Over 200 SIA members converged on Minneapolis-St. Paul for the SIA’s 42nd Annual Conference, May 30 to June 2. This was the SIA’s second visit to the Twin Cities, the first being at the 12th Annual Conference in 1983. Conference participants received a friendly welcome from the local host committee and volunteers who organized a full slate of tours and paper sessions. The conference headquarters was the historic St. Paul Hotel, which opened in 1910 and was restored to elegance in 1982.

At the Thursday evening opening reception, Stephen Elliott, Director of the Minnesota Historical Society, welcomed the SIA, and Larry Millett, author and historian, offered a presentation on the industrial heritage of the Twin Cities. This heritage is closely tied to the Mississippi River. St. Paul was an active riverboat landing well before the first steam locomotive arrived in 1861, while the St. Anthony Falls, straddled by Minneapolis, powered sawmills and flour mills, giving rise to industry giants Pillsbury and General Mills. Railroads, particularly James J. Hill’s Great Northern Ry., linked the Twin Cities to farm communities across the northern tier of the U.S. from Minnesota to Montana, spurring the cities’ rapid growth. Fittingly, the SIA reception was held at the Minnesota Club, where Hill and other leaders of business and industry often met to socialize and eat when they were in the city.

The schedule of this year’s conference followed the traditional format of pre-conference tours on Thursday, tours on Friday, paper sessions and the Annual Business Meeting on Saturday, and post-conference tours on Sunday. Nearly a dozen members graciously volunteered to report for SIAN, resulting in the following tour summaries and photographs.

*Thursday Tour 1: Summit Avenue and James J. Hill House.* Beginning in the 1880s, Summit Ave., located high above...
the Mississippi on the west side of St. Paul, became a prime address of the city's well-to-do, who built a succession of grand houses along the broad, tree-lined street. Grandest of all was the massive Richardsonian Romanesque mansion completed in 1891 to the design of Peabody, Stearns & Furber of Boston for the railroad baron James J. Hill (1838-1916). With 13 bathrooms, 22 fireplaces, and a 2-story art gallery fitted with a pipe organ and skylight, it was once the largest private residence in Minnesota. Our knowledgeable guide, Joanne Dolney, shared stories of the Hill family as she showed off the lavish carved oak and mahogany woodwork (much of it executed by German artists working under Johannes Kirchmayer), copious stained glass, leather wall coverings, and the desk Hill used in his Great Northern Ry. office. We inspected the sophisticated (for their time) heating, lighting (gas and electric), plumbing, communication, and security systems throughout the 42-room, 36,000-sq.-ft. house, which is a National Historic Landmark. Our guide then led us on a walking tour of Summit Ave., providing commentary on its array of architectural styles, from Italianate to Prairie School.

Although it was impressive to our eyes, St. Paul native F. Scott Fitzgerald, our guide told us, derided the assemblage as “the architecture of the gloomy nineties.”

Thursday Tour 2: Heart of the City and Landmark Center. This guided walking tour started in St. Paul’s historic theater district with visits to two operating theaters, the Park Square and the Paramount, the latter in its Spanish Baroque splendor. We stopped in the Hamm Building (1915), home of the Capitol Theater, exceptional for its ornate terra cotta and original light fixtures. We then heard about the Lowry Building’s transformation. Constructed on the site of an 1870s car barn, the Lowry was built in 1911 as a department store and medical building; now it is condominiums. The tour culminated in the stunning Landmark Center, which opened in 1902 as a federal courthouse and post office. We saw the ornate courtrooms that have been returned to their original state with raised woodwork on the walls carved by furniture makers. Supreme Court Justices Berger and Blackman clerked in this building. We heard colorful stories of Prohibition trials, with J. Edgar Hoover allegedly calling St. Paul “the cesspool of the country.”

Thursday Tour 3: Ford Steam Plant. The tour departed the St. Paul Hotel for the Steam Station of the Ford Motor Co.’s Twin Cities Assembly Plant, an immense operation that turned out over six million automobiles ranging from Model Ts during its early days to Ford Ranger trucks in the years leading up to its closure in 2011. As we headed west from downtown toward the Mississippi, tour leader and local architectural historian Brian McMahon provided a wonderful prologue describing the early history of Ford in Minneapolis and St. Paul.

The now-inactive steam plant was built in the mid-1920s along the eastern bank of the Mississippi, below and across a parkway from the rest of the massive assembly complex. The building itself with its large industrial windows resembles a small, industrial cathedral complete with a smokestack campanile. Several Ford employees who had worked at the site, including a former head engineer, met us at the gate.

(continued on page 4)
and guided us around the plant. They generously provided detailed information about the operations within the building, which was constructed to turn river water into high-pressure steam for heat and power. (Excavations for traffic tunnels next to the building additionally provided high-quality silica, which was used by Ford in glass production at the assembly plant.) As we traversed stairs and catwalks, our guides shared entertaining stories about their own experiences working for Ford. We were allowed to explore almost all of the steam plant, including the interior of an arched bridge that dramatically linked an upper level of the building to the bluff and eventually the rest of the factory above.

After touring the interior of the Steam Station, we had the opportunity to walk around the outside of the building for great views of Lock & Dam Number One (constructed for Ford) framed by the Ford Parkway Bridge in the distance. Before returning to conference headquarters, we made a brief (unauthorized) final stop to look at part of the exterior of the assembly plant believed to have been designed by Albert Kahn (which unfortunately was significantly altered over time and is scheduled for demolition later this year). A bas-relief in the wall of a nearby modern addition to the building contained a Fordism that applied to the afternoon: “Excellence is Never Granted to Man but is the Reward of Labor.” The labor that went into the tour definitely rewarded the participants with an excellent excursion.

Thursday Tour 4: District Energy. District Energy St. Paul currently heats 80 percent of the buildings in downtown St. Paul and adjacent areas. It is the largest hot water district heating system in North America. Established in 1983 in response to the prior decade’s energy crisis, this is a thoroughly modern facility employing some innovative technologies, especially in the area of “green” energy, although heir to American District Steam’s 1905 system. The tour began with a presentation describing the operation of the facility and the services provided to customers, including

the Minnesota State Capitol. The plant produces electricity with a wood-chip-fired turbine, and waste heat from this process is used to produce hot water. Solar panels are used to produce additional hot water. Hot water is now considered more efficient to use than steam for heating, which in the past had been the more common method in the U.S. and remains in use in many places. The facility also produces and provides the downtown area with chilled water for cooling systems. Following the presentation, tour participants were guided through the plant where we sweated in the heat of the noisy turbine room and were close enough to the operations to have to move out of the way of a truck bringing in a load of wood chips. The plant does not employ a large control room with wall-sized panels of switches as found in some older plants; instead a few computers have

(continued on page 6)
programs displaying graphics and diagrams that allow workers to monitor and control the various systems.

**Friday Tour 1: Mighty Mississippi.** “A Twin Cities Riverboat Cruise with the Experts” certainly lived up to its name. The tour guides took a team approach with respect to the many bridges, applying their collective knowledge in engineering, geology, history, and contemporary issues. In addition, we had along with us a tugboat captain. So you could say we had a whole team of bridge experts and one person who has made a career of steering around their interests.

Before boarding the boat, our tour started by walking the James J. Hill Stone Arch Bridge, built in 1883, as it provides a good view of the Minneapolis milling district. Of the sights that have changed since the 1983 conference, none is more striking than the flour-milling district. Three decades ago, it was all but abandoned. The conversion of the arch bridge from rail to pedestrian was the catalyst that transformed the whole neighborhood. Now the district is full of pedestrians. We then took a short bus ride to view the Seventh Street Improvement Arches, which were built in 1884 to carry a road across two rail lines, a challenge being the road crossings not at a right angle. The helicoid or skew design, the arch’s stones laid in a spiraling pattern, was an elegant solution. We did not have to worry about a train while walking through, as the arches currently span a park path.

Our river tour took us through a deep gorge that was responsible for keeping Minneapolis and St. Paul separate for decades, as the steep banks discouraged development. For most of our day we passed by forested parkland punctuated by an occasional bridge. For the most part, we could not see other structures atop the bluffs. At one point, we spotted a great blue heron at river level, and then looked above to see the great blue sign of the Ford assembly plant. The boarding point was the top of the Upper Lock, which was just one of several special arrangements our tour guides provided. Extending navigation from St. Paul to above the falls required four dams, and we locked through each of them. These days, commercial traffic ventures to the top of the system of locks only twice a day to serve gravel and scrap-iron terminals above the falls.

A variety of arches, trusses, girders, and movable bridges—of varying scale and aesthetic interest—filled out the remainder of the tour. The citizens of the Twin Cities have sought, and often received, highway bridges of stature appropriate to the upper limit of navigation of the “Great River.” A desire for monumental scale and clean lines suggested arches. Our tour included six grand concrete-arch bridges. One, the Cappelen (Franklin Avenue) Bridge, built in 1919-23, has the distinction of having had the longest single span in the world at 400 ft. until surpassed in 1931. It was named after its Norwegian engineer Frederick William Cappelen, who died before the bridge was completed. It is scheduled for rehabilitation next year.

The port of St. Paul, just downstream of downtown, is our tug captain’s home territory. The scrap iron dock was active this day, with a backhoe unloading a barge. The

---

This year the Vogel Prize is awarded to Paul J. White for his paper “The Rise and Fall of the California Stamp: Historical and Archeological Perspectives on the Aging of a Technology,” published in IA: The Journal of the Society for Industrial Archeology, Vol. 36, No. 1, pp. 65-83. Here Paul addresses an area in the history of technology where skillfully collected material evidence fills a gap left when the documentary record fails us. Writers in engineering journals typically focus on new technique; older methods that might be considered obsolete by the engineering profession but which can fill a useful economic niche are rarely accorded attention in the publications intended for practicing engineers and managers that are often the primary resource used by historians. Nor are accounts of the adaptive re-use of past techniques likely to be mentioned in company reports. Paul shows us how a detailed examination of an abandoned mill can reveal the ingenuity with which artisans made obsolete equipment economically viable.

The Skidoo mill in California processed hard-rock gold ore from 1908 through 1915 with methods that had been in use in the western gold fields for half a century. Despite its obsolescence when it was closed, several entrepreneurs found the remaining Skidoo mill machinery useful in intermittent operation for another 20 years. We are fortunate that the location of the mill on an arid hillside adjacent to Death Valley allowed for the preservation of the milling equipment that was not removed for use elsewhere.

Paul’s detailed documentation of the stamps that processed the gold ore reveal how these machines were repaired and modified so as to keep them economically viable long after they would otherwise have been scrapped. He carefully constructed his paper with an introduction to hard-rock milling technique that allows readers not expert in extractive metallurgy to understand the detail of the stamp machinery that he then presents. Paul’s paper shows his careful scholarship and his skillful exposition through effective use of photographs and an extensive set of notes. It is also gratifying to see a HAER recording project serve as the basis of an interpretive paper that addresses a significant problem in the history of technology.

Each year the SIA recognizes outstanding scholarship in the field of industrial archeology with the Robert M. Vogel Prize. Named for SIA co-founding and distinguished member Robert Vogel, the award honors the author of the best article to appear in the journal IA within the past three years. The prize consists of a cash award and a wooden foundry pattern bearing a plaque engraved with the recipient’s name. Articles selected must have a clearly stated thesis and well-constructed narrative. Analysis of material culture and high-quality illustration that support the thesis and conclusion are also important measures of scholarship worthy of the prize. Selection is made by the Vogel Prize Committee consisting of five members appointed by the president, who serve five-year terms.
SIA members aboard the river-tour boat.

A vintage bus delivers conference participants to the Wabasha Street Caves for the Annual Banquet on Saturday night. The caves were hollowed out in the mid-19th century by silica mining and later used for mushroom farming, cheese storage, and a Prohibition-era night club.

mill in the 1990s, enough was left of the structure to form the basis for the historic Mill Ruins Park and the Mill City Museum, an interactive multimedia establishment.

After touring the mill district, the group headed to Lock and Dam No. 1, built by the Army Corps of Engineers in 1917, and then to the Metropolitan Waste Treatment Plant, constructed in the mid-1930s as a Public Works Administration project. Known as the “Pigs Eye Treatment Center” for its location at Pigs Eye Lake, it is supplied by interceptor tunnels cut 200-ft. deep into the bedrock under the Twin Cities. It is one of the ten largest water treatment plants in the U.S. The raw water goes through numerous stages here, beginning with bar screening, to remove larger objects, rags, etc. Sand and dirt are removed at the next stage, followed by solids and bacteria. The group then proceeded to the hydroelectric plant of the Ford Twin Cities Assembly to view the turbines, which several SIA members commented were in the best working order they had ever seen for turbines of their age and type. The tour ended with a drive through Mushroom Valley, home to many natural caves used for growing mushrooms and aging blue cheese, and a stop at the Omaha Swing Bridge, where a combination of unplanned events allowed us to view the bridge as it swung open to accommodate a boat, then closed to allow a freight train to pass over, all in a matter of minutes.

Friday Tour 4: Railroads, Windows and Steel. Andersen Windows was founded in 1903 by Danish immigrant Hans Andersen and his family in Hudson, Wis., where logs arrived via the St. Croix River. Today, Andersen Corp. is a major international corporation with its headquarters in Bayport, Minn., east of St. Paul. Our group toured Andersen’s massive, 65-acre Bayport manufacturing facility. The factory processes include material receipt, ripping and milling, manufacturing of components for sashes and frames, and final assembly and shipping. Our guide pointed out numerous examples of reuse and recycling of materials.
SIA Awards Industrial Heritage Grants for 2013

The SIA’s Industrial Heritage Preservation Grants (IHPG) are made to nonprofit organizations and qualified individuals for the study, documentation, recordation, or preservation of significant historic industrial sites, structures, and objects. Grants in the amount of $1,000 to $3,000 are awarded once a year and announced at the SIA Annual Business Meeting. Applications are due each year by March 1. This year SIA received 12 highly qualified applications. With matching funds from the Kaplan Foundation, the SIA was able to offer grants to four of the applicants.

The Quincy Mine Hoist Association in Hancock, Mich., (tour site—1997 Annual Conference, Houghton) received a grant to assist with production of engineering documents for the preservation and restoration of critical components of the hoist house and the world’s largest steam-powered hoist, which served the copper mine’s Shaft No. 2 from 1918 to 1933. This funding is the first phase of an estimated $200,000 restoration project.

The Public Library of Steubenville and Jefferson County, Ohio, received a grant to assist with the Upper Ohio Valley Steel Documentary Traveling Exhibit Project. The funds will be used to create a display of photographs featuring the former Wheeling-Pittsburgh Steel Corp. plants at Steubenville and Mingo Junction.

After the Andersen tour, the group enjoyed lunch at the Minnesota Transportation Museum in the Great Northern Ry.’s Jackson St. Roundhouse, built in 1907 and the only surviving building on the site of the railway’s shop complex. There was plenty of time to explore the maintenance bays and the many displays of locomotives, passenger cars, and maintenance-of-way equipment. The roundhouse has the features of a railway museum as well as those of a working railway shop, including a functioning turntable. Our group leader, John Wickre (SIA), showed off the Baldwin-built, 4-6-2 Pacific, Great Northern steam locomotive 2156 and explained its workings and described some of the substantial effort still needed to bring it back to operating order.

Our group’s visit to the Mill City Museum (Washburn A Mill) included a view of the “Flour Tower” presentation, which uses a large freight elevator to transport the audience through displays depicting the life of workers in one of the world’s largest flour mills. We also had a guided tour of the remains of the building as our enthusiastic guide effectively brought the old ruins to life.

Friday Tour 5: Milling, Malting, and Flour. This tour began with a visit to PEM Millwork in nearby New Hope. PEM makes custom doors for airport sound mitigation programs throughout the nation that are funded by airline fees. PEM’s Glenn Hoover explained how its doors utilize a variety of core materials to meet specific performance requirements. They are also designed to be an exact match of the customer’s existing doors. PEM designs and builds the door casings as an integral part of the system.

The tour’s next stop was a brief visit to the Peavey-Haglin Experimental Concrete Grain Elevator in the town of St. Louis Park. The elevator, built in 1899-1900, is National Historic Landmark and Historic Civil Engineering Landmark as an early experimental use of reinforced concrete. The site is now home to Nordic Ware, a maker of kitchenware. The 22-ft.-diameter, 125-ft.-tall structure was the idea of Frank Peavey, a leading grain dealer who sought to find a quicker and less expensive way to construct elevators that would also be fire-resistant, unlike wood. Peavey hired local contractor Charles F. Haglin for the project that was at first built only to the 68-ft. level and filled with grain in order to test the performance of the new material. Satisfied, the structure was then completed to its full height, and filled with grain. As its name suggests, the single-bin silo was built solely for experimental purposes and has since been empty. It stands as a significant example of the pioneering use of reinforced concrete as a building material.

The group then travelled to the home office of the T.E. Ibberson Co., located in Hopkins. Established by Thomas E. Ibberson in 1881, the company has designed and built thousands of grain elevators around the world, as well as bulk storage facilities for coal, salt, fertilizer, and liquids. Gerry Leukam provided a display of numerous historic construction photographs and drawings from the early 20th century when rural wooden elevators were Ibberson’s main focus. Also on display in the conference room was Leukam’s personal collection of antique tools, typical of those used during

(continued on page 18)
that period. Lunch was also provided at Ibberson, accompanied by a slide presentation on the company's history and current work, such as the huge new Grain Export Terminal in Longview, Wash. The presentation also included an amazing time-lapsed view of the concrete slip-forming process used to quickly construct huge engineered structures.

The last stop was Rahr Malting in nearby Shakopee, which produces malted barley for the brewing industry. It is the largest single-site malting facility in the world, producing over 24 million bushels of malt per year. The plant’s first malthouse was constructed in 1937 with new houses added in 1954, 1977, 1980, and 1994. The site also contains a series of large grain elevators, with total capacity of 8 million bushels, constructed in various stages since 1937. The newest bins were designed and built by T.E. Ibberson. The tour split into two smaller groups for a visit to Malthouse No. 4 (1980). Tim Sparks explained how malting is an eight-day process and we saw all of the steps from the delivery through steeping, germination, drying, and shipping. Moving through the malthouse requires passing through airlocks, which maintain different air temperatures within the facility. The malting process at Rahr is continuous—as soon as one tank is emptied, it is immediately filled again for the next batch. Rahr only produces light-colored “base malts” which are then stored for shipment via rail. (Specialty dark and amber malts require further roasting at other facilities.)

Afterward, the group was able to walk around the outside of the huge plant, past the adjacent Koda Energy bio-waste electric plant that suffered a major explosion on Apr. 25, 2013. It is out of commission until repairs can be made. Rahr is currently getting its electricity from elsewhere.

Sunday Tour 1: Mississippi Riverfront and Mill City Museum. This tour featured a 1.5-hr. walking tour of the Minneapolis Riverfront District and St. Anthony Falls, followed by a visit to the Minnesota Historical Society’s Mill City Museum, repeating sites that had been visited on Friday for those who had not had a chance to see them.

Sunday Tour 2: St. Paul Union Depot. Upon arrival at the St. Paul Depot, this tour, led by John Wickre, visited the headhouse, main concourse, and massive waiting room. The depot, which was constructed from 1917 to 1923, is in beautiful condition after having been fully restored during the past two years. It will soon become a significant inter-modal passenger transportation facility when Amtrak shifts its operations there and upon the opening of the Central Corridor (Green Line) light-rail segment of the METRO system in the near future.

The SIA offers its thanks to the many volunteers who
famous for its architecture, with buildings designed by top architects of the 20th and 21st centuries.

He noted that the 2014 Annual Conference is scheduled for Portland, Maine, a beautiful city on the Atlantic coast. Due to its popularity as a tourist attraction, with a significant increase in hotel rates after Memorial Day, the conference will be in mid-May, several weeks earlier than normal.

Ron Petrie then passed the microphone to Tom Ferrell, who is organizing the 2013 Fall Tour in Rockford, Ill., with his wife Uma. Tom reported that because the city was in decline when he grew up there, it has taken some time for him to appreciate it, but he has learned a lot about his hometown in the process of planning the tour, which is scheduled for Sept. 26-29. Tom then gave a presentation on the city, founded in 1834 as “Midway” (i.e., between Chicago and Galena), and its role as a manufacturing center for farm machinery, furniture, and machine tools through the mid-20th century. Rockford now gives prominence to the high-tech aerospace industry. Day 1 of the tour is planned for Rockford's history museum, Midway Village, followed by three tours each on Days 2 and 3. Confirmed tour sites include the Illinois Ry. Museum; the Rockford Register Star newspaper, which has been printing since 1855; the Rockford Sanitary District; a Lowe’s regional distribution center; and metal fabrication equipment manufacturer MegaFab. Other tentative stops are being explored. There will be a break from SIA Fall Tour tradition with a Sunday brunch at the Coronado Theater, an atmospheric movie palace from 1927.

Nominations Committee. President Hay recognized current SIA Board members and staff, and thanked departing Board members Maryellen Russo and David Rotenstein for their service.

Nominations Committee Chair Kevin Pegram reported receiving 290 ballots. He announced the results of the election, with Justin M. Spivey re-elected as Secretary, Nanci K. Batchelor re-elected as Treasurer, Lynn Rakos elected to the Nominations Committee, and new directors Richard K. Anderson, Jr., and Ann Dichter. Kevin emphasized the need for nominees who have not served before to lend fresh perspective. Tim Mancl, the incoming Nominations Committee chair, said, “Nominations start now.”

Vogel Prize. Bob Casey read the Vogel Prize citation on behalf of committee chair Robert Gordon (see article elsewhere in this issue). Patrick Martin accepted the prize on behalf of Paul White, indicating that Paul is on a well-deserved vacation in New Zealand. Paul was pleased and honored by the award. Patrick indicated that Paul was grateful to his reviewers, grateful to Fred Quivik for sharpening up his language, and looking forward to contributing more articles to IA in the future.

General Tools Award. Carol Poh read the General Tools Award citation (see article elsewhere in this issue). In accepting the award, Bob Frame said that it was a profound honor and that SIA has been his professional community, his family, and his home. He thanked committee members Carol Poh, Richard K. Anderson, Jr., and Helena Wright, as well as the “devious people” who nominated him.

Bob said that he joined the organization in 1976, when everything he knew about SIA came through the mail. He received a call for nominations, indicating that one could