

Chicago Science & Industry Museum exhibit of plumbers' tools

By the 1880s, indoor plumbing was a prominent feature of better homes and row houses. That wasn't necessarily good news, however.

Drainage was unsanitary, venting and trapping unknown. House drains frequently would be buried under cement by home builders who didn't know what

to homeowners that dispelled their fears and instructed them how to ensure safe and healthy indoor plumbing.

Major urban centers like New York, Philadelphia and Boston enacted comprehensive codes to govern the sanitary arrangements of buildings. Governmental efforts to develop plumbing systems were propelled along by homeowners who began to seek advice on proper plumbing, repulsed by the stench of sewer gas emanating from faulty drains.

and maintaining water service, gas service and drainage in a building.")

The problems of the plumbing profession were not of its own making. Unlike today's trade, the original plumbers were mechanics with virtually no knowledge of the health and sanitation implications of their work. Of course, how could anyone expect plumbers to know of those things when medical science was still debating the role of microbes and sanitation was just coming into its own as

THE GOOD OLD DAYS OF PLUMBING IN AMERICA

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all this newfangled plumbing was all about. Soil pipe lines ended at the fixtures instead of extending to the roof and venting to atmosphere.

Being wealthy enough to afford indoor plumbing during that era wasn't as much of a status symbol as one might imagine. To be sure, it added a certain dimension of convenience to life—most welcome, of course, on a frigid winter night.

But the homes stunk! And there were serious questions raised by people of high stature whether their health might not be threatened by indoor plumbing. Most of their concerns were about sewer gas, which was widely believed to be the source of disease. It would not be proven conclusively until 1909 that sewer gas was not the direct cause of bacterial infection, but the misleading research served a useful purpose of sparking demand by homeowners for better, safer plumbing systems.

The true heyday of good, safe plumbing in America occurred from 1880 on. Much of the credit must go to the pioneering sanitation engineer **George E. Waring, Jr.** A landmark book of his published in 1876, *The Sanitary Drainage of Houses and Towns*, sparked many municipal reforms in public health, building codes and sanitation systems. Waring also wrote numerous other articles and books geared

Chicago Museum of Science and Industry exhibit.

In 1881, New York State led the nation in requiring the registration of plumbers, as well as Board of Health supervision of all new plumbing installation. This was accomplished through prior submission and approval of plans and examinations of completed work.

In a research paper titled "The Plumbing Paradox," Columbia University's **May N. Stone** observes that "an examination of water service, drainage and fixtures in New York City row houses built between 1880 and 1885 reveals that during this five-year period the plumbing arrangements changed from an unsafe state to a fairly safe and sanitary one as a result of agitation and legislation."

Growing Pains: The fits and starts of plumbing sanitation was mirrored by the growing pains of the plumbing industry as a whole, and most of all, the plumber.

Even then, the plumber's reputation suffered because of the antics of unqualified jacklegs. In the 1870s, the plumber was reviled, the term synonymous with "cheat," according to May N. Stone. (The terms "plumbing" and "plumber" were used on only a limited basis in the 19th century, reports Stone. "Fitters, lead workers" and other synonyms were more common. The *Encyclopaedia Britannica* did not include plumbing in its listings until 1911, at which time the trade was described as "work...done for the purpose of fitting up

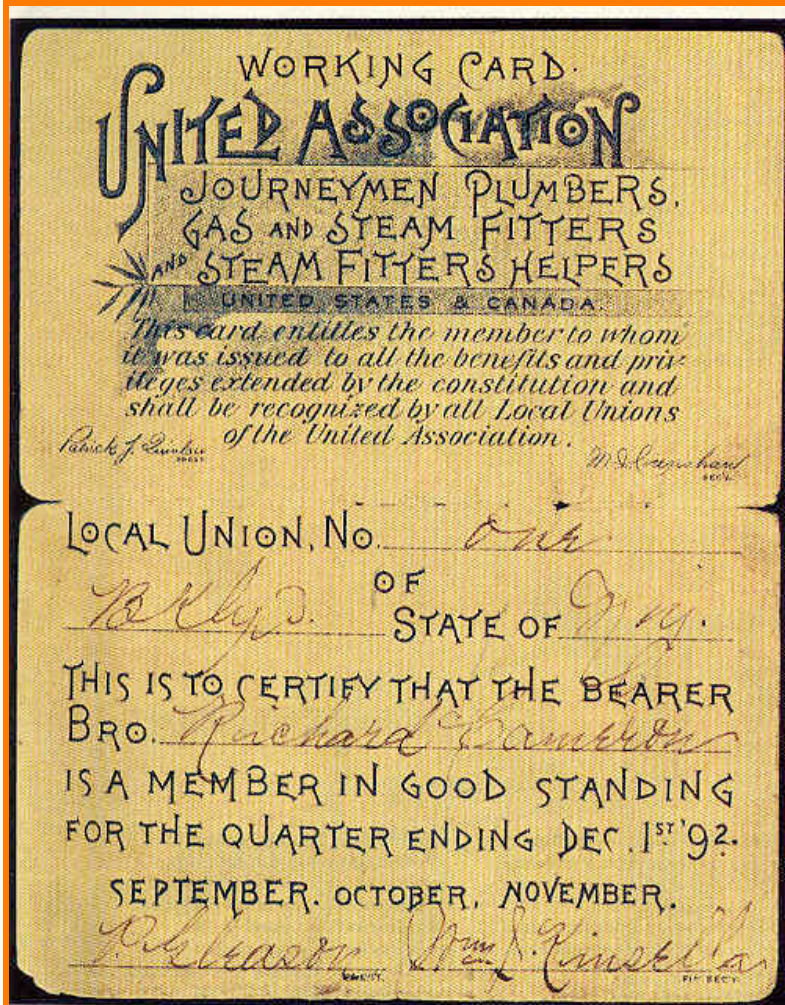
an important engineering specialty.

Even in the mechanical end, early standards and regulations were poor to nonexistent, allowing virtually anyone to pass himself off as a plumber. "A plumber's license simply conferred upon him the right to open the street and make sewer connections, a small bond having been given as an assurance that he would restore the pavement; no license whatsoever was required for work within a house," writes Stone.

The plumber of yesterday also was befuddled by constant refinements in material, fixture design and piping arrangements, and requirements that changed from year to year. A house built in 1883 and passing muster to then-current specifications might be condemned as faulty five years later.

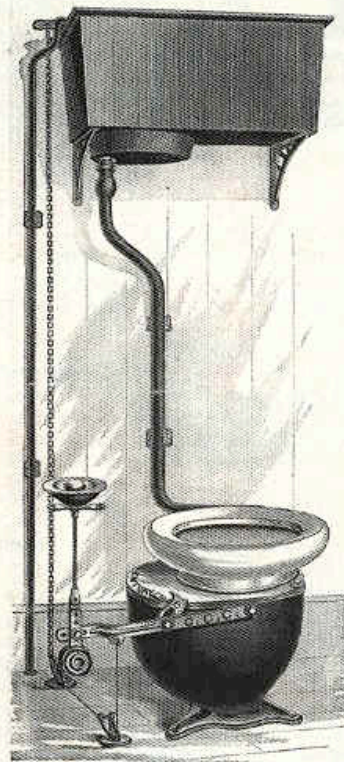
Towards Professionalism: Sanitation knowledge inspired sanitation reform. Citizens at large demanded improvements in municipal water supply and sewerage systems, and better plumbing systems in homes. And in more homes. Only a few more years would pass before American manufacturers would produce closets on a grand scale, equal to or better than their English prototypes.

It was time for the industry to get its act together. The need for education, cohesion, organization and standards gave rise to the formation of the plumbing industry's three most important



Left: One of the earliest union working cards issued by the United Association.

Below: This "Century" cistern closet, complete with cistern and bowl, cost \$15.45.



institutions that still exist today: The National Association of Master Plumbers (now NAPHCC) in 1883; the Master Steam and Hot Water Fitters Association (now MCAA), in 1888; and the following year, the United Association of Journeymen Plumbers, Gas Fitters, Steam Fitters and Steam Fitters' Helpers of the United States and Canada—the UA plumber's union.

There were various reasons why all of these groups were formed, including economic advantage and to grapple with labor relations. However, their most important legacy is training and education. The apprenticeship system was being organized, and an important philosophy injected into it, best expressed by master plumber James Tucker of Boston.

As reported in *A Heritage Unique*, the official history of NAPHCC, Tucker delivered an essay titled "The Proper Education of the Plumber" at the 1884 convention, in which he argued:

"No plumber can keep abreast of his trade if he educates his hand alone. The skilled hand is a good thing in its place,

but without the educated eye... it will not permit the plumber to keep pace with the age. A knowledge of joint-wiping and trap and pipe-fixing is good so far as it goes, but it is not of much avail apart from a knowledge of sanitation in plumbing. The principles of hygiene, the subject of hydraulics, and so forth, are of the first importance if you would be a sanitary plumber."

Expanding Role: The plumbing trade rapidly came up to snuff. A craftsmanship ethic took hold that enabled American plumbers to finally call themselves that with pride. It was plumbers, not engineers or product designers, who began venting and trapping fixtures. The new Irish and German immigrants became the backbone of the industry, bringing to America their work ethic and skill in the mechanical crafts.

A well-trained plumber of the late 19th century learned his trade through apprenticeship or perhaps from serving as a plumber's helper. According to the *Gasfitters' and Plumbers' Companion*, an

early trade publication, he usually owned his own tools. Included in his carpenterbag would be a solder pot, ladle, cloth, shave hook, turn pin, chipping knife, dresser, hammer, saw, wrench, pliers, and several minor tools.

Union plumbers in St. Paul could expect to earn \$3.50 a day for "first-class men" and \$2.50 for "second-class" men, reported the first edition of the *United Association Journal* of October 1, 1892. A standard work day was eight hours, so figure a union wage at roughly 44¢ an hour.

With winter setting in and recession taking hold, reports of work varied around the country and Canada. Bad news from Toronto was that two thirds of UA plumbers were unemployed, and the weekly hours were cut. Those who were lucky enough to get jobs worked "only" eight hours a day, "only" till noon on Saturday. This made "only" a 44-hour week.

Times were bad in Milwaukee, too, but plumbers were hopeful that new

buildings would be going up soon. Milwaukee Local No. 785 was working eight hours, "the wages are good, although no scale has been adopted as yet," report the *Journal*. From Columbus, work was also "dull," but there was a bright spot. The state Board of Health promised support for a law governing plumbing and inspection. There still were no "practical" men as inspectors.

The *UA Journal* showed a balance of \$420.80 on hand as of Sept. 1, 1892, and counted 4,806 members on the UA books. The 96 locals were spread out over 30 states and two provinces of Canada. It wasn't bad for a fledgling association organized a few short years before.

Ten years later, in 1902, a successful strike in Terre Haute, Indiana, resulted in an increase in wages of 5¢ an hour. From \$3.85 for a day's work, or 48¢ per hour, the union plumber now could expect to receive 53¢ per hour, or \$4.25 for an eight-hour day.

Spiraling inflation made news, too. The *Journal* printed an item stating that while wages had increased 4.3% during 1890-1899, the cost of living had jumped ahead at the rate of 8%.

Grassroots Grips: The *Journal* printed letters from the various locals. They were rife with reports of lockouts and strikes, and castigation of "industrial spies" and "scabs." Plumbing was advancing, but labor relations were still mired in the Dark Ages.

Plumbers complained about politics and plumbing inspectors. Plumbing inspectors were not "practical plumbers," complained one disgruntled UA member. And what's worse, they "are subservient to the municipal ring." Plumbing laws were not being enforced and unsanitary conditions resulted.

And Brother Doyle wrote from St. Paul, "The worst evil we have to contend with is the indiscriminate selection of apprentices...without regard to their fitness. A large number comes from the toughest element in the city...well versed in the slang of the street, but their education has been sadly neglected in other respects.

"After working a year or two," Doyle goes on, "the employer urges him to wipe a joint ('swipe a lump' is what the boy calls it), and then he will get a dollar or two added to his wages in the week and a kit of tools." The apprentice then quits the employer after awhile, and is given the tools, "including that double-back-action, adjustable tool called the helper...He's sent out jobbing and an innocent public suffers for his ignorance."

A Plumber's Life: A fascinating glimpse of the life of a plumber of that era is portrayed in a family document donated to the archives of the United Association

by **John Kremers** of Three Rivers, Michigan, and **Bob Matheson** of Rochester, Minnesota.

Both men are grandsons of **Ernest H. Maas, Sr.**, who lived around the turn of the century and founded Maas Plumbing and Heating Co., in Rochester. The company still exists under family ownership. Bob Matheson is its president.

Eight years old when he came to America, Ernest Maas, Sr., already had a full-time job in a tailor's shop when he was 12. Then he picked up work in a planing mill and later a saw mill at the princely daily wage of \$1.50, all of which he dutifully turned over to his father.

"In those days, most of the children did not get the education they get nowadays. Work. Work. That was the idea and I always did work," wrote Ernest Maas, Sr., in a tone that betrays both lament and pride.

Work was more plentiful in Rochester than in his hometown of Winona, Minnesota, and he moved there in 1884 to work in a hardware store. "There were other reasons why I wanted to stay in Rochester," he confessed, "for I had made the acquaintance of some nice girls and so I made up my mind to stay." A three-year contract stipulated he would be paid \$2 per week the first year, \$3 the second, and a royal amount of \$5 per week in the third year. "I had to pay \$3 a week for board, so now figure that out," he wrote.

Maas moonlighted at making stovepipe at "one cent per piece," and earned another \$1 a night for four extra hours of work. By dint of hard work, good reputation in stovepipe work, and a broken leg, he came to the attention of **Dr. W. W. Mayo**, and then Mayo's two sons, **Will** and **Charles**, the soon-to-be famous Mayo brothers, who established the Mayo Clinic.

The brothers tapped Maas to install the plumbing, tin work and comices in the hospital building, all two floors and 15 rooms of it. The water closets emptied into a big cesspool until the public works system came on line a few years later.

There were two bathrooms, one on each floor of the clinic's original building. The bathroom had a common flat rim sink with two faucets, "which had to be operated by hand," Maas noted.

"Dr. Will wanted to know whether there was not some way by which he could operate the faucets with his feet," said Maas of the famous surgeon. A good workman must be innovative and willing to try new methods, so, "We had a pair of pedals made by a blacksmith, put some self-closing stops in the pipes under the sink

and attached them to the pedals.

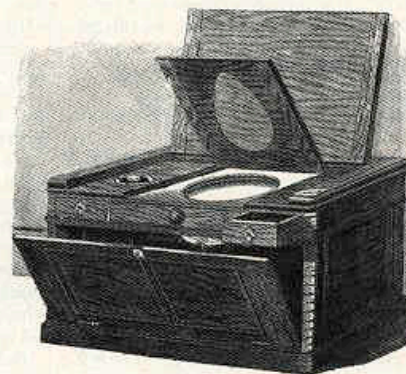
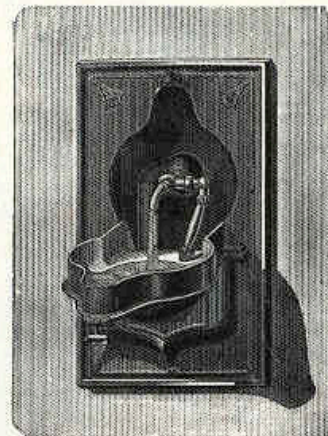
"Oh, Boy, that was something," he reminisced. "Just a wood floor in the operating room and yet that was the start." Expert lead-worker that he was, Maas also made lead screens for the new X-ray equipment.

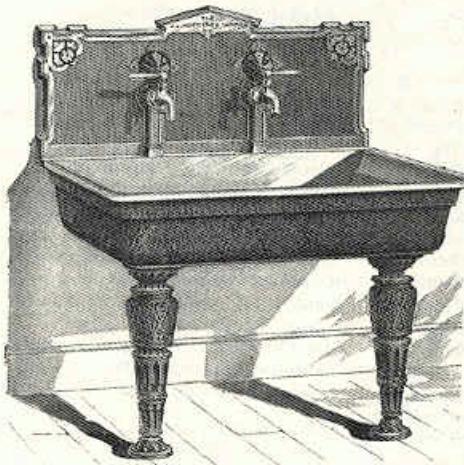
From workman to entrepreneur, Maas stabbed at opportunity again. With a partner, he took over a plumbing and steamfitting shop in Rochester and really set to task. They rented a building at \$17 a month, and bought a two-wheeled cart. A horse was added, then two horses and a wagon. They incorporated in 1910 as Maas Plumbing and Heating Company.

Product Explosion: There is a *joie de vivre* to the writings of Ernest Maas,

Below: Shown open, a folding lipped urinal, with silver plated faucet and couplings. It cost \$21.

Bottom: The Plumbers Catalogue offered a water closet encased either in mahogany (\$50), black or french walnut (\$40) or plain black walnut (\$30).





This complete cast iron kitchen sink was offered in sizes from 30" to 48" x 23" x 9", and cost from \$16.50 - \$24 (plain) to \$33-\$48 (enameled).

Sr., that reveal him to have been a delightful man and a credit to his trade. He clearly was proud at having been a plumbing innovator.

Others were not so happy with change. New technology and lack of uniform standards and requirements bedazzled many workers. The scope and range of new plumbing products could be intimidating.

Average citizens also had to adjust to changing habits and mores. Augmented by the rapid advances in plumbing technology and the low cost of goods produced on a mass scale, Americans were soon registering the highest standards in health and hygiene. But old ways are sometimes slow and unyielding to change.

Plated pipes of shiny brass tubing became the vogue, open plumbing quite the fashion. It was a sign of prosperity to show off the myriad loops and bends of plumbing scheme. Gone were the cabinet closets and dry-sink furniture. Freestanding fixtures became popular, and sometimes highly ornamented. Associated with sanitation and cleanliness, white became the chosen color.

As American manufacturers caught up with the Europeans, their plumbing products began to swamp the market. Indoor plumbing became a commonplace commodity, especially in the northeastern and Middle Atlantic states, which were close to the emerging American manufacturers and plumbing supply houses.

Horn Aplenty: The hand pump all but disappeared as faucets joined forces with

the stalwart sink. Separate faucets for hot and cold appeared, usually of nickel-plated iron. For the more affluent were brass or copper faucets, the richest in gold- or silver-plating. To avoid confusion in running the water, the words "HOT" and "COLD" were written on the handles or maybe set on porcelain buttons at the top of the faucet.

At first, the spouts were fixed in place, but by the turn of the century, they swung around to right or left angles. Early models featured the high,

gooseneck spouts which have become so popular again.

The pedestal-base sink became the sure-footed fixture in the bathroom. An ingenious touch was the soap receptacle and/or towel bars incorporated into the design.

Off the assembly line came sinks in all types of materials. Kitchen sinks were made from enamel, metal and soapstone, although soapstone became discolored and greasy-looking. Painted, galvanized or enamel cast-iron were the most common. But they weren't too durable—the coating wore off. Porcelain china, earthenware bowls and marble appeared in the bathroom then, soon to be replaced by vitreous china.

When they first came out, sinks were freestanding. They rested on cast-iron legs often painted white to match the enamel or porcelain. The legs imitated the period furniture, with ball or claw feet.

In the 1840s, the bathtub was widely denounced as an "epicurean English innovation which would surely corrupt the democratic simplicity of the Republic." By the 1890s, the Saturday night bath was an American tradition.

Prior to the 1890s, bathtubs were copper-lined wooden boxes, the metal requiring constant polishing. Then cast-iron tubs took hold, first appearing in institutions. They weren't too popular in private homes, however—the enameled linings tended to scale off. Porcelain was the choice material.

No Bums Allowed: A symbol of the finest and best plumbing lay in construction of George Washington Vanderbilt's Biltmore House in Asheville, North Carolina. "Bum" contractors need not apply, the work order stated.

Built in 1895, it featured 57 bathrooms, hot water, flush toilets, tubs and showers,

the whole works. It's estimated that the estate cost the equivalent of well over \$30 million in today's dollars to construct.

Vanderbilt ordered most of the fixtures and fittings from England—their plumbing products still being rated the best in style and quality. The closets featured copper-lined oak tanks. They were mounted approximately 8-10' above the bowl, operated by a swift tug of a pull-chain. The closets were all vented to the roof, and all water lines had drains.

Vanderbilt's personal bathroom featured a huge, round tub. Not lacking for any amenities, it also contained a hand-held shower.

Vanderbilt had no qualms about using American-made pipe; the quality was always first-rate. Unfortunately, there was no standardization—each pipe and fixture manufacturer had his own specifications. Neither in American nor metric measure was there any uniformity, not even in sink and basin outlets, faucet drilling, trap gauges, and so on.

To repair any brass pipe thread or valve tapping, for example, the fitter had to match exactly the thread size by using hand-operated dies. It must have taken a hunk of muscle and precision to cut 6' or 8" pipe!

Attitudes Die Hard: The Vanderbilt mansion offers an intriguing side trip through the history of American plumbing, but one that is very much off the beaten path.

The big story, and true glory, of the American plumbing industry, is its having brought sanitation and hygiene to the masses. It wasn't until after World War II that the majority of the American people had private baths in their homes. But long before private bathrooms became common, the working class had access to cleanliness in the form of public bath houses.

Chicago's first free public bath house opened with great fanfare in January 1894. Free soap and a towel were handed out to each bather, who was allowed 20 minutes. It was a great success. Like Roman spas of old, the bath house had a steam room and a pool. Brick ovens heated the room to 250', the customers lathering each other up with soapy warm water, using thick brushes of dried oak leaves. Patrons then doused themselves with cold water, took a shower and received a rubdown from the masseur.

But not everyone was happy. When another bathhouse was being built a couple of miles away, neighborhood citizens erupted in a near-riot. They allowed construction to proceed only after being assured that the presence of the bath house in their midst didn't mean they would be forced to take baths! **PM**