Machining a gear with a lathe, Mesta Machine Company, West Homestead, c. 1910. The size and scale of steelmaking technology at the turn of the century fueled the almost overnight industrialization and urbanization of many parts of the country. Today, that same technology presents a new set of challenges for those who hope to preserve it.
The Big, the Bad, and the Ugly: Collecting Industrial Artifacts for History Museums

By John Bowditch

It has been nearly 200 years since the start of America's industrial revolution, with the impact on society obvious and enormous. In fact, the industrial age has almost passed as we enter the era of the information revolution.

Until recently, most general history museums in the United States chose either to ignore the history of large-scale industrial activity (as opposed to craft work) or, at the very best, to depict it graphically. But today more and more museums collect industrial artifacts and mount exhibitions that relate to the industrial environment and its effect on society. In addition, there is growing interest in the preservation of the industrial landscape and in different parts of the country entire industrial complexes have been preserved. There are government agencies such as the Historic American Engineering Record office which are documenting industrial sites and professional organizations such as the Society for Industrial Archeology concerned with the same things.

While it is obviously possible to collect industrial artifacts and to preserve mills and similar structures, such materials have unique requirements, particularly in the areas of moving, storage, exhibition and conservation. Machinery, in particular, can pose special problems due to its weight, difficulty in interpreting its purpose or operation, and its appearance.

I am primarily concerned here with the general history museum. Technical and science museums have very different agendas, needs and experiences. I also assume the general history museum is collecting these items to deal with social, economic or design matters, and not, generally, to deal with strictly technological development, although this is certainly not always the case.

Collecting and Exhibiting Industrial Machinery

For most museums and curators, the first and most obvious obstacle — the size of the machines — can be daunting.Usu-
ally we think of a piano or large painting as being really big, but a typical industrial machine usually is no smaller than a desk and no lighter than half a ton. Enormous engines can weigh hundreds of tons.

With the associated costs of moving, storing, and difficulty in preparing for exhibit, it is no wonder that most museums cry uncle. Most conservation laboratories in most museums are usually unable or unwilling to cope with enormous, heavy objects. Traditional methods of conservation may be too slow or inadequate under these conditions. In addition, artifacts are often exhibited outside, so in such cases preservation is the only answer.

The second problem is no less frightening, even if less recognized. Put simply, most industrial equipment is relatively unintelligible to both the museum staff and visitors. Everybody knows what a chair is used for, and how it works, on some fundamental level. But few people have any understanding of what even a common machine tool, such as a milling machine, is for, how it works or why it is important.

Closely allied to the above is a very simple fact: most machinery is ugly to most people. Either it represents an unpleasant memory of hard work or it is just plain dirty and ugly. Few can appreciate machinery strictly for its beauty of form.

Finally, there is the problem that most machinery is only a small part of the industrial process. Unlike a chair, the lathe or machine tool cannot easily stand alone; it is part of a much larger and complex environment that in toto represents a unit of production, the factory: machinery plus people, furnishings, buildings and ancillary apparatus to make it a complete and living thing. How much could visitors really understand about farm life if all they saw exhibited was a stuffed cow?

Therefore, the collecting of industrial artifacts requires careful planning and judicious choice. Most museums could not collect an entire factory even if they wanted to. How can curators and other museum staff tell the story of industrial life in America using artifacts while still maintaining a traditional museum environment?

The answer lies in selectivity. No museum can possibly document every aspect of the history of American industry and no museum can collect even a tiny portion of what is out there relative to the subject. We must set limits. There is no other way to save these types of enormous artifacts.

Collecting may be limited in several ways. The first is the intended scope of the museum’s collections on the whole. Probably the most general overall limit is geographical; many museums attempt to collect regionally while others do so on a national or international level. Other museums are limited by subject; the Museum of American Textile History, for example, would have no rational reason to collect parts of steel mills. Still others collect only from a certain historical period. Nevertheless, even when these strictures are placed on collecting, things can quickly get out of hand.

Collecting in many museums has often been quite haphazard; if a great object presents itself, we acquire it; if we have a collection of similar items, we “fill a gap,” etc. I once heard of a curator who had acquired the name of the “vacuum
cleaner." He sucked up any item offered. Henry Ford attempted to do this with industrial artifacts. In a mere 10 years he filled several warehouses and a couple of acres of museum floor space. He barely scratched the surface of what was out there at the time and the collections emerged as rich but extremely uneven in content, with some artifacts over-represented (steam engines) and some industries with few or no artifacts (textile machinery).

In 1981 the Henry Ford Museum collections staff began a systematic review of its collecting enterprise in a effort to systematize the collecting endeavor and to shape the existing collections. While there were many debates, the process finally evolved into general agreement that the collecting should be based on historical themes rather than by class of artifact. At the time, this seemed to be a revolutionary concept and I still believe it is in many respects. The theme of major interest for the museum was determined to be the national shift from rural agrarian to urban industrial society.

In the case of industrial artifacts, it was decided that the major theme was change in the means of production in the United States over the same period. This theme fit the machinery collections into the museum’s overall historical framework. Beyond this, it was immediately obvious that this major theme was in itself far too broad, so further strictures were placed. It was decided that, in general, only production machinery related to the manufacture of consumer goods would be collected. Machinery for “producer goods industries,” such as the steel industry, would not be collected.

Even these two strictures were not enough; it was necessary to go further and identify key subthemes. In our case, these subthemes numbered about 10. Typical examples were:

• The shift in production location from small shops and homes to factories.
• Development of mass-production techniques for simple commodities like flour or cotton textiles.
• Mass-production of complex consumer goods such as sewing machines, clocks and automobiles.
• Changes in the work environment.
• The application of mechanical power to production.
• Development of synthetic materials.
• Change in the production of food; the beginnings and growth of the ready-to-eat food industry.

Further definition was made by identifying representative industries felt to be important: furniture manufacturing, textiles, the auto industry, and the like. In this way, a topic seemingly impossible to organize began to become more clear.

Of course, if you are dealing with the history of a particular city, the choice is much easier. The Grand Rapids Public Museum plans an extensive exhibit on the furniture industry of the city, for example. The point is that limits make possible collections that are manageable and capable of contributing to coherent exhibits.

Having defined the industries which you wish to document, how do you determine which machines to save? There are literally thousands used to build a car, for example. The answer is to look at the machine in three very different ways. First, study the product. For

Ore stock yard and ore bridge, Duquesne Works, 1987. Many aspects of a steel plant are so large that they can only be preserved on the site. This approach, however, supplies an important, tangible context for the visitor. The Steel Industry Heritage Task Force, a local consortium of community groups and public historical agencies, has recommended preservation of an iron ore yard and bridge at the Carrie Furnaces in Rankin, similar to the one pictured here.
Historical Society Collects Steel Valley Artifacts
By Bart Roselli
Assistant Director for Museum Programs
Historical Society of Western Pennsylvania

HOW do you craft a memory of the lifeblood of a region — a century worth of technological, social and industrial change that shaped the landscape and identity of steel making towns in the Pittsburgh District? This was the task given to the Historical Society when we set out to salvage historic steel making materials in August of 1987. The responsibility was great, for hundreds of thousands of people would someday come to share this memory and base their understanding of our past on the artifacts and photographs that we chose to collect and later exhibit.

There are always other considerations, and in this effort the Society had to concentrate its collecting at sites where plenty was left to be preserved. This had to be done by the Museum’s curatorial crew with limited funds, time and staff. Chosen were the recently closed Duquesne Works in Duquesne and National Tube Works in McKeesport. USX had deeded both to the county and the Regional Industrial Development Corporation was hired to supervise redevelopment plans.

Contracted by RIDC, the Museum staff provided expertise in the selection, documentation, collection and storage of historical objects and machinery from inside the deserted mills. In four months, more than 2,000 objects, 300 photographs, and enough archival materials — maps, drawings, documents and other published materials — to fill 600 cubic feet were taken from the two sites. This collection may seem substantial, but we often asked ourselves during the work in the 350 buildings how accurately the materials reflected the complex histories of the two facilities. When shut down, the two plants employed more than 6,000 workers, occupied 300 acres of land, produced steel which had orbited the Earth and was used in America’s most famous battleships and tallest skyscrapers. The sites contained tens of thousands of machines — some the largest of their kind in the planet — and represented the work lives of four generations of families in that part of the Monongahela River valley.

Ultimately our choices were driven by plans to use the materials as educational and research tools. We worked to accurately reflect each plant’s individual history: Duquesne as a site of technological innovation in making iron and semi-finished steel and National as a pipe mill. In addition, we had to concentrate on areas slated for demolition and we could not spend precious resources gathering materials that duplicated other collections, for instance at the Smithsonian or at Sloss Furnaces National Historic Landmark in Birmingham, Alabama.

In addition to collecting machines at the two sites, we salvaged as much of the human experience as possible, to preserve a record of the life and work histories of valley residents. Building upon other work by the National Park Service to document machines and industrial landscapes, we focused our collecting on work stations, control panels, inspection tables, offices, metallurgical labs, the ground level of blast furnaces, locker rooms, crane operators’ cabs, rolling mill pulpgits, machine shops, lunch rooms, and infirmaries. We approached the sites as a unit, in a holistic way, to preserve a complete understanding of how a worker or superintendent might have viewed the plants. We avoided the easier and seductive “grab bag” approach. We devised a three-tiered system,
based on the size of the objects, to categorize all the contents of both plants.

Walking through deserted cathedral-like vaults at these giant mills, we felt like archaeologists exploring a lost city. Much remained in place; an entire office lay open to us, as if the workers had left moments before. Under layers of dust in the plant’s receiving office, we found bills of lading, recording ores and other raw materials shipped from the plant on its last day. We took rows of steel lockers, complete with workers’ names, union stickers, and graffiti; we also saved the boots, hardhats, and reading materials inside the lockers. From the blacksmith shop, we saved one-of-a-kind tools forged to perform specialized tasks in other departments; we also collected wall calendars. From administrative offices, we took payroll records, accident forms, and office equipment.

The fortunate part of our work is that unlike lost cities, there are people living who know how to tap a blast furnace or to operate a charging machine. By collecting the oral histories of these people, we can document a representative slice of life in the Mon Valley during its steel-making days. These oral histories, combined with other research and the artifacts and photographs collected during projects like the one at Duquesne and National will form the basis of a continuing series of social history exhibits at the Historical Society.

Building upon our previous work, we now turn to the famous Homestead Works. Working with the Allegheny County Steel Industry Heritage Task Force, we will spend this summer collecting documents, handtools, signs, and other objects from the plant for a steel museum. We also will recommend several large pieces of machinery and structures should be preserved. Complete buildings, two blast furnaces, and machinery in Homestead’s 48-inch mill — built in 1899 and in continual operation until 1979 — already have been selected.

As plans for a steel heritage historic site move toward realization, our preservation plans are growing to more clearly reflect the scale of these mammoth places. With careful choices, detailed documentation, and thoughtful exhibits and programs, we will ensure that the coming years provide residents a rich appreciation of our steel industry heritage.

Above: Decorated cart in machine shop, National Tube Works. Personalized work places suggest one opportunity for a more “human” interpretation of industrial technology and worker culture. Center: Control room in blast furnace #1, Duquesne Works. Sensitivity to the context of the work experience can do wonders for interpretation. A worker in this control room, for example, was literally enveloped in a blanket of heat. Its walls only partially shielded him from the intense heat of the blast furnace just beyond the oblong window on the wall. Workers often stood on the plate to keep their feet away from the hot floor. Lower left: Women’s dressing room outside of heat treating building, Duquesne Works. A traditionally male industry, steel only begrudgingly made accommodations to women workers who entered its shop floors during the 1970s. This one trailer served all female employees at Duquesne.

of this type of effort is the urban national park at Lowell, Massachusetts. Clearly, once you begin to move in this direction, the operation has totally outgrown the traditional museum setting. The reason much of this type of preservation is happening is that people are beginning to see architectural beauty in old industrial buildings. Beyond that, there is a recognition of the need to present the entire industrial landscape as an exhibit environment. Visitors can then begin to get an idea of scale that is simply impossible in conventional exhibits. The truth is there are very definite limits to what can be shown using machinery or other similar artifacts that are pulled from their original context.

Preservation of entire industrial complexes is still a very new thing in this country. It is impossible to save all early and important industrial sites. At best you will be lucky to save one in a given industry or geographical area, so it better be the right one. The same careful selection process outlined
above relative to machinery collection is essential: what is the story you are trying to tell and which industry is the best representative and which specific plant is the best one? These questions must be answered with the needs of museum programming in mind, and once the historical points have been addressed, the practical questions rush to the fore. Can visitors understand what they see in this plant? Can they get to it? Will they feel safe leaving their cars in the parking lot? Is it safe to visit? Is there asbestos and if so, how is getting rid of it to be handled? On and on. Finally, and perhaps most importantly, the “double whammy” of the whole business: 1) How can it be financially supported? and 2) Will anyone really be interested enough to visit in the first place?

Unfortunately, many mills and factories aren’t noticed or evaluated before they are partially torn down or the wrecking ball is almost there. This can lead to hasty decisions, inadequate planning, and ultimately, failure. If significant plants are identified and evaluated before they are about to be closed or demolished, it is much easier to rationally evaluate them and to develop a comprehensive plan of preservation that is more likely to be successful and which will tell the story you wish to tell. Federal programs such as the HAER project have been documenting and recording significant and historic industrial sites for many years. HAER can help identify the key plants and further community interest that can lead to preservation planning and actual preservation later.

Building Cooperation Among Museums

If we can contemplate preserving and exhibiting an entire factory or city, such as Lowell, how about the national effort to save our industrial heritage? Whether the item to be preserved is a single machine or an entire mill complex, the need for national cooperation between museums in this area is very great. The story is so large, and the artifacts so difficult to move and preserve, it is important to look toward consortiums of museums to preserve as much as possible.

Cooperation can come at several levels, beginning with preservation of individual artifacts. One of the simplest ways to accomplish this is to divide up the pie so certain museums become “national repositories” for various types of artifacts. Other museums would not attempt to collect very much in areas that are deeply collected by a particular museum. Nationally, everybody gains because by working together a more complete cross section of the industrial landscape can be preserved and there is less duplication of effort.

More needs to be done so that key museums are identified as collecting specific classes of artifacts. In addition, the present highly personal network of notification when artifacts become available needs to be greatly expanded. It’s not enough to rely on one curator telling another about an available engine, or whatever. Unlike fine art objects or even highly collected decorative art objects, there is no shortage of industrial artifacts, which often have scrap value. I get offered things every week that are worthy and which should be preserved but for which I have no place. The next call a potential donor usually makes is to the junk yard. It is not at all unusual for me to get a call a year or two later from a museum asking about the availability of the very machine that was offered previously by someone but which has been recycled into a new Toyota!

If we look beyond the preservation of individual artifacts or even individual industrial sites to a program of overall national or regional preservation planning, the same cooperation becomes even more essential. Various national and regional groups need to meet, plan and negotiate to assure that appropriate sites are preserved.

This last point brings me to true cooperation among museums, professional societies, government bodies and preservationists. Occasionally institutions actively compete with each other for the same historic industrial materials. A more common problem is that regions may compete for scarce government funding or individual cities may become competitive with another. Still more common is the inward-looking view of most museums. This state of mind says, “If we can’t exhibit it or use it in our collections, why invest time or money in preserving it?” These attitudes must be altered and some systems devised so various museums and agencies work together and not at cross-purposes.

Important resources in these cooperative preservation enterprises are the professional societies like the Society for Industrial Archeology or the Society for the History of Technology. The SIA, in particular, has been in the forefront of the industrial preservation movement and has also acted as an information clearinghouse for many years. Professional societies such as the American Society of Mechanical Engineers can also be invaluable.

Perhaps the cooperation described above could someday lead to an old dream of mine: a sort of artifact wholesale operation that would operate sites to “hold” significant items until museums need them. The sad truth is that most industrial equipment goes through a very dangerous period when it is between 25 and 75 years old. No one wants it, but later, when it is needed, it has all been lost. If it can be stored for a very critical few years, there is a good chance it will be preserved.

The interim organization could
also provide other services, such as conservation and restoration, moving of artifacts and exhibit planning and services such as erection of historical machinery, etc.

The organizing of such a wholesale operation would be very complex and expensive. Member museums would have to pool their resources. Detailed financial arrangements would have to be made to assure the body supervising the interim preservation would not be inviable.

In closing, we can see that collecting industrial artifacts creates new challenges for the average history museum. However, we can also see that many of these challenges can be met. In so doing, visitors to these museums may finally benefit from the unique exhibits created from collecting the big, the bad, and the ugly.