12.1 Robbins addresses tour group at the forge building excavation. (Photgraph 750 by Richard Merrill, November 15, 1952.)

CHAPTER TWELVE

Robbins' Public Outreach and Outside Research

Donald W. Linebaugh

Beyond the project's obvious contribution to early industrial archeology, two aspects of Robbins' work at Saugus stand out in the history of historical archeology: his public outreach and his own research and use of specialists in wide-ranging areas from ironworking to faunal analysis to artifact analysis and conservation. While Robbins did not always welcome the intrusions of visitors to the site, he was keenly aware of the need to include the public in the work in order to garner its financial and political support. He also had a more selfish interest in promoting himself as an archeologist and in taking "ownership" of the discoveries. Likewise, his use of specialists was driven by a number of issues, including the input and direction of the Reconstruction Committee, the huge and varied volume of artifacts that required new approaches to analysis and conservation, and his own uncertainty and inexperience in the nascent field of historical archeology. Susan Colby, an assistant at his subsequent Philipsburg Manor Upper Mills project in New York, remarked that "Robbins wanted people to accept his ideas but understood his limitations, particularly his lack of formal education."[1] For Robbins, the outside experts he engaged served to advance his archeological education, bolster his confidence, and legitimize his findings and interpretations. This chapter considers the ways in which Robbins sought to educate the public about his work at Saugus, even as he himself was learning on the job, and explores his collaborations with specialists in many affiliated disciplines.

He saw it almost as a mission to get people involved in these sites so that they could participate in their own heritage. [Robbins' contributions were] to get people interested in archaeology and bring attention to historic-sites archaeology, in that order.[1]

Paul Heberling, personal communication, 1992.

While Robbins was always concerned about receiving the credit due him for his archeological "discoveries," he was also extremely generous toward those who acknowledged and respected his work. He shared his knowledge with interested members of the public from the very start of his career at Walden Pond, although he sought to keep the exact location of the excavation secret in order to both control news of the discovery and protect the site. Robbins' interest in public archeology began in the fall of 1945, when, armed with "a pocket compass, a ninety-eight cent G.I. trench shovel . . . [and] a couple . . . of probing rods," he began looking for the Walden Pond house site of Henry David Thoreau.[2] From 1945 to 1947, Robbins identified, excavated, and carefully documented the building's stone chimney foundation, stone corner piers, and root cellar.[3]

As noted above, Robbins initially guarded his claim to the discovery of the cabin site, carefully controlling who saw his discovery at Walden.[4] English professor and colleague Walter Harding remembered that Robbins was reluctant to allow him to see the site because he "was always very suspicious of any

college teachers—he had one particularly unfortunate experience."[5] Robbins made no excuse for his careful handling of news about the discovery, stating that "many are they who want to know the secret and have gone out to Walden Pond to seek it."[6] It seems clear that Robbins' experiences at Walden colored the remainder of his career; he developed a wariness of those who might attempt to exercise control over or misrepresent his work.

While Robbins was clearly concerned about being scooped on the news of his discovery, he also sought to interest the public in the process of research and the excitement of discovery through the publication of ***Discovery at Walden***. The animated style of this book was well suited to captivate readers and bring the story of his work to the attention of the public. In the introduction to ***Discovery at Walden***, Thoreau Society secretary Walter Harding writes that a brief visit to the site gave him a "shiver of excitement" and a review of the evidence convinced him of the accuracy of Robbins' work.[7]

As will become clear, Robbins quickly developed a philosophical commitment "to make history come alive by digging it up, getting others involved . . . ."[8] This philosophy manifested itself in a lifelong dedication to public and civic engagement in terms of archeology. Initially based on a very personal desire for success, he came to see the larger benefit of teaching history and archeology to the public. His work at Saugus deepened his appreciation of the important benefits of public participation. After Saugus, he went on to develop a vital public archeology program during his excavations at the Philipsburg Manor Upper Mills (PMUM) site in North Tarrytown, New York, from 1956 to 1962.[9] By the mid-1960s, Robbins had also established successful school-based archeology programs in New York and New Jersey.[10]

Although Robbins did not have a formalized program for public participation in the archeology at Saugus, he opened the site to visitors, developed a museum exhibit of artifacts that included portions of the conserved waterwheel and wheelpit, helped with media coverage of the project, regularly lead tours through the excavations for general visitors and local school and civic groups, and gave public lectures on his Saugus work throughout New England. The small size of the First Iron Works Association (FIWA) and lack of experience of its local organizers dictated that someone like Robbins would end up managing and carrying out many parts of the project. Asked to wear many hats at Saugus, Robbins discovered the opportunities and problems inherent in operating a large excavation open to the public, including the difficulty of staffing and running a public program, the political benefits of public participation, and the excitement and power of public interest. While these demands provided Robbins with real opportunities for professionalization, they also stressed him and distracted him from the archeological work at hand.

As complex as my archaeological work was it presented no problem which would wear me out, both physically and mentally. But to mix this work with sundry duties ranging from overseer of all problems to caretaker of washrooms, interspersed with two museums to study and carefully prepare appropriate exhibits for, as well as public relations and goodwill, research which developed mediums for restoring our priceless artifacts, both metals and wood, annual meetings which necessitated careful planning and many late evenings, as well as numerous other time absorbing details, was more than my strength could contend with after dieting on it for five years.

Roland W. Robbins to Quincy Bent, November 16, 1953.

12.2 Robbins probing in trench with school children looking on, September 27, 1950. (Photograph 235 by Richard Merrill, 1950.)

Robbins' education of the public also had distinct political and economic ramifications; for example, he engaged in community politics during the campaign to relocate Central Street for the Saugus excavations.[11] Negotiations between the FIWA staff and town officials to close and reorient the street to provide access for excavating the buried furnace waterwheel were contentious and dragged on for several months. Town meetings generated heated debate among all parties and opposition from homeowners in the ironworks neighborhood. Town representatives and neighbors regularly visited the site throughout the summer of 1950. During these visits, Robbins gave them special tours of the excavations, museum and laboratory, and artifact collection, and vigorously lobbied for the importance of completing the waterwheel excavation.[12] With the help of this personal lobbying effort by Robbins, the road rerouting was approved during a special town meeting.

Another educational aspect of the Saugus project was the museum created by Robbins to house the thousands of artifacts uncovered during the excavations. Begun in the first full year of the project, the museum was initially housed in Edward Guy's former blacksmith shop, adjacent to the Iron Works House. In June 1949, just eight months into the project, Robbins had "moved [the] D.A.R. and Mr. Guy's effects from my museum, cleaned it up and rearranged [the] artifacts."[13] By month's end, Robbins reported that he and several staff members had "finished cleaning and arranging my museum."[14] It became clear to Robbins early in the project that the volume of artifacts was going to be huge and would require space for both processing and exhibition to the public.

Always cognizant of the publicity angle of his projects, Robbins also saw the museum as a direct reflection of his work; it was, he emphasized, "my museum."[15] This sense of possessiveness and responsibility was not unusual among the early archeological pioneers. It exists to some extent even today, as the artifacts are a tangible and essential type of evidence for interpretation and to control them is to control the site. It also seems clear that the museum was seen by the officers of the FIWA as a crucial part of the overall project and important for drawing visitors. The organization's president, J. Sanger Attwill, had been the president of the Lynn Historical Society before joining the Saugus organization and seems to have regarded the exhibition aspect of the site as a central component. Clearly, however, most of the attention was on the house and industrial buildings themselves. It was only when the excavations began to yield such amazing finds as the furnace waterwheel that Robbins' associates began to take the museum more seriously. In fact, Robbins and Attwill regularly argued about the building's heating, fire protection, and security.[16] For example, on November 14, 1949, Robbins recorded that

> over the weekend someone was in museum and handled relics. In so doing, they handled tuyere and chipped 2 pieces from the larger end, one piece being the size of 2 half dollars. Attwill was here and Miss Hawkes informs me he showed members of the

Mr. Tower, Bent, Hartley, Attwill and I met at the Town Line for lunch. In morning Mr. Young, Saugus' new Town Manager, DeFronzo and Chapman were with me an hour at 3:00 p.m. All persons mentioned above went over the rerouting of Central St. and were in accord of the situation. This being the taking of a bit of Robinson's lawn at the corner of Marion Rd. and Central St. so as to round this turn more. At the Union St. extension end it was agreed that the road should run between the store at the corner of Pleasant and Central Sts. and the white house just beyond and on Central St. This way no building would be disturbed. At 8:00 p.m. the above people, the five Saugus selectmen, 4 members of the Planning Board, Nelson Pratt, Mr. Hills, Mr. Nardo and several other interested persons went over the proposed route and were in accord with the proposed route. After the tour of the proposed re-route of Central St. the above people gathered at my museum where the meeting and discussion was [sic] *held.*

Roland W. Robbins, "Saugus Ironworks Daily Log – 1950," July 6, 1950.

12.3 Robbins showing gear and other artifacts in museum building. (Photograph 137 by Richard Merrill, 1950.)

> Field and Forest Club the relics. Phoned Sanger in a.m. about gas heat [and security] being installed in the museum. He believed the initial expense would be too great.[17]

Robbins and Attwill went back and forth on these issues over the next year or more with Attwill contending that these modifications were not appropriate expenditures as the structure was a "temporary" museum building.[18]

While "temporary," the museum building quickly became the central location for artifact storage, processing, conservation, and display. At first, the space housed piles of artifacts identified by general type and material, particularly iron and slag pieces. Eventually, it evolved into a rather amazing facility for the time. The museum became a place for the crew of laborers to work indoors on "relic classification" and exhibit preparation when the weather was not suitable for field work. In July 1949, Robbins reported that he "told Mr. Bent that I would be busy with excavations until winter set in. Then I would turn to my museum work and relic classification."[19] In September 1950, Robbins noted that he moved the "newly located hammer head, found in excavations along northerly side of Bridge St., into my museum," where it would undergo cleaning and conservation.[20]

The museum was also very much the principal public face of the project. It was a work in progress during the entire excavation period, providing an excellent and generally up-to-the-minute summary of the work underway and the discoveries made to date. It typically didn't take Robbins too long to get major artifacts cleaned, and in some cases conserved, and on display in the museum. This enabled visitors to follow the excavation quite closely in terms of the many spectacular artifacts and features discovered. For example, Robbins moved the bellows beams into the museum for exhibit in January 1950.[21] In August 1951, he recorded that he "built [a] platform and placed [the] 500 lb. hammer head upon it" and noted that he and his staff had begun work on the waterwheel exhibit.[22] Likewise, in June 1952, he wrote that the "men brought Jenk's anvil base up to museum. We found we could not lift it out with 80' crane without damaging it. Jones' men made a new stand for it. Tomorrow we shall place it in museum upon new stand."[23] While these were often temporary exhibits that were later reworked, they provided a great sense of the amazing preservation of the site and its artifacts and offered visitors a real and tangible view into what the ironworks might have been like.

While Robbins was clearly advancing in his knowledge of archeology day by day, he also was steadily picking up on the museum aspects of his job. In June 1950, he reported that he joined the American Association of Museums, no doubt to increase his connection to the museum world and to benefit from its resources in terms of exhibit preparation and presentation.[24]

This morning we moved the newly located hammer head, found in excavations along northerly side of Bridge St., into my museum. First we took it to Eastern Industrial Oil Products Co. and weighed it. It weighed 505 *lbs. Originally it probably was cast as a 500 lb. Head. The extra 5 lbs. can be accounted to oxidation, and what. . . soil became adhered to the hammer head by oxidation. What appeared to be a concave area along one side of the head of the hammer, which was first noted when the hammer was uncovered, and believed to have been constructed that way, now appears to have been treated by breakage, or chipping. I phoned Hartley twice this a.m. First to tell him the head would probably weigh at least 400 lbs. And then to inform him as to its exact weight of 505 lbs. He was surprised. Said he couldn't recall reading of hammers of that weight. Thought it was very impressive.*

Roland W. Robbins, "Saugus Ironworks Daily Log - 1950," September 2, 1950.

12.4 Exhibits in museum building with forge hammerhead display in foreground. (Photograph 471 by Richard Merrill, 1951.)

Robbins and his staff constantly rearranged and improved the museum as the project progressed. For example, in June 1951, he and his staff "moved the relics in my museum back to make room for the west sill of the hutch which we removed today."[25] Robbins realized that he needed full-time help with the museum and artifacts in the second year of the project, as the volume of artifacts grew exponentially; he was not allowed to hire an assistant until June 1952. His assistant, Barbara Franklin, started on June 16, 1952, and it is clear that she was quickly put to work on artifact classification and exhibit planning and organization.[26] In June 1951, Robbins had arranged with artist Charles Overly to prepare murals of the ironworks site for the museum building. Robbins reported that "Howard Stevenson sent me prints of sketches to be used in [the] new booklet. I will have my artist be guided by their detail when laying out [the] mural in my museum."[27]

In 1952, a new museum building was constructed to provide a larger exhibit space. The old building was to be used for storing and processing the ever-increasing collection of artifacts. Over the next two years, Robbins developed, expanded, and enhanced his new facility. In August, he reported that he had "Jones put up four panels in [the] new museum building. Will use these for exhibit purposes."[28] In September, carpenters built a frame for the "base sills of the anvil and 1st anvil base. This is being set up in the old museum building, at the westerly end, just beyond the platform which exhibits the three waterwheels."[29] Several days later Robbins had his men "clean and wash the J.J. [Joseph Jenks] drawers in the new exhibit case. Also had some of relics buffed. Clyde Hiltz here this P.M. with sign for forge anvil base exhibit—laid out more sign work for new museum with him. In P.M. I worked in new museum arranging relics on the three panels."[30]

This will make possible the assembly of the original furnace wheel pit along the north wall of the building. As I think of it, if we were to remove the bench along the north side of the old museum building, it might make possible the assembly of the furnace wheel pit, the funnel connecting it to the race and a section of the race. This is worthy of consideration.

Roland W. Robbins, "Saugus Ironworks Daily Log - 1952," December 4, 1952.

In December 1953, Robbins began the process of disassembling the original furnace waterwheel pit so that it could be reassembled in the museum building. He and architect Conover Fitch agreed to "have the chimney in the old museum building removed. This will make possible the assembly of the original furnace wheel pit . . . ."[31] Several weeks later, Robbins spent time with his new assistant, Steve Whittelsey, "going over my thoughts regarding new arrangements of artifacts in the museum buildings."[32]

In March 1954, Robbins again met with Fitch to discuss museum exhibits, particularly the installation of the furnace wheel pit. He recorded that

> In speaking of the assembling of the furnace wheel pit timbers, its funnel and tailrace, we decided it would be detrimental to the exhibits to extend the length of the building to accommodate a full section of the tailrace. We decided that the tailrace section could be carefully cut so that it would fit in the present building.[33]

12.5 Robbins talking to tour group in museum building with furnace waterwheel section display at left, June 30, 1951. (Photograph 376 by Richard Merrill,1951.)

Work on the furnace tailrace exhibit in the new museum building was finished in early April when Robbins noted that "this is making quite an impressive exhibit."[34] He then had his workers move "Jenks' two waterwheels, gudgeon bearing block, and hub from old museum building to new . . . . Dismantled the bench which exhibited the three waterwheels in the old museum building."[35]

Although Robbins had contacted artist Charles Overly about developing a mural for the museum building in 1951, it appears that Overly did not begin this work until at least 1952, when the old museum was being reworked and the new museum finished. Robbins' logs record that Overly worked on painting the mural in the old museum in June 1953.[36] In the meantime, Robbins and his staff assembled the "section of the furnace wheel and spoke in the original furnace wheel pit."[37] This artifact had been displayed in the old museum since 1951 and was moved when the wheel pit was installed in the new museum.[38] As in other areas of the Saugus project, Robbins had to do it all in terms of working on the museum, including ordering "paper cup dispensers for the toilets" and supervising his men to "oil the floor of the old museum building."[39]

During the project, Robbins also became a consummate tour guide, leading literally thousands of visitors around the site. While at some level he saw these activities as linked to "publicity" for the site, he came to realize their educational value and to appreciate the intense interest of the public in his excavations. Thus, as work on the site progressed, he lead more and more tours, both formal and informal, for school groups, local business leaders, visiting dignitaries, and colleagues. During a typical tour, Robbins showed visitors the excavation area, ongoing restoration work, and the museum and artifact collections. He and his staff later developed signage for a marked path that took visitors on a self-guided tour of the site. Signs were placed at a series of platforms where visitors could safely stand and watch the excavation work in progress.[40]

As early as September 1949, Robbins reported that he showed a couple "about the excavations and the museum."[41] In the summer of 1950, he showed many Saugus residents around the site to sell them on the idea of closing Central Street so that Robbins could search for and excavate the furnace waterwheel. For example, in June he noted that the George Layhe family "came in to see me. They are part of a committee formed to consider the present situation of the I.W. etc. I showed them about my museum, the excavation, etc. Attwill had spoken to their group last night. They seemed quite impressed by their visit here. Said they believed everything would go through o.k."[42] In August 1950, Robbins met a Professor Gronewold and a group of 33–35 school teachers from western New York and gave them a tour of the site and museum.[43]

Robbins often found himself on call to lead tours for special groups and important visitors. In August 1950 he recorded that Mrs. Crowninshield and her Marblehead Garden Club were to tour the museum

If the new museum building could be built to accommodate the entire tailrace assembly, the pieces could be fitted and matched and be quite unnoticeable. To cut these pieces at an angle, such as ship lapping, might make the joining less noticeable. The flooring near the northeast corner of the old museum building has settled badly. It would not be an easy job to raise this flooring. We decided to leave it as it is and to build up this area along the area that the tailrace will occupy.

Roland Robbins, "Saugus Ironworks Daily Log - 1953," March 17, 1953.

12.6 Museum assistant Barbara Franklin (?) talking about exhibit panels in museum building, June 30, 1951. (Photograph 382 by Richard Merrill,1951.)

after a presentation by project historian Neal Hartley.[44] Robbins lamented that "my entire day was given to preparing [for] and welcoming the 17 members of the Marblehead Garden Club. Only several came into my museum—and then for ***only 4 minutes***."[45] This type of situation was clearly annoying to Robbins, but it seems that it was the exception not the rule. Robbins would lead lengthy tours for both small and large groups. These smaller groups might spend one or two hours with Robbins, as he accompanied them around the site.[46] He eventually had to hire a tour guide during the busier summer months as the demands on his time increased.[47] The range of groups visiting the site was truly extraordinary. Robbins and his new guide, Fred England, Jr., led regular group tours for Salem Teachers College, Lynn Classical High School, the Harvard Botany Club, the Nahant and Saugus schools, the Braintree Women's Club, and the National Federation of Business and Professional Women's Clubs, among others; the last group, numbering over two hundred, was in town for its annual convention.[48]

Visitors consistently found the excavations to be fascinating. In November 1952, the Appalachian Club visited the site. Although the organizers had estimated a turnout of 15 members, over 40 arrived for the tour and "showed considerable enthusiasm for the entire project."[49] Visitation to the site was particularly high on weekends. In March 1953, Robbins recorded that on "Saturday 36 or more people registered in the new museum building. Sunday, 141 or more registered in the new museum building. We have no way of telling how many visited the museum, certainly all did not register."[50]

At 2:00 P.M. [members of the Appalachain Club] gathered in the new museum. I spoke to the group, and showed pictures of our work. Attwill operated the projector. At 3:00 P.M. I took them into the field and showed them about the excavations, new furnace and forge site. The group was an excellent one to talk to and showed considerable enthusiasm for the entire project. The last members lingered until nearly 5:00 P.M.

Roland Robbins, "Saugus Ironworks Daily Log - 1952," Nov. 15, 1952.

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Robbins engaged in many other types of public outreach as part of the publicity and marketing plan for the site. For much of the excavation and reconstruction periods, the overall publicity for the project was handled by the New York public relations firm of Hill and Knowlton. Robbins participated in publicity as early as 1949, when he did a half-hour radio interview on WLYN with several other members of the FIWA staff.[51] He was also asked to work with writers and photographers who were preparing stories about the excavations for magazines like ***Popular Mechanics*** and ***Business Week*** and newspapers such as the ***Boston Globe***.[52] He reported that Hill and Knowlton "sent one dozen copies of 'Restoration of First Iron Works, Saugus, Massachusetts.' These I shall pass out to newspaper or magazine writers, or sources whereby this material will be beneficial for our public relations."[53]

Robbins and his staff also regularly assisted with and participated in publicity photos with school children, scouting groups, and civic organizations.[54] For example, in September 1950, he remarked on the school kids "who posed with me yesterday at the hammer head site . . . . These pictures were taken yesterday for publicity purposes."[55]

Interestingly, Hill and Knowlton made Saugus one of the earliest sites publicized through the new medium of television. In 1950, Robbins noted that a Professor Wesley Pratzner of Boston University was "coming out tomorrow p.m. with Phil Coolidge, a television man, to size up the situation for television

12.7 Robbins and school students pose for "publicity shot" with forge hammerhead, November 19, 1950. (Photograph 269 by Richard Merrill, 1950.)

possibilities."[56] Several months later, in January 1951, Robbins was "Ruth Lev's guest at 11:15 a.m. on her television show 'All About People,' broadcast on WBZ Boston." He went on to note that it was "an audition for her, N.B.C. officials being present."[57]

Television work led Robbins to photographer Henry Gibson, who suggested the preparation of a color movie about the excavations. Gibson reviewed many of Robbins' color photographs, planning to use some of them in the film. Much of Robbins' photography was eventually used in the 1955 documentary film, "The Saugus Iron Works Restoration: A Shrine to Pioneers of American Industry," which won the Golden Reel Award in the History and Biography Category at the 1955 Golden Reel Festival.[58] The FIWA also produced two filmstrips on the excavation work, titled "Discovery at Saugus" and "The Cradle of an American Industry," for use in schools. Robbins served as a consultant on the project, providing scriptwriter Henry Gibson with images of the excavation and artifacts and offering comments and suggestions as the project proceeded.[59]

Gibson left for my use a moving picture camera and several rolls of color film. He instructed me on handling the camera, etc. I shall take a roll of color shots tomorrow, weather permitting, and send them on so he can see how I am doing. The pictures I take will be used for a color film to be prepared.

Roland W. Robbins, "Saugus Ironworks Daily Log - 1951," January 17, 1951.

In addition to his day-to-day work with Hill and Knowlton, Robbins lectured to community and professional organizations across the region. During his tenure at Saugus, he made over fifty public appearances, lecturing to more than 3,500 people on his archeological work at Walden Pond and Saugus and reading his Vermont stories and poetry. Almost two thirds of his lectures focused specifically on the Saugus excavations, reaching over 2,000 people in the community and region. Following his employment at Saugus, Robbins continued to lecture on the excavations, addressing approximately 4,000 people during 35 separate lectures between 1954 and 1957. Beginning in 1955, he developed a lecture program that drew on his various excavations, including Saugus, Walden, Shadwell, the Thomas Jefferson birthplace, and the Quincy Iron Works. Between 1955 and 1957, he delivered this new talk, "Treasure Hunting in Americana," almost fifty times to audiences totaling over 8,000.[60]

Robbins' audiences included historical societies, clubs, civic and community groups, patriotic organizations like the DAR, schools, libraries, and churches. He also spoke on his excavations and discoveries at Saugus to members of the Massachusetts Archaeological Society, at a conference sponsored by the Antique Club of New Jersey, and as part of an exhibit opening at the New Jersey State Museum. Of this last lecture, Kathryn Greywacz, director of the museum, wrote to Robbins that "before any more days pass, I must write and thank you for the wonderful talk you gave at the Museum on the 'Restoration of the Saugus Iron Works.' There was so much interest taken in your talk and we have received so many requests to have you back again some evening, I would be glad to have you let me know should you be planning to be in the area later on . . . ."[61]

Robbins's regular lecturing on the Saugus project proved to be a major avenue for interesting and exciting the public. This lecturing benefited Robbins and the project in several direct ways, particularly in

Due to copyright restrictions, this image is not available in the on-line version of this publication.

12.8 Robbins shooting movies of excavation work. Note the refinery (forge) sign and Bridge Street in background, October 1951. (Photograph 1805 from the Roland W. Robbins slide collection, 1951, Saugus Iron Works. Courtesy The Thoreau Society® Collections at the Thoreau Institute at Walden Woods.)

garnering community interest and support for the project. While lecturing generated income for Robbins during much of his later career, he generally did not charge for his Saugus talks during the project as he considered publicity part of his job. Hill and Knowlton supported Robbins' lecturing and regularly arranged appearances.[62] He consciously cut back on his other "professional engagements" during his time on the job at Saugus. In 1950, Quincy Bent questioned Robbins about doing lectures during the work day: "Being busy, as you are, with your archaeological work I wouldn't want you giving lectures through the day time."[63] Robbins was incensed, and wrote in his daily log that

> I told him that he should know better than to as much as imply I should do such a thing. I said that in the past I had talked to local Rotary and Lions Clubs at their luncheons—but had not taken professional engagements. How caustic—how ironic! To think of all the free evening lectures I gave last winter and spring simply to create interest and spread goodwill![64]

This experience further confirmed his already negative view of Bent and had a lasting impact on his relationship to other organizations for which he worked. In regard to Saugus, he wrote in 1950 that "after Mr. Bent's acid remark, I have no designs on continuing this goodwill work in the future." He kept his promise, as his records indicate that while he gave 12 lectures in 1949 and seven in 1950, he offered only five or six in 1951 and only eight over the next two years.[65] Restricting his lecturing principally to evening and weekend hours, he now charged for these "professional engagements," unwilling to donate any more after-hours time to the project.

Robbins had similar disagreements at subsequent projects regarding lecturing and time commitments. He came to see his archeological discoveries as his intellectual property to use as he liked, balking at any suggestion that the story and the information belonged exclusively to the site and the organization sponsoring the work. Nevertheless, he remained committed to providing lectures for publicizing his various projects, often at no charge to his employer; lecturing was, he found, an excellent way of "getting others involved . . . ."[66] During his career, Robbins delivered almost 700 public lectures to an estimated 70,000 people, who apparently found him an engaging speaker and his subject one of great interest.[67] The vast majority of his lectures came during periods between major excavations. From 1954–1957, between the end of the Saugus project and the beginning of the Philipsburg Manor work, Robbins presented 120 lectures to over 17,000 people. Even when doing his lectures pro bono, Robbins found that they were a very useful publicity vehicle for networking with groups and organizations in search of an archeologist; they literally became marketing opportunities for himself as an archeologist. As J. C. Harrington noted in 1965, at the time it was "harder to find an available [historical] archaeologist than a Chaucerian scholar."[68]

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Lecture flyer, n.d., The Roland Wells Robbins Collection in the Thoreau Society Collections at the Thoreau Institute at Walden Woods.

12.9 Robbins lecturing on the ironworks excavations, November 15, 1951. (Photgraph 508 by Richard Merrill,1951.)

The benefits of Robbins' lecturing were, however, far from his alone. Thousands of men, women, and children learned and laughed with Robbins, often getting their first introduction to historical archeology from him. During the Saugus project in particular, Robbins came to realize and capitalize on the excitement generated by the tangible remains of the past and the thrill of discovery; he understood the emotional appeal of archeology and stood ready to weave a compelling story around his discoveries. Archeologist James Deetz underscored the importance of this emotional appeal of the past and its connection to intellectual pursuits in his book ***Flowerdew Hundred***, specifically pointing to the work of Robbins at Saugus in this regard.[69]

Clearly ahead of his time in taking archeology to the streets and schools, Robbins ultimately paid a heavy price for his public-oriented approach. His populist appeal, which earned him the title "the People's Archaeologist," created a tension between himself and university professionals that would ultimately shatter his reputation and career. As the academy drew the discipline of historical archeology under its wing, it began the slow process of professionalization that enabled academics to control and standardize archeological knowledge. As a result, the field's "secrets" were restricted to those with a certain level of professional proficiency, limiting membership in the new "community of the competent."[70] Robbins believed that the ownership of the past belonged in the hands of the individual, making "everyman his own historian," to use Carl Becker's phrase.[71] Robbins's unrestricted approach, which shared archeology with the masses and suggested that they could themselves be archeologists of sorts, ran counter to all that was held sacred in the professional culture. Ironically, Robbins' successes and failures at pioneering public archeology inform current attempts at public education and interpretation, even among academics.[72]

But the emotional impact of these objects [Saugus artifacts] is palpable, reminding us in ways that no written account could of what it must have been like in the rough New England frontier, trying to develop a technology in the face of considerable odds.

James Deetz, "Flowerdew Hundred: The Archaeology of a Virginia Plantation, 1619-1864," pp. 169-174.

Robbins also served as a pioneer in historical archeology by involving a host of specialist researchers and consultants in the Saugus project and by carrying out his own outside research on a host of topics and subjects, including historical and oral history research, the study of other contemporary ironmaking sites, artifact identification, conservation, materials testing, and geoarcheology. In most of these areas, Robbins and his colleagues literally broke new ground in the fields of industrial and historical archeology.

Throughout the project, Robbins traveled to area libraries and research centers to consult documentary records, including early illustrations of ironworks by Diderot, plats and maps, and contemporary accounts.[73] His historical research began early in the project, before full-time historian E. Neal Hartley was hired. While limited in scope it "helped him in interpreting his archaeological finds."[74] He recalled that most of his reading was directed at obtaining a "little better idea of what I should look for . . . . I had to learn to identify the iron works buildings, what we should expect to find, what a blast furnace consisted of . . . . I thought that would be the best information to have if I was going to dig."[75] In September 1949,

12.10 Robbins discussing artifacts with tour group in the museum building, October 18, 1952. (Photograph 739 by Richard Merrill,1952.)

for example Robbins traveled to Salem, Massachusetts, where he examined several diaries in the collection of the Essex Institute.[76] Archeologist Mary C. Beaudry, who subsequently analyzed the use of documentary sources for the project, writes that Robbins "did not have the advantage of a full-scale [historical] research report to guide his investigations" or even a complete chain of title for the property.[77] He was, she concluded, "able to make fairly accurate statements about the remains he uncovered, based on the small-scale research which he personally conducted."[78]

Robbins and his colleagues at Saugus had a great deal to learn about early iron making and availed themselves of any opportunity to study other furnaces and ironworks layouts. Robbins supplemented his documentary research with visits to other iron-making sites in the area and throughout New England.[79] For example, in 1949, he visited the modern Lynn Iron Foundry, where he observed the "plant operations" and the casting process; he noted that he learned the "names of the different channels which carry melted metal through the sand mould."[80] Robbins seems to have literally taken every opportunity to examine other furnace operations. While on vacation in Vermont in the fall of 1949, he visited the Forest Dale Furnace and then spent several days studying the Pittsford Furnace.[81] In 1950, while working on the furnace waterwheel at Saugus, Robbins visited Sturbridge Village with Hartley to study the "22 foot waterwheel in operation at the gristmill."[82] Robbins and the Saugus team also visited several eighteenth- and nineteenth-century ironworks sites in the Ringwood Manor State Park in New Jersey in early 1952, one of several trips set up by the American Iron and Steel Institute.[83]

Robbins also met with several iron-industry experts during the course of the project. For example, in 1950, ironworks expert Earle Smith visited the site to discuss the Saugus evidence; Smith likened the Saugus setup to the Sandvik, Sweden, furnace.[84] Robbins questioned him about the construction of furnace foundations, the arrangement and use of casting beds, and the layout of the forge hammer. Smith explained that the hammer area "should produce a wooden block in its center on which the anvil rested." Robbins asked Smith to look at several artifacts, including a series of "cupped metal pieces" that Smith identified as ladles. Robbins and Hartley arranged to send Smith samples of slag, metal, ore, and limestone from both the Saugus excavation and testing at the Hammersmith furnace in West Quincy.[85]

Robbins' meeting with English ironworks expert Dr. H. R. Schubert was less successful than his visit with Smith. He and Schubert strongly disagreed on the interpretation of several pieces of evidence related to the ironworks layout. In June 1952, Robbins recorded that "I was talking to Dr. Schubert and Hartley and remarked that the forge hammer base was seated upon a large horizontal beam. He [Schubert] remarked, 'It couldn't be, they always placed a metal plate, or sow bars, at the bottom of the anvil base.'" Robbins noted that he "had to take him down to the site to prove my point."[86] In another exchange, Robbins recalled telling Dr. Schubert

Mr. [Earle] Smith went over the casting beds, their slope, the stone ramp at S.E. corner of furnace and agreed that they are all very logical. He said the size of the casting area and its slope were in keeping with casting beds he has seen in Sweden . . . . He said it was not unusual to cross a casting bed to get to the slag dump. He agreed 100% with my archeological theory of this layout. Also he offered a likely solution for the disturbed low area to the front of furnace breast. He said that cart service across that area would sink into the mud hub deep or more. It is possible that the area was cleared of its mud and filled with slag, metal waste, etc. for a more solid base. Also cart and breast service across this area would churn up the loam and mix surface evidence into it.

Roland W. Robbins, "Saugus Ironworks Daily Log – 1950," April 29, 1950.

12.11 Diderot sketch of ore harvesting boat. (Gillispie, *A Diderot Pictorial Encyclopedia*, Vol. 1, plate 83, 1959. Courtesy of Dover Publications, Inc.)

> how I found the casting beds clinging to the south side of furnace breast. He insisted that that could not be the case, "they ran out from the center of the casting arch." I told him I had the sands from these beds. He said that that wasn't possible, "they wouldn't last that long." He didn't seem interested in this evidence, he felt certain that this was never the case with the English furnaces . . . . All this, mind you, without any knowledge of the evidence uncovered by my work. He seems entirely convinced that Saugus was a prototype of English Iron Works.[87]

Robbins sarcastically noted that "Dr. Schubert should have been brought over 3½ years ago. With his knowledge of English Iron Works there would have been no need of engaging an archaeologist to determine the basic pattern of the Saugus Iron Works."[88]

Robbins also studied sites and features with historical links to Saugus, such as the furnace at Braintree Quincy, Massachusetts. As noted above, he took ore, slag, and coal samples for laboratory analysis and eventual comparison with the Saugus specimens.[89] Robbins developed a dialogue with other archeologists and historians working on historic sites around the country, including those excavating iron-making sites such as the National Park Service's project at Hopewell Village in Pennsylvania.[90]

The chemical analysis indicated below, compared with the Saugus slag analysis covered in my letter of November 18, 1949, shows that they bear very close resemblance to each other and therefore are probably of the same general type. It would seem with this magnesia content that the gabbro from Nahant must have been used in these slags as well as those from Saugus.

H. M. Kraner (Bethlehem Steel Company) to Roland W. Robbins, September 11, 1956. Robbins, "Report of the 1956 Archaeological Exploration at the Site of the 1644 John Winthrop, Jr. Blast Furnace," p. 273.

In 1950, Robbins traveled to Quincy, Massachusetts, to locate and investigate the Braintree furnace, related to the Saugus Hammersmith operation and the later Hubbard Furnace on the Monatiquot River.[91] Robbins noted that he sought out a site on the property of a Ford automobile dealer; he investigated along the river, recording "much evidence of building foundations along the water way. Also sites of two or three dams."[92] While he thought this indicated "many generations had made use of this area and its water power for different manufacturing and business purposes," he felt that the topographic relief in this area argued against its being the location for the furnace.[93] He also noted that the river at this point was clearly not navigable. Moving farther downriver, Robbins stopped by a site that Hartley believed to be the Hubbard Furnace, which operated after the Braintree Furnace ceased operation. Although he could not examine the site closely, Robbins noted that it did have sufficient topographic relief for a furnace and furnace bridge.[94]

Robbins and his colleagues next visited a site at the Hall Cemetery, which he reported as having started in 1643.[95] He located a mounded area that was close to a channeled waterway known as Furnace Brook. After obtaining permission for some limited testing from the cemetery superintendent, Robbins excavated two small test pits in the approximately 21-by-24 -foot raised earthen feature. In test pit #1, Robbins dug to a depth of 37 inches, recovering "stone, glass and other rubbish" from the first 18 to 20 inches.[96] He notes that the soil below about 20 inches "began to take on the reddish color found in soil that filled Saugus crucible pit and its surrounding area"; this soil continued to the bottom of the test. He

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12.12 Iron expert Earle Smith examining artifacts during visit to Saugus, April 30,1950. (Photograph 373 from the Roland W. Robbins slide collection, 1950, Saugus Iron Works. Courtesy The Thoreau Society® Collections at the Thoreau Institute at Walden Woods.)

also records that a metal probe rod hit what he suspected was a stone foundation at about 55 inches and that the bottom of the test pit contained "burned sandstone furnace lining similar to that found at Saugus."[97] The unit also contained slag waste pieces and what he thought might be a piece of metal waste. Robbins' other test pit was dug some fifty feet north of the earthen feature and contained a layer of slag that further probing suggested was at least two or three feet thick. Robbins ends his notations by stating "today's tests and observations here were gratifying. Time may prove this site to be the Braintree branch of the Saugus Iron Works." [98] Visits like this were critical in Robbins' ongoing education on ironworks, helping him to improve his understanding of furnace layouts and to read the landscapes of these industrial sites.

Another important early furnace was the Falling Creek Ironworks site in Virginia, thought by some to be the first ironworks in America. Robbins visited the site in 1951 at the request of the Restoration Committee of the FIWA and members of the American Iron and Steel Institute.[99] Both groups were aware of the Falling Creek site and became concerned about the legitimacy of their claim that the Saugus facility was actually the "first" ironworks site in colonial America. Robbins was asked to investigate the site and determine whether evidence existed that would confirm that the Falling Creek site actually operated before its destruction during the 1622 massacre.[100]

Robbins records his Falling Creek visit in his Saugus daily log for March 31, 1951, providing an important sketch map of the site.[101] He reports that he located evidence of an old dam and deserted canal that ran along the north side of the river from the dam to a gristmill ruin. Working south from U.S. Route 1, he notes that the stream banks from Route 1 to the dam were steeply sloped and that the area "permits no working area for casting, etc."[102] He continues his observations by recording that "the general area where the ruins of the grist mill stand [are] most desirable for blast furnace operations. Here, either side of Falling Creek provides ideal elevations for a furnace bridge, as well as a working area . . . ." He further favored this area because it provided navigable waters that terminated at the falls and calculated that a dam at this "cascades" would provide a good head of water to power the furnace. While Robbins states that he looked carefully at the conjectured furnace site area, he notes that he found no slag or other evidence to suggest furnace activity. He did find, he continues, metal waste, metal, brick, and refractory brick 20–25 feet west of the gristmill ruins and notes that "this evidence indicates that forge activity took place in this area some time ago."[103] Subsequent research suggests that this evidence reflects the location of Archibald Cary's eighteenth-century forge on the site. Robbins reports that the materials suggested forge activity prior to the building of the gristmill and that he "took a refractory brick, metal waste materials, and a large piece of metal . . . back to my hotel."[104] He took these samples back to Saugus for further examination and testing and ends his notes by stating that "if I have the opportunity to continue the Falling Creek investigation I shall first concentrate on the area to either side of Falling Creek at the cascades."[105] The trip thus ended without a confirmation of the whether the site actually produced iron

Bricks I found at forge site at Falling Creek yesterday compare favorably in size and appearance with a brick in the Archaeological Museum which has 1717 carved in it. Bricks were often burned (made) on site where the building they were to be used in was being erected. Small (thin) size brick found only occasionally and in small quantities in Williamsburg. Probably Williamsburg "English" bricks are similar to the thin bricks we have found during the Saugus excavations. The thin bricks found at Saugus are contemporary with the Iron Works, having been found in two places in the furnace construction. (In circular structure at N.E. corner of crucible pit, and in drainage system leading into north wall of crucible pit from bellows base timbers. Also the furnace lining probably used brick to some extent, possible at the tunnel head.) At 2 P.M. I met Mr. Minor Wine Thomas, the Williamsburg Archaeologist.

Roland W. Robbins, "Saugus Ironworks Daily Log – 1951," March 31, 1951.

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12.13 Historian E. Neal Hartley standing on retaining wall along Furnace Brook, looking toward the site of Braintree works. (Photograph 1963 from the Roland W. Robbins slide collection, 1950, Saugus Iron Works. Courtesy The Thoreau Society® Collections at the Thoreau Institute at Walden Woods.)

and thus could be considered the first ironworks in the colonies. Subsequent work by Robbins, Howard McCord, the staff of the William and Mary Center for Archaeological Research, and, most recently, Lyle Browning of the Falling Creek Ironworks Foundation, suggests that Robbins' educated guess was correct and that the furnace stood on the west bank of Falling Creek in the immediate vicinity of the "cascades" or falls.[106]

In addition to his consultations with iron-industry experts and visits to various sites, Robbins also sought assistance with the analysis and interpretation of the artifacts recovered from Saugus. In January 1950, while visiting Fred Orchard at Harvard's Peabody Museum to learn more about artifact conservation techniques (see also Chapter 11), Robbins asked about help with identifying early American pottery. He notes that he told Orchard about an idea from Plimouth Plantation's Henry Hornblower to check "antique shops along Charles St. . . . I asked why this would be advantageous and he said that some of the pieces found in these shops may be dated. Believed I quite possibly could find valuable information and similar specimens to those uncovered during my excavations at the Society of the Preservation of N.E. Antiquities *[sic]*."[107] Likewise, while in Virginia to investigate the Falling Creek Ironworks site, Robbins notes that he spent "time in the Archaeological Museum and with Williamsburg's archaeologist, Minor Wine Thomas. This trip was very successful and informative. Wish I had some time [to] spend there. He wants me to return and to visit his lab."[108]

Robbins clearly took every opportunity to learn about the artifacts he was recovering. Because historical archeology was such a new field, he had to approach this work from many directions to get even basic information. Over the course of his five years at Saugus, Robbins spent considerable time getting to know pottery types, clay tobacco pipes, animal bone, and the many kinds of metal artifacts used in and produced by the ironworks. In January 1949, Robbins began his artifact research at the Concord Public Library, looking for information on the clay tobacco pipes he was recovering. He was excited to find a *Scientific American Supplement* from 1908 that told "considerable about the early clay pipes."[109] A visit to the tenth annual meeting of the Massachusetts Archaeological Society provided another opportunity for asking questions about pipes, but Robbins notes that archeologists William Fowler, Jesse Brewer, and Charles Sherman were only able to tell him that the clay pipe bowl he brought along was "not of Indian origin."[110] Robbins, like J.C. Harrington at Jamestown in the 1930s, struggled with the general lack of information on historic artifacts. As Harrington later wrote, "I came to Jamestown with the ability to recognize the difference between a corrugated and a simple stamped Indian potsherd, but such terms as 'delftware' and 'stoneware' were completely foreign to me; they were all just 'china.'"[111] In an attempt to discover more about pipes, Robbins wrote to H. Geiger Omwake, superintendent of the Lewes School District, Lewes, Delaware, who he records "is a top authority on Colonial clay pipes," and sent him several sketches of pipe bowls recovered at Saugus.[112] While waiting for a reply from Omwake, Robbins visited the Art Department of the Boston Public Library, where librarians found several articles from

During the four years of excavations here at Saugus, we have located considerable evidence regarding clay pipes and the periods when they were used. Many of them have been found at working levels associated with the Iron Works activity which took place here three centuries ago. While all of these specimens have been carefully carded, plotting their association with the different sites, time has not permitted a careful study of their significance and relation to different periods. This will be attended to in due course. However, I think it is well to point out that the earliest pipes did not always contain a small bowl. Also, here at Saugus, we have uncovered considerable evidence of red clay pipes.

Roland W. Robbins to Maurice Robbins, January 26, 1953.

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12.14 Sketches of tobacco pipes found at Saugus, drawn by Nan Herwitz, January 1953. (Courtesy The Thoreau Society® Collections at the Thoreau Institute at Walden Woods.)

the journal *Antiques* on "TD" pipes and "colonial pipes found in and about Yorktown" and suggested a couple of pottery and porcelain books that reference clay tobacco pipes (i.e., works by Edwin Altee Barber and William Chaffers).[113] Robbins also contacted archeologist Arthur Woodward of the Los Angeles Museum for more information on the identification and dating of pipes.[114] By the end of the project, Robbins was passing his information on tobacco pipe identification on to fellow archeologist Maurice Robbins, providing a sketch of the marked pipes at Saugus (drawn by Nan Herwitz) and explaining what he had learned about each pipe and its maker.[115]

Although not a primary focus of his work at Saugus, Robbins also sought help with Native American artifact identification from colleagues at the Peabody Museum and the Massachusetts Archaeology Society. For example, in late 1951, Robbins took an unusually large stone axe found in the fill of the refinery waterway first to Ben Smith, the president of the Massachusetts Archaeology Society, and then to Frederick Orchard at the Peabody.[116]

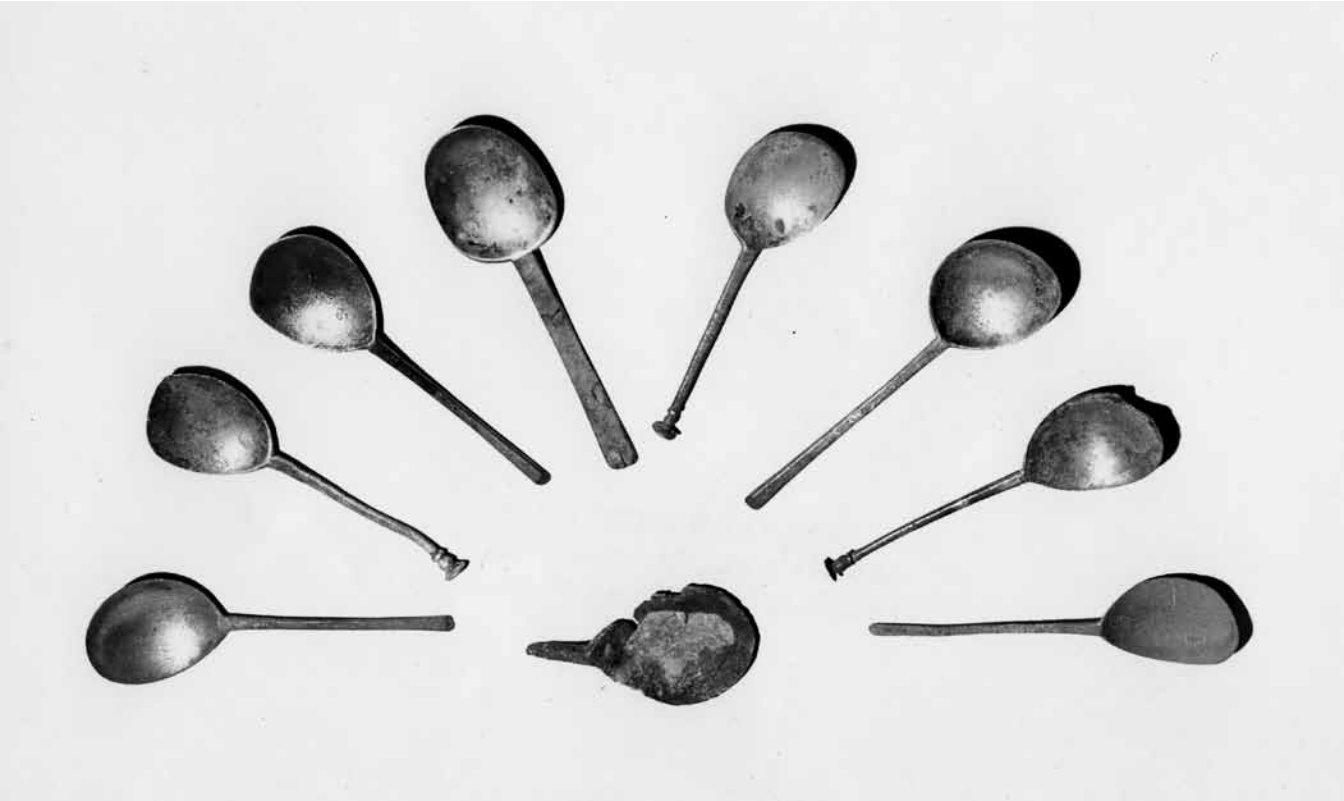
As discussed above, Robbins sought out help in identifying ceramics early in the project. After being directed to the collection of the Society for the Preservation of New England Antiquities for comparative examples, he also visited the Concord Library for sources "on pottery and china marks to determine age of chinaware uncovered in fill to north side of Bridge St's. retaining wall."[117] Robbins also met with local experts like Henry Hornblower. Hornblower examined the

> pottery and glass bottle piece[s] found amid stones of foundations #9 and 10. After examining these specimens he doubted either was earlier than 1720. Said it was unlikely that the glass bottle bottom was much earlier than this. Said the pottery piece could be earlier. I asked if it could be earlier than 1680. Again he said he didn't think so. He said no careful study of earlier pottery has been made which could set a definite period on any amount of it. Also said that John Marshall Phillips at Yale University could be helpful, he being one of the top authorities in his field.[118]

With Mrs. Crowninshield was a man (a Boswell or Buswell) who apparently was well versed in pottery. He inspected the pottery piece found amid stones of foundation #7 (Sept. 8 relics), and stated it could well be 3 centuries old. He said it had the lines of 17th century pottery. The bottle bottom with (Aug. 25 relics) was not as old in this man's opinion. Possibly about 1776 he suggested. He thought that the Brooklyn (N.Y.) Museum would know. Mrs. Crowninshield said she would send me the address of the person to write to at the Brooklyn Museum.

Roland W. Robbins, "Saugus Ironworks Daily Log – 1949," September 21, 1949.

Similarly, while in Williamsburg, Virginia, in 1951, Robbins met with "Williamsburg's archaeologist, Minor Wine Thomas" to get help with identifying Saugus artifacts. On this trip, he spent time in the Archaeological Museum, where he took copious notes in his daily log on various types of ceramics recovered at Colonial Williamsburg.[119] On several occasions Robbins met with Lura Woodside Watkins and her son C. Malcolm Watkins, both ceramics experts, who helped with the identification of Saugus artifacts.[120] For example, in December 1952, Robbins recorded that the Watkinses



12.15 Seventeenth-century "latten" spoons excavated at Saugus, April 1953. (Photograph 868 by Richard Merrill, April 27, 1953.)

> looked at some of the pottery fragments I have uncovered at Saugus. I showed pottery pieces from below the base sills of Jenks 1st wheel pit. She said they were 17th century. Also the pottery pieces from the dock excavations were identified as of 17th century, one piece from the dock site was delft. The complete bottom of a red clay pottery piece, filed with the Sept. 18-23, 1950 relics also is of the 17th century. The clay plugs I have found (they may not be contemporary with Iron Works period) she suggested that they may have been used by potters when stacking jugs in the kiln. They would use such a plug to set jugs upon one another. I also showed her the bottom of a china dish which I removed this week from between two of the stones in the easterly side of the middle stone well which is south-east of the forge. She said it might be 1900, certainly not earlier than 1850. This china piece, plus the wire nails found in the sieve, at end of lead pipe leading from the easterly side of this well; as well as Iron Works impurities found more than 6" below lead pipe, and about the base stones of this well; as well as the cut through the natural loam line, with sand or clay fill upon it, with Iron Works impurities upon the clay or sand fill, which was made when the area was dug out for well purposes, strongly suggest that this well is ***not*** contemporary with the Iron Works era. I shall do more work here before completely eliminating this well as being associated with the Iron Works period.[121]

The Watkins also looked at pottery pieces removed from *the charcoal bed just east of south-east corner of forge. Said it is 17th century. I showed them a piece of blue chinaware from this area (exact site unknown.). They identified it as Blue Staffordshire china 1815-1835. Her son, C. Malcolm, went over my evidence, also. He agreed with his mother's views concerning my artifacts. He is associate curator, Division of Ethnology at the Smithsonian Institute.*

Roland Robbins, Saugus Ironworks Daily Log - 1952, December 26, 1952.

With continuous input from experts like the Watkinses, Robbins became more comfortable with artifact dating and, as demonstrated above, was clearly using artifacts to establish relative stratigraphic and chronological relationships.

Robbins also drew on experts in the field of forestry to provide help with the identification and dating of the many wooden artifacts recovered from Saugus. He had experimented with dendrochronology at the Walden Pond project to date a tree stump near the cairn marking the Thoreau cabin site. At Saugus, he called on the same expert, forester Jack Lambert of the Massachusetts Department of Conservation, Division of Forestry, to study wood samples. In early 1949, for instance, he contacted Lambert to help with identifying the types of wood being found in the furnace sluiceway. Robbins reports that Lambert "felt quite certain that the beam which lies across the sluiceway near the converged end is oak. As for samples of the easterly sluiceway beam and the large beam which crosses at sluiceway's rear, he was more doubtful but believes they are chestnut. Chestnut is one of best woods for use in contact with ground."[122] In April 1953, Robbins invited Lambert and associate Harold O. Cook to study "the growth rings on the anvil block." They determined that there were "270 discernible rings, (about 8 more rings were difficult to discern.) Jack estimated that 25 more rings could be added between the last discernible ring and the pith of the tree, giving it an overall age of about 295 years."[123] Lambert and Cook also provided help in locating trees of sufficient diameter to be used as anvil bases in the reconstructed forge building.[124]

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12.16 Robbins with ceramics expert Mrs. Lura Watkins, March 17, 1952. (Photograph 1264 from the Roland W. Robbins slide collection, 1952, Saugus Iron Works. Courtesy The Thoreau Society® Collections at the Thoreau Institute at Walden Woods.)

At a time when faunal bone was not even being collected at most historic sites, Robbins sought help from Barbara Lawrence and staff at the Harvard Zoological Laboratory to analyze selected faunal remains from the site.[125] The specimens were typically objects of special interest or from important contexts which Robbins hoped to identify and even date. Although Lawrence indicated that dating wasn't possible, she and collegue Dr. Irwin Romer provided general identification for most of the samples. A 1950 letter report indicates that the list of identified bones included cow, pig, sheep, cat, and chicken. The authors note that "from the sharply cut surfaces of some of the long bones and pelvis, it shows clearly that most of the collections were the debris of foodstuffs of the early pioneers, except the cat which was presumably a pet."[126] Robbins also sought help in identifying the animal-hair packing used to caulk the buckets of the furnace waterwheel; the results suggested cattle hair.[127]

The Saugus site produced thousands of artifacts, with excellent preservation of metal, wood, and leather. These materials presented enormous conservation problems for Robbins (see Chapter 11).[128] From the very beginning of the excavations, he conducted research on approaches to dealing with these materials and consulted with several conservation specialists. For example, he worked with Professor Uhlig of MIT to conduct a series of experiments on iron preservation and the corrosion process.[129] In 1952, Robbins hired a worker to begin a series of metal-cleaning experiments with brushes, grinding wheels, and electrolytic reduction.[130] Even more problematic than metals were wooden artifacts. Robbins voiced his concerns with wood preservation problems in early 1949 and quickly began searching for help with this conservation challenge.[131] With the discovery of the large waterwheel sections in 1950, he stepped up his search for suitable wood treatments. In early 1951, Dr. Elso Barghoorn of the Harvard Biological Laboratory conducted a series of experiments to test possible treatments on samples of ironworks wood and finally settled on a paraffin wax impregnation technique.[132] Many sections of the waterwheel pit and flume and waterwheel itself were successfully preserved in this way and remain on display to this day.

Robbins and the Reconstruction Committee also engaged researchers from the iron industry to provide sampling and testing of slags, iron products, iron ores, and casting sands from Saugus. Beginning early in the project, Robbins regularly sent groups of samples to various iron company laboratories, such as Bethlehem Steel, Inland Steel, and Republic Steel. For example, in April 1949, he sent a package of samples including "castings, metals, nails, tuyere, sows and a circular metal piece," as well as samples from the slag heap, to a Mr. Herty at Bethlehem Steel in Pennsylvania.[133] Robbins would typically prepare a list of the samples, providing a brief description and provenience if available.[134] In July 1953, for instance, he sent a group of eight specimens of "impurities" from near the slitting mill site to H.M. Kraner of Bethlehem Steel for analysis.[135] His notes indicated that Specimen #2 consisted of "pieces of two fair sized clinker specimens found in the 13½" deep bed of impurities which were above the lens of lime

I went to Robert Peabody Museum at Andover and looked up Fred Johnson. I want[ed] to get his suggestions for preserving the waterwheel, its buckets, etc. Also to get his suggestions for dismantling the wheel when we remove it.

He telephoned E. Barghoorn at Harvard's Biological Laboratories . . . and told him our problem. Mr. Barghoorn was interested and asked if I would bring him samples of the wood we are finding. He would like to make test with them. I shall do this soon. I shall attempt to get Mr. Barghoorn down to Saugus so that he may receive a first hand account of our problem.

Roland W. Robbins, "Saugus Ironworks Daily Log – 1951," March 13–14, 1951.

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12.17 Crucible after cleaning and treatment in museum building. (Photograph 1568 from the Roland W. Robbins slide collection,1952, Saugus Iron Works. Courtesy The Thoreau Society® Collections at the Thoreau Institute at Walden Woods.)

materials." Robbins recorded that it was possible that "these specimens could identify the nature of the activity taking place there."[136]

In May and June 1949, Robbins sent 20 samples of cast and wrought iron from the furnace area for analysis. A report by analysts S. Epstein, K. Haupt, and A. G. Ferdinand details the chemical and metallographic examination of these specimens, separating them into two groups of cast-iron (five) and wrought-iron (twelve) samples.[137] The authors note that while both the wrought- and cast-iron specimens showed considerable variation in phosphorus and sulphur content, in general the wrought-iron specimens were lower in phosphorus and sulphur than the cast iron. The analysts also note that "all of the wrought iron specimens were relatively low in carbon content."[138] They found that it was unlikely that any of the wrought-iron specimens was "quenched from above the critical temperature for hardening."[139] Similar analyses were performed on the sandstone-lining evidence, the slags, and molding and casting sands.[140] In the case of the molding and casting sands, Robbins submitted numerous samples of sand and mold fragments from the sow and hollowware casting beds of the furnace.[141] Sample B-1, analyst Frederick Matson reports, was "a mixture of raw very fine textured sandy clay and of clay that has been exposed to heat and has been oxidized to an orange color."[142] Matson also notes that the "quartz grains are dominant and control the color, while the actual clay particles act as a bond." [143] These types of studies were extremely important for the confirmation of Robbins' interpretation of various features, providing solid physical evidence of specific types of ironworking activities.

Took samples of teeth from May 25 and June 11 artifacts (tailrace excavation), as well as bone evidence from May 24 (2 pieces) and June 10 (east of tailrace excavations) 2 pieces and one tusk for examination at Harvard Zoology Museum. Sent Herty Jr. specimens of furnace's sandstone lining (1 piece); its clay packing (1 piece); piece from broken casting (#20) piled in corner of two walls located 40' south westerly of furnace's southwest corner; and 2 pieces of bog ore removed from excavations about area near to south wall of furnace.

Roland W. Robbins, "Saugus Ironworks Daily Log - 1949," June 14, 1949.

Robbins' collaboration with Dr. Elso Barghoorn on wood conservation resulted in their study of sea level rise along the coast. Robbins' discovery of three-hundred-year-old ironworks features submerged under the Saugus River caused him to wonder about sea level during the 1640s. Dr. Barghoorn began studying the features and the underlying geological formations in 1951, and published "Recent Changes in Sea Level Along the New England Coast: New Archaeological Evidence" in 1953.[144] This article, based on the archeology at Saugus and at the Boylston Street fish weir in Boston, concluds that the Saugus evidence proved a sea level rise of three feet over three hundred years or about one foot per hundred years.

Robbins' reliance on outside research, both his own work and the contributions of specialist researchers and consultants, added greatly to the success of the Saugus Iron Works reconstruction project. With historical archeology still in its formative stages, the general level of knowledge about artifact and feature types was extremely limited. At industrial sites, this knowledge was virtually non-existent in the late 1940s. Robbins and his colleagues on the Reconstruction Committee were forced to pursue a wide variety of approaches and were generally open to input from many sources. While Robbins worked on all aspects of the research, he also had a great deal of assistance from experts in many fields. Much of the analysis and eventual translation of the evidence into the physical reconstruction would not have been

12.18 Technician using spectrometer to examine chemical composition of "Saugus Pot," January 4, 1951. (Photograph 280 by Richard Merrill,1951.)

possible without the input of so many other researchers, particularly the iron-industry experts and analysts.