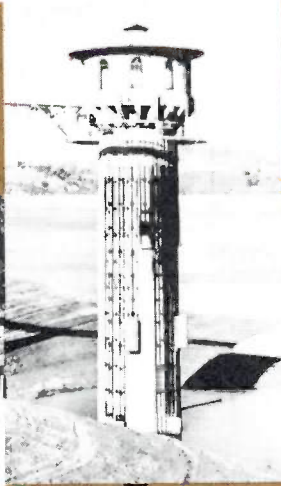


MUELLER[®] Record

SUMMER 1977



**U.S. FACING SERIOUS
WATER SHORTAGES**

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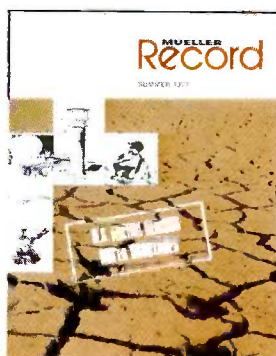
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MUELLER® Record

SUMMER 1977

Published by
Mueller Co.
500 West Eldorado St.
Decatur, Illinois 62525

Jim Cussins
Editorial Consultant

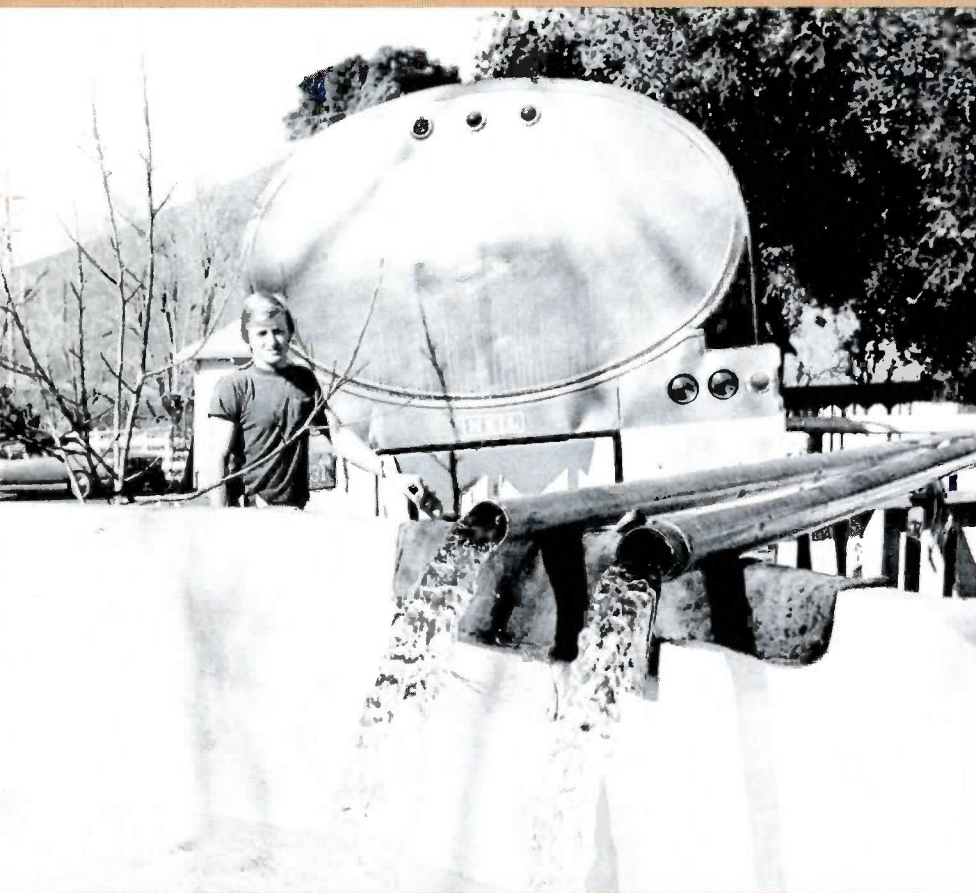


About the cover

Drought conditions throughout most of the U. S. are responsible for pictures such as those used to illustrate the cover of this edition of the Record.

WATER:

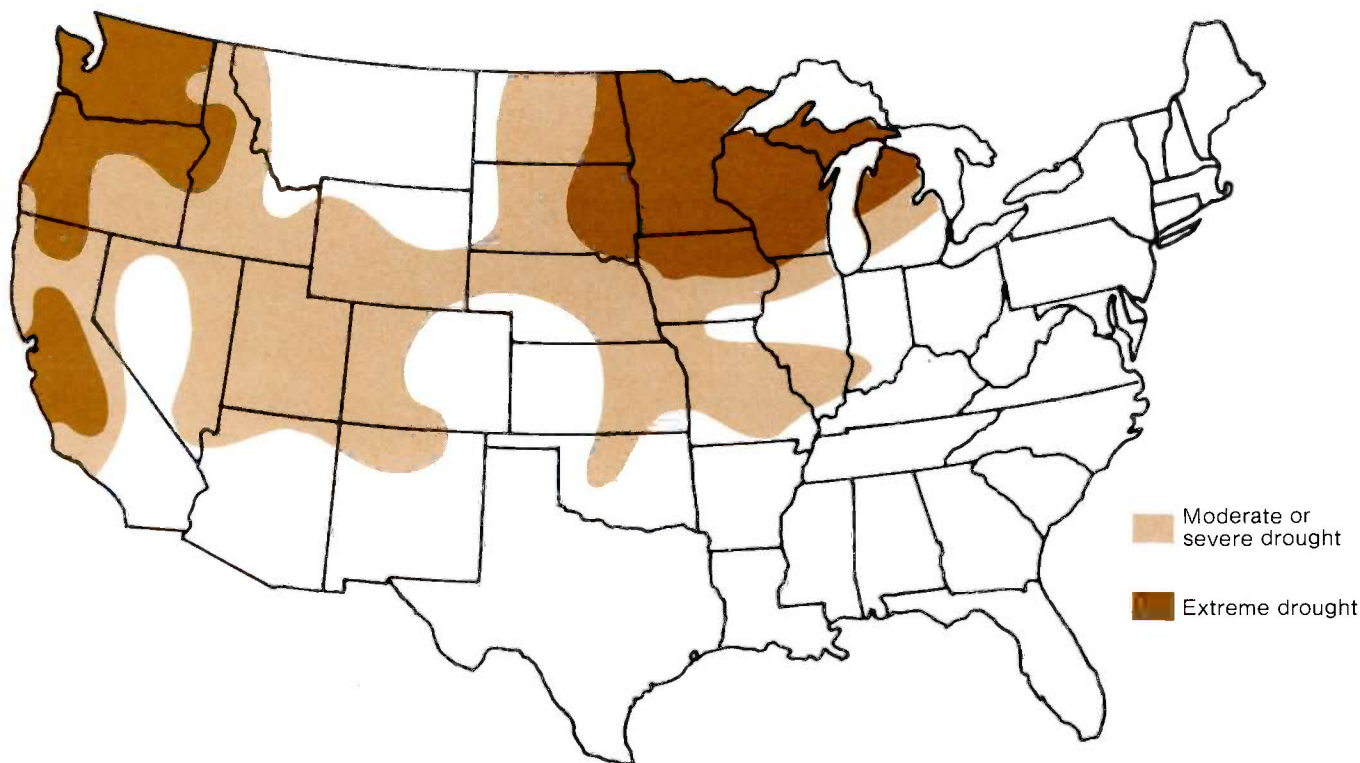
an endangered species



Trouble comes in pairs, so the saying goes. That appears to be true in light of the natural gas shortage which is going to have a marked effect on our lives from now on . . . and the less publicized but equally serious water shortage. It, too, will result in some profound changes in our established lifestyles in the future. These will primarily be higher food prices and conservation measures.

What are the factors behind the growing shortage of water? The most important is rainfall . . . not only to provide moisture for crops, forests and grasslands, but to maintain adequate ground and surface water levels. The other important factor is a vastly increased use . . . by industry, agriculture and a growing population.

Dairy farmer forced to truck water to a holding tank.



A nationwide problem

Drought conditions which existed throughout most of the nation during 1976 was no real surprise. Weather and climate specialists predicted that the drought experienced in the Southwest would move up into the Midwest in 1975 and 1976. Similar conditions were also foreseen for the North Central states and throughout the high plains area. The West, too, is suffering from a serious water crisis; particularly Marin County, just north of San Francisco where a 30% mandatory reduction in water use has been ordered.

In the East, the problem is not so much the result of drought conditions, but falling ground water tables and increased usage of surface waters, where the available supply is being depleted faster than it is being replaced.

It is impossible in an article of limited scope to cover the entire U.S. region by region to pinpoint the exact nature of the water problem. However, by selecting random situations from representative parts of the country, one can get a general picture of the situation and the possibilities for the immediate future.

The West: conditions dry

The entire West Coast is in trouble because of lacking rain and snow. In the

Cascade and Sierra Nevada ranges, snowfall provides water for drinking, farming and hydroelectric power during the summer months. But the mountains feeding into the Columbia River basin of Oregon and Washington have less than their usual snowpack, and the forecasts point to continued dry weather which will certainly aggravate the situation. California melons and tomatoes are now suffering from one of the driest winters on record. Water for irrigation, the life-blood of the State's fruit and vegetable industry has been cut back as reservoirs remain low with no new influx of any significance seen. California grows 40 percent of the nation's vegetables and fruits. With reduced production, the prices of these commodities could skyrocket.

Cattle and other livestock are also suffering from the dry weather throughout the rangelands from the Midwest to the Pacific. The drought has so stunted feed crops and forage that farmers and ranchers, unable to feed or water their cattle, are selling them off and taking severe losses. States of emergency exist throughout many of the Midwest, Southwest and Western States, and are even extending into the normally "wet" south.

The Midwest: drying out

The conditions in Iowa are representative of the entire Midwestern region of the country. For almost 10 months in a row, most of the Corn Belt and the Great Plains experienced below normal precipitation. The moisture shortage was accompanied by the coldest fall and winter since 1872.

The subsoils of the Corn Belt are unusually dry, especially at lower levels, and moisture is considered inadequate throughout much of this region.

The dry weather poses a threat to corn and soybean yields. If it continues through the summer, it would become almost impossible to equal last year's 6.1 billion bushel corn crop. It has been reported that Iowa has produced good crops in recent years because of adequate subsoil moisture. But that soil moisture is gone now.

Streams throughout the Midwest are at their lowest levels, many farm wells have gone dry, and many of the natural lakes are abnormally low.

The odds are less than 50 percent that this area will receive enough rain to replenish soil moisture and water tables.

Adding to this some climatologists predict drought conditions could prevail throughout the Corn Belt in 1977 and on to perhaps 1981. Looking ahead, they see the 1978 growing season as warmer and drier than normal. Commenting on what might happen in the years to come, J. M. Mitchell, senior research climatologist of the U.S. Environmental Data Service, said: "Purely on the basis of probability, it is highly unlikely that we'll experience the weather of the '50's and '60's any time soon. We should be banking on more drought and more floods."

Arizona's Water: going, going . . .

Arizona is another area where conservation measures are being called for to prevent a disastrous shortage. The water reserves of that state are being depleted at nearly twice the rate of replenishment. Pima County is the top water using region in the state, with water being withdrawn at five times the replenishment rate.

In Tucson, the water table is dropping an average of two feet a year, while in one section, mining and farming are said to be causing water level declines of as much as ten feet a year. Heavy pumping near the Santa Cruz River south of the city is causing the water table to drop as much as 20 to 30 feet each year.

Conservation efforts for homeowners include free distribution of plastic bottles to displace water in toilet tanks to reduce the amount used when flushing. Many homeowners are using free water-saving shower heads, and at a public hearing, citizens were told that pricing strategies will be used to encourage cutbacks in lawn watering. Average daily water use is 200 gallons per person, with about 70 percent going to lawns and trees.

Texas High Plains: water shortage serious

Texans must undertake good water planning now or pay serious consequences in the future, warned Gen. James N. Rose, director of the Texas Water Development Board. He said that Texas faces a need for 200 percent more water in the next 40 years if the state's lands are to be developed for full agricultural production.

Even with the present level of irrigated agriculture, demands for water will increase 43 percent by the year 2020 because of increased population and industrial expansion. Similar outlooks are being forecast in many areas of the country where patterns of industrial and population growth are developing. Rose said that 60 percent of crops produced in Texas are on irrigated lands, 70 percent of which are on the High Plains, where the majority of the state's cotton,

grain sorghum, wheat and grain-fed cattle are produced.

The ground water supply for that region will be dangerously depleted within 20 years, he said, unless water is imported from another area. Contemplating the future with High Plains water nearly depleted, Rose said, is frightening. "Without this area in full production at that time, it is useless to even think about what the price of food might be. There won't be enough to go around at any price. In light of predictions of world population growth and world famine, we cannot afford the possibility of losing this invaluable productive capacity."

Rose made a strong appeal to water works officials for their support of a proposed constitutional amendment increasing the Water Development Board's bonding authority by \$400 million. The increase will make it possible to continue loans to small towns and communities, water districts and river authorities to conserve and develop Texas' water resources.

Pardee Dam reservoir, Lodi, Cal., down to a 96-day supply of water.





Dried up reservoir typical of those throughout the western portions of the country.

Nation's Capitol not immune

One form of dramatizing the problem is to project a series of scenarios of what might happen if steps are not taken to alleviate the situation. A good example is the Washington, D.C. area, which derives its water supply from the Potomac River. In 1957, a report stated that "Within a few decades, the amount of water taken from the river for municipal water supply will exceed the present minimum flow. Without large storage projects to release water during drought, the river above Washington will be drawn dry and the flow downstream from the city will be almost entirely treated sewage."

A similar warning was sounded in 1966, again in 1968, and in 1971 it was stated that without action, "this area will face the possibility of severe water shortages lasting from one to several days."

"Water factories" are seen as one answer to a problem such as this. One such "factory" now in operation is in Orange Co., California where a wastewater reclamation plant is successfully returning up to 15 mgd of recycled wastewater into the Santa Ana River to prevent seawater intrusion.

To warn of what could happen, the Corps of Engineers offered these possible scenarios:

1. One possibility might be a summer of

periodic small deficits lasting one to two weeks each . . . a 10 percent probability for 1977. An emergency plan would entail voluntary curtailment of "non-essential" uses of water. The biggest victim would be lawns and shrubs at this stage. However, one of the dry spells would probably be more severe with demand exceeding supply by 15 percent or more. In such an event, mandatory curtailment of non-essential uses and a formula allocation of the available raw water to the various water utilities would prevent the failure of any water system.

The ability to fight fires warrants special consideration. As the probability of losing water pressure in a distribution system increases, the risk of loss of life and property increases. Although it is difficult to assign dollar costs to the risks associated with such losses, higher premiums for fire insurance are assigned to areas having higher risk of water system failure. Increasing fire insurance costs are a part of this scenario.

2. This describes a more severe drought period of a week or more where the techniques for reduction of demand are insufficient to maintain pressure throughout the system. When the demand does exceed the supply, the water system will have to reduce the rate at which water is drawn from the Potomac. With less

water pumped into the distribution systems, a total loss of pressure in certain zones will result. Immediate action must be taken to prevent a major system failure. This could consist of actually turning off water to major sections of these distribution systems because partial pressure throughout an entire system cannot be maintained. Once turned off, a zone would be totally without water except what could be trucked in by Civil Defense or Red Cross.

The monetary and non-monetary costs associated with such events could be considerable. Preliminary investigations suggested the possibility of high health risks associated with the infiltration of contaminated water into empty water supply lines, causing the possible infection of an entire community when the water is again turned on. It must be noted, however, that infiltration cannot take place when water systems are operating under normal pressures, and in the event of a water stoppage, water managers are able to treat a system to purify the water when service is resumed. Other risks, such as those associated with fire fighting, hospital and sanitary services, could be catastrophic.

Any American water utility would view these problems with alarm and go to considerable lengths to prevent turning water completely off in any community.

Dramatic Results of Conservation (even if not intentional)

A study in contrasts

Louisville, Kentucky is an example of what can happen to ground water levels when use is curtailed. A dramatic rise in the water table under downtown Louisville is occurring. Water levels in some places are higher than at any recorded time. The U.S. Geologic Survey says that increases are due to a sharp cut in industrial use of ground water, greater use of septic tanks in suburban areas, expanded water company service replacing private wells, and unusually high precipitation in recent years. Precipitation is the one element that is uncontrollable, but the other reasons for this rise in the water table are indicative of

steps that can be taken in areas where water shortages are developing.

To illustrate how dramatic the rise actually is, the water level in an area extending from downtown Louisville to the suburb of Kosmosdale has risen 20 feet since 1960, with half of this occurring since 1970. In low-lying areas, the water is within 20 feet of the surface. In some parts of downtown, the water is within 40 feet of the surface. The increases came to light when an area-wide survey assembled statistics for a 15-year review of Jefferson County water data.

The experts are speaking — but are we listening?

A recent 15-month study on climate and food conducted by the National Research Council for the National Science Foundation found “no basis” for expecting

the “abnormally favorable” climatic conditions of the 1960s to continue. It suggested that a major commitment is needed to insure that U.S. food production will not be adversely affected by unfavorable weather changes. The study also called for greater involvement of research groups and others to respond to the challenges of weather and climatic fluctuations.

Reid Bryson, director for the Institute of Environmental Studies, says: “There is a very important climatic change going on. It could, if it continues, bring starvation to something like a billion people.”

The unanswered question:

But implementation is a far cry from being warned. Part of the problem is that in spite of shortages in the past in various parts of the country, few Americans have ever really experienced a serious public water emergency. We have taken it for granted that good, clean water will flow in an unending stream every time we open a tap. We frequently resist higher taxes to provide better municipal water service, or higher rates in the case of private water companies. An economy of abundance leads to an economy of waste. For most of the U.S., water is no longer an abundant commodity, yet the waste which became a habit during abundance now continues. The question is: **WILL WE ACT BEFORE THE WELLS, LAKES AND STREAMS RUN DRY?**



Parched earth in a Kansas wheatfield

Because the situation revolving around the nationwide water shortage is one of continual change with developments taking place daily, we will include an update of this story in the next edition of the Mueller Record.

— Editor



3-R PROGRAM . . .

Super Service for Mueller® Machines

3-R means Rapid Repair and Return, and that's exactly the kind of service you get when you send your Mueller Machine in for repairs.

We know how important your Mueller Machine can be to you. That's why we instituted this program. It's designed to save you time and money, and according to the response, it's doing a fine job for our customers.

Here's how it works. You send your worn or damaged Mueller Machine to us, and specify that you want it repaired under the 3-R Program. We'll go to work on it immediately without taking the time to send you an estimate and then waiting for your reply. The reason why we do this is that 98% of the time our customers give us the go-ahead after receiving our repair estimate. So why waste that valuable time?

If, for any reason, your machine is un-repairable, we'll let you know immediately and ask for your further instructions.

We are hoping to extend this service in the future to include shell cutters, pilot drills, combined drills and taps, etc.

For further information about the 3-R Program, contact your Mueller Sales Representative. If your machine needs repairs, send it in and tell us you want to take advantage of the 3-R Program. We'll put it back in like-new condition and get it back to you in record time. That way your Mueller Machine will be available when you need it, saving you time, labor and money.

AN EXTRA MARGIN OF SERVICE

CUT MACHINE REPAIR DOWNTIME WITH MUELLER® 3-R PROGRAM

3-R . . . Rapid Repair and Return . . . a no-delay program that means speedy service on the Mueller Machine you send us for repairs . . . without wasting time waiting for estimates. We offer you this program because we know there are times you need the fastest service possible. And our records show that 98% of our repair customers give us the go-ahead after receiving the estimate.

Tell us you want 3-R service when you send us your machine, and we'll start repair without delay. We keep you informed, too. We'll let you know when the repairs are completed and when we ship it back to you. That way, you'll know exactly when to expect your machine. If repairs are impractical, we'll advise you immediately so you can decide whether you want to replace it with a new Mueller Machine.

Expanding the 3-R Program. We know how important all your Mueller Machines and equipment are to your operations. That's why we will soon include shell cutters, pilot drills, combined drills and taps, and other equipment in this program on a trial basis. We'll let you know.

If you have a machine that needs repairs, send it to us now and ask for 3-R Program handling, or contact your Mueller Sales Representative for more information.

MUELLER® CO. / DECATUR, ILL. 62525

Factories at Decatur, Ill., Chattanooga, Tenn., Asheville, Ala.
MUELLER LIMITED, Barrie, Ont., St. Jerome, Que., Canada
Sales office and Western Service Center, Sparks, Nevada

servicing the water and gas industries since 1857



W-7712

Hydrant Highlights

Your average fire hydrant is normally an unobtrusive object, standing quietly along a street or roadway minding its own business. But from time to time, due to circumstances beyond its control, a hydrant will be projected into a position of prominence or notoriety quite out of keeping with its nature.

Three such hydrants have been brought to our attention and because fire hydrants are a large part of our business, we feel it is incumbent upon us to acquaint you with these remarkable individuals and their note-worthy adventures — or mis-adventures — as the case may be.

The Wading Fire Hydrant

Jack W. Warren of South Gate, Cal., who retired from Mueller Co. in 1970 after 36 years of service in the Plating Dept. of the Los Angeles and Brea factories, was visiting a friend in Ocean Springs, Miss., near Biloxi Bay. To their surprise, they spotted a Mueller Fire Hydrant standing forlornly out in the water of the bay several feet offshore. Mr. Warren's friend said the shoreline had been cut back when a breakwater was built, leaving the formerly on-shore hydrant off-shore.

The Obstructionist Fire Hydrant

From George H. Neely III of Ballagh & Thrall, Inc., Philadelphia, comes this story of a fire hydrant occupying a position of prominence smack in the middle of Mr. Steve Kollatos' driveway. Mr. Kollatos, who lives in Boston, built the garage with the idea of having the water company move the hydrant when he finished. He figured it wouldn't be much of a problem to relocate the hydrant. But when he completed his garage in 1973, he was informed that he would have to pay \$3,000 to have it moved. Mr. Kollatos' remark upon hearing this disquieting piece of news was, "I guess I made a mistake." A late bulletin received from Jim McClintick, Mueller Representative located in Nashua, N. H., reveals that the hydrant is no longer blocking Mr. Kollatos' driveway. Whether Mr. Kollatos paid to have it moved or the water company relented is not known. However, we are happy to say that this was not a Mueller Fire Hydrant. One of ours would never have done such a thing.

The Flying Fire Hydrant

A graphic description of an incident where a Mueller Improved Fire Hydrant became airborne was sent in by William B. Chain, Jr. of the New Jersey Water Co., Haddon District. Mr. Chain's prose is too good to dilute, so with only minor edits to conserve space, here is his account:

"It was early morning on the 10th of June, 1975. The intersection of State Hwy. #38 and Church Road in Cherry Hill, N. J., was settling down after a busy night of traffic. The traffic signals at the intersection were silently winking at each other in an almost military way. Our 'hero', Mr. Mueller Fire Hydrant, was standing watch on the southeast corner. He had a trying day, with large 18 wheelers passing him at speeds of up to 50 mph only 3 feet away, and was taking a breather. When out of the dark,

a 1971 Chevy came barreling down on poor Mr. Fire Hydrant. Unable to take evasive action, he was caught by the Chevy just under his 4½" cap, breaking his safety stem coupling and safety sleeve, hurling him up into the air. The first thing he saw was Benash's Liquor Store, 78 feet east of his station. Wanting to get even with the world, Mr. Fire Hydrant struck the liquor store 12 feet up on its front wall just to the right of the door, causing superficial damage. He then came to rest on the ground, tired and spent. Later, with his fractured safety flange, safety stem coupling and safety sleeve replaced and with a new coat of paint, he was as good as ever. He's back at his station standing watch, enjoying the dubious honor of having, for a few glorious moments, known the thrill of free flight."



We are inviting our readers to report any circumstances in which fire hydrants (preferably, but not necessarily, Mueller) play a dominant role or are found in strange or unusual locations. Pictures will be gratefully accepted — preferably

in black and white — as these are more suitable than color photos for reproduction. Also, be sure to include your name, position, firm, etc. because we will include this in your story.

Fire hydrants on display date back to the early 1900s.

Museums Emphasize Importance of Water in Nation's Growth

Delving into the past to preserve for present generations some concept of the way our forebears lived is nothing new. Historical societies, museums, special interest groups including old car buffs, antique collectors and others have long been engaged in this preoccupation. But apart from a few curios gracing a water company's lobby, or more often, an inner office or storeroom, little of any real importance in the way of developing collections of water service paraphernalia

for public viewing had been undertaken. It has only been recently that man's early attempts to control water for public distribution has come into focus as an important element contributing to the development of our society.

The following three stories are indicative of an awakening in this regard, and may provide an impetus for others to follow suit.



Nation's First Water Museum Established in San Antonio

The San Antonio, Texas, City Water Board's Water Museum was dedicated in the summer of 1976. It was created to educate the public about water sources and processing, and to present an interesting insight into an important facet of the city's past.

Artifacts, models and photographs are used to depict such topics as recreational use of water and San Antonio's early water system. The site of the museum is the Yturri House, a restored building dating to the late 1860s, which also houses the Water Museum Library. In an Artifacts Room, components of San Antonio's water system are on display as they have been preserved. These include a fire hydrant dating to the early 1800s, wooden water mains, and some of the vessels used to carry water from the early city's wells or springs to the home. Plans call for this room to exhibit early records of payrolls and costs of materials in comparison with present-day records.

Recreational uses of water provide the topic for one exhibit room. It contains photos of San Antonio's River Walk and the many springs which provide recre-

ational opportunities for the public. Future displays will show the recreational aspects of both ground and surface water sources, emphasizing man's need for water as a means of sustaining life as well as enjoyment.

Also being planned is a model of early San Antonio's water system. This acequia system was built by Spanish settlers and missionaries, and parts of it are still standing today. A description of the original system and other photographs are now on display.

The Edwards Story is the theme for another room in the museum. This refers to the Edwards Underground Aquifer which is the source of San Antonio's present water supply. A model of the aquifer, depicting the area and topography involved, has been constructed. A sample from the Edwards Limestone Formation and a core sample of a well drilled into the formation are also on display. In addition to the exhibits, the Water Museum Library will provide a setting for the accumulation of water facts, historical data and photographs, plus the honors which have been awarded to the City Water Board over the years.



Restored 19th century house provides setting for nation's first water museum.

Vessels used to carry water from the early city's wells and springs.

Philadelphia's Fireman's Hall Features Early Day Fire Equipment

One of Philadelphia's important contributions to urban civilization was organized fire fighting service. Memorabilia depicting the early days of fire fighting was collected and put on display in a museum which opened in 1967. The facilities were enlarged for the Bicentennial last year, with the facade of the building restored to the condition it was in when the Union Fire Company was founded by Benjamin Franklin in 1736. It remained relatively unchanged up until 1871, at which time it was discontinued by the original fire company. Water troughs for horses, cobblestones and the artistic design of the fire house doors look as they did in colonial times.

Housed in the building is an exceptionally fine collection of fire fighting equipment and paraphernalia relative to the period. Methods of extinguishing fires included the bucket brigade, the hand-pulled engine, horse-drawn engine and the present-day engine are on display. How water was procured through the years, the various sprinklers used, spanners and tin cutters from the 1730s, hand-pulled spider reels of hoses from the 1840s, parade hats, lanterns, a 1752 hand pumper, a 20-man hand pumper called the Southhampton, and a vintage hand pumper of the 1800s are all in the museum.

On March 15, 1871, when the Union Fire Company became the city-wide professional Philadelphia Fire Department, Engine Company 8 was stationed in the building and remained at that location until the early 1960s. When it relocated, it represented 240 years of uninterrupted service to the city — the longest continuous period of fire service by a single engine company in the nation.

Among the artifacts dating back to 1736 are leather buckets for carrying water and linen bags brought to every fire to hold property which was in danger. Also there are lanterns that were placed in windows of houses near the fire to prevent confusion and enable friends to give speedy and effectual assistance.

Most of the apparatus, including engines, buckets, ladders, bags, baskets, and hoses, were imported from England. Replicas of this equipment, as well as the various helmets, badges and plaques of the volunteer organizations, are a key attraction in Fireman's Hall.

One of the first successful builders of fire engines in this country was Richard Mason, a member of the Northern Liberty Fire Company of Philadelphia. A replica of one of the engines he built in 1801 is on display, as well as a model of a hydraulion, a primitive type of hydrant,

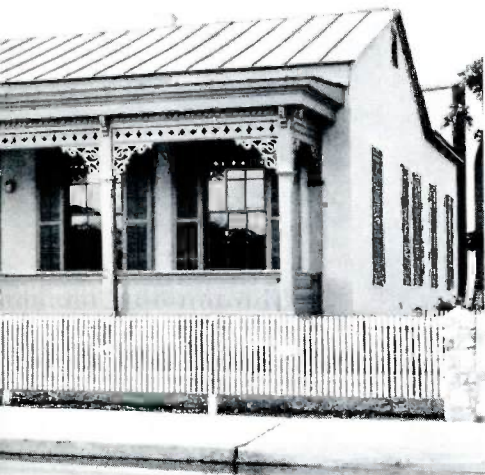
that furnished water to fire companies in 1821.

Completing the collection are old uniforms, alarm boxes, old newspaper clippings, personal belongings of former chiefs, a library, workshop and a memorial tablet listing the name and company of every fireman who lost his life in service since 1791.

Although Fireman's Hall was enlarged and improved primarily to provide an attraction for visitors to Philadelphia during the Bicentennial Year, it will now remain as a memorial to the fire fighting profession, not only of Philadelphia, but of all the nation.



A collection of old fittings from the water distribution system.



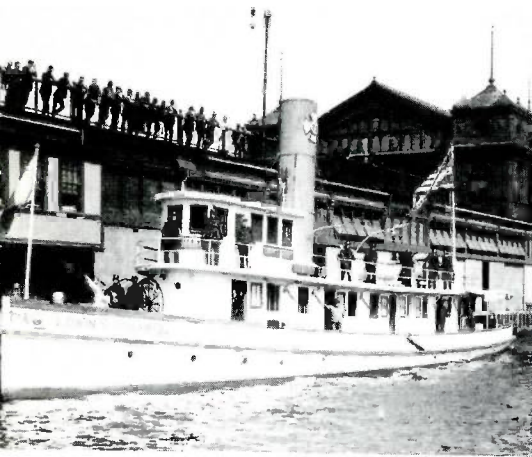
Department memorabilia on display.



Early 1800
fire hydrant.



The Metropolitan Steamer . . .
a horse-drawn engine of 1907.



Philadelphia fireboat Edwin S. Stuart
at Race Street Pier . . . 1908.



Philadelphia
fire hydrants
of the 1800s.

Philadelphia Fire Museum story
courtesy of Destination: Philadelphia,
a publication of the Philadelphia
Port Corp.

Information for San Antonio Water
Museum provided by Water & Sewage
Works Magazine.

Story material for "The City" provided
by Pat Ott, wife of Robert J. Ott,
Mueller District Manager
in Atlanta.

Mueller Fire Hydrants Part of Unusual Art Display in Atlanta

While not in the same category as the San Antonio Water Museum or Philadelphia's Fireman's Hall, the display titled "The City" at the High Museum of Art in Atlanta deserves a place here. Among other things, it recognizes the part water service equipment plays in the total concept of the city as an organic structure. The display is not essentially historic, but it has historical overtones that relate to the city's growth and the changes that took place with the passage of time.

"The City" has been designed to appeal to the senses. It includes elements that attract the eye, the ear, the sense of touch, and the emotions. It is expressly for young people and is considered an important part of the teaching procedure of the Museum's Department of Children's Education. Programs include Student Tours, Elementary Art for the Schools, Discovery, Special Education Tours and Adventures in Looking.

The theme of "The City" is designed to make viewers more aware of the urban environment, as well as to lead them to creative looking and thinking about the city. The exhibit also provides viewers with the experience of the city as a place composed of the elements of art — line, color, shape, texture, light, movement and space. Participants can draw many analogies between the components of the urban environment and works of art.

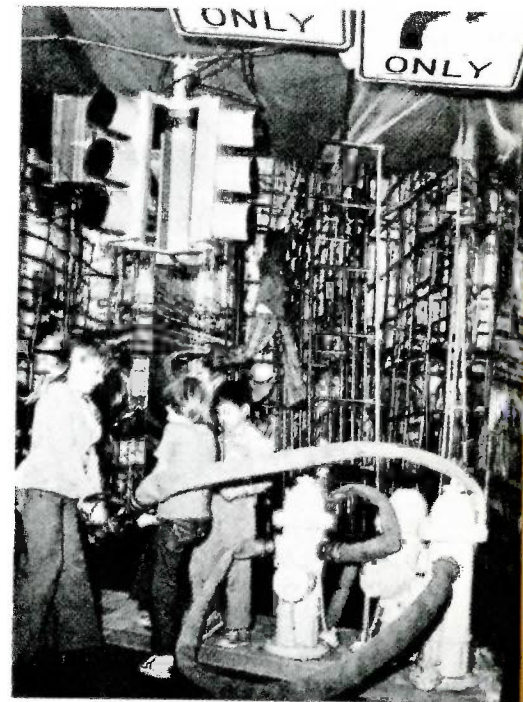
The display is composed of ten different elements, each of which is intended to create a distinct impression on the participant. These include photo-murals, faceted mirrors relating the place to the viewer, stylized buildings, trees, cars, people and other elements where citizens can design their own city. There is also a "Time Machine" — a controllable slide show — and a zeotrope, which illustrates the way perception is affected by walking or running. The display also includes street signs and street furniture, which consist of parking meters, street lights and fire hydrants (the Mueller fire hydrants referred to in the headline).

"The City" includes a wind machine to simulate the wind tunnel effect of walking between skyscrapers. There are also pipes, valves, sewer pipes through which the children can crawl, multi-media shows, films and other elements designed to create visual and lasting impressions.

Pat Ott, wife of Mueller District Manager Robert J. Ott of Atlanta, is a **docent** connected with the exhibition. She describes a docent as an instructor, lecturer, reader, or professor. The docent's

job to her is that of a hostess, guide, amateur scholar and lay enthusiast, who in this instance, forms an essential link between the curatorial staff and a broad and changing audience. A docent develops and shares with others at the Museum a richer background of the arts, while at the same time moves outside of the Museum and into the community.

According to Mrs. Ott, the exhibition, which opened in September, 1974, will be on view through September, 1977. It is sponsored by an anonymous former school teacher; Heery & Heery, Architect-Engineers; the Members Guild; McElroy & Hardy, Specialty Contractors; a private foundation; and the Metropolitan Foundation of Atlanta. The chief designers of "The City" are Mack Scogin and Chuck Clark of Heery & Heery, with audio-visual components and multi-media sequences by (AND) Media Studio. Photography was created by Lucinda Bunnan and David Lang.



Children at the exhibit containing
Mueller Co. fire hydrants.

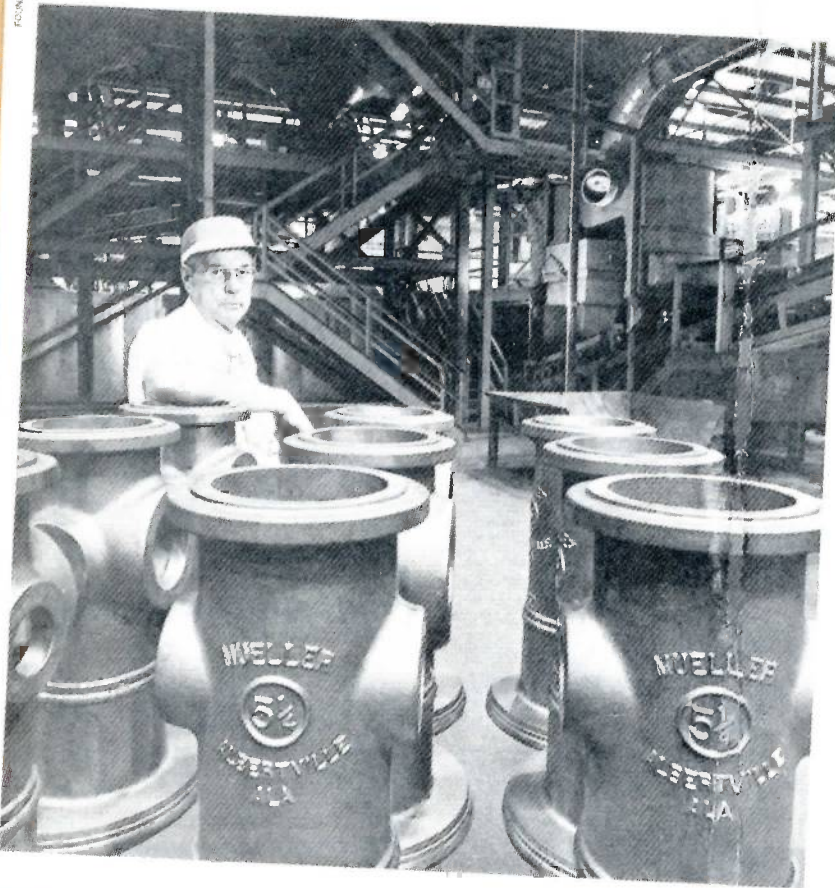
National Engineering Co. features Mueller Foundry in magazine ad.

FOUNDRY '81 January 1977

"Our Simpson Multi-Mull handles

200 tons per hour with ease."

Frank C. Hackman, Plant Manager



■ Mueller Co. Centurion Fire Hydrant, "the new standard for community safety," was born in this bright and clean new 275,000 sq. ft. plant near Albertville, Alabama.

"Centurion Fire Hydrant specs call for quality iron barrel to barrel," says Frank C. Hackman. "Just as we use railroad rail and steel strip for furnace feed, we specified a continuous muller to assure controlled sand consistency. Compared to a batch muller of the same size, the continuous muller is twice as good. We would need two 200 tph batch mullers to handle the same amount of sand. Obviously, there must be a savings in cost, material and manpower.

"We will have to mull about 1300 tons of sand for 189 tons of poured metal produced in our three 50-ton induction furnaces," said Frank C. Hackman. "Rated at 200 tph, our Simpson Multi-Mull (Model 200/250) should handle that load with ease."

"During the last forty years, I have built foundries across the country. Of the various mullers that I have seen, Simpson Multi-Mull not only looks the best, its performance is the best. At Mueller Co. alone, I have installed five of them. And," concluded Mr. Hackman, "they're all still going strong."

"Consistency of molding characteristics with big and continuous productivity from 15 to 100 tph... strong reasons why foundryman like Frank C. Hackman and nearly all iron foundries have re-ordered Simpson Multi-Mulls for their ambitious production schedules.

Contact National Engineering Company for complete information on Multi-Mull.

Request Bulletin 86M-74



"Just one of the casing batch-ers used had a problem with molding steel."



Aerial view of Mueller Co.'s new plant near Albertville, Alabama.



"Our cores are so large they supply all of our mold sand requirements."



"TIMEMASTER" batch processes complete reworking of all sand preparation operations.



National Engineering Company

20 North Wacker Drive
Chicago, Illinois 60606
(312) 762-8190

Circle 379 on CARD-INFO Card

The above spread appeared in the January, 1977 issue of "Foundry" Magazine. It emphasizes the care and attention Mueller Co. devotes to the quality of its products by using the most up-to-date equipment and production methods. The Albertville, Ala. plant is a model of modern technology and efficiency, and provides greatly expanded production facilities to meet the growing demand for Mueller Co. Centurion Fire Hydrants.

The construction of this newest Mueller Co. facility provides us with additional means to pursue our objective of improving product output. It not only increases hydrant production, but by relieving facilities elsewhere, enables us to increase production of other needed products.

A Primer of Basic Information

THE COMMON VALVE

The dictionary describes a valve as: **Any of various devices that regulate the flow of gases, liquids or loose material through apertures by opening, closing, or obstructing ports or passage ways: The movable control element of such a device.**

One of the most common valves is the one we use daily to turn the water on and off at the kitchen sink. A simple twist of the handle does the job.

Another job, perhaps not quite so evident to those of us who regard the interior of a flush toilet tank as something mysterious and forbidding, is the ball or flapper type valve that controls the flow of water from the tank . . . and the water inlet valve regulated by a float that refills the tank each time the device is used.

The valves used on the bathroom vanity, tub or shower are essentially the same type as that used at the kitchen sink with the only real difference being the fancier externals. Even the stopper in the tub can be considered a valve of sorts.

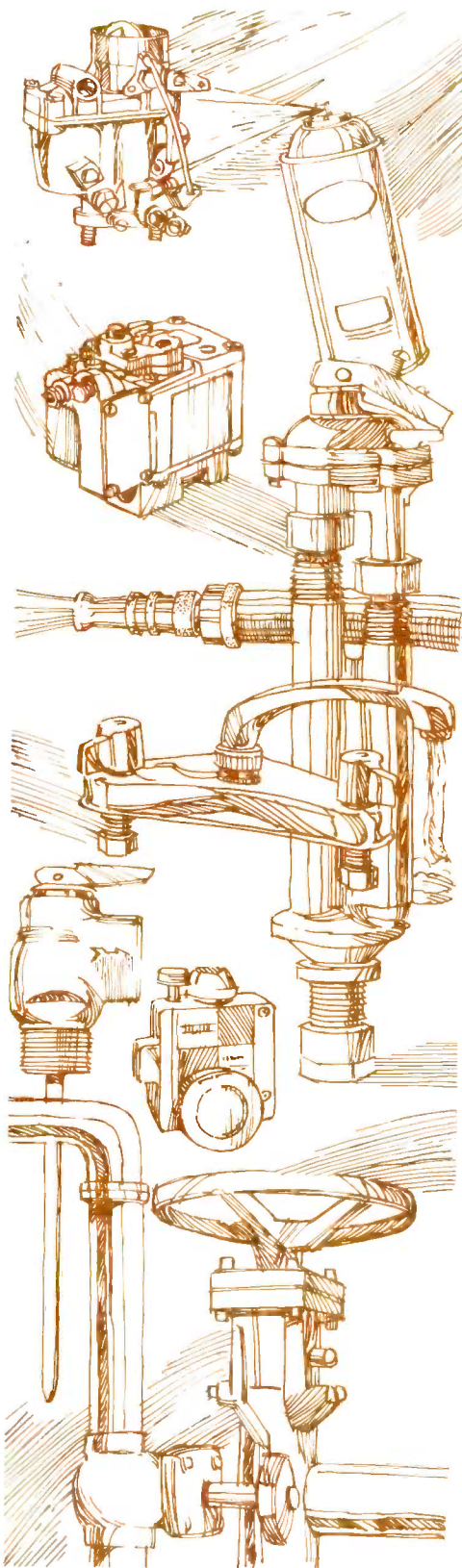
Another valve almost every household contains is the operating valve used to control the flow of gas in the furnace as it goes on or off as the thermostat dictates. In this case, the control is remote and automatic, normally a mercury switch.

The water heater in the basement or utility room uses, along with its simple shut-off and drain valves, an internal gas valve that operates much like the one in the gas furnace — being switched on and off by a temperature sensing device.

And while we're still in the basement or utility room, the automatic washer has at least two built-in valves. These are small reed, or gate-type valves actuated by a solenoid to control the mix of hot and cold water, and usually operated by a timer.

Another valve most of us are familiar with is the ordinary hose nozzle. Its primary function is to utilize the water pressure to throw a stream of water the greatest possible distance . . . or by opening to its greatest volume potential, to discharge the same volume of water with less force.

The damper in the chimney above a fireplace is also a valve — controlling the flow of air, smoke, gases and heat



in the chimney, and stopping it off when the fireplace is not in use. It is ordinarily controlled by a small brass handle, and few, if any of us, ever see this valve operate.

The automobile contains any number of valves of different kinds. The carburetor, for example, is controlled by a butterfly valve that is activated by the accelerator pedal, and opens to let more air into the carburetor throat or closes to pull more gasoline into it, thus regulating the speed of the engine.

Another commonly used valve is that in the top of the spray can — whether it be paint, cleaning solution, hair spray, or whatever. This is perhaps one of the smallest, yet simplest valves we ordinarily use in our everyday lives.

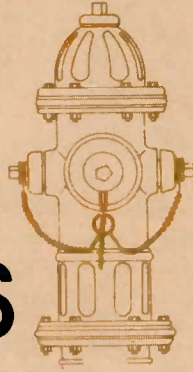
These are the simple valves we rely on and with which most of us are, if not familiar, at least aware. But there are other valves the average person has no knowledge of, unless they are used in one's line of work. These are the valves that help control the flow of water impounded by a huge dam that are in themselves quite massive, weighing up to thousands of tons and measuring many, many feet in size. And there are the sophisticated valves used in nuclear reactors, and valves used to control the flow of all types of fluids ranging from the thinnest gases to abrasive slurries. The fluids many handle may be hazardous, corrosive or toxic and may even be radioactive materials.

Some valves are used at pressures in the vacuum region to the highest pressures that man is capable of containing, and at temperatures ranging from the cryogenic region of cold to the heat of molten metals.

Valves may also be constructed for "zero leakage" sealing requirements for the thinnest gases where leaks can be dangerous, or they may be built to fairly loose tolerances where minor leakage is not important.

Some valves are made to operate continuously for years without failure, while others may be designed for a life of only a few hours. But no matter how large or small, how sophisticated or precise or complex a valve may get, it is still a device that is used to regulate the flow of gases, liquids or loose materials, as we stated at the beginning of this article.

F.H.A.P. SOCIETY NEWS



The Fire Hydrant Appreciation and Preservation Society announced their Annual National Achievement Award for 1976 will not be awarded. While many nominees were outstanding, the Board of Governors felt none approached previous winners in their endeavors. Nominees for the 1976 award will receive certificates of merit, and are: Bartle Bull — Publisher, Firehouse Magazine; Norman Hunt — Manager, Crestline Village City Water District; Sandra Howard — Employee, Tennessee American Water Co.; and John Graves — Ceramist.

Oldest Fire Hydrant Contest

The F.H.A.P. Society is currently conducting a contest to find the oldest fire hydrant in the United States still in use.

As of this date, the oldest fire hydrant, as reported by historian Dewey Johnson in the Jan., 1970 Ill. AWWA Journal, is 115 years old. This hydrant is located in Chicago and is still a part of the Chicago Water System.

If you have information about a candidate for the oldest fire hydrant in the U.S. that is still in use, please contact Jim S. Cusins, Promotional Director, F.H.A.P. Society International Headquarters, 500 West Eldorado St., Decatur, Illinois 62525.

INDUSTRY NEWS

Reliable sources of drinking water are lacking for at least one-fifth of the world's city dwellers and three-quarters of its rural people, reports the United Nations. The statement was contained in a report titled: "Resources and Needs: Assessment of the World Water Situation," the first of a series of papers prepared for the upcoming U.N. Water Conference in Mar del Plata, Argentina.

The report warns that it may become necessary to relocate populations close to readily available water sources, and says that irrigation demands in many areas would increase because of the "imperative need to step up food production."

Although the paper said that water "tends to be available in the wrong place at the wrong time, or with the wrong quality," a chapter on non-conventional sources of water supply mentioned de-

salting sea water, desalting plants and reusing wastewater as growing sources of supply.

WATER QUALITY IMPROVEMENT SLOW

Twenty-three states in the U.S. can boast that "most of their waters are of good quality or already meet the 1983 goals" of PL 92-500, according to the National Water Quality Inventory submitted to Congress by the Office of Water Planning and Standards.

Despite many reported improvements, several problems still exist, especially in highly populated areas. The most frequently mentioned are dissolved oxygen, coliform bacteria and nutrients. The health hazard caused by high coliform bacteria counts is considered a significant problem by almost all states reporting.

MUELLER NEWS



Hugh L. Baker

On July 31, 1976, Hugh L. Baker retired from his position of Product Development Manager after 42 years with Mueller Co. A native of Decatur, Hugh graduated from the University of Michigan in 1933, and began working at Mueller Co. in 1934 in the engineering department of the company's Columbian Iron Works division in Chattanooga, Tennessee. A year later, he entered the division's sales department, becoming Sales Manager in 1937. In 1945 he was transferred to Decatur as Assistant Sales Manager for the company. He has held a number of positions in headquarters sales, as well as advertising and marketing, and was Manager of Marketing Services prior to being named Product Development Manager. Mr. Baker and his wife will remain at their home in Decatur. Our wishes for a rich and bountiful retirement are added to those of the many friends he has gained over the years.



Richard C.
Sponsler

Richard C. Sponsler, Annapolis, Md., has retired as Southeast District Representative with Mueller Co. effective December 16, 1976. Dick has completed 24 years of service with Mueller Co. On behalf of Dick Sponsler, we would like to express his appreciation for your loyalty and friendship during those years, and we are certain you will join us in wishing him a full measure of good health and happiness.

MUELLER NEWS



R. J. Cope

On March 25, 1976, R. J. Cope retired from his position as Sales Representative with Mueller Co. Bob had completed 23 years of service. From 1952 to 1976, Bob was our Sales Representative in Kentucky and part of West Virginia. We're sure all of us who worked with Bob hope he enjoys all his "take it easy" years to the fullest. And we're sure he, too, will remember the friends he's made in his years with Mueller Co.



R. H. Roarick

R. H. Roarick, after 35 years of service with Mueller Co. as Sales Representative in the San Antonio area of Texas, retired on March 31, 1976. Ray started with Mueller Co. in 1940, and in the course of those many years, made innumerable friends in the trade. We all miss him, but do send him our best.



C. Robert Fisher

C. R. Fisher, Sales Representative for Mueller Co., will now serve as the Sales Representative for the entire state of North Carolina due to a territorial realignment for better service to our customers. Bob joined Mueller Co. in 1969 as a sales trainee and in 1970, completed his sales training program. He was appointed a Sales Representative in our Southeastern Sales District. He has served in that capacity for the past 5½ years. Bob is married and his headquarters will be in the Charlotte area.



**Sam R.
McWilliams**

S. R. McWilliams has been appointed Sales Representative for Mueller Co. in the Southwest Sales District, succeeding R. H. Roarick. Sam joined Mueller Co. in 1967 as a Sales Service Correspondent in our Chattanooga Plant. In 1969, he completed a comprehensive sales training program. Sam was appointed a Sales Representative in our Southern Sales District, where he has served for the past 7 years. Sam is married and has two sons. He and his family will make their home in the San Antonio area.



**James W.
Wagoner**

J. W. Wagoner has been appointed a Sales Representative for Mueller Co. in our Southern Sales District. Jim joined Mueller Co. in 1961. Since that time he has worked in our Decatur Plant and in the Decatur Sales Office as Manager of Customer Records. A program of sales training combined with Jim's past experiences, has given him excellent knowledge of both the water and gas industries. Jim is married and has two children. He and his family will make their home in the Shreveport, La. area.



John W. D'Angelo

J. W. D'Angelo has been appointed a Sales Representative for Mueller Co. in our Western Sales District, succeeding R. Wayne Black. John joined Mueller Co. in 1968 and served in our Brea, California, Sales Office as Sales Service Correspondent until he was appointed a Sales Representative. His work in the Brea Sales Office gave him an excellent background and experience working with both water and gas customers. He has also completed our sales training program which makes him well qualified to serve you. John is married and has one daughter. He and his family will make their home in Brea.



Ross Caylor

Ross Caylor has been appointed Sales Representative for Mueller Co. in our Southeast Sales District, succeeding R. J. Cope. Ross has been selling water works products for a leading distributor for the past 22 years and has gained vast experience in water works and distribution systems. Ross completed our sales training program, gaining a thorough knowledge of products for both the water and gas industries. This, combined with his previous experience, enables him to provide you with a wealth of knowledge. Ross is married and will make his home in Lexington, Ky.



Michael S. Bucalo

Michael S. Bucalo has been appointed Sales Representative for Mueller Co. in our Midwest Sales District. Mike, a native of Cleveland, Ohio, worked for the Automatic Sprinkler Co. Headquartered in Minnesota, he covered a 5-state area for the firm, gaining valuable experience for working with our water works customers. Since joining Mueller Co., Mike has become thoroughly familiar with products for both the water and gas industries. His combination of knowledge and experience gives him the highest qualifications for serving you. Mike is married and has one daughter. He resides in Mound, Minnesota.



**Karl Miersemann,
Regional Director,
Western Europe
and North Africa**

Karl Miersemann joined Mueller Co. on October 14 as a Sales Representative in our International Division. A graduate of San Jose University with a B. S. in Industrial Engineering and a Minor in Business Administration, he worked with Fairchild Semi-Conductor, Inc. following graduation. Later he joined FMC Corp. where he was named Product Sales Manager. He has traveled extensively throughout the world—in Europe, the Mid-East, Africa, Far East, and Latin America. Following training in Mueller Co. product lines, he will spend a large part of his time overseas building contacts, relationships, representation and sales. Karl is married and has two daughters.



Malvin C. West

M. C. West has been appointed Sales Representative for Mueller Co. in our Southeast Sales District, succeeding R. C. Sponsler. Born in Missouri, Mal attended school in Decatur and has lived here for the past 23 years. He joined Mueller Co. in 1963 and has worked in our Decatur Plant and Foundry. Before being selected as a sales trainee, he was our Assistant Brass Foundry Supervisor. Mal has completed our sales training program where he gained a knowledge of products for both water and gas industries. This plus his previous experience makes him exceptionally well qualified to serve you. Mal is married and has two daughters and a son. He and his family make their home in Annapolis, Md.



Thomas C. Tietze

Thomas C. Tietze has been named Sales Representative for Mueller Co. in our Midwest Sales District. Tom is a native of Kansas and had been serving as a Sales Representative for a leading water works distributor. This experience has given him an outstanding background for working with our water customers. He has completed the Mueller Co. Sales Training Program which has provided additional knowledge of products for both the water and gas industries, which makes him exceptionally well qualified to serve you. Tom and his wife live in Omaha, Nebraska.



**Helmut Biller,
Regional Director,
Mid-East**

Helmut Biller was employed by Mueller Co. as a Sales Representative in our International Division. He started with Mueller December 10 and on completion of a training program will assume the position as Regional Director, Mid-East. Helmut was educated at the University of Munich in Germany and has been a permanent resident of the U.S. since 1968. He had been employed as a V.P., International, Chadbourn, Inc., worked for an international subsidiary of Modern Fibers, Inc., and with Scriptomatic. He has traveled widely in overseas markets developing agents, representatives and contacts. After training in Mueller product lines, Helmut will spend much of his time overseas. He is married and has a 10-year old daughter.



Off the Record



Graffiti:

- General Custer wore an Arrow shirt at the battle of the Little Big Horn.
- If you don't know where you're going, you'll probably end up somewhere else.
- He who lies with dogs shall rise up with fleas.
- People who ask for advice often have hearing problems.

off taxes you wouldn't have to pay if you didn't have so much money already."

A politician was late for a speaking engagement, so he was more than a little upset when he was accosted by a local reporter.

"What do you think of the situation in Europe?" the newsman asked.

"No time to think now, man, I've got to talk," replied the politician.

As the judge was stepping down from the bench one day, he tripped on the top step and fell all the way to the floor. An astonished court attendant rushed to his aid and said: "I hope your Honor is not hurt, sir."

"No," said the Judge, "my honor is still intact, but I think I've broken my leg."

Woman to nurseryman: "What can I plant in a patch that gets very little rain, too much sun, has clay soil and is on a rocky ledge?"

Nurseryman: "How about a nice flagpole?"

A big gun is often a man of small caliber and immense bore.

Einstein, asked for the secret of his success, said: "If A is success in life, I should say the formula for success is A equals X plus Y plus Z, with X standing for work and Y for play. What is Z? That's keeping your mouth shut."

Layman's definition of success: "Making more money so you can pay

A man can roll with the punches as long as they are well spiked.

Physicist Dr. James A. Van Allen, discoverer of the Van Allen radiation belt in space, was lecturing to fellow scientists on the hazards that the belts would present to space travelers. During the question period he was asked if he knew of any practical use for these dangerous zones.

"Well," said Van Allen, "I've been making a good living off them for two years."

A woman handed a stamped parcel to a post office clerk and asked him to weigh it. He told her that she had put too many stamps on it.

"Good heavens!" she exclaimed, "I hope it won't go too far."

Those pictures on vegetable seed envelopes are not real. They're posed by professional vegetables at \$75 an hour.

Just the price of coffee is enough to keep us awake.

It takes more brains to fill out the tax forms than it takes to make the income.

Super highways help to bring places closer together — like this world and the next.

An optimist is convinced that the cleaners are shrinking the waistline of his trousers.

Scotchman to wife: "I'll be gone for six days. Dinna ferget to take little Donald's glasses off when he isn't looking at anything."

Husband: "Where does all the money go that I give you for groceries?"

Wife: "Turn sideways and look in the mirror."

Women don't want a go-getter — they want an **already-gotter**.

Life is one fool thing after another. Love is two fool things after each other.

A PAGE FROM THE PAST

Historical notes, sidelights, anecdotes and items of interest dealing with the subject of water distribution in the early days

The Great Fire Bucket Brannigan



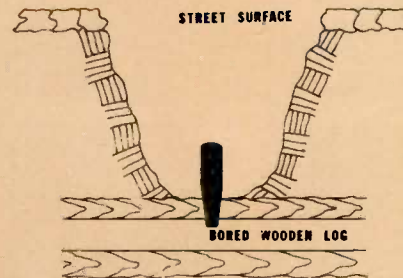
Here's an interesting sidelight we ran across about one of the problems that existed back in the days when the bucket brigade was a common method of fighting fires. In this particular instance, each household kept two leather buckets on hand, expressly for use by the local fire company. When a fire broke out, people in the immediate vicinity would bring out their buckets and give them to the firemen. At the conclusion of the fire, rather than attempt to return individual buckets to their owners, the firemen would toss them all into a pile in a near-

by yard or vacant lot for their owners to retrieve. This usually became the scene of a mad scramble with people tugging, shouting, and frequently swinging buckets as weapons as each sought to grab those in the best condition. The quickest and strongest usually walked away with the better buckets, leaving the worn and leaky ones for the less agile. It can be assumed that more injuries resulted from this bucket brannigan than did from the fires.

The Origin of the Term "Fire Plug"

Do you know what the first fire plugs were? Actually, they were just that — plugs. Wooden plugs that were inserted into holes drilled at certain strategic locations in the wooden water mains of the early days. It can be assumed that their locations were marked in some way, because when a fire broke out nearby, the fire fighters would dig down to the main, pull the plug, and either pump or scoop water from the flooded hole to

fight the fire. What with the time involved in digging, and waiting for the hole to fill with muddy water, this was not a very efficient system for fighting fires. The terminology, however, has stuck, and the modern, efficient fire hydrant of today is still called a "fire plug." The term is not altogether a misnomer, because if the average person was asked why it's called a fire plug, the answer would probably be, "Because the firemen 'plug' their fire hoses into it."



Material Needed

MUELLER CO. is compiling a collection of historical facts, stories, items, and photos or other pictures dealing with early water distribution and fire fighting. If you have any contributions to make, they will be gratefully accepted, and if suitable, will be printed here with due recognition given to you.

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FOR THE EXTRA MARGIN OF PERFORMANCE

EFFICIENT DESIGN FOR MAXIMUM FLOW... THE MUELLER® CENTURION® FIRE HYDRANT

The real test of a fire hydrant is its performance under actual operating conditions. The smooth internal passages and long radius bends of the patented Centurion Fire Hydrant design (Patent No. 3980096) assure higher flow and higher delivery pressure—right out to your pumper and hose nozzles.

Built-in performance—bonnet to shoe

The dry-top design includes an O-ring sealed oil reservoir system for continual lubrication of the operating mechanism. A thermoplastic anti-friction washer assures easy operation over the life of the hydrant.

Hose and pumper nozzles are threaded in for easy replacement and special locking method makes insertion simple.

Safety stem coupling and flange break or pull apart to help avoid barrel or stem damage. Service is easily restored by replacing broken parts with low cost repair kit.

A unique bolting arrangement allows the compression type main valve which closes with the pressure to remain attached to either the shoe or the lower barrel. You can repair or remove the lower barrel without shutting off the water supply. You can also leave the main valve securely attached to the lower barrel for fast, easy shoe changes.

The Mueller CENTURION Fire Hydrant meets AWWA Standard C-502 and is well below the limits for pressure loss at all flow rates. It's available in a choice of sizes and inlet connections. For full details, contact your Mueller Distributor or Mueller Sales Representative.

MUELLER® CO.
DECATUR, ILL. 62525

Factories at Decatur, Ill., Chattanooga, Tenn., Albertville, Ala.,
MUELLER LIMITED, Sarnia, Ont., St. Jerome Que., Canada.
Sales office and Western Service Center, Sparks, Nevada.

serving the water and gas industries since 1857

