ASSE ILLINOIS CHAPTER
MONTHLY NEWS LETTER

CHICAGO WATER TOWER

A UNION PLUMBERS BODY CAN OVERCOME ALMOST ANYTHING

A UNION PLUMBERS MIND CAN ADAPT AND RESOLVE THE PROBLEM AT HAND

A UNION PLUMBER WILL BE THE BEST THEY CAN BE

THE UNION PLUMBER HAS LEARNED TO CONVINCE THEIR OWN MIND THEY CAN AND WILL DO IT RIGHT THE FIRST TIME

AMERICAN SOCIETY OF SANITARY ENGINEERING
ILLINOIS CHICAGO CHAPTER
SANITATION NEWS LETTER

Volume 40 Issue 4 April 2020

Published by: **Gary Wallace Howard**

Water-Related Epidemics

While today we understand that cholera and typhoid are both bacterial diseases and that polio is a viral disease, Chicagoans fought them without this basic knowledge across the nineteenth and into the twentieth centuries. Instead, Chicagoans looked for patterns of epidemic outbreaks and sought ways to prevent the conditions surrounding those outbreaks. Without the aid of germ theory, nineteenth-century public health officials, physicians, and engineers determined that control of water supply and wastewater were crucial to checking these epidemics.

Although they were not the only diseases related to polluted water supply and inadequate sanitation, cholera, typhoid, and polio followed one after the other in Chicago, as sanitarians sought to protect residents from them. Over time, sanitarians found that cholera could be controlled by better water supply. Improving water supply, however, led to more wastewater in and around Chicago, which increased the incidence of typhoid fever. While better plumbing and sanitation helped control typhoid fever, it reinvigorated an old disease like polio, as residents lost what had been a natural immunity to the disease.

CHICAGO CHAPTER PRESIDENT NOTES

Well here we are in April 2020. Being out in the fresh air without wearing a jacket is soothing to the body. The topic I wish to present to our membership this month is Codes and how far back in time did codes start and what codes do we as Protectors and Preventers need to follow.

"The Code of Hammurabi," written by Hammurabi, the 6th king of Old Babylon, was the first known code of ancient Babylon. One of the clauses of the code called for people to be put to death if a house that was not constructed properly fell and killed an owner. (1700 B.C.) Archaeologists discovered copper water pipes in the palace ruins of the Indus River Valley in India. (4,000 to 3,000 B.C.) Egyptians developed copper pipes that were used to build elaborate bathrooms inside the pyramids and intricate irrigation and sewages systems. (2500 B.C.)

These and other codes were though up, designed and installed by creative minds of that time in history. Now we use a CADD to design everything from the bed of a footing to the spires that reach the sky. We no longer use hollowed out logs for water mains, but instead use Iron, Plastic, and in the near future maybe even Carbon Fiber. What do codes mean to the plumbing industry? Well without them we wouldn't understand the hydraulics, and pneumatics of water and air working together in one single plumbing system. Just think 244 plus years ago when our ancestors arrived here they drank the water from the streams and lakes. But now we would get ill from drinking water from streams or lakes without adding some chemical or running it through filtration. Our codes are constructed by professionals and the codes are there for us to read and understand, from the inspired owner, designer, contractor and the installer. Built within our codes we have a number of referenced codes which we must follow when they apply. Some of them are referenced in the most National code books and in the 2014 Illinois Plumbing Code Section 890.130.

When working in Hospitals, Assisted Living/Memory Care Facilities, Dialysis, FDA Facilities, Dairy Facilities among others they are other Plumbing Codes imbedded within their codes. We also have codes for Rainwater Harvesting, Storm water retention or detention. Don't rely on what the CADD or Print shows rely on the code. If you install it against code you are at fault the violation is yours. When your prints show something that is not up to a Code or Standard bring it to the attention of the designer before continuing, and get clarification.

Best Regards,

Gary W. Howard

MONTHLY CONTEST

For the Apprentices at Local Union 130 Enter and win First two with the correct answers

wins

First year membership to ASSE will be free with the agreement you sign up for at least three years of membership, send answers to Cristina Barillas cbari130@gmail.com

2014 State of Illinois Minimum Plumbing Code

FOLLOWING THE STATE PLUMBING CODE

Question from the 2014 State of Illinois Plumbing Code

You shall include section, paragraph and page number.

1. A device supplied with water under positive pressure that passes through an integral orifice, causing a partial vacuum and resulting in movement of fluid by siphonage is called?
   a) Pressure vacuum breaker
   b) Aspirator
   c) Back siphonage
   d) Either a or c
   Section_____Paragraph_____Page_____

2. A fitting or device designed and constructed to provide, when proprerly vented, a liquid seal that will prevent the back passage of air without materially affecting the flow of sewage or waste water through it, is called?
   a) A back water valve
   b) A inline check valve
   c) A house trap
   d) A P-Trap
   Section_____Paragraph_____Page_____

3. A device located within the environment to be conditioned that directly transfers its heating energy by radiation or forced or gravity convection is called?
   a) A Furnace
   b) A double wall water heating unit
   c) A double- double wall water heater with an atmosphere relief vent
   d) A Terminal Heating Device
   Section_____Paragraph_____Page_____

4. Can a Union be used in a drainage and vent system
   a) Yes
   b) No
   Section_____Paragraph_____Page_____

Submission shall include Name, Mailing Address, e-mail U.A. Card Apprenticeship Number and application

50% off new active member dues on the first year. As a member of ASSE International you will belong to an organization represented by all disciplines of the plumbing and mechanical industries, forming a platform to receive, understand and solve industry problems relating to standards, codes, contracting, engineering, and business. We encourage you to attend Meetings, get involved in chapter activities and apply for national committee work. Whether it's through planning, or participating in local chapter activities and meetings, submitting articles to our publication, or volunteering on a committee, your involvement is essential to ASSE International success. Now is the time to immerse yourself in your organization.

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The Encyclopedia of Chicago

Sanitation in Chicago: A Strategy for a Lakefront Metropolis

A city's sanitation strategy is a deliberate, conscious decision. The demand for sanitation services simultaneously involves a demand for water works, water mains, sewers, and wastewater treatment works. A water supply is a city's lifeblood, but once brought into the city, water subsequently has to be removed. Lack of a sewer system creates a health hazard, but so does a system that discharges sewage into a city's water supply. The need for a sanitation strategy has faced cities at every time and place. Water and wastewater works represent public investments that an urban area must make if it is to survive. Strategies require choices, often defined in part by characteristics of a city's location.

Tap water, for example, must be clean and potable. A city whose water supply does not meet this qualitative standard must allocate more funds to this resource. Cities located on salt water draw their water from a variety of sources, often distant lakes as opposed to adjacent groundwater. At the other end of the process, the salt water itself generally offers the only alternative for wastewater disposal. Historically, salt-water cities have expended large sums of money to bring fresh water to the city and have spent relatively little on wastewater disposal. Cities located on rivers customarily draw water upstream and deposit wastewater downstream, if the river is large enough to supply all the city's water. If not, the city must supplement the river's supply with either distant sources or groundwater. The wastewater disposal point must be located so backwash does not threaten the water intake point. Still different are cities located on a freshwater lake. Here, supply and sanitation problems are not separable if the city elects to utilize the lake for both purposes. If alternative sources can be found for either (e.g., a sewage farm), the interdependencies can be reduced or eliminated. Generally, however, freshwater cities adopt strategies opposite to their salt-water counterparts' inclination to concentrate resources on supply. It makes more sense for them to take advantage of the freshwater on their doorstep and expend large sums of money trying to keep the wastewater away from the city's water supply intake. To that end, some freshwater cities have moved the water intake point several miles out into the lake.

ELLIS S. CHESBROUGH, C.1870

FIRST WATER INTAKE CRIB, LAKE MICHIGAN OFF CHICAGO AVENUE

From the outset, Chicagoans preferred Lake Michigan water to other sources. For many years, the intake point stood close to the mouth of the Chicago, and the water supply was often polluted. After several failed attempts to improve the quantity and quality of the water supply, the newly formed Board of Public Works in 1861 asked its engineer, Ellis Sylvester Chesbrough, to identify and assess alternatives. Chesbrough recommended a tunnel dug under the lake to the water intake point two miles offshore; a crib would protect the point. In spite of many difficulties, the tunnel project got underway in 1863, and the last stone was laid in 1866. By 1872, Chicago's continued

ORIGINAL TWO MILE CRIB, C. 1867

WORKMEN CONSTRUCTING THE WATER TUNNEL

rapid growth created a demand that exceeded the tunnel's capacity; fortunately, provision for a second tunnel accompanied construction of the first one. The policy of attempting to avoid pollution by extending the water intake point further into the lake continued until extension was no longer feasible. With continued growth and the annexation of suburban areas, Chicago constructed additional pumping stations, dug new lake tunnels with intakes protected by cribs, and finally in 1898 began the task of combining the several tunnel and pumping systems into an integrated whole. That system, with improvements, is the basis for Chicago's present supply.

Disinfection was introduced in 1916 by adding chlorine to the water supply at the pumping stations. An experimental filtration plant was introduced in 1928 to address continued turbidity. Chicagoans voted in 1930 to construct a major filtration plant on the South Side, but the Depression and World War II delayed its completion until 1947. Chicago's South Water Filtration Plant was the largest water processing facility in the world until the city's Central Water Filtration Plant was completed in 1964. In spite of the abundant quantity of fresh water at Chicago's front door, the city has invested a large amount in maintaining and improving the quality of that water.

CHICAGO'S DEEP TUNNEL SYSTEM IN 2003

Disposal has proven more difficult. In the early nineteenth century, the Chicago River ordinarily was little more than a creek, with banks lying two feet above the water. Normally sluggish, the river discharged large volumes of water in times of heavy rains or melting snows through its short main trunk into Lake Michigan. Chicago's random waste disposal methods led to a succession of cholera and dysentery epidemics. In 1852, Illinois's legislature empowered sewage commissioners to supervise the installation of sewers in the most densely settled districts and the digging of ditches in the remainder. In 1855 the Board of Sewerage Commissioners was formally charged with supervising the existing sewage and drainage scheme and planning a coordinated system for the future. Systematic sewage disposal and drainage was unknown in the United States, and in 1855 Chicago was in a position to become the first large American city to build a comprehensive sewer system.

Chesbrough designed a combined sewer system (one that collects wastes from both residences and streets) that emptied into the Chicago River. Drainage was to be accomplished by gravity, but Chicago's flat topography proved unfavorable to sewer construction. In reality, the task of constructing underground sewers required raising the city's grade. As sewer construction progressed away from the river, the streets had to be raised. The sewers were laid on top of the ground, then earth largely dredged from the river was filled in around them, covering them entirely. New, paved streets were constructed above the sewers.

The Chicago River evidently was innocuous for the first few years following installation of the new sewers, but soon the river became polluted, particularly the South Branch where much of the city's industry was located. Simultaneously, the city discovered that the Illinois and Michigan Canal pumps were moving the river's pollution into the canal. This important discovery meant that Chicago could avoid using Lake Michigan as a wastewater depository, thereby conserving the Lake Michigan water supply. In the late 1860s the canal was deepened yet again to enlarge its sewage handling capabilities, and additional pumps were installed. These enlarged facilities, completed in 1871, formally reversed the Chicago River's normal current, as the pumps pulled Lake Michigan water through the river to provide the canal's summit level.

With Chicago's continued growth, this system could not maintain the reversal under adverse weather conditions; the Chicago River, and often Lake Michigan, remained polluted. The solution was to enlarge the system, and officials recognized that it would cost less to dig a new channel than to enlarge the old one once more. In 1889 voters approved the Sanitary District of Chicago (now the Metropolitan Water Reclamation District of Greater Chicago) to implement the new channel scheme. This supra-governmental body proved necessary because the natural drainage area did not conform to Chicago's political boundary lines. Even with the annexation of adjacent suburbs, the affected area was

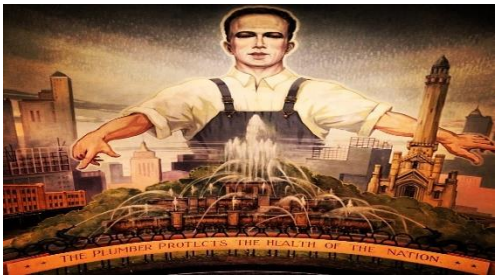
much larger than the city of Chicago was ever likely to become. The strategy embodied in the Sanitary District was hardly revolutionary; it continued the same methods, only more effectively and with greater flexibility. Work began on the 28-mile Sanitary and Ship Canal in 1892 and was completed in 1900.

As new territory was annexed, two additional channels (the North Shore and the Calumet-Sag Channels) were added, but continued population and industrial growth would put significant pressure on the sewage-handling capabilities of the fixed-capacity channel system. Within the first ten years of operation it was clear that the district's works were not capable of handling the growing volume of Chicago's domestic and industrial wastes. In the 1910s the district began to construct sewage treatment plants to supplement the channel system. The decade of the 1920s saw the start of construction of the major treatment works that are the foundation of the city's current wastewater strategy. The Calumet sewage treatment works were placed in operation in 1922, followed by the North Side works (1928), the West Side works (1931), and the Southwest works (1939). A suit against the district was resolved in the U.S. Supreme Court in 1930 and resulted in a reduction of the district's diversion of water to reverse the river. This effectively reversed the district's approach; sewage treatment plants were forced supplemented by the channel system. By 1970 Chicago had the largest sewage treatment facilities in the world.

In 1972, Congress, in amendments to the Water Pollution Control Act, required that water pollution from all sources in urban-industrial areas be controlled. More than 90 percent of the district's wastewater was treated, but a heavy rainfall or quickly melting snow could still force the district to let raw sewage escape into the lake. The proposed solution was the multi-billion dollar Tunnel and Reservoir Plan, conventionally called "Deep Tunnel." Phase I of TARP, the antipollution phase, which went into operation in 1985, involved the construction of 110 miles of tunnels to capture storm overflow and keep it in the system for processing. Phase II, the anti-flooding phase, required an additional 21 miles of tunnels plus 3 large reservoirs.

Prior to the advent of public works projects in the 1930s, Chicago had spent more on sewage disposal-drainage than any other American city. Today the city has the largest water and sewage treatment works of any city in the world. Many lakefront cities are located at the mouth of a river, so the alternative of reversing a river's flow was, and still is, technologically available. Only Chicago has found this alternative economically feasible.

Louis P. Cain



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All Board Meetings and Membership Meetings are canceled until further notice.

Here are some form you are required to fill out if you wish to be an apprentice, plumber, inspector, plumbing or irrigation contractor or education sponsor. Go to the web-site below and scroll down to plumbing forms, and search for which form you may need.

http://www.dph.illinois.gov/forms-publications

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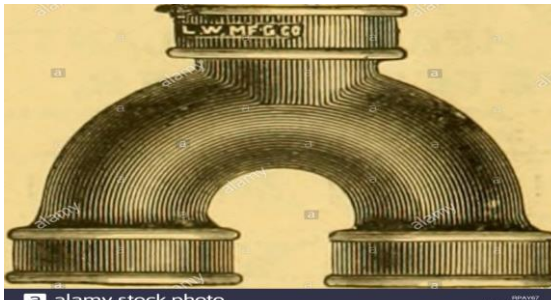

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This course is focused on refreshing the Cross Connection Tester on testing procedures as well as hands on repairs for approved assemblies for the state of Illinois. During this class we will be going over our NEW mechanical wall, show you how water pressure fluctuations affect backflow assemblies, how to remedy the situation and be able to see it in a live setting. Also new this year is the Flood Control Integrated System by Wilkins; this system can be designed to shut off a specific water line when a backflow goes into a full dump situation.

- ☐ Thursday, January 16th
- ☐ Thursday, January 30th
- ☐ Thursday, February 13th
- ☐ Thursday, February 27th
- ☐ Tuesday, March 3rd
- ☐ Tuesday, March 17th
- ☐ Thursday, April 2nd
- ☐ Thursday, April 16th
- ☐ Thursday, April 30th

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- 3" Watts 909

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- ☐ Tuesday, February 4th
- ☐ Tuesday, February 18th
- ☐ Thursday, March 12th
- ☐ Thursday, March 26th
- ☐ Tuesday, April 7th
- ☐ Tuesday, April 21st

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WEISS INSTRUMENTS	Thermometers & Gauges

ASSE ILLINOIS CHICAGO CHAPTER HAS BEEN INVOLVED FROM THE BEGINNING TO THE END OF EVERY PROJECT SINCE AT LEAST FROM 1918. TAKE PRIDE IN BEING A MEMBER

SPONSOR OUR PICNIC FOR $250.00 HELD IN AUGUST OF EACH YEAR AND RECEIVE A ¼ PAGE ADD IN OUR MONTHLY NEWS LETTER FOR ONE YEAR.
SPONSOR OUR CEU CLASS FOR $350.00 EACH CLASS AND RECEIVE A ¼ PAGE ADD IN OUR MONTHLY NEWS LETTER FOR ONE YEAR. CLASSES WILL BE HELD ONCE EACH QUARTER .

PREVENTION RATHER THAN CURE

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