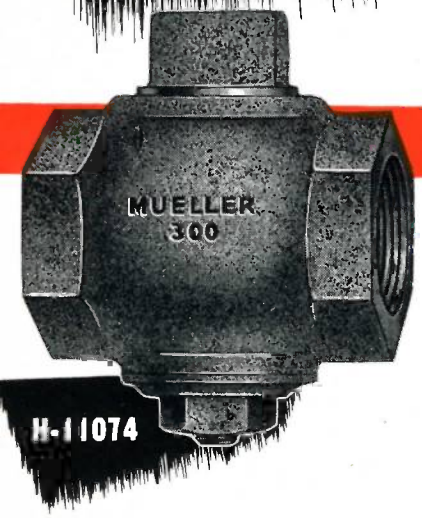
MUELLER RECORD

NOVEMBER • 1949 • DECEMBER

ALL BRONZE
HIGH PRESSURE GAS STOPS



H-11074

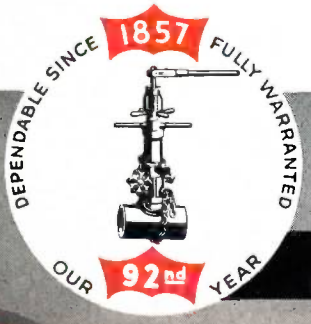
FOR PRESSURES UP TO 300 POUNDS

The MUELLER H-11074 is designed and constructed to meet the demand for a stop to handle higher pressures than average gas stop requirements. The bodies are cast from high copper content bronze with extra thick sections for added strength. The bronze keys are precisely lapped into the bodies for tight seal and easy turning. Full line capacity through body and key. Furnished in sizes ¾" to 2".

H-11075

FOR PRESSURES UP TO 500 POUNDS

The MUELLER H-11075 is designed to meet the requirements for a stop to handle extreme high pressures. The heavy, ribbed design provides additional strength to the rugged body of high copper content bronze and the drilled solid bronze key is ground and lapped into the body to insure a tight seal and easy turning. Generous proportioning of both the body and the key permits large openings to assure a free flow of gas. Available in sizes ¾" to 2".



MUELLER CO.

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November • 1949 • December
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CONTENTS

COVER

Gustav Anderson
Amityville, New York

MOSTLY PERSONAL

WE HAVE NEVER experienced any 40 below weather, and, what's more, barring any unforeseen events that would require our presence in North Dakota in midwinter, we don't ever expect to. But we know a man who seems to thrive on it. He's S. K. Svenkeson, superintendent of public works at Minot, North Dakota. During the course of gathering material for the article on page 3, we asked Mr. Svenkeson, who is thoroughly acclimatized to the region's winter weather, if he could recall any extremely cold (below —40) weather in recent years. He unhesitatingly allowed that they had a real cold snap in the winter of 1934-35, when the temperature dropped to —45. We'll agree that's pretty cold; but, after all, what difference can five degrees make?

Just when we were on the verge of congratulating ourselves on our choice of Minot as the subject of an article in this winter issue, we picked up the November 12 issue of the Saturday Evening Post and found that we had been scooped. The editors of the SatEvePost had decided to pick Minot for the seventy-fifth article in its series, the Cities of America. We must confess that we found it an interesting article, too.

(Cnotinued on page 20)

Adding a service connection to a Minot water main takes on the appearance of a major excavation project. Donald Mahoney, serviceman, is shown making a tap in a main, using a Mueller B machine.

They bury 'em D E E P in North Dakota

NORTH DAKOTA'S weather makes just as many headlines as Florida's during the winter months, although not necessarily for the same reason. On a given winter's day the temperature may be in the seventies in Florida, while in North Dakota the mercury may be in the neighborhood of the 40 below mark, give or take a few degrees. Thus, the variation in headlines is primarily one of degree, as measured on the Fahrenheit scale.

As a former resident put it: "It's not always cold up there in winter—sometimes it's colder." Winter lasts from October through April, and there's hardly time for spring and autumn. Before anyone has had a chance to accustom himself to the high temperatures of the brief, hot summer, it's winter again.

Distributing a product as susceptible to freezing as water requires the observance of certain precautions, for the matter of a dependable water supply is taken as much for granted in Minot, as in Miami, irrespective of differences in latitude and temperature.

The water superintendent of Minot, located 85 miles from the Canadian border in the heart of the cold weather country, compensates for these differences in several ways, not the least of which is the depth at which the city's water mains are laid. Miami's mains lie just under the surface of the ground; in Minot they bury them deep.

S. K. Svenkeson, Minot's superintendent of public works, said recently: "We lay our mains with a cover of 8½ feet to be certain that we are below the frost line and to make sure that the gooseneck of the service line connection is below it."

At that depth the excavation necessary to reach the main to make a service connection becomes something of a major earth-moving project. But this amount of cover is required to protect the city's 40 miles of mains and its 3,600 services against the severity of the winter weather.

Even at that, Mr. Svenkeson would be the last to deny that Minot's services are freeze-up-proof. But they are as near that as practicable.

Winter weather brings installation work to a standstill, Mr. Svenkeson said, but maintenance work is kept up, meters are checked, and work in other departments keep employees occupied, thus avoiding lost time.

Weather is the big factor to be considered in the calculations of the water department, which, besides that has the

headaches typical of water departments everywhere. But with 55 years of cold weather experience back of it, Minot's water department accepts the terms of the cold war pretty much as a matter of course.

The city's first water works system was constructed in 1894, about seven years after the town site had grown up from a barren homestead. Citizens of the town approved the original bond issue of $10,000 on June 27, 1893. The town's first source of water was a shallow well on what is the present site of the Ward County courthouse.

By 1904 it appears that the well was abandoned and a pump located on the Souris River which runs through Minot. Raw water was pumped into the mains. By 1907 it was realized that the river water was unsafe and plans were developed for a treatment plant, which was put into operation in 1909. At that time it had not occurred to anyone that the river supply would not be ample for future needs, but by 1916 this proved to be true.

In 1920 two 8-inch wells, having a depth of 130 feet, were sunk and put into service. The city of Minot now has six wells in operation, four of which have capacities of 800 gallons per minute, one of 400 gallons per minute, and the other of 300 gallons per minute. Average daily pumpage this year has been 1,300,000 gallons. Ten years ago the water department was pumping 1,023,000 gallons a day. Mr. Svenkeson attributes this to a population increase of 5,700 and increased consumption for air conditioning (in the summer) and similar uses during the period.

The U. S. Geological Survey estimates that wells can be depended upon to meet a 3,750,000 gallon average daily demand, and the city can obtain a limited supplemental supply from the Lake Darling dam, constructed by the U. S. Fish and Wild Life Service. However, quality causes Mr. Svenkeson more worry than quantity, for Minot's water is hard and carries iron in objectionable amounts.

The city's wells vary from 130 to 158 feet in depth. The rock bed of this region is the Fort Union formation. It is covered with the alluvium, sand, and

S. K. Svenkeson, Minot's superintendent, has become acclimated to the severe weather.

silt deposits of glacial Lake Souris, and glacial drifts varying in depth from a few feet to 250 feet.

In the Souris River Valley, the water is obtained from sand and gravel beds in the valley fill. These deposits, while erratic in location, are apparently interconnected and presumably extend up and down the river for many miles.

According to Mr. Svenkeson, sand deposits predominate and in many test holes is found to be too fine to serve as a source of supply for a well. There seems to be no pattern to the gravel deposits, Mr. Svenkeson said, and they can be located only by testing.

"Three of our wells," Mr. Svenkeson said, "are in coarse gravel and four are in reasonably coarse sand and all of them are gravel packed."

Two years ago last summer Minot suffered a serious water shortage when its No. 4 well went out of operation, due to failure of the well casing, which admitted gravel, partly filling the well and ruining the pump. Lawn sprinkling and air conditioning were curtailed for some time. Since then, the city has completed four other wells.

The city's distribution system includes one elevated tank of 110,000 gallon capacity for high level service, a million gallon steel reservoir, and a three million gallon reservoir for low level service.

Baton Rouge Is Growing—Fast

Abundant water a blessing for the city, whose limits this year were expanded from five to 35 square miles.

By L. C. Eldridge

Superintendent-Engineer, Baton Rouge Water Works Co.

BATON ROUGE, capital of Louisiana and the state's second largest city, is blessed with an abundant supply of ground water of unexcelled quality. And with the city's growth expanding at an unprecedented rate, this really is a blessing.

L. C. Eldridge

The city's first water works system was started in 1888. Water was obtained from the Mississippi River and filtered. A standpipe, 15 feet in diameter and 100 feet high, was built at this time and is still in service at the Lafayette Street Pump Station. It is in unusually good condition, having been constructed of wrought iron.

Most of the original cast iron mains are still rendering service, although practically all of the small pipe has been supplemented by parallel mains of several times the capacity of the original system.

In 1889 the first well was developed at a depth of 190 feet. The high organic content of the water made it necessary to drill deeper in search of a better quality. In 1896 the second well was developed at a depth of 800 feet. A small ground storage reservoir of masonry construction of 300,000 gallons capacity and the standpipe of 132,500 gallons capacity constituted the storage facilities of the system.

In 1914 two additional ground storage reservoirs, each of 500,000 gallons capac-

Contributing to the rapid growth of Baton Rouge has been its industrialization. Refineries are shown in the foreground; the state's 34-story capitol building is in the background, upper left.

ity, were added. These were of reinforced concrete construction. As of that year, five wells were supplying the water through one pump station. Three of these wells were 900 feet deep and two were 2,000 feet deep. Three small, steam-driven pumps handled the water supply.

Two years later, in 1916, a five million gallon a day Laidlaw pumping engine was installed, this unit serving as the main pumping unit until 1925, when electrically-driven centrifugal pumps were installed. The Laidlaw steam pumping engine has been in service as a standby unit and is at the present time ready to serve in that capacity.

In 1927 the increased demand made it necessary to develop an additional well field and pump station. In the northern part of town, the Lula Avenue pump station was constructed and the development of a new, proven well field started. Within a few years this station was furnishing 80 per cent of the total requirements of the system. Automatic pressure-controlled equipment was installed, so that only a routine check-up and daily inspections were required of the chief operator. No operators were kept on duty at this station. In 1938 the peak load on the system required the construction of an elevated storage tank of 500,000 gallons capacity.

A third pumping station and well field were developed in 1942 in the eastern part of Baton Rouge. This station consisted of automatically-controlled deep well turbine pumping equipment only. No horizontal centrifugal pumps were installed. No operators were required on continuous duty, only a routine check-up and daily inspections by the chief operator being necessary.

Three additional elevated storage tanks were constructed during 1945 and 1946.

A reinforced concrete ground storage reservoir of 2,500,000 gallons capacity was constructed at the Lula Avenue pumping station during 1944.

Three deep well turbine pumps were installed in wells at this station during 1942, due to the lowering of the ground water table.

Until 1949 most of the artesian wells produced water either by natural flow due to high static heads or by direct pump suction. It is at present necessary to produce all of the water from wells by means of deep well turbine pumping equipment.

The 2,000-foot stratum tapped with the first well in 1914 produced water at a static pressure of 50 pounds per square inch. These wells maintained pressure on the distribution system during the hours of minimum consumption at night for a few years through a by-pass around the pumping equipment. This stratum is one of the most important producers in our present system. The static level is now approximately 25 feet below ground level.

The quality of the raw water is better than any that can be produced on a commercial basis by means of filtration. The hardness is zero to 5 parts per million; pH approximately 8.6; chlorides approximately 6 parts per million; carbonate alkalinity, 10 parts per million;

Tracing Its Growth

Average Daily Pumpage

1930—2.3 million per day.
1940—4.4 million per day.
1949—8.5 million per day.

Estimated Population Served

1920—28,000.
1930—48,000.
1940—68,000.
1949—120,000 (estimated).

Number of Services

(Includes some outside city limits; 100 per cent metered.)
1930—10,000.
1935—11,500.
1940—16,600.
1945—20,600.
1949—29,000.

Population of Baton Rouge

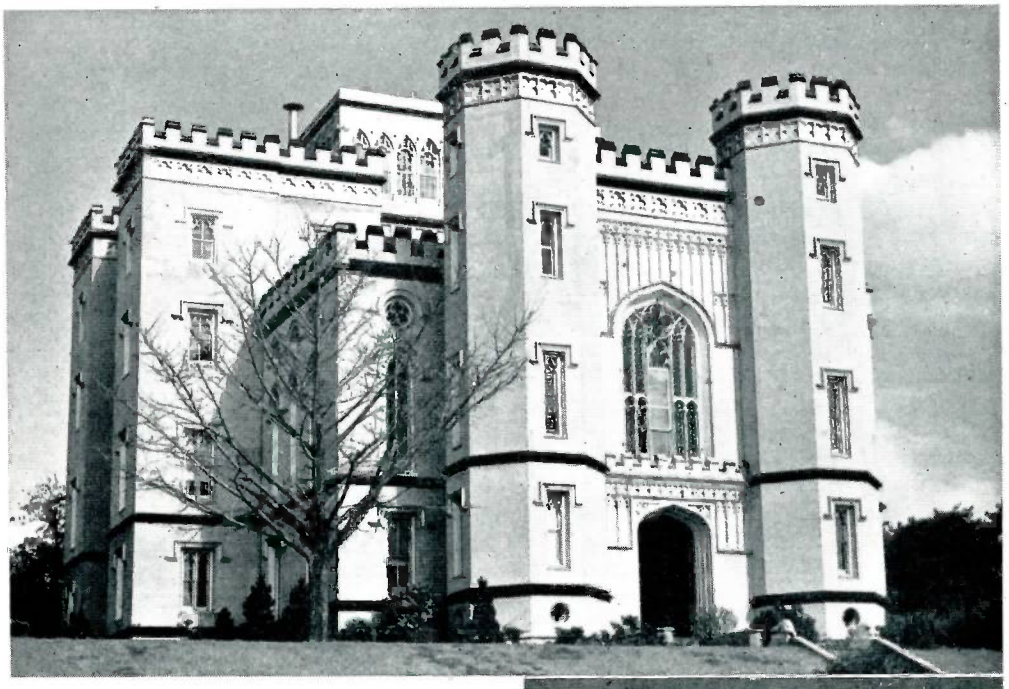
(Approximately)
1920—22,000.
1930—30,000.
1940—38,000.
1949—120,000.

Mains—Inch Miles

1930—396.
1940—765.
1949—1,440.

Fire Hydrants

1930—402.
1940—411.
1949—1,138.



Above: One of the city's historic landmarks is the old state capitol, which was built in 1850. The state's present capitol, completed in 1932 at a cost of five million dollars, is considered one of the country's most beautiful.

and bicarbonate alkalinity, approximately 120 parts per million. The water is surprisingly inactive from a corrosive standpoint. Galvanized iron pipe or lead pipe removed after 20 years service is in perfect condition on the inside surface.

As usual in most well waters, hydrogen sulfide gas is present in solution. The temperature of the 2,000-foot water is 92 degrees Fahrenheit. The gas separates from the water quite readily when subjected only to atmospheric pressure, and produces the usual H_2S odor. In a closed system this gas is reduced by chlorination to a point where it cannot be detected, and is one of the best possible indicators of trouble with the chlorination equipment, as would be expected and understood.

A city-parish form of government became effective January 1, 1949, and the city limits were extended to include a total of approximately 35 square miles. The area of the city before this extension was approximately five square miles. The population of the city of Baton

Rouge now places it as Louisiana's second largest city, New Orleans, of course, being the largest.

Twenty wells now supply the Baton Rouge Water Works Company with an adequate supply of soft water. Well capacities range from 600 to 4,000 gallons a minute.

The Baton Rouge Water Works Company is at present engaged in the largest expansion program with which it has ever been confronted. Fire hydrants have been installed in the greatest part of the new area of the city and the program is continuing at a rapid pace.

The water works in Baton Rouge is rated Class I, with only about 35 other cities in the United States obtaining such a high classification for their water works systems. To obtain this classification years of detailed planning and hard work were required. Every effort is being made to maintain a high standard in order to continue to earn the highest possible classification. Pipe line construction is all done by our own men. Four foremen with the minimum number of necessary labor and all the mechanical equipment that can be used to an advantage install all the necessary pipe lines under the supervision of our superintendent of construction, John C. Pearce.

New services are installed by one foreman with four crews working under his supervision. Maintenance is handled by one foreman with four crews under his direction. Most of the foremen are qualified to handled any or all kinds of work and are interchangeable from job to job, some of them even alternating as chief pumping plant operator.

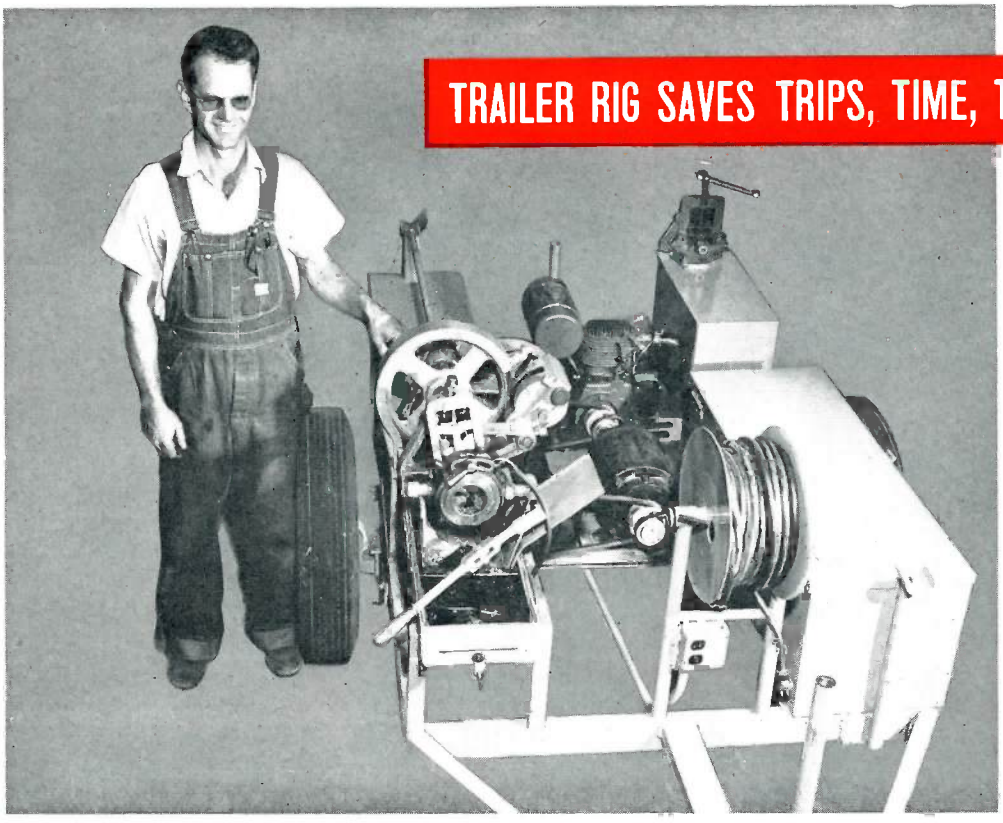
Several trucks are equipped with winches and booms, or side booms, for handling difficult jobs. Trenching machines and bulldozers are used as well as a dragline for construction work or maintenance work whenever possible. Deep well turbines and all pumping equipment are maintained by our own crews.

Alvord, Burdick, Howson and Maxwell are the company's consulting engineers and to them is due a large part of the credit for the high classification of the Baton Rouge water works. H. P. Connell is president of the Baton Rouge Water Works Company, D. R. Taylor is general manager, and R. C. Barrow is secretary. The company has been privately owned and operated since its inception.

Liverlip and Leo

"See, I told you that short-cut from the Smiths saved a lot of time!"

TRAILER RIG SAVES TRIPS, TIME, TROUBLE



Thomas O. Pierce, California plumber, threads pipe by machine, using electricity or gas engine for power.

THOMAS O. PIERCE, JR., Banning, California, plumber, has devised a portable, trailer-mounted pipe-threading machine which gives his customers little chance to make remarks about plumbers who "forget" their tools.

Mr. Pierce, who opened his own plumbing shop at Banning several years ago, had previously spent 18 years in Palm Springs and the desert area as a foreman for a pipe and supply company. His experience was that the pipe-threader was usually at the wrong end of the line when it was needed or that electricity was not available. The alternatives were a dead-head trip to the shop or laboriously threading the pipe by hand.

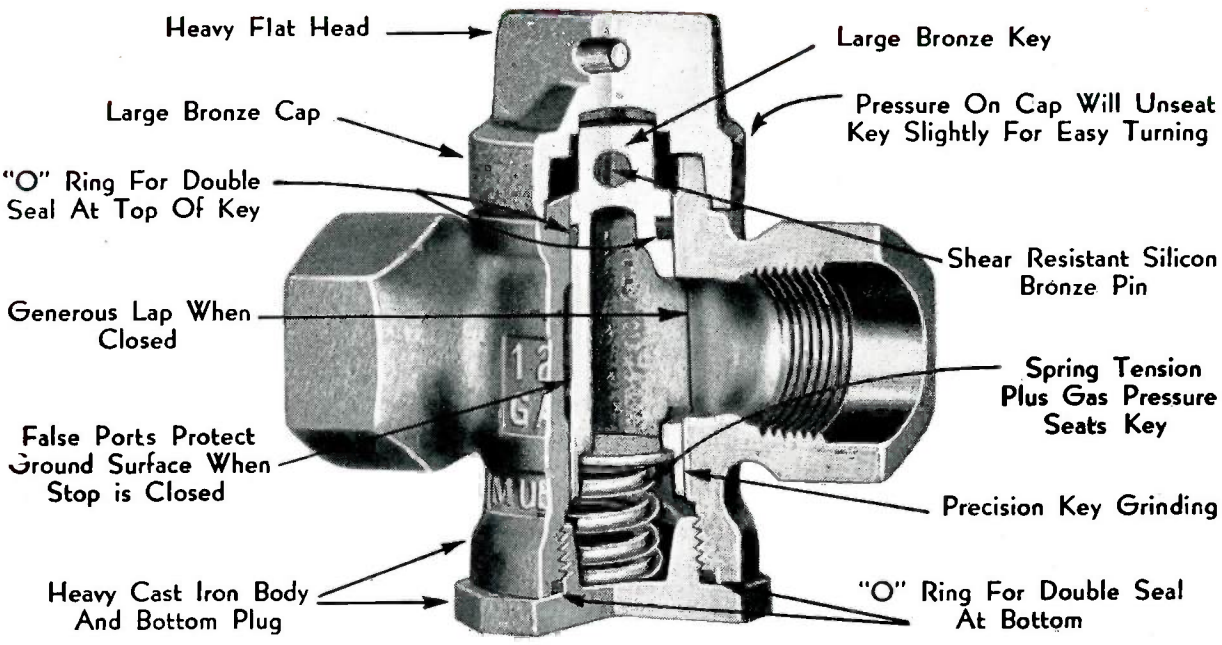
So when he went into business for himself he began to think of a device which would save trips, trouble and time. He talked the matter over with H. B. Neth of the Banning Machine Shop, explaining what he had in mind and what tools were required. From that huddle the rig shown above was built.

The pipe-threading machine was mounted on a trailer frame, and when electricity is available a 1-horsepower motor is used to operate the machine. A reel is provided for 100-feet of cord. When electricity is not available, a 3-horsepower gasoline engine furnishes power. An extra supply of gas is carried in the compartment at the rear of the trailer on which the vise is mounted. Other compartments furnish tool storage space.

In addition to its other savings, Mr. Pierce figures the trailer saves about $100 a year on insurance on the truck on which the pipe-threader formerly was mounted.

He hasn't selected a name for his gimmick yet, but it probably will be something compounded out of his initials —T.O.P.—and present trademark, a red top.

Here's the NEW Mueller Gas Curb



MUELLER CO. has developed a new inverted key gas curb stop to meet the demands of the gas industry, faced with increasing pressures in distribution and service lines, for a stop which is non-leaking and easy turning and which does not require periodical servicing. The new curb stop, designed for pressures up to 125 p.s.i. with an ample factor of safety, is made in two models: H-11104 with recessed iron pipe threads at both ends, and H-11405 with Dresser couplings. Both models are furnished in ¾-inch, 1-inch and 1¼-inch sizes.

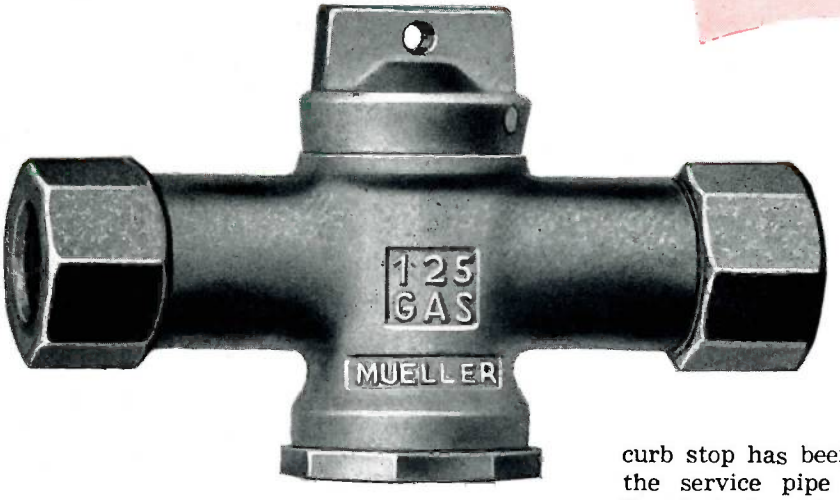
Construction details of the stop are illustrated in the sectional view above. The heavy bronze key is precision ground to a gas-tight fit in the stop's heavy cast iron body. The key is of the inverted type, and a pressure-tight seat is accomplished by means of an alloy steel spring, plus the service line gas pressure.

To effect a double seal from the atmosphere, non-deteriorating O rings are placed above and below the gas-way, giving positive assurance against top or bottom leakage.

The stop is operated by turning a heavy bronze flat-head cap, and downward pressure on the cap unseats the key a slight amount for easy turning. The spring and gas pressure re-seat the key after operation. False ports in the stop's body protect the key's ground surface, making for easy turning by eliminating any tendency to bind. Re-lubrication of the stop is not required.

Stop

H-11104 inverted key gas curb stop with O ring key seals. The stop is easy turning, does not require re-lubrication, and is positively gas-tight top and bottom at all times. Construction details of H-11104 and H-11405 are shown at the left. Both stops are furnished in the following sizes: ¾", 1" and 1¼". Quality features of the new stop apply to both models.



H-11405. This extended Dresser end curb stop is especially designed for replacement of existing threaded curb stops. The stop can be installed on plain ends of service pipe after threaded curb stop has been removed by cutting the service pipe behind the threads. Regularly furnished with either armored or plain grade 27 rubber gaskets.

Sizes	¾"	1 "	1¼"
Overall length	8¾"	9 "	9½"
Depth of each recess	2 15/16"	2 15/16"	2 15/16"

All They Wanted Was Water

Texas' first oil boom was set off by drillers under contract to sink a well for the city of Corsicana.

IT WAS WITH annoyance and disgust that H. G. Johnston, Elmer Akins and Charles Rittersbacher found oil at 1,035 feet in a water well they were drilling under contract for the city of Corsicana, Texas. This discovery was made June 9, 1894, certainly an auspicious day so far as the future prosperity of the state of Texas was concerned. But it was not regarded as such by the drillers nor the city's officials. Doubtless oil was a mighty fine thing in its place, back East in Pennsylvania, but the citizens of Texas, and the people of Corsicana in particular, wanted water—and plenty of it.

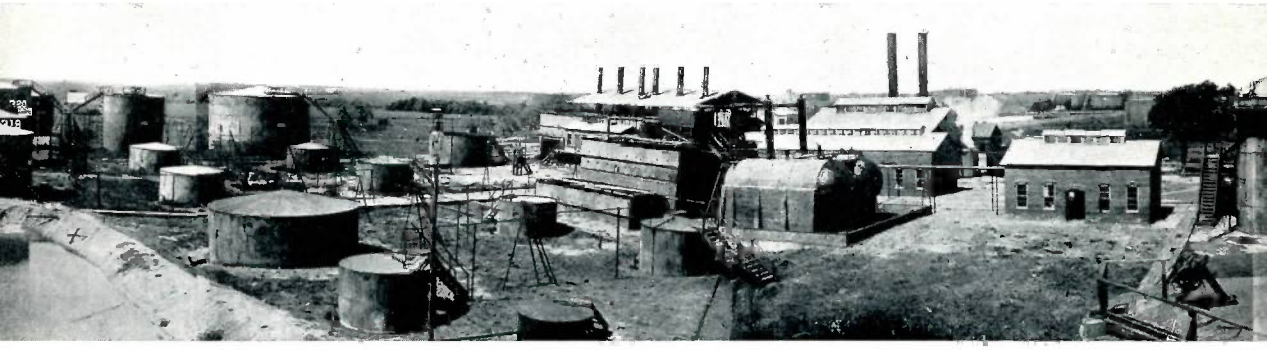
For the drillers the presence of oil meant they would have to case off the well to prevent contamination of the artesian water they were seeking, and, as matters turned out, casing off was only one of the troubles oil was to bring them. The glumness with which they viewed their discovery was more than justified in the light of later developments at the well site.

News that oil had been found attracted crowds of spectators, many of whom might have been better employed tending their cattle and cotton. Three derricks were burned down due to the carelessness of the curious, events which almost cost the drillers, doing business as the American Well and Prospecting Company, their respective and collective shirts before the well was completed at 2,470 feet.

There were those, however, who did not share the dismay of the drillers and their employers. Major Beaton and H. G. Damon, local promoters, figured the discovery might be indicative of the presence of oil in a quantity which would make its production commercially feasible. They organized the Corsicana Oil Development Company, and they were joined in the venture by John Davidson, an experienced Pennsylvania oilman. On September 6, 1894, they obtained a lease from A. Bunert and his wife which carried with it the provision "to dig, bore and mine for and gather all oil, gasses, coal or other minerals." The lessors were promised one-tenth royalty. They also secured other leases, and J. M. Guffey and John H. Galey, also Pennsylvanians, were offered a half interest in their Corsicana holdings if they would equip and bore five wells. Guffey and Galey accepted the proposal and selected a site for their first well about 200 feet south of the city's new artesian well. The drill reached a "shale sand" at a depth of 1,030 feet and in it found both oil and gas. The oil output by natural flow was two and a half barrels a day. A nitroglycerin shot was used in an attempt to increase the flow and it later was worked with compressed air, but it never paid well.

Galey's second well was sunk January 15, 1896, on South Eleventh Street. No oil was found. In May he drilled the third well at Fourth and Collins Streets, and it came in as a 22-barrel producer. The fourth and fifth wells were finished July 1 and August 5 that year, produc-

Firing the Southwest's first still—Christmas Day, 1898.



The refinery of J. S. Cullinan and Company, Corsicana, in 1901. This company, a pioneer in the Corsicana field, was the predecessor organization of today's Magnolia Petroleum Company.

ing 20 and 25 barrels a day. By the end of the year, total production of crude oil in Texas was 1,450 barrels.

Success of the wells led to the formation of other companies, including the Texas Petroleum Oil Company. Corsicana's businessmen bought stock in these companies, and in 1897 development work on a large scale was underway. At first, operations were within the city limits, and town lots were leased throughout the eastern section of the city. Royalties of from 8 to 10 per cent were usually offered the owners.

Fifty-seven wells were completed in Corsicana in 1897, 50 of which were producers. Output climbed to 65,975 barrels. The next year 316 wells were completed, 287 oil producers, 25 dry and four gas wells. Daily production went up to 2,300 barrels a day.

Texas' first oil boom was in full swing.

The Texans had found oil, but they were confronted with the same problem the oilmen of Pennsylvania had encountered 40 years before: it had to be processed.

James E. Whiteselle, Corsicana's mayor, invited J. S. Cullinan, a Pennsylvania refiner, to visit the city at this point. Cullinan accepted and arrived in Dallas October 17, 1897. He was met there by Mayor Whiteselle, who escorted him to Corsicana.

Cullinan, who had received favorable reports on developments at Corsicana before he was approached by the mayor, was impressed with what he found at the Texas city. He estimated that between $700,000 to $800,000 had been invested in oil production at Corsicana. Cullinan contracted with producers until he had secured practically the entire output of the Corsicana field. He also entered into a contract with the Waters-Pierce Oil Company to distribute refined oil to the various cities and towns.

Cullinan noted that the average cost of a well, fitted and ready for operation, was approximately $1,500, a sum to command respect in those days but a small fraction of today's costs.

To secure financial support for his enterprises, Cullinan went to St. Louis, where he contracted with Calvin N. Payne, another Pennsylvanian, and Henry C. Folger, a New York financier, who supplied $150,000 to build the refinery.

Back in Corsicana, Cullinan acquired 100 acres of land on the southwestern outskirts of the city, where he built a small refinery capable of processing 500 barrels of crude oil a day. The J. S. Cullinan Company was a predecessor organization of the present Magnolia Petroleum Company, whose refineries today now process some 150,000 barrels of crude a day for the manufacture of more than 400 useful petroleum products.

As the plant neared completion, Cullinan decided to fire the stills for the first time on Christmas Day, 1898, another memorable date in the history of Texas' petroleum industry. W. C. Ralston lighted off the still, and it is of interest to report that he later rose from stillman to superintendent of the refinery and occupied that position when he retired from Magnolia July 1, 1936. Mr. Ralston lived in Corsicana until last

April 21, when he died there at the age of 79.

The refinery's first products were illuminating oil and gasoline. Paraffin in the crude oil was not of sufficient quantity to justify its manufacture.

From the handful of men who operated Cullinan's refinery, Magnolia has grown to the point that it now employes 12,500. Fifty years ago it owned 70 producing wells; at the end of last year it had more than 9,200 producing oil wells and 330 producing gas wells. In 1911 the company's pipe lines totaled 216 miles; today its network of lines extends into nine states and includes about 8,700 miles of gathering and trunk lines.

These, then, were the early developments of Texas' vast industry, which during 1948, according to the U. S. Bureau of Mines, reached a peak production figure of 903,318,000 barrels—or 44.8 per cent of the nation's total.

The discovery of oil at Corsicana brought about the state's first commercial oil field and its first oil boom. It was a miniature boom in comparison with such hectic ones as Spindletop, Ranger and the East Texas booms that were to come during the next 35 years.

And many Texans believe that the state's potentialities haven't yet been fully realized. As evidence they point to the current Scurry County field, which some observers feel may develop into the state's biggest boom since the East Texas field was opened in 1930. Estimates of the amount of oil in the Scurry County field range up to one billion barrels and more.

In the space of a half century, the state's petroleum industry has grown to fabulous proportions. An annoying accident at Corsicana has been parlayed into a major industry, both from the standpoint of production and refining. The Texas Mid-Continent Oil & Gas Association reports that the refining of oil provides the state with its largest industry in terms of capital investment and value added to product through manufacture.

Drillers Johnston, Akins and Rittersbacher inadvertently opened a new era for the state back in '94, and all they wanted was water.

The accidental discovery of oil at this site led to Texas' vast petroleum industry. In 1948 the state reached its peak output of 903,318,000 barrels — 44.8 per cent of the U. S. total.

George Washington Didn't Sleep Here, Either

But he was one of the owners of the "burning springs" of West Virginia's Kanawha Valley.

FACT AND FANCY are closely interwoven in the lore of the Kanawha Valley of West Virginia, which occupies a unique position in the development of the natural gas and oil industries.

Natural gas was observed by the valley's first frontiersmen in the form of burning springs. The first white men to discover them are believed to have been Captain Matthew Arbuckle, Rev. Joseph Alderson and John and Peter Van Bibber, who came through the valley in 1773. The tract on which the springs were located was surveyed on May 26, 1775, and five years later, July 14, 1780, a patent, signed by Thomas Jefferson as Governor of Virginia, was issued to Generals George Washington and Andrew Lewis for the 250 acres covered by the survey.

Most standard histories have it that General Washington personally observed the springs. However, according to Dr. Roy Bird Cook, one of the region's contemporary historians, this was just another place at which Washington did *not* sleep. As a matter of fact, says Dr. Cook, the Father of Our Country did not get within 50 miles of the springs. In other words, any statement that Washington visited the springs is so much gas-heated hot air.

Washington in his will mentions the springs as follows: "The tract of which the 125 acres is a moiety, was of a bituminous spring which it contains, of so inflammable a nature as to burn freely as spirits, and is nearly as difficult to extinguish."

Jefferson wrote in 1781 that the springs were located "seven miles above the mouth of Elk River, and sixty-seven above that of the Kanawha itself." He described the springs as "a hole in the

earth of a capacity of thirty or forty gallons."

Washington, it appears, planned to leave the portion of the land on which the springs were located as a public property. But no record of this intention was ever made. Title to the land was involved in considerable litigation after his death, and it continued in one direction until 1919.

* * *

THE KANAWHA VALLEY first gained prominence as a producer of salt, which was obtained by the Indians and early settlers by boiling brine from a spring, the Great Buffalo Lick, across from which lived Daniel Boone. Later, in 1808, the Ruffner brothers, David and Joseph, resorted to drilling to obtain a stronger brine. This became the accepted method of obtaining brine and gave impetus to the young industry. Salt production in the valley reached its peak between 1845 and 1853, when the region furnished most of the salt used in the west. The techniques and tools developed by the valley's salt drillers were later used by drillers seeking oil and gas.

* * *

CAPTAIN JAMES WILSON may be credited with drilling the country's first gas well in 1815 within the present limits of Charleston. This distinction also is claimed by Fredonia, New York, near which William A. Hart drilled a gas well in 1821. Possibly the claims of New York and West Virginia both are valid. Captain Wilson was not looking for natural gas; Hart was. Captain Wilson was the first to find gas by drilling; Hart was the first to drill for gas.

The captain, according to legend, had not found as good brine as he expected at the depth to which he had drilled. He declared in emphatic language that he would have better brine or bore the well into hell.

Shortly after making this declaration, the auger struck a cavity and the gas vented, catching fire from a nearby grate. The intensity of the blaze made the captain wonder if perhaps Providence had taken his words at face value, and he ordered the drilling stopped forthwith.

* * *

A SIMILAR STORY concerns William Thompson (or Tompkins). The circumstances are so nearly parallel there is reason to believe the history writers may have deviated from their facts for the sake of telling a good story.

Thompson, in 1841, was drilling a salt well near the burning springs to which General Washington has been linked. He had been having some difficulty and had been drilling at night by torchlight. On this particular night, so this particular story goes, he swore: "I'll strike that brine today, or hell!"

Just then he struck gas, which caught fire from the torch.

"Well, I guess it's hell!" he exclaimed.

* * *

THE HISTORIANS AGREE that Thompson was first to utilize natural gas as fuel to fire his salt furnace. Dr. I. C. White, writing in the West Virginia Blue Book in 1917, says:

"It is well known that the first use of natural gas for manufacturing purposes in America was by Mr. William Tompkins (or Thompson) in the Great Kanawha Valley, who in 1841 struck a large flow of gas in boring a salt well only a few hundred feet distant from the 'burning spring' that Washington noted sixty-six years before, and piping the gas to his salt works, using it instead of coal in boiling down the brines and displacing several hundred bushels of coal daily."

* * *

TWO YEARS LATER, Messrs. Dickinson and Shrewsberry struck what was the granddaddy of all wells up to that time. They were drilling a well a few rods below Thompson's and were at a depth of about 1,000 feet when the well came in.

John P. Hale describes the strike in his History of the Great Kanawha Valley:

"So great was the pressure of this gas, and the force with which it was vented through this bore-hole, that the auger, consisting of a heavy iron sinker,

weighing some 500 pounds, and several hundred feet more of augur poles, weighing in all perhaps 1,000 pounds, was shot up out of the well like an arrow out of a cross-bow. With it came a column of salt water, which stood probably 150 feet high. The roaring of this gas and water, as they issued, could be heard under favorable conditions for several miles."

* * *

DURING THE TIME the well was blowing, it was the custom of stage drivers to stop so that their passengers could see the display. A Harvard professor happened to be a passenger on one occasion. Being of an inquisitive nature, the professor went as near the well as possible and lighted a match to learn whether the gas would burn. It would.

The professor's clothes were set afire and his hair and eyebrows singed. He jumped into the river to save himself. The derrick and engine house caught fire and were badly damaged. The professor crawled out of the river and resumed his journey to Charleston, where a physician dressed his burns.

Col. Dickinson had his own opinion of Harvard professors who wanted to experiment at his expense, and he called for Col. Woodyard, ordered him to follow the professor to town and get out a warrant and have him arrested for wantonly burning his property — "unless," he concluded his instructions, "you find that the fellow is a natural damned fool and didn't know any better."

Col. Woodyard went to the professor's hotel room, where he found him in bed, blistered and bandaged. The professor's plight was such that Col. Woodyard was unable to repress a feeling of sympathy. He told the professor what Col. Dickinson's instructions had been, but emphasized the codicil with which they had been concluded.

The professor decided to take advantage of the legal loophole.

"Well," said Col. Woodyard, "if this is your decision, my duty is ended, and I bid you good morning."

* * *

THE WELL was used for many years as a source of brine and the fuel with which the brine was evaporated. The natural flow of gas lifted the brine from the well, forced it a mile or more through pipes to a salt furnace, raised it into a reservoir, boiled it in the furnace, and lighted the property at night. Success of the well induced others to bore deep wells for gas, and several of them also provided gas and brine in the same manner as Col. Dickinson's well.

* * *

SALT, GAS AND OIL have a close relationship, for it was the salt makers who made the natural gas and oil industries possible. Considerable quantities of petroleum were found in the early salt borings on the Great Kanawha River long before Col. Edwin L. Drake drilled his oil well at Titusville, Pennsylvania, in 1859. The salt makers regarded it as a nuisance, for it spoiled their brine. However, some was used for lubricating machinery and for torch lights and some was collected and sold.

There exists an account of a commercial well which was drilled in West Virginia in 1844. George S. Lemon in 1835 settled at the forks of the Hughes River, one of the tributaries of the Little Kanawha River, and shortly after he began collecting and selling oil from surface deposits two miles below. He had in his employe a mulatto, Hugill (or Hugle), who had learned to bore wells on the Great Kanawha, and since he needed salt he determined to sink a well for brine near the oil pit diggings, where he had noted cattle licking the rocks for salt. He and Hugill rigged up a means of drilling the well by water power and at a depth of 100 feet they struck oil, gas and water. Since the oil ruined the brine, a siphon arrangement was devised which removed the water and also enabled them to save about one barrel of oil a day. This was called sand oil and commanded a price five cents a gallon higher than the surface oil.

* * *

NATURAL GAS and oil have long since surpassed salt in importance in the state's economy, and the production of oil is incidental to that of natural gas. West Virginia is the largest producer of natural gas east of the Mississippi.

Off the . . Record . .

He was applying for county relief and the young lady official was filling out the customary form.

"Do you owe any back house rent?" she inquired.

"We ain't had a back house for years," the applicant replied with dignity. "We got inside plumbing."

* * *

"Mister, I'm a piano tuner. I came to tune your piano for you."

"But I didn't send for a piano tuner."

"I know it, sir. The neighbors around here did."

* * *

"What is middle age, dad?"

"Middle age, my boy, is that period in a man's life when he'd rather not have a good time than have to get over it."

* * *

"Are you a good little boy?"

"No ma'am. I'm the kind of a boy my ma doesn't want me to play with."

* * *

A man divorcing his wife, a strip tease artiste, gave as a reason: "Everybody in the country saw more of her than I did."

A tramp knocked on the door of an inn known as "George and the Dragon." When the landlady opened the door the tramp asked: "Could you spare a poor hungry man a bite to eat?"

"No!" said the woman as she slammed the door. The tramp knocked on the door a second time.

As the woman again opened the door, he asked, timidly: "Could I have a few words with George?"

* * *

Judge: "Why do you want a divorce?"

He: "She insists on keeping her pet goat in our bedroom and I can't stand the smell."

Judge: "Why don't you open the window?"

He: "What, and let all my pigeons out?"

* * *

The two skeletons in the corner closet were grumbling about the heat, the dust, the boredom.

"What are we staying here for anyhow?" one asked.

"Darned if I know," the second skeleton answered. "I'd leave here in a minute if I had the guts."

* * *

Orthopedic Specialist: The girls at these Florida beaches have beautiful legs, don't they?

Lung Specialist: I hadn't noticed. I'm a chest man, myself.

"... er, where would I find the light globes?"

"John, come back here!"

"Our boy's doing right well in the city, Pa. Says he's had bacon and eggs twice already this week."

"Henry, are you sure you took the right detour?"

"Joe, old boy, for a father of twins you look down-hearted."

"I thought she would forget about giving the wrong number when she quit being a telephone operator."

* * *

"Do you love your enemies?"

"Yep — all three of them — tobacco, women and liquor."

* * *

Her car stalled at the corner. The light changed colors, red, yellow, green several times while she tried to start. Then a cop walked over, put his foot on the running board and said: "What's the matter lady: ain't we got any colors you like?"

* * *

Policeman: How did the accident happen?

Motorist: My wife fell asleep in the back seat.

* * *

And did you hear of the Scot who took his wife, about to have a baby, to the country because he heard that they had free rural delivery?

* * *

When five-year-old Willy encountered his father, just home from work, he was obviously recovering from a crying spell.

"What's the trouble, Willy?" inquired his father.

"I've just had a dreadful scene with your wife," sniffed Willy.

"I'm glad you children are not disturbing daddy while he has his nap."

"Shhh, mom! We're waiting for his cigaret to burn down to his fingers!"

* * *

"Yep, the engagement is off; she won't marry me."

"Did you tell her about your rich uncle?"

"Yeah. Now she's my aunt."

* * *

Wife: "Every time you see a pretty girl, you forget you're married."

Husband: "You're wrong, my dear. Nothing brings home the fact with so much force."

* * *

"What's this check stub—one pullover $25? Isn't that expensive for a pullover?"

"That's what the policeman said the regular price was, dear."

"You got it from a cop?"

"Why, yes. I went through a red light and he blew his whistle and yelled 'pull over.'"

* * *

A circus side show displayed a poster advertising a dwarf five feet tall. "Shucks, I don't see anything so wonderful about that," commented a farmer. "I've seen dwarfs a lot smaller than that."

"Ah, my friend, but that's just what makes this one so remarkable," declared the barker. "He's the tallest dwarf in the world."

Mostly Personal

(Continued from page 1)

Mark Murphy, who wrote the SatEve-Post article, did a good summary job in his lead paragraph, quoted herewith:

"The word 'metropolis' can be applied, oddly, to at least one town of only 25,000 people: Minot, in Northwestern North Dakota. The town serves as capital of a region which is larger than most states. The region extends into Montana and up into Saskatchewan and Manitoba, and is united by economy, geology and rugged weather. It is a country of short history and high hope."

* * *

In our article on the discovery of oil at Corsicana, Texas, page 12, there's some history of the origin of Magnolia Petroleum Company. We wish we had inquired further concerning the history of the company's trademark, the red Pegasus or winged horse, for with some 200 other officers and men we were instrumental in giving the company a great deal of free advertising during the Pacific war (if we may be pardoned for another wartime memoir).

The USS Merrimack, a fleet oiler, usually carried both high octane gasoline and fuel oil, and some wit slightingly referred to us as a floating filling station. Since that's what the ship actually was, there wasn't much we could say in rebuttal. So we decided to make the most of the phrase.

One of the men, a 4.0 gunner's mate in wartime and evidently a pretty good house painter in civilian life, volunteered to paint any design we might select to carry out the filling station motif, provided the captain's permission could be obtained. Permission was duly granted, to the best of our recollection, over a couple of cans of warm beer on Mogmog, one of the Ulithi atolls. Magnolia's trademark was unanimously chosen, the red paint broken out, and the design appropriated forthwith. The starboard side of the bridge was selected for the painting, since it offered a wide, uncluttered surface. The port side offered a similar expanse, but was not as desirable because of the standard procedure of fueling underway. Under normal conditions only destroyers and cruisers were fueled on our starboard side, and the officers of flag rank, who might take exception to the device, would more likely be in the battleships and carriers fueled on our port hand.

The near-life-size winged horse executed by our gunner's mate was a credit to Magnolia Petroleum Company, the ship's company of the USS Merrimack, and the entire tanker navy.

The Merrimack's winged horse was still flying when we left the ship in Tokyo Bay.

* * *

Norman Slater, water superintendent of Windsor, New York, and the man responsible for the predicaments in which our good friends Liverlip and Leo become involved, has again depicted the two as meter readers in this issue of the Mueller Record. Judging from the response his cartoon on meter readers occasioned after its appearance in the March-April issue, Norm seems to have become something of a champion for these unsung heroes, who daily risk loss of limb and/or temper, or damage thereto, as they make their rounds from one booby-trapped basement to the next.

Norm's last cartoon showed Liverlip and Leo at the commando course they had devised for getting meter readers in shape for their duties. Apparently this struck a responsive chord, for the cartoon has since been reprinted in publications sponsored by Central Arizona Light and Power Company, Phoenix; Wisconsin Public Service Corporation, Green Bay; Bureau of Safety, Inc., Chicago; and Southwestern Public Service Co., Miami, Texas.

* * *

We should like to express our thanks to Dr. Roy Bird Cook, Charleston, West Virginia, for making available to us much of the research material that went into the article on the historic Kanawha Valley, page 15. Dr. Cook, one of the region's noted historians, is secretary of the West Virginia State Board of Pharmacy.

Included was a photostat of a survey map made by Robert James, May 22, 1795, "laid down by a scale of 400 poles to an inch." On it are clearly shown the many salt licks, which gave the region its early importance.

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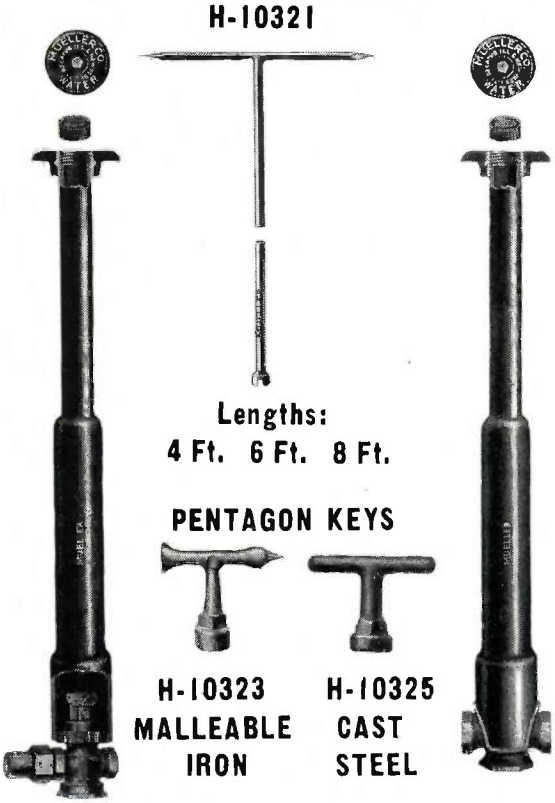

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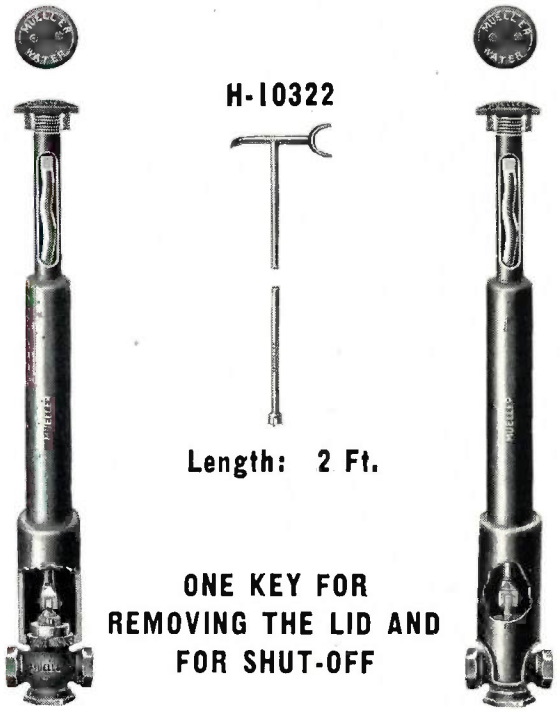

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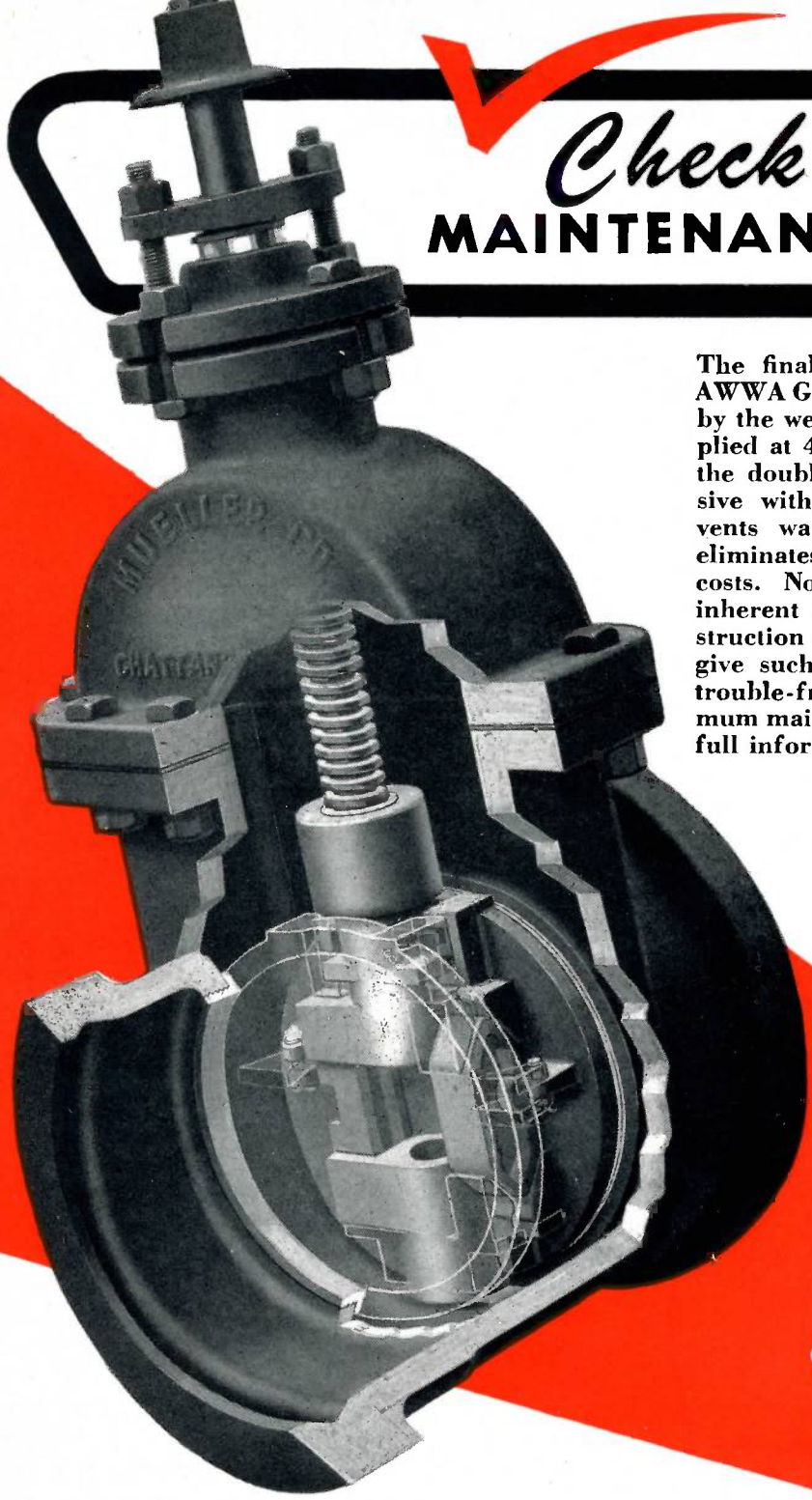

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