 Terrestrial Magnetism, Department of, Carnegie Institution, 303–4  
 Thalian Literary Society, 7  
 theater, 18–20  
 Thorpe, Jim, 115, 123; newspaper image of, 124  
 Timm, Chad W., article by, 225–57  
 Tolbert, Caroline J. *See* Redlawsk, David P.  
 Tomlinson, Dorothea, 51, 54; illustration of entry in Ames mural competition, 51  
 Townsend, Mary Bobbitt, book by, reviewed, 73–74  
 trade unions, 221, 223  
 “Tragedy of the Commons,” 330  
 Treu, Nancy, 346  
*Triumph and Tragedy: The Inspiring Stories of Four Football Legends*, Fred Becker, Jack Trice, Nile Kinnick, Johnny Bright, reviewed, 388–89  
 Tsar Bomba, 319  
 Tull, Clyde, 19  
*Twilight Rails: The Final Era of Railroad Building in the Midwest*, 182–83  
 Typographical Union, 221, 223
- The Underground Railroad in Michigan*, reviewed, 167–68  
*The Underground Railroad on the Western Frontier: Escapes from Missouri, Arkansas, Iowa and the Territories of Kansas, Nebraska and the Indian Nations, 1840–1865*, reviewed, 72–73  
 unions, trade, 221, 223  
 University of Chicago, 121, 124, 130  
 University of Illinois, 130  
 University of Iowa, 1–35, 111–31, 137, 138, 139, 143, 144, 146–49, 151–57, 159, 160, 304, 306, 312, 318  
 University of Minnesota, 22, 111, 124–25  
 University of Northern Iowa, 1–35, 133–35, 137, 147, 155, 156, 157, 160  
 University of Wisconsin, 22  
 University Theatre, University of Iowa, 20  
 V-2 rockets, 302, 305, 321; photo of, 303  
 Van Allen, Abigail Halsey, 305  
 Van Allen, James, 301–24; photos of, 309, 313, Fall cover  
 Van Allen Belts, 301, 310, 314, 319–24  
 van de Logt, Mark, book by, reviewed, 270–71  
 Vang, Chia Youyee, book by, reviewed, 389–90  
 Vanguard program, 307, 308, 310  
 Vernall, Frank, 51  
 Vernov, Sergei, 302, 308, 322  
 Vetter, Juanita, 342  
*The Vidette*, 20  
*Vidette-Reporter*, 20  
 vocational education, 133–34, 139–40  
 von Braun, Wernher, photo of, 309
- Wadsworth, KS, 238  
 wages, 214, 218, 223, 233–34, 236, 241, 248, 250, 252  
 Walker, David A., book reviews by, 76–78, 369–71  
 Walker, Harley, 238  
*Wandering Souls: Protestant Migrations in America, 1630–1865*, reviewed, 260–62  
 Wapello, Iowa, 238  
 War Department, 237, 238, 250, 253  
 War Food Administration, 226, 237, 255  
 War Manpower Commission, 236, 250  
*War Party in Blue: Pawnee Scouts in the U.S. Army*, reviewed, 270–71  
 Warner, Glenn Scobey “Pop,” 115  
 Wasserman, Louis. *See* Connolly, M. Caren  
 waste management, 325–57  
 waste-to-energy plants, 325–57  
*A Watershed Year: Anatomy of the Iowa Floods of 2008*, reviewed, 191–94  
 Watson, Forbes, 49, 50  
*We Saw the Elephant: Overland Diaries from the Lander Trail*, reviewed, 269  
 Weeks, Carl, 53, 54, 55

- Welch, Mary, 137  
 Wellhausen, Vera, 242  
 Wendl, Steve. *See* Snavelly, Richard  
 West Point, NE, 238  
 Wexler, Harry, 306  
 Wheeler, David, 9  
*When Tillage Begins, Other Arts Follow*, 46  
 Whitby Literary Society, 7  
*Why Iowa? How Caucuses and Sequential Elections Improve the Presidential Nominating Process*, reviewed, 391–92  
 Wiegand, Paul, 347  
*William Clark's World: Describing America in an Age of Unknowns*, reviewed, 369–71  
 Williams-Searle, John, book review by, 83–85  
 Wilson, R. Michael, book by, reviewed, 169–71  
 Wingerd, Mary Lethert, book by, reviewed, 163–65  
*Wisconsin Vietnam War Stories: Our Veterans Remember*, reviewed, 187–88  
*Wisconsin's Own: Twenty Remarkable Homes*, reviewed, 275–76  
 women's education, 132–60  
 Women's Equity Action League, 142  
 Women's Land Army, 226  
 Wood, Grant, 46, 358–67  
 woodworking, 208–11  
 Wooster, Robert, book review by, 73–74  
*Work and Sing: A History of Occupational and Labor Union Songs in the United States*, reviewed, 186–87  
 working class, 201–24  
 working conditions, 222–23  
 "Working with the Enemy: Axis Prisoners of War in Iowa during World War II," 225–57  
 World War I, 117, 140  
 World War II, 140, 225–57, 304, 321  
 Wyman, Mark, book by, reviewed, 280–81  
 Xanthos Social Club, 30  
*Yankee Warhorse: A Biography of Major General Peter Osterhaus*, reviewed, 73–74  
 "Yucca" bomb, 313  
 Zakhar, Renee J., book review by, 386–88  
 Zetagathian Literary Society, 1–2, 5, 7, 13, 17, 19, 20, 21, 22, 25, 26–28, 33, 34; photo of room of, 12  
 Zetaetheans Literary Society, 7



EACH ISSUE of *The Annals of Iowa* brings to light the deeds, misdeeds, and accomplishments of our predecessors and shows how they fit into the intricate mosaic of Iowa's past. Its in-depth articles will satisfy even the most serious explorer of Iowa's past.

Anyone with a serious interest in Iowa history will gain valuable perspective from the pages of the *Annals*. Give it as a gift to a friend or relative. Check to see if your public, school, or academic library subscribes; if they don't, encourage them to do so or, better yet, donate a subscription.

✂-----

- ☐ *Annals of Iowa* Subscription
- ☐ New   ☐ Renewal   ☐ Gift\*
- ☐ One year, \$24.95
- ☐ Two years, \$44.95
- ☐ Three years, \$64.95

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Make check payable to the State Historical Society of Iowa and return with this coupon (or a photocopy of it) to:

Subscriptions  
State Historical Society of Iowa  
402 Iowa Avenue  
Iowa City IA 52240

- ☐ Please send information on membership in the State Historical Society of Iowa.

\*For gift subscriptions, write the recipient's name and address on this form, and include your name and address on the back or on a separate sheet of paper. Also indicate how you would like your gift card signed.

## Contributors

JAMES RODGER FLEMING (B.S. in astronomy from Penn State; M.S. in atmospheric science from Colorado State; and Ph.D. in history from Princeton University) is professor of science, technology, and society at Colby College. His latest book, *Fixing the Sky: The Checkered History of Weather and Climate Control* (Columbia University Press, 2010), won the Hacker Prize from the Society for the History of Technology. He is writing a biography of the CO<sub>2</sub> molecule.

ANGIE GUMM is working as an independent scholar in Wichita, Kansas. She earned her Ph.D. in agricultural history and rural studies from Iowa State University in May 2010. Her book on the national history of resource recovery is under advance contract with the University of Massachusetts Press.

TRAVIS E. NYGARD is assistant professor of art history at Ripon College in Wisconsin. His doctoral dissertation (University of Pittsburgh, 2009) was "Seeds of Agribusiness: Grant Wood and the Visual Culture of Grain Farming, 1862–1957."

## The State Historical Society of Iowa

*The Annals of Iowa* is published quarterly by the State Historical Society of Iowa, the Historical Division of the Department of Cultural Affairs of the State of Iowa. The society operates from two centers, Des Moines and Iowa City. A museum, research library, state archives, special collections, community programming, historic preservation, and membership programs are located at 600 East Locust Street, Des Moines, IA 50319, phone 515-281-5111. Publications, a research library, and special collections are located at 402 Iowa Avenue, Iowa City, IA 52240, phone 319-335-3916. The society also operates several historic sites across the state.

## Subscriptions

Subscriptions to *The Annals of Iowa* are \$24.95 per year; single copies are \$7. Contact Publications, State Historical Society of Iowa, 402 Iowa Avenue, Iowa City, Iowa 52240.

*The Annals* is available on microfilm from Xerox University Microfilms, 300 N. Zeeb Road, Ann Arbor, Michigan 48106.

## Submissions

*The Annals of Iowa* invites the submission of articles on Iowa history and on subjects concerning the nation and the Midwest with an Iowa focus. State, local, and regional studies of political, economic, social, cultural, intellectual, institutional, ethnic, religious, material culture, archeological, and architectural history are welcome. The *Annals* also reviews significant books on related topics. A detailed set of editorial guidelines is available on request. All correspondence concerning editorial matters should be addressed to:

Marvin Bergman, editor  
*The Annals of Iowa*  
State Historical Society of Iowa  
402 Iowa Avenue  
Iowa City IA 52240

*The Annals of Iowa* is a participating member of the Conference of Historical Journals.



Printed on  
Recycled Paper



The acid-free paper used in this publication meets the minimum requirements of the American National Standard for Information Services—Permanence of Paper for Printed Library Materials, ANSI Z739.48B1984.