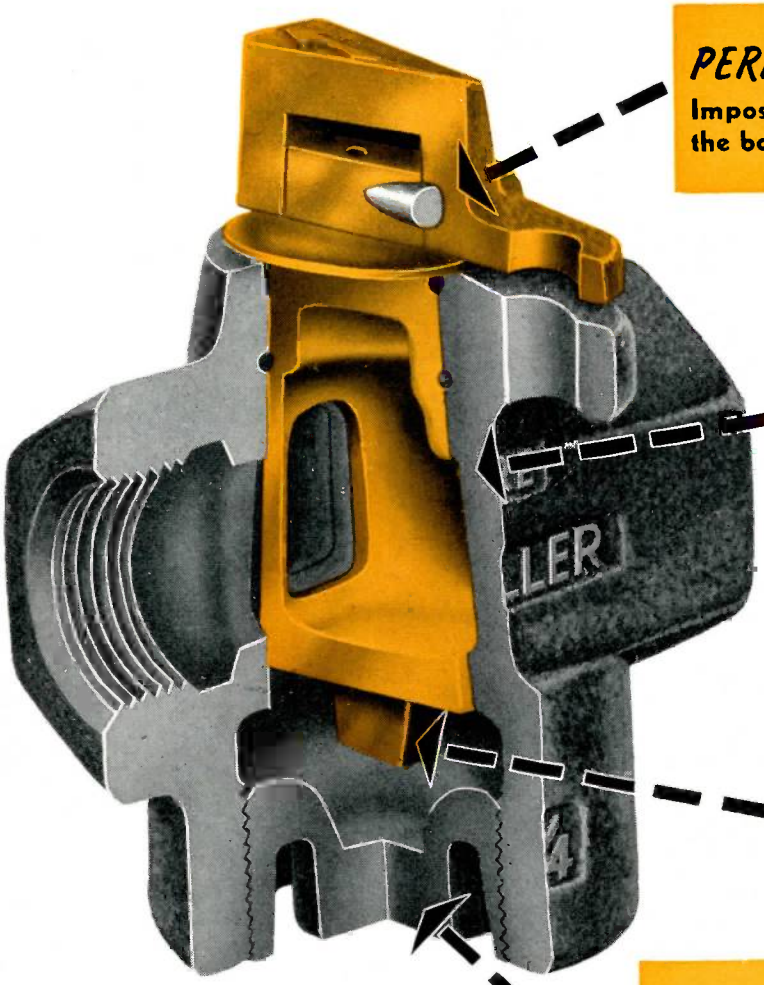
MUELLER RECORD

JULY • 1948 • AUGUST

THE *NEW* MUELLER LUBRICATED GAS METER STOP



PERMANENTLY PINNED HEAD

Impossible to remove the bronze key from the body without destroying the Stop.

HEAVY GRAY IRON BODY

Cast with extra thick sections and accurately machined. Vertica and annular grease channels provide complete seal and easy turning.

INVERTED BRONZE KEY

Each key is individually ground and lapped into the seat of th body to insure a leak-proof seal

SPECIAL LUBRICATING PLUG

Has recessed pentagon head that can be operated only with a special wrench. The key cannot fall out or be blown out even though the lubricating plug is completely removed.

SPECIFICATIONS

H-11110 Plain Stop with Flat Head
H-11112 Lock Wing Stop with Flat Head
Iron Body, Bronze Key and Head
Inverted Key Type
Straightway Pattern, Inside I. P. Threads
Sizes: ¾" and 1"
Pressure: 125 P.S.I.

– SAFE – TAMPER-PROOF

These are outstanding features not available on any other Gas Meter Stop. For complete details, write us today for a copy of our colorful folder No. 8738.

DEPENDABLE SINCE 1857 FULLY WARRANTED OUR 91st YEAR

MUELLER CO.

MAIN OFFICE AND FACTORY.....DECATUR, ILLINOIS
OTHER FACTORIES: *Los Angeles, Cal.; Chattanooga, Tenn.; Sarnia, Ont. Canada*

MUELLER RECORD

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(Hydrant and Valve Division)
Chattanooga, Tenn.
CANADIAN FACTORY
MUELLER, LTD.
Sarnia, Ontario
BRANCHES
New York, San Francisco

July • 1948 • August
Vol. XXXV No. 1
GENE J. KUHN, Editor

CONTENTS

COVER
Harold M. Lambert Studios

MOSTLY PERSONAL

IN KEEPING WITH the dignity and responsibilities of our new profession—that of engineer, license No. 491, and duly affiliated with the National Association of Sidewalk Engineers—we expect to bring the readers of the Mueller Record any number of technical articles in forthcoming issues.

Our membership was earned through our coverage of the two cuts made in a 20-inch main to supply the new J. C. Penney Co. building. The account appears elsewhere in this issue. Since it was hot, dry and dusty the afternoon the cuts were made and then rained the following day, when we returned to take a shot of the completed job, we feel that our membership in the J. C. Penney Co. chapter of the N.A.S.E. was richly deserved.

Just before press time we learned that R. C. M. Kraabel, supreme super-

(Continued on page 31.)

THERE ARE 28 REASONS

For Customer Satisfaction

The 28 STAINLESS STEEL PINS in the face of the MUELLER SELF-CLEANING SHOWER HEAD move back and forth in the holes every time the handle is turned to adjust the stream from a stinging needle shower to a soft rain patter. This simple, positive action forever banishes clogged or sputtery showers as every hole is kept open and free. It's no wonder your customers will be satisfied!!! Keep an ample supply of these SELF CLEANING SHOWER HEADS on hand at all times. Your jobber can supply you.

Mueller Self-Cleaning Shower Heads are available complete with Swivel Joint, Arm and Wall Flange, or with Head and Swivel Joint alone.

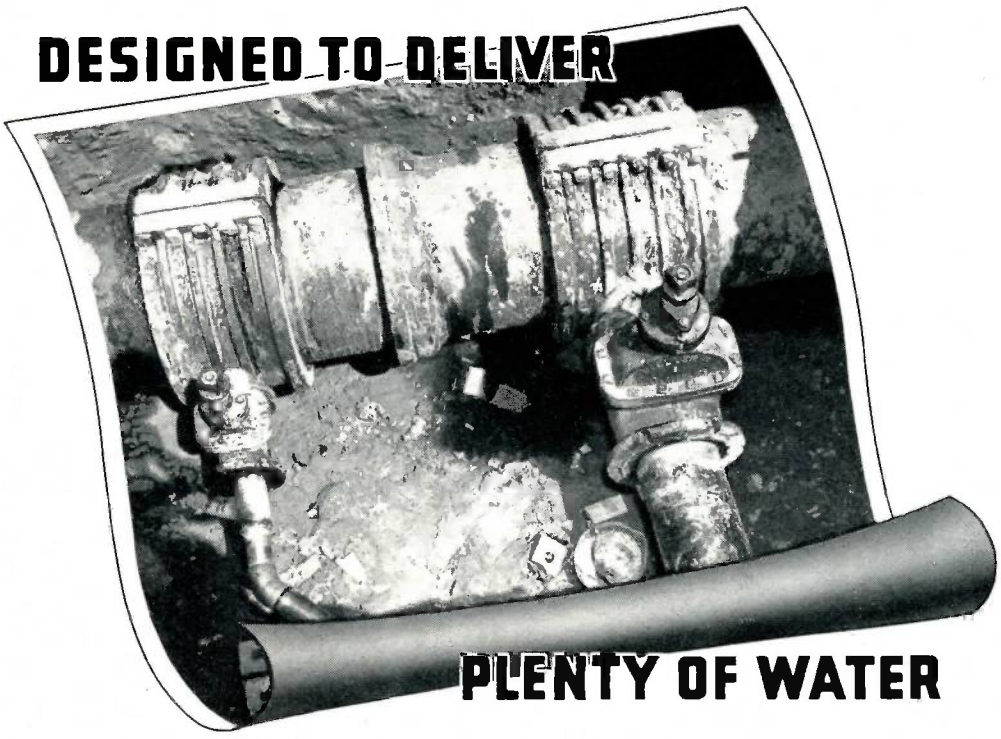
DEPENDABLE SINCE 1857 FULLY WARRANTED OUR 91st YEAR

MUELLER CO.

MAIN OFFICE AND FACTORY.....DECATUR, ILLINOIS

OTHER FACTORIES: *Los Angeles, Cal.; Chattanooga, Tenn.; Sarnia. Ont. Canada*

DESIGNED TO DELIVER PLENTY OF WATER



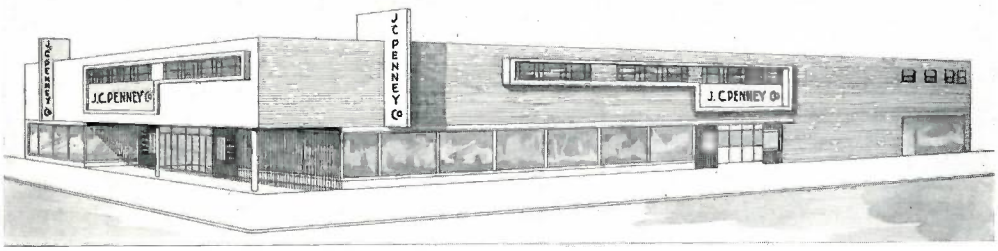
Mueller tapping sleeves and valves used in making cuts in 20-inch main to supply water to new building.

AN ABUNDANT SUPPLY of water for fire protection and drinking and sanitary use in the new J. C. Penney Co. retail store building in Decatur, Illinois, has been assured through the specifications of the building's architects. The store will be the largest of the 48 the company operates in the state of Illinois.

Seperate lateral connections to a 20-inch water main were specified by the architects, Charles Harris and Associates of Decatur. The 800 heads in the store's sprinkler system will be supplied by an 8-inch lateral, and a 2½-inch line was specified for drinking and sanitary purposes.

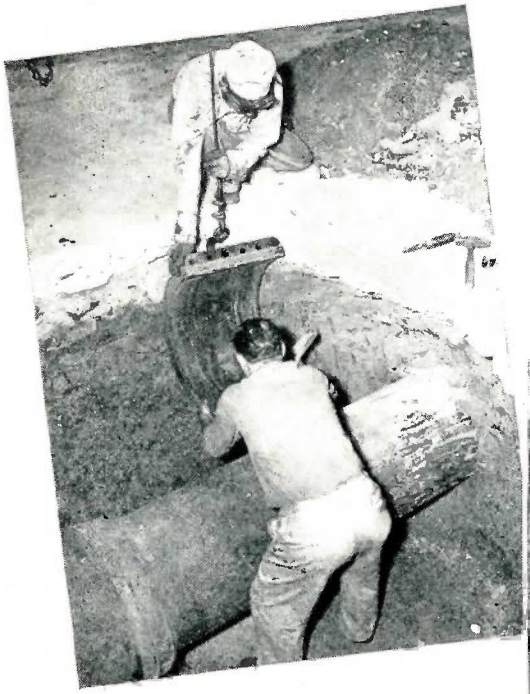
Mueller tapping sleeves—a 20″ x 8″ and 20″ x 3″—and valves were used by the plumbing contractor, S. E. McDaniel Co., Inc., another Decatur firm. A Mueller C-1 power operated drilling machine was used to make the two cuts in the cast iron main under pressure, one an 8-inch cut, the other a 3-inch.

Mr. McDaniel, a veteran plumber, said he seldom had occasion to make two cuts



This is an architect's sketch of the new J. C. Penney Co. store now under construction in Decatur, Illinois. The building is expected to be completed by the middle of November.

Disassembling the 20"x8" tapping sleeve at the start of the job.



Easy does it as the sleeve body is being lowered into the ditch.

of this nature so close together, most jobs, of course, calling for only one cut in the main. The cuts were made in separate sections of pipe. In digging the ditch, workmen chanced to uncover a bell and spigot joint in the main at the point the cuts were to be made. To comply with the city plumbing code with plenty to spare, the 8-inch cut was made 18 inches from the bell end of the pipe, and the 3-inch cut was made 11 inches from the spigot end. However, the design of the Mueller sleeve is such that the connections actually strengthen the main.

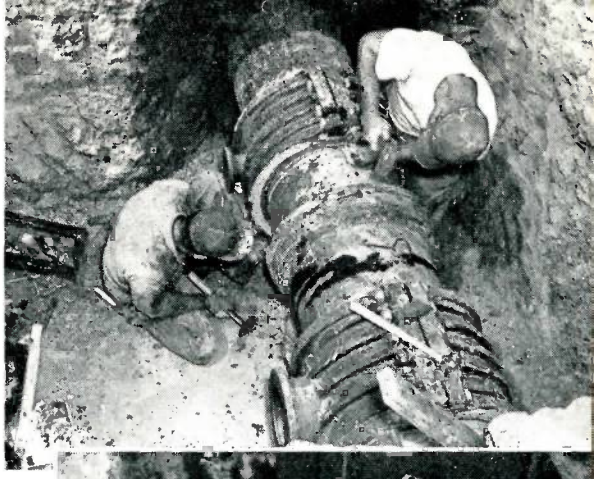
Mueller tapping sleeves and valves meet A.W.W.A. specifications. Tapping valves are tested at 300 pounds per square inch hydraulic pressure, and are

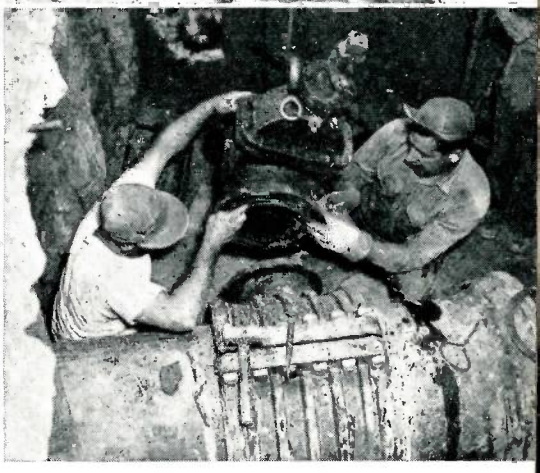
The 20"x3" tapping sleeve is shown in the photographs below as it was disassembled and then bolted to the 20-inch water main.

recommended for 150 pounds per square inch working pressure.

R. C. M. Kraabel, manager of the Decatur Penney store, said the building is expected to be completed about the middle of November. It will be one of the most modern of the 1,601 stores in the Penney chain throughout all 48 states.

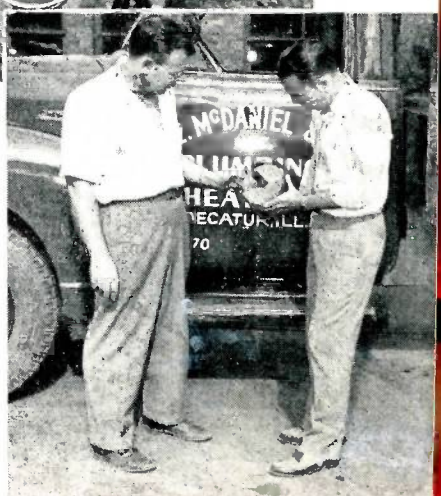
The 1-story building will have 46,000 square feet of floor space, of which 31,000 square feet will be selling space. The building is being so constructed as to carry additional floors later. Buff brick with stone trim is being used on the exterior of the building. The interior will incorporate new ideas in department store lighting and will be fully air conditioned.



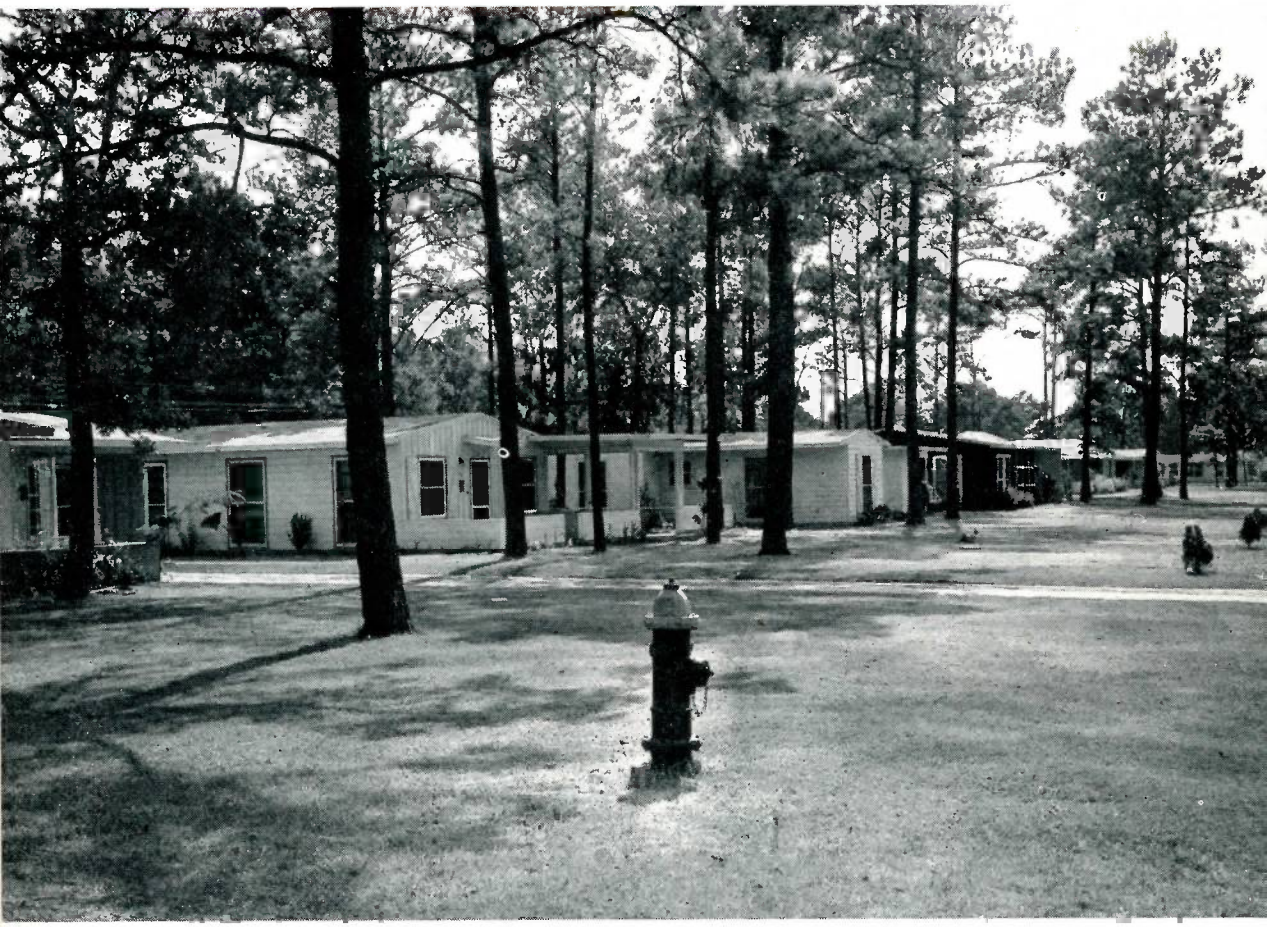


In the top photograph, both sleeves are in position and the 20"x3" sleeve is being calked on, prior to bolting on the valves.

Below: A Mueller C-1 drilling machine was used to make the cuts in the main.



Howard McDaniel, left, and C. W. Doherty examine the 8-inch coupon, or slug, cut from the main by the drilling machine.



Mueller-Columbian Improved Fire Hydrants are symbols of protection in the world's largest privately-financed housing project on the outskirts of Houston, Texas. When completed, Oak Forest will provide housing, shopping and recreational facilities for 25,000 persons. A planned community, it will include 4,800 single-family houses on 1,132 acres. It's the work of one man: Frank W. Sharp.

Frank W. Sharp, Builder

A former Texas farm boy and carpenter's helper tackles a mammoth $32,000,000 planned community.

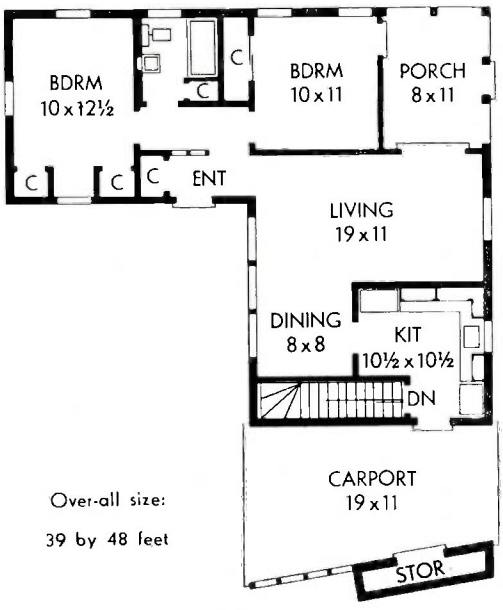
FRANK WESLEY SHARP, a farm boy who came to Houston from East Texas 22 years ago in a Model "T" Ford and got a job as a carpenter's helper, is building houses on a scale that's amazing even to fellow Texans, accustomed as they are to doing big things in a big way.

Mr. Sharp is currently engaged in developing the largest privately-financed, single-family homes project in the world on the northwestern outskirts of Houston. Oak Forest, Mr. Sharp emphasizes, is not just another housing project, but a planned community in which no two homes are alike. Plans and colors are changed from house to house.

Since early in 1946, Mr. Sharp has built almost 1,000 homes at Oak Forest, and is hard at work on the completion

COURTESY BETTER HOMES AND GARDENS

Three of the four Better Homes and Gardens "five-star" homes, selected from among those constructed at Oak Forest, are shown on this and the following two pages. This house has two bedrooms, partial basement.



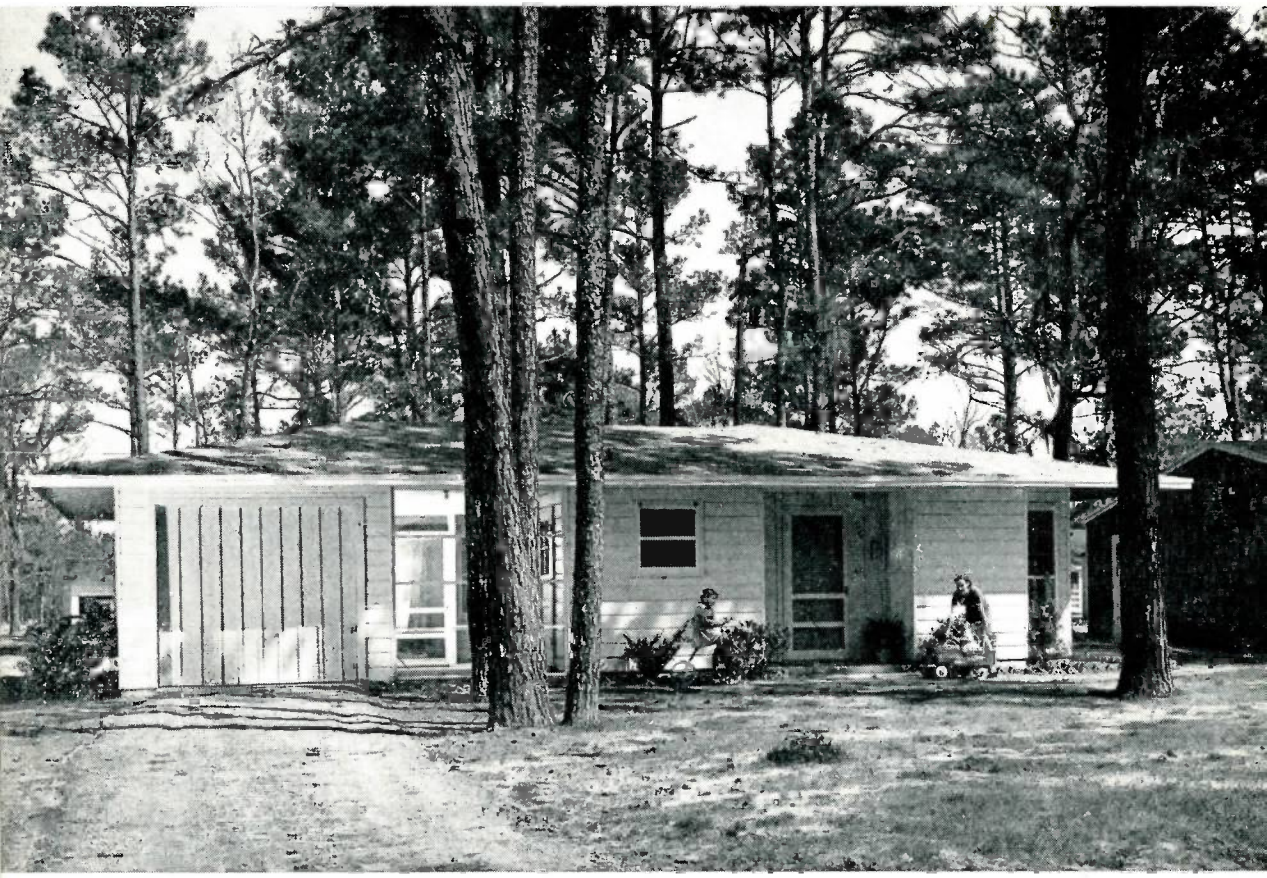
Over-all size:

39 by 48 feet

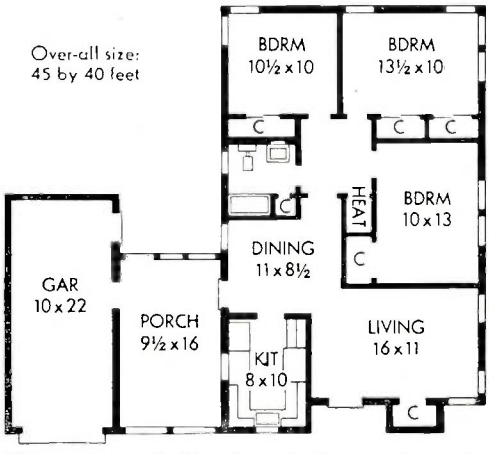
of still other sections of the development. Oak Forest, when completed, will include 4,800 homes, occupy 1,132 acres, and represent an investment of $32,000,000.

Oak Forest will have two large shopping centers, occupying 20 acres, while 57 acres have been set aside for schools, parks and recreation. Twenty-seven acres have been allotted for churches and small business sites.

Prices of homes at the development range from $8,500 to $10,000. They are of frame construction, using Douglas fir lumber on solid concrete slab foundation, and designs vary from modern to Colonial. However, Oak Forest is no architectural hodge-podge. The houses have been laid out to blend into a well-



COURTESY BETTER HOMES AND GARDENS



The garage of this three bedroom house is separated by a breezeway, giving a sense of breadth to the house. This is the only house to have an enclosed garage, the others having carports. The house has no basement.

balanced community. Individual tastes are being catered to.

Better Homes and Gardens paid tribute to the design of the houses at Oak Forst in featuring four as "five star" homes in its July issue. E. T. Meredith, Jr., publisher of the magazine who went to Houston with several members of his staff to see what manner of man this Frank W. Sharp is, told some 600 of the city's business and civic leaders:

"This is the first time that any builder, or any city, has had four five star homes in an issue of *Better Homes and Gardens*.

Although only 42 years of age, Mr. Sharp is no newcomer to big league building. In the past eight years he has built five other large housing projects, including:

Brookhaven, 1939-41, built 312 four to six room houses, made $18,000 profit.

Industrial Addition (80 per cent of Jacinto City, now a city of 10,000 on the north bank of the Houston ship channel), built 835 houses. Lost $206,000 on the first 600 houses, because he hadn't perfected his cost formula. He finally came out with a profit, because of the advance in real estate prices in the Houston area.

Texas City, war housing, 96 homes, built in 1943-44. These homes came

COURTESY BETTER HOMES AND GARDENS

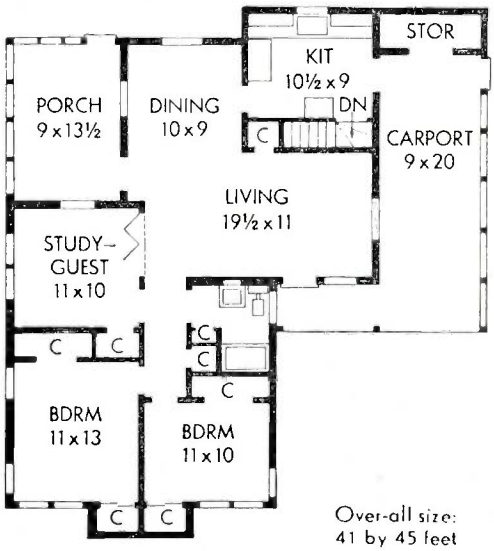
through the recent Texas City disaster in fine shape, except for broken glass. These homes are now being sold on a cooperative basis.

Lucille Place, Houston, 110 homes.

Royden Oakes, homes for those in the upper income brackets. Seventeen are now underway, range in price from $25,000 to $30,000. There are 180 sites in the development.

However, Oak Forest is the development that has Texans scurrying to find superlatives to describe Mr. Sharp. He has been termed the "fabulous Frank Wesley Sharp," "home builder extraordinary," "Houston's young master builder of homes," "the amazing Mr. Sharp," and a score of other flattering tributes.

Mr. Sharp prefers to call himself lucky, considering some of his earlier experiences in the building field, but whatever it is he's a one-man army in licking Houston's housing shortage as he demostrates what a man with an idea —several ideas, in fact—can do.



Over-all size:
41 by 45 feet

Features of this house include the combination den-bedroom and an abundance of storage space. Basement is under living, dining and kitchen areas. Plans may be purchased from Better Homes and Gardens magazine.

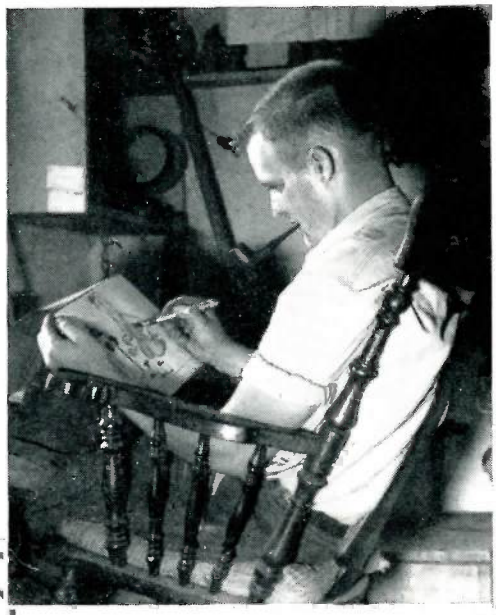
Life Can Be Funny- To Supt. Norm Slater

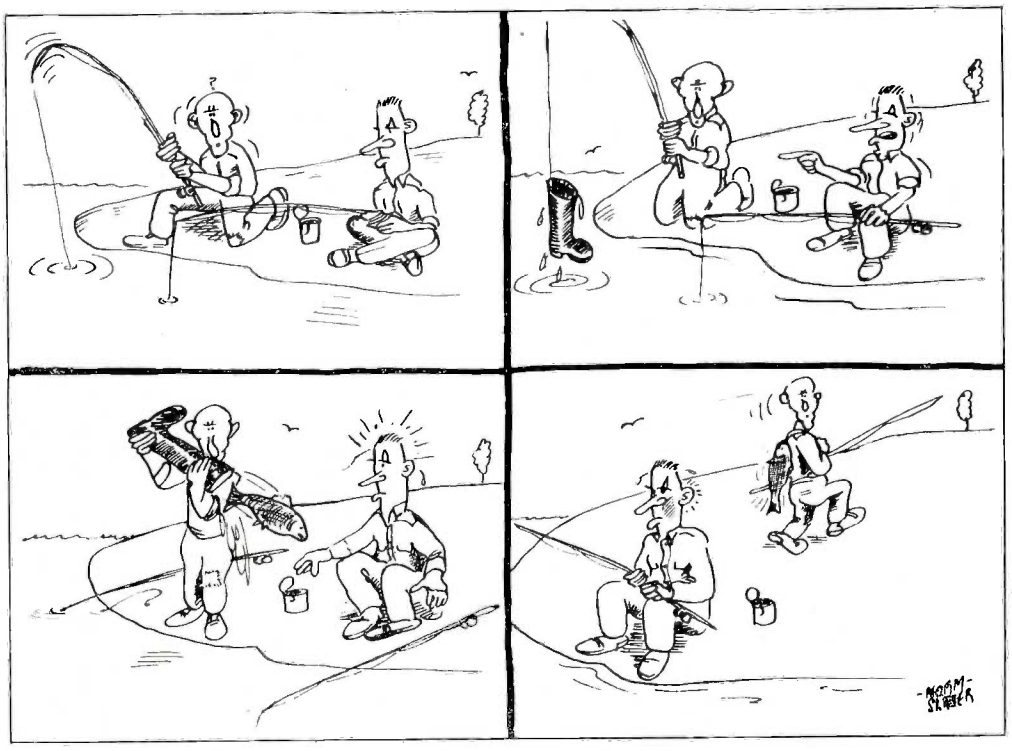
NORMAN SLATER IS A water works superintendent with a sense of humor. That isn't so unusual, except that he has the ability to transfer the humorous happenings of the day onto a sketch pad as cartoons.

"Norm" is a 24-year-old ex-G. I. who rather unexpectedly found himself named superintendent of streets and water at Windsor, New York, a small city on the Susquehanna River in the foothills of the Catskill mountains.

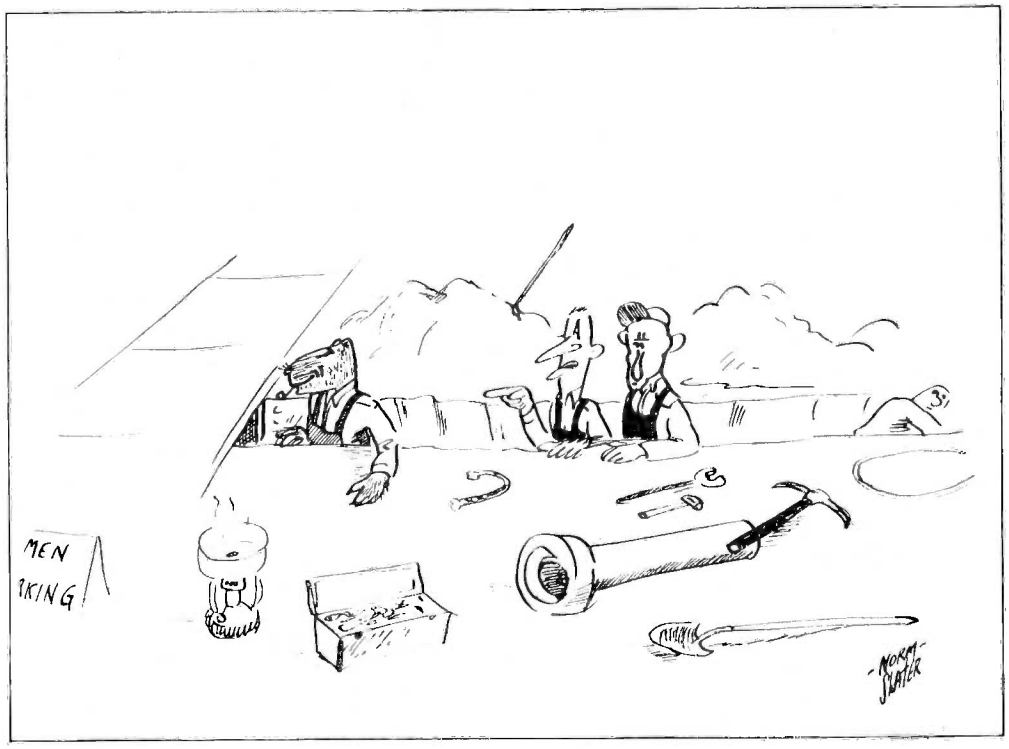
He has been drawing for about as far back as he can remember, but the cartooning is a rather recent manifestation of his desire to put the occurrences of the day down on paper with a cartoonist's pen instead of brush. As he describes it:

"I first started drawing cartoons while I was overseas with a mobile radio outfit of about 30 men. One day I drew a couple of my buddies, and it made them laugh. Somehow that sort of pleased me, so I continued drawing cartoons off and on, as time permitted. There were times that I just didn't have time or was too tired to draw after coming off a watch at the radio. We broke up the outfit in 1945, and I came home, intending to keep up with my drawing. But circumstances alter cases.

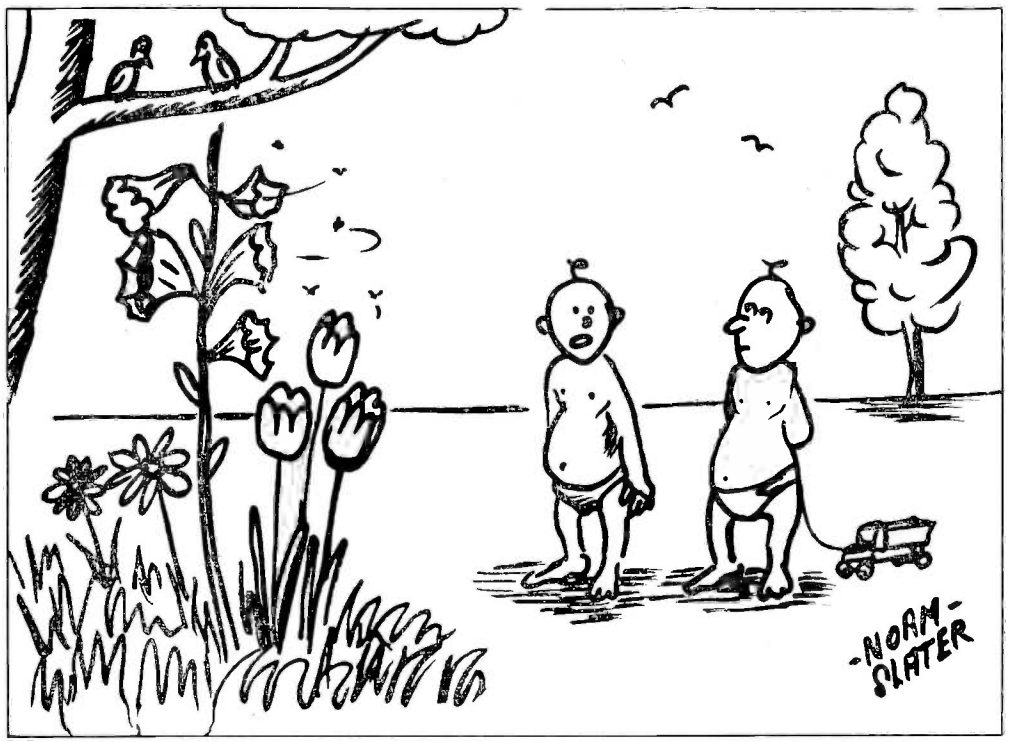




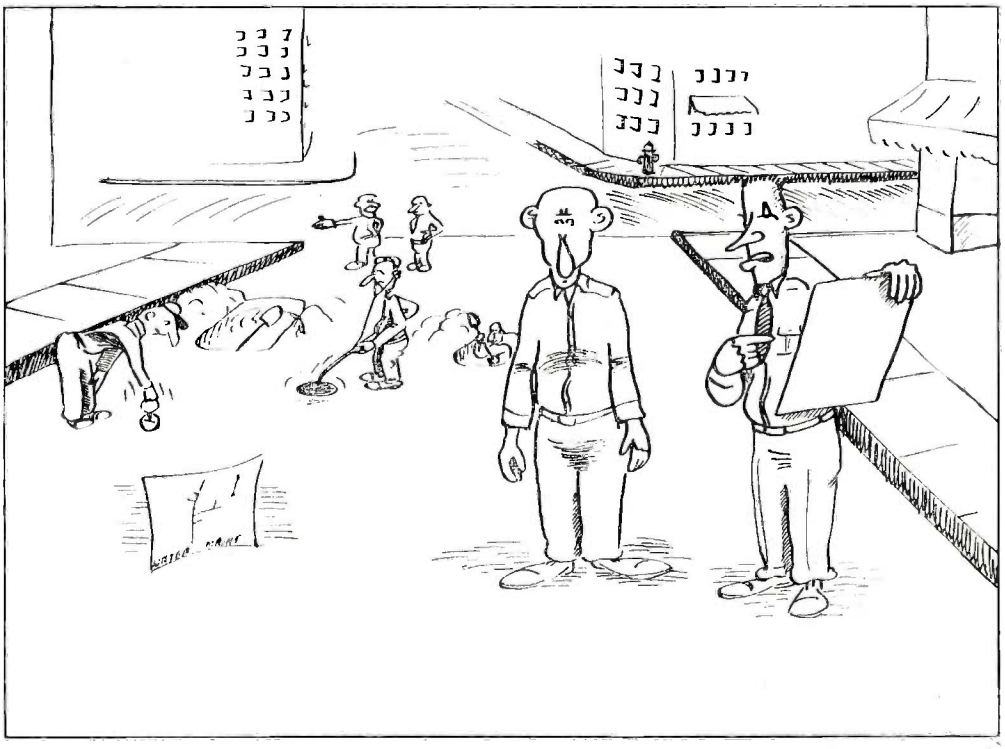
Story without words



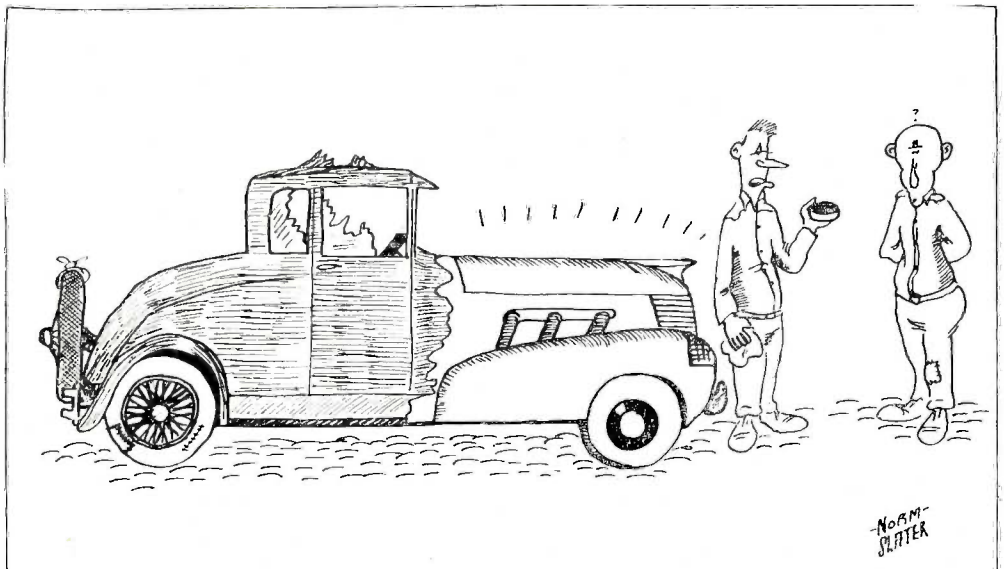
"I think this tunneling is getting Joe down"



"I wonder who tells the birds and bees about people"



"We don't have so much trouble finding mains since I drew my own map."



"Well, I'm not surprised. They told me it would"

"I went back and finished my high school education, so that I could go on to some art school under the G. I. Bill of Rights, but when I attempted to get into them, they were so crowded that they couldn't accept me.

"Seeing that I couldn't get into an art school, I went to work in a wrench factory. There was a lot of cartoon material there, so I started putting up a cartoon a day on the company bulletin board. Orders finally slacked off, and the company had to cut their help almost in half. I was in the half that left. But the day before I checked out, I drew a big cartoon and one of the workers wanted it as a souvenir. I sold it to him for a buck—at last I was a commercial artist!"

At about the same time the former street and water superintendent of Windsor decided to retire. Norm tried for the position and got it—and his inexperience at first caused him a lot of headaches that didn't seem too funny even to a cartoonist.

"I didn't know too much about the water and street business, and, consequently, I went 'round and 'round for a while. Then I got on to the way it was done, and things went smoother. I began to see that there was plenty of material for cartoons right on the job. So I was off again."

Norm said he obtains most of his ideas from the men who work with him, but the public at large contributes its share, too. Here's a situation that made a cartoon idea and one with which most water superintendents are familiar:

"I shut the water off on one street while a woman was having a shampoo in a beauty parlor, and there wasn't any water to rinse her hair. BOY!"

Most of the ideas, though, don't involve irate customers, Norm wants it understood. However, if the occasion ever arose, he could probably dish up a cartoon that would turn a customer's complaint to a chuckle, which is one advantage, at least, of the art.

Cartoons that parallel or cariacture everyday occurrences have the widest appeal, Norm believes, and many minor happenings have a humorous slant that can be captured in a cartoon.

In addition to cartooning, he rates hunting and fishing high up on his spare-time activity list, and particularly enjoys pistol shooting—a hangover from Army days. Also left over from duty overseas is the equipment to indulge this hobby, "a room with half of the equipment of the German Army in it: three pistols, four rifles and two shot guns."

Peekskill, N. Y., Wins Tapping Contest

Greensburgh betters time by 2 minutes, 45 seconds, but is disqualified by judges of Westchester meet.

MUELLER CO. PRODUCTS scored a clean sweep in what was billed as "the world's champion tapping contest" at the eighth annual meeting and outing of the Westchester (New York) Water Works Conference on July 28.

Four 2-man teams competed in the special attraction, which was won by Arthur Brown and Charles W. Stottler, representing the Peekskill Board of Water Commissioners, Peekskill, New York. Time for the winners was 8 minutes, 22 seconds. Mueller B tapping machines were used in all instances as were Mueller corporation stops—with one exception.

Rules of the contest required the making of a three-quarter inch tap in a standard size water main and inserting a corporation stop, with the main under pressure.

Although the best time for the contest —5 minutes, 37 seconds—was turned in by Nicholas Casolaro and Sandy C. Martin, representing the Greenburgh Water Department, they were disqualified when the judges spotted a leak at the stop. The team attempted to tighten the stop in the main, since the leak at first appeared to be at the threads, but it then started leaking around the barrel.

The embarrassment of LeRoy J. Evans, manager of Mueller Co.'s New York City branch, and Salesman Jim Williamson was reaching the painful stage, when it was found that the stop was made by another manufacturer. Andy Grantham, superintendent of the Greenburgh Water Department, explained that the stop must have been a holdover, purchased during the war when some substitutions were necessary, and

The winnahs and still champs were Charles W. Stottler and Arthur Brown, representing the Board of Water Commissioners, Peekskill, New York. Time 8 minutes, 22 sec. Greensburgh's team turned in best time.

Nicholas Iannarelli, handicapped by one arm being in a sling, and Pat Gabriele, representing Westchester Joint Water Works District No. 1, Mamaroneck, were the runners-up.

This close-up of the winning Peekskill team — Arthur Brown and Charles W. Stottler — indicates the concentration of the contestants. Brown and Stottler gained possession of the Al Kassay trophy for the Board of Water Commissioners of Peekskill for at least one year, and in addition each received a Mueller self-cleaning shower head as an individual prize.

that it was brought to the contest by mistake. The statements of Casolaro and Martin, whose time bettered that of the winning team by 2 minutes, 45 seconds, were not made public.

Albert E. Kassay, superintendent of the water and sewer department of North Tarrytown and chairman of the Westchester Conference, awarded the winning team a trophy. The first water department to win the contest three times gains permanent possession of the trophy. Wins need not be in consecutive years. In addition to the trophy, Brown and Stottler also were awarded Mueller self-cleaning shower heads for their efforts.

Other entrants in the contest were:

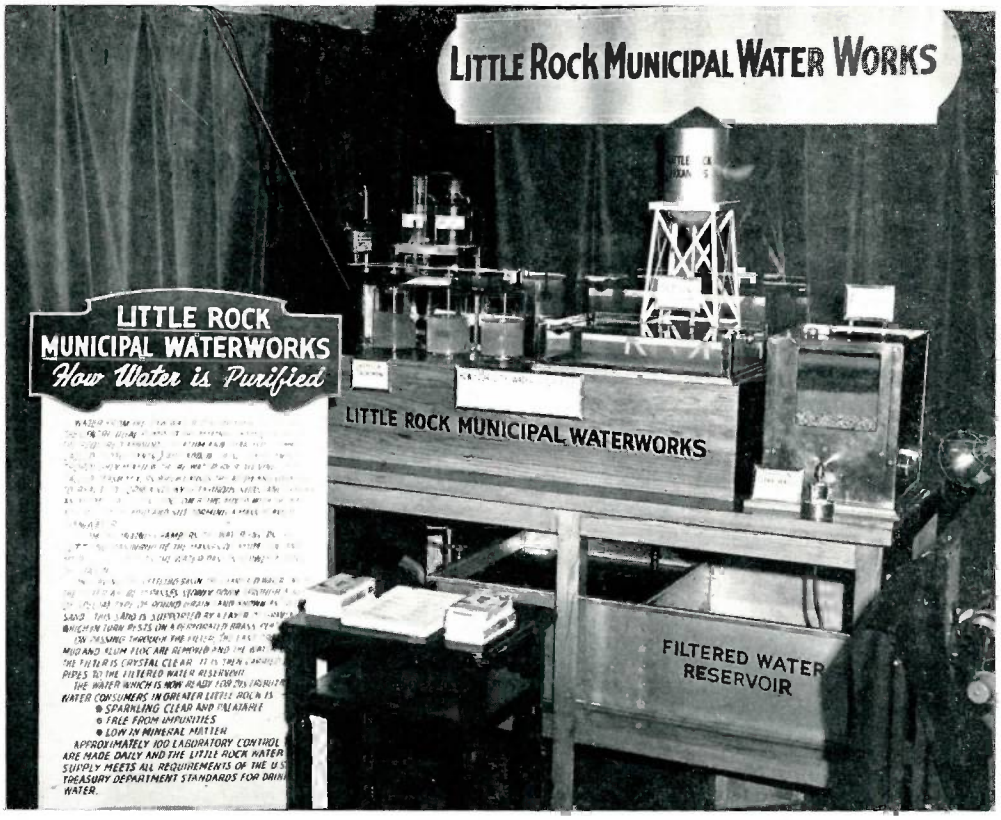
Westchester Joint Water Works No. 1, Mamaroneck—Nick Iannarelli and Patsy Gabriele. Time: 9 minutes, 10.6 seconds.

New Castle Water District No. 1, New Castle—Charles Dedde and G. Ruckert. Time 9 minutes, 36.7 seconds.

Sandy C. Martin and Nicholas Casolaro bettered the time of the contest winners by 2 minutes, 45 seconds, but were disqualified. Their time: 5 minutes, 37 seconds.

Following the contest, the teams posed for this portrait, with the winners, Stottler and Brown, seated in front. Others were G. Ruckert, Nicholas Casolaro, Sandy C. Martin, Chas. Dedde, Patsy Gabriele, Nick Iannarelli.

Model Plant Shows Little Rock Residents How High Quality Water Is Produced



Workable miniature illustrates filtration process, including the chemical treatment of turbid water.

L. A. JACKSON, manager-engineer of the Little Rock, Arkansas, Municipal Water Works, believes that words do only half a job in keeping his consumers informed of the high quality of the city's water and how it gets that way. So he goes a step farther and *shows* them—by means of a well-constructed, workable miniature of a filtration plant.

The plant was designed by W. A. Mayhan, superintendent of filtration, and assembled at the purification plant. Major units of the plant were built to specifications at local machine shops, glass plants, electroplating shops, and others. The smaller parts, such as pulleys and shafts, were made in the filter plant's machine shop.

Total cost of the model plant was $642.84, an expense that is being offset by reason of the plant's educational value. The plant has been shown at several exhibits, where it has been a top attention-getter. The display is arranged so that it may be easily dismantled and re-assembled.

Students and others who visit the filtration plant periodically are also shown the miniature, which gives them a better understanding of the processes involved in producing a safe, sparkling water. Mr. Jackson said the plant had been

found "especially valuable from a technical and educational standpoint, as evidenced by the interest shown by students and technical minded customers.

"A display of this nature reveals in some degree the many ramifications of operating a water utility, thus dispelling the idea that all a water utility does is to collect rain water and sell it at exorbitant rates."

In describing the operation of the plant, Mr. Jackson said that raw water turbidity is artificially made by diluting raw lake water with Arkansas River water to get a turbidity of 100 p.p.m. A constant chemical dosage of 2 g.p.g. of alum, plus 0.7 g.p.g. of soda ash "gives a very nice floc and a clear filtrate." The filtration rate is manually controlled, and is set at approximately 100 ml. per minute.

The raw water reservoir adjoins the filtered water reservoir and is so lettered (however, the letter is obscured in the photograph by the table containing literature on the plant). This reservoir holds 30 gallons of raw water, which at 100 ml. per minute operation will last about 18 hours.

Although not shown in the photograph, the operating pump and piping is so arranged that the filter can be backwashed from the filtered water reservoir and the wash water discharged into the raw water reservoir. This required the use of a pump of much higher capacity than would normally be needed. However, in normal operation this excess capacity is used to keep the mud in the raw water well mixed by a recirculation water jet.

The display also includes the following description of the purification process:

Water from the raw water reservoir is lifted by the centrifugal pump to the mixing chambers where the required amounts of alum and soda ash (commonly called "coagulants") are added. These coagulants are thoroughly mixed with the water by removing paddles called flash mixers which causes the alum and soda ash to react to form a sticky gelatinous substance known as alum "floc." This "floc" on being mixed with the water adheres to the mud and silt, forming a mass heavier than water.

From the mixing chambers the water enters the settling basin where the masses of alum floc and mud settle out as the water passes slowly across the basin.

On leaving the settling basin the clarified water enters the filter where it passes slowly down through a bed of special type of round grain sand known as "filter sand." This sand is supported by a layer of gravel which in turn rests on a perforated brass plate.

On passing through the filter, the last traces of mud and alum floc are removed and the water leaving the filter is crystal clear. It is then carried by pipes to the filtered water reservoir.

The water which is now ready for distribution to water consumers in Greater Little Rock is:—

Sparkling clear and palatable.
Free from impurities.
Low in mineral matter.

Approximately 100 laboratory control tests are made daily and the Little Rock water supply meets all requirements of the U. S. Treasury Department Standards for Drinking Water.

Another sign is headed: "How your city water is purified," and goes on to read, "This model water treatment plant shows three of the principal treatments used in the modern purification plant of the Little Rock Municipal Water Works."

Two smaller signs, one at the point where chemical treatment is begun and the other above the filtered water reservoir, serve to call attention to the "before and after" appearance of the water.

The compactness of the model plant and the fact that it has been designed for convenience in disassembling and setting up are features that mark it as an ideal type of display.

As a public relations aid, it has the advantage of being a "live" display, one that attracts and holds attention. It tells a story in a minimum of time and space.

From results obtained thus far, the display, it appears, pretty well gets across to the public in simple, understandable form the story of Little Rock's water works.

Methods of Classifying Communities For Fire Insurance Ratings

Factors include water supply, fire department and prevention, alarm system, police, laws, structures.

By H. R. Bogardus

MUNICIPAL classifications are determined by the application of the Standard Grading Schedule for Grading Cities and Towns in the United States with reference to their fire defenses and physical conditions, after field inspection and test of the local facilities. The grading schedule is based on the premise that a community with no protection would have a deficiency grading of 5,000 points, while a perfect community would have a deficiency grading of zero points. The chief items that are taken into consideration are Water Supply, Fire Department, Fire Alarm System, Police, Building Laws, Fire Prevention and Structural Conditions. The maximum number of points chargeable to each of these items are as follows:

Water Supply	1,700
Fire Department	1,500
Fire Alarm System	550
Police	50
Building Laws	200
Fire Prevention	300
Structural Conditions	700
Total	5,000

In studying the water supply system, primary consideration is given to the efficiency and experience of operating personnel, the completeness of records and plans, the normal adequacy of the entire system, the reliability of the sources of supply, the capacity of pumps and transmission lines, the normal quantity of storage, the adequacy and reliability of the distribution system, the location and type of fire hydrants (the compression type is preferred) and the frequency of the gate valves effecting control in the event of pipe-line breaks.

The quantity of water required for fire protection purposes in each community varies with the structural conditions which constitute the principal mercantile district or high value area and in average communities with normally anticipated structural conditions the required flow is determined by the formula: $G = 1020 \sqrt{P} (1 - .01 \sqrt{P})$ where G equals gallons per minute, and P equals the population in thousands. The fire flow thus obtained for each community constitutes the basis for the grading schedule set up for that community in that most items in the schedule have a direct relationship to this feature of the supply. However, in all communities special conditions such as extensive flammable liquid storage or hazardous manufacturing activities may demand greater quantities of water in these special areas. Generally speaking, however, fire flow demand for principal mercantile districts or high value districts range from 1,000 g.p.m. for a period of four hours for a normal community of 1,000, to 12,000 g.p.m. for a period of ten hours for a normal community with a population of 200,000. The required fire flow in residential districts depends upon the character and congestion of the buildings. Sections where structures are small and of low height, with about one-third of the lots in the block improved with buildings, require not less than 500 g.p.m. With larger or higher buildings, up to 1,000 g.p.m. is required, and where the district is closely built on, with buildings approaching the dimensions of

Editor's Note: Mr. Bogardus is assistant superintendent of the engineering department of the Fire Insurance Rating Organization of New Jersey, an affiliate of the National Board of Fire Underwriters. The article is a resume of an address made by Mr. Bogardus at a meeting of managers and other personnel of the Northeastern System of the Water Utilities Service Corporation at Camden, New Jersey, and is reprinted with permission of H2O.

hotels or high value residences, 1500 to 3000 g.p.m. is required with up to 6000 g.p.m. necessary in densely built sections of three stories and higher. These requirements merit some explanation, however, in that they indicate the quantity of water which authorities believe should be available in these respective districts, but it being recognized that lesser quantities are of appreciable value in fire fighting, the general practice is to accept for recognition for the establishment of a protected area, all hydrants which can be depended upon to deliver a minimum of 200 g.p.m. for a period of one hour. Hydrants meeting this requirement entitle the communities in question to a protected rate for all properties within 500 feet.

Careful consideration in all cases should be given to hydrant spacing because the value and capacity of the water system is entirely dependent on the availability of the fire hydrants. In general, hydrants should be spaced so as to serve maximum areas of 40,000 to 120,000 square feet, depending on the structural conditions in the particular area. These area requirements, however, may be modified in residential districts consisting of single streets or rural roads without block development where buildings are normally on 100-foot lots, to provide a coverage of 120,000 square feet per hydrant by considering a width of protection of 200 feet and a spacing of 600 feet.

In setting up municipal grading schedules the first consideration is given to the "limiting factor" of the water system in that it is readily recognized that a hydrant or a system of hydrants might deliver from 1,000 to 5,000 g.p.m. whereas the capacity of the system over and above the consumption demands for a period of hours might be restricted by a supply works capable of delivering, for instance, only 500 gallons per minute, offset to only a slight extent by storage of 100,000 to 300,000 gallons, in which case the delivery of hydrants would indicate the limiting factor of the system. In other instances the capacity of the supply mains from the source of supply might be such that the initial flow at hydrants due to proximity of storage could not be maintained, or in other instances pumping equipment could be of such capacity as to be unable to maintain the initial hydrant delivery after depletion of storage. All of these features are studied and analyzed by the rating organization engineer during the survey and before proceeding with the grading schedule make-up.

Following the above comments, Mr. Bogardus opened the meeting for general discussion and questions from the floor which are outlined below:

The question was raised with regard to protected and unprotected rates in a given rural community where a local insurance agent advised that his company would write the so-called unprotected properties at the protected rate. An explanation of this statement was solicited. It was advised that in some areas certain companies were allowed to write insurance at discount rates, but that almost without exception, the stock companies and participating mutual companies would be required to adhere to the published rates.

The question was asked whether or not the practice of installing battery meter settings was acceptable, and the group was advised that same would be approved provided the required delivery through the connection was available.

A question was raised with regard to the minimum size of pipe and it was explained that 6-inch was the generally accepted minimum size, but that a hydrant which would deliver a minimum flow of 200 gallons per minute would normally be recognized in sparsely built areas, even though it was supplied from a 3-inch or 4-inch line.

The question was raised regarding the water supply requirements for sprinkler system supply. It was advised that these requirements were based on the regulations of the National Board of Fire Underwriters governing the installation of sprinkler equipments and that sprinklered buildings were specifically rated by the Sprinklered Risk Department of the Fire Insurance Rating Organization, which department operates independently of the Engineering Department, except that the Sprinklered Risk Department depends on the Engineering Department for basic infor-

(Continued on page 30.)

UNDERGROUND STORAGE

Oklahoma Natural Gas Company of Tulsa uses two depleted fields as a natural storage to meet winter peaks and as emergency reserve.

AESOP'S FABLE OF the thrifty and industrious ant who toiled all summer long to lay up a supply of food against the winter has a real-life parallel in the Oklahoma Natural Gas Company of Tulsa. However, instead of grain, the company is putting by natural gas in two large underground storage projects to meet emergency and peak demands during the winter.

Oklahoma Natural's storage projects are the Osage storage, located on the northwest edge of Tulsa, and the Haskell storage, which is approximately 19 miles west of Muskogee.

Fundamentally, the underground storage of natural gas is the process of putting gas, which has been produced from distant fields, into a previously depleted gas field near the markets, or near the transmission lines leading to these markets. Oklahoma Natural's underground storage projects are not to be confused with the practice of storing gas under high pressure in steel tanks, either above or below the ground.

The development of underground storage presents many difficult and costly problems. It calls for considerable time and work on the part of engineers, drilling crews, operating men, geologists, and others, along with the expenditure of a reasonable amount of capital.

However, the advantages of underground storage far outweigh the expense and effort involved. Benefits derived from a well-balanced storage program are numerous. It is a permanent capital investment which helps to simplify system operation, for in winter, when the loads frequently tend to exceed pipe line capacity, the stored gas can be withdrawn to help meet the peak or cold weather demand, and to relieve the main lines as well as the production system. A storage also serves as a stand-by source of supply during such emergencies as a break in the pipe line or other serious service interruption. Another advantage is the safety factor.

On top of that, adequate storage capacity assures the company of getting its fair share of gas which it is obliged to purchase in competition with other companies, regardless of the time of year or whether or not it is actually needed at the time. The storage program thus helps the company to conserve the natural gas reserves it controls in its exclusive use.

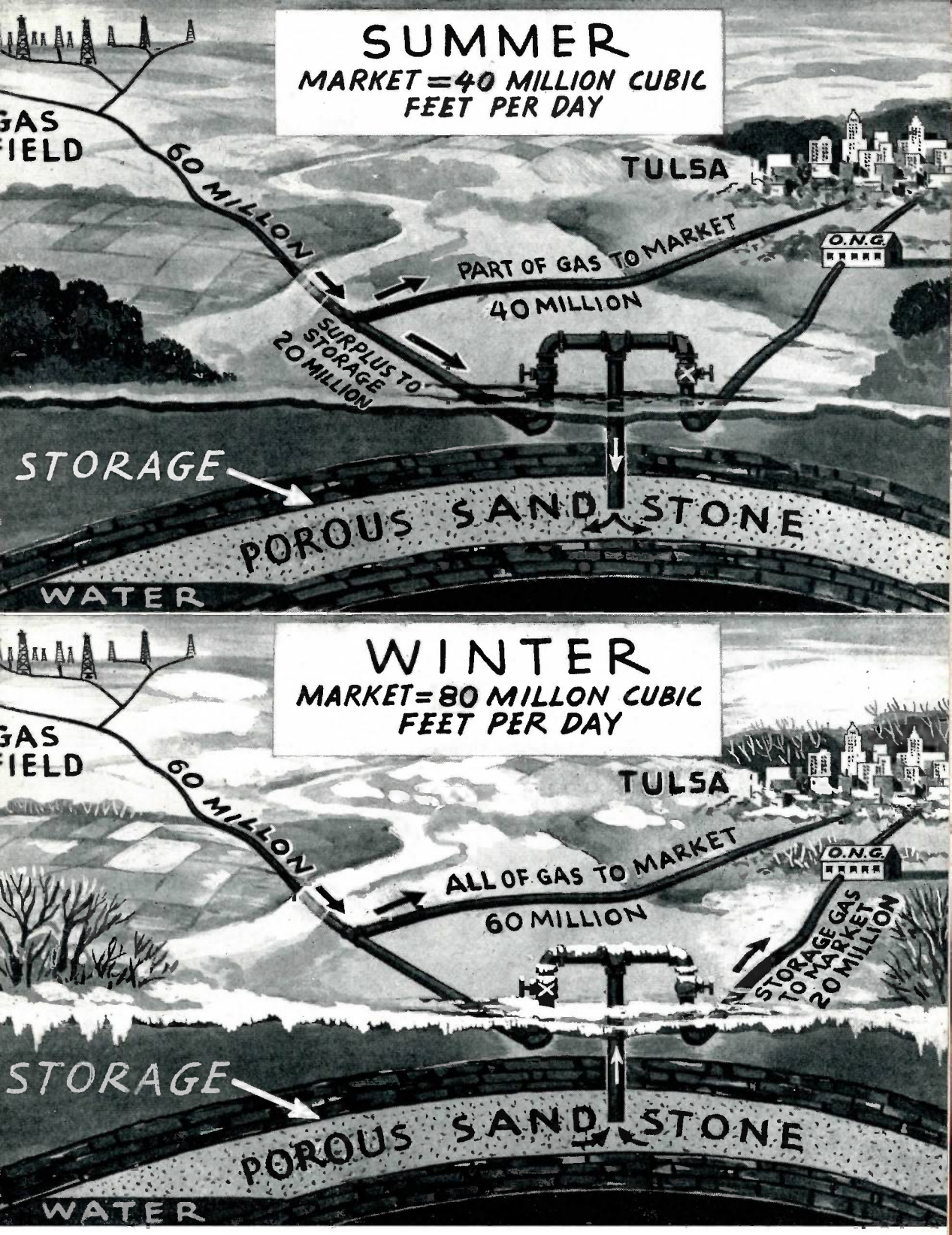
During the summer months, Oklahoma Natural's gigantic underground storages enables it to store safely large amounts of "distress" gas which otherwise would be wasted to the open air, thereby conserving a valuable natural resource and at the same time creating added security for natural gas users.

Oklahoma Natural serves nearly 210,000 meters in 100 communities throughout the state of Oklahoma. These meters are served through pipe lines amounting to more than 5,000 miles. Sources of supply are sometimes such great distances from its market areas that the use of underground storage projects are a necessity, particularly during the peak period.

The Osage field originally was produced by Oklahoma Natural Gas Company from 1922 through 1928. It was finally abandoned when it was depleted to a pressure of thirteen pounds per square inch.

Fifteen years later it became necessary to turn the depleted field into storage. Five new wells were drilled in the spring

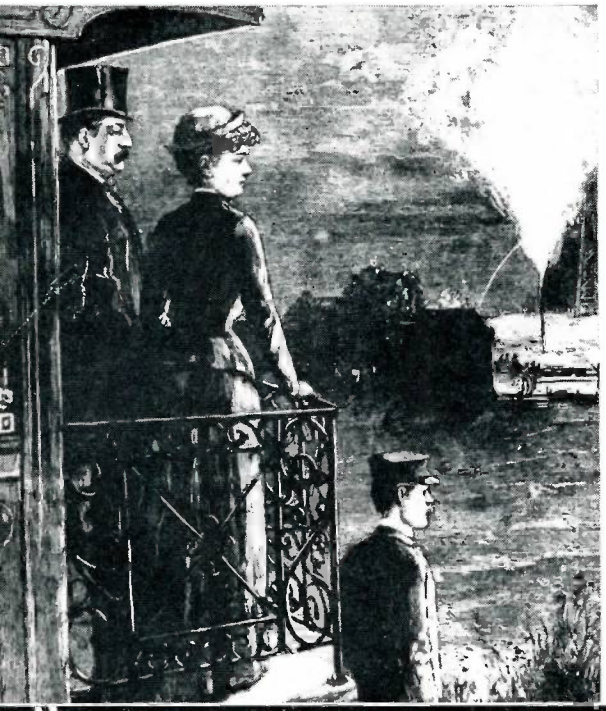
(Continued on page 30.)



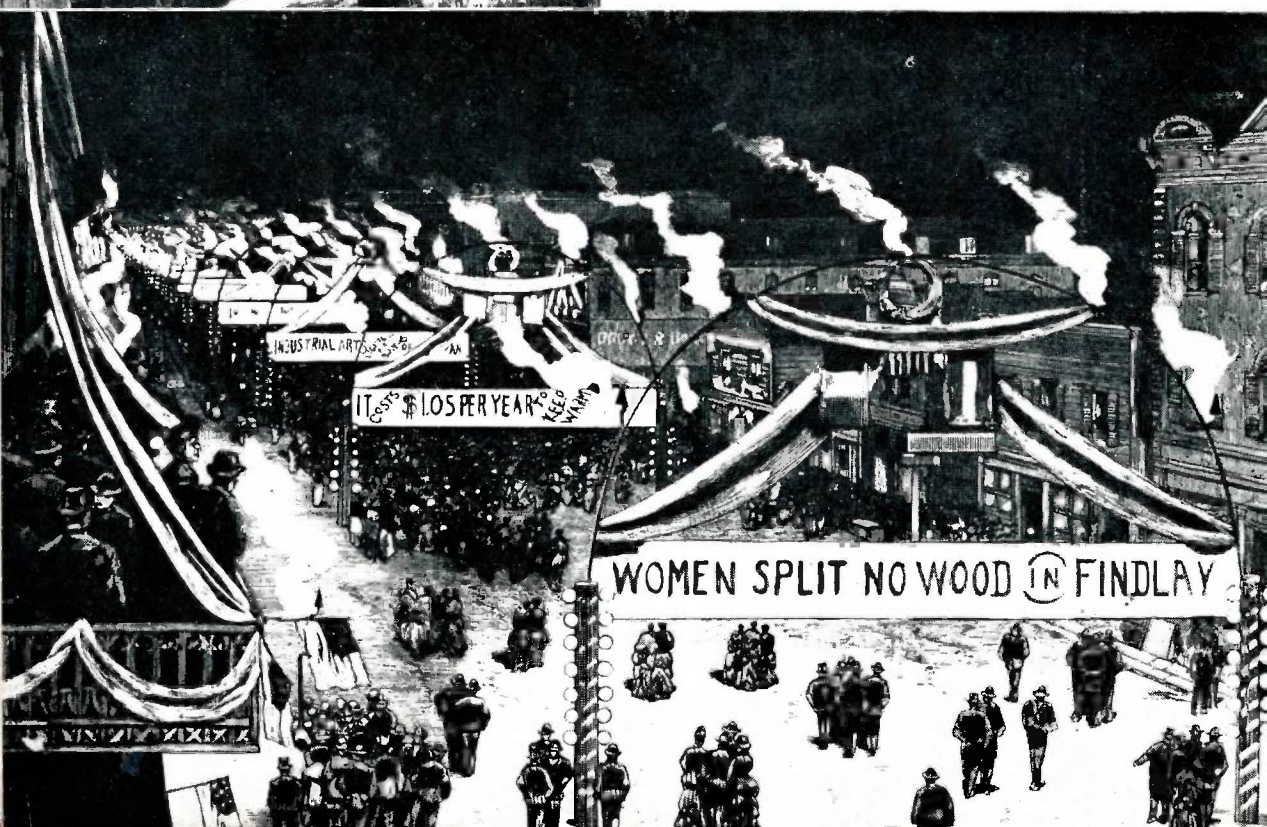
Above is artist's portrayal of how gas storage works by contrasting summer and winter loads. Figures shown are only approximate and are used only to establish an example of the real thing. The drawings clearly illustrate Oklahoma Natural Gas Company's method of utilizing depleted gas fields to provide underground storage to meet emergencies and the peak loads of winter months.

"Women split no wood in Findlay"

IN THE SUMMER OF 1887 there was evidence that the age of chivalry was still rampant in the midwestern section of these United States as the residents of the up-and-coming little town of Findlay, Ohio, set out to make a triumph of the celebration of the First Anniversary of the Practical Application of Natural Gas to the Mechanical Arts.



President Grover Cleveland and his wife viewing the illumination of a gas well (a drawing made in 1887).



A view of the street fair held in Findlay to commemorate the "First Anniversary of the Practical Application of Natural Gas to the Mechanical Arts." Gas jets furnish lighting.

BETTMANN ARCHIVE

BETTMANN ARCHIVE

Natural gas street lights in the 1880s were crude affairs, consisting only of a length of pipe. They were generally placed in the center of the street because of the fire hazard.

Natural gas was not exactly new to the citizens of Findlay, for as early as 1839 drillers, seeking water, had encountered gas, which was piped into a nearby house for use as fuel and light. Indeed, looking back on the gala three-day fete, the circumstances that prompted it seem somewhat obscure.

But there was something about the phenomenon of natural gas, of a fuel that could be taken from inside the earth, that gripped the imagination. In ages past, the Persians and natives of India had scrupulously kept fires burning at gas seepages as objects of worship. However, it is doubtful that religious zeal had anything to do with Findlay's celebration. Specifically, the town's enterprising citizenry was out to honor the harnessing of natural gas to mechanics—and mechanics was a term that had a wonderful connotation in the 1880s.

Plans for the celebration were started months ahead of time. There were the usual committees who did the things committees usually do, and almost everyone in town had a hand in making every detail just right. Handbills advertising the event were widely circulated to assure the best possible attendance. Both young and old felt a pleasurable thrill of excitement at the prospect of the affair, which was scheduled for June 8, 9 and 10, and would be in the form of a gigantic street fair.

When, at last, the great day arrived and the open gas jets were lighted, the first sign to strike the eyes of visitors was not a lengthy dedication or discourse on mechanics but a phrase that must have been coined by some genius of brevity:

"Women split no wood in Findlay."

There was nothing about the banner that struck anyone as appearing in the least incongruous, despite the high-flown sound of the title of the commemorative jubilee. Here was a miracle fuel that took hours of drudgery out of household chores.

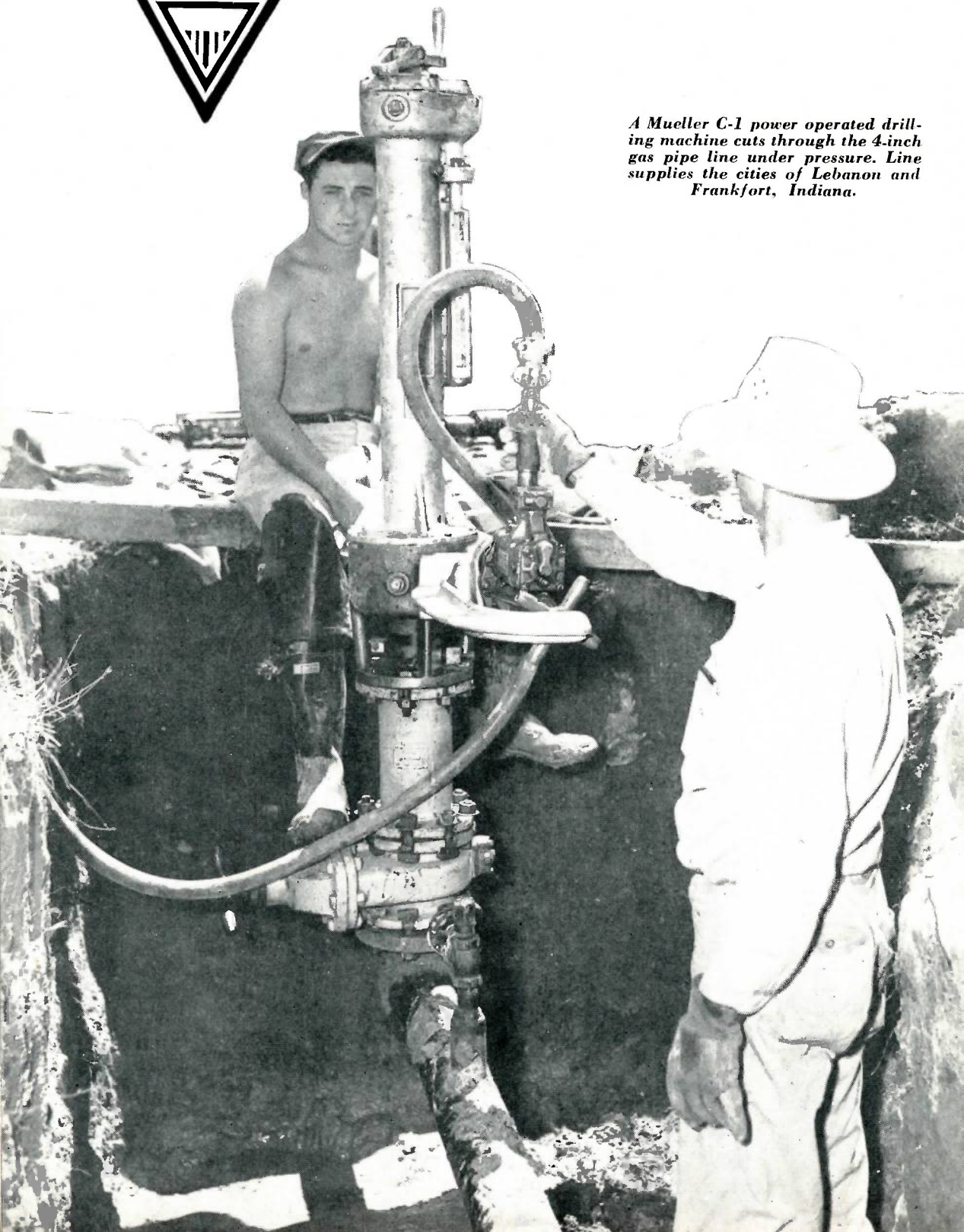
The next sign bore the legend: "It costs $1.05 per year to keep warm." Considered on the basis of the uninflated hard dollars of sixty years ago, this was still real economy. Thus, the men of Findlay pampered their womenfolk, and at a nominal per annum cost, too.

Today there are twenty million residences in the United States in which women split no wood. According to the

(Continued on page 30.)

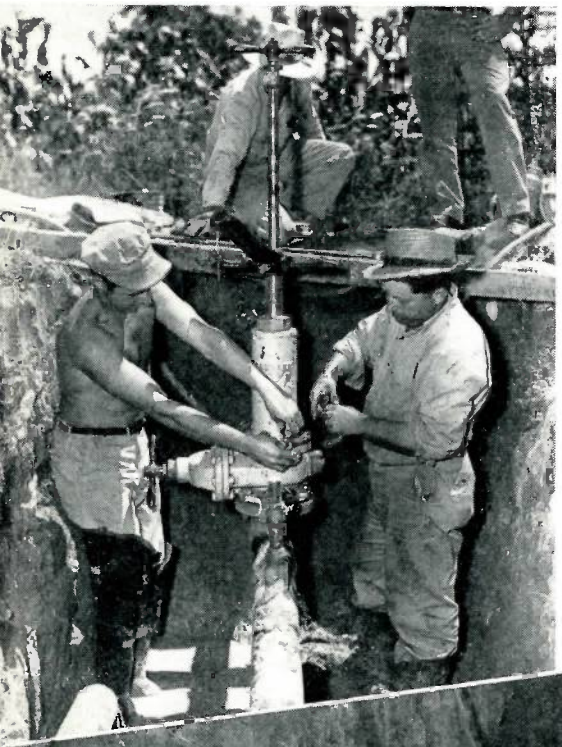
PANHANDLE EASTERN PIPE LINE COMPANY

UNDERPASSES



A Mueller C-1 power operated drilling machine cuts through the 4-inch gas pipe line under pressure. Line supplies the cities of Lebanon and Frankfort, Indiana.

AN UNDERPASS ▼ ▼ ▼ ▼



A cutting torch is used to sever the old line. This is on the upstream side of the line.

PANHANDLE EASTERN PIPE Line Company was recently faced with the necessity of lowering a four-inch gas pipe line, supplying the cities of Lebanon and Frankport, Indiana, to make way for an underpass beneath the Pennsylvania Railroad Company's tracks on U. S. Highway No. 52, just outside Lebanon.

To provide ample room for the four-lane highway, a section of line 475 feet long was lowered to a depth of 14 feet. Mueller line stopper equipment and fittings were used to permit the replacement without a long shut-off period. Lebanon was dependent upon the line for a continuing supply, although Frankfort had a gas holder which would

After the cuts have been made, the Mueller stopping machine is bolted onto the gate valve prior to stopping-off line and by-passing the flow around the section being replaced. Below: Welding the new section of line to old with the stopper holding back gas flow.

provide emergency service for a limited time.

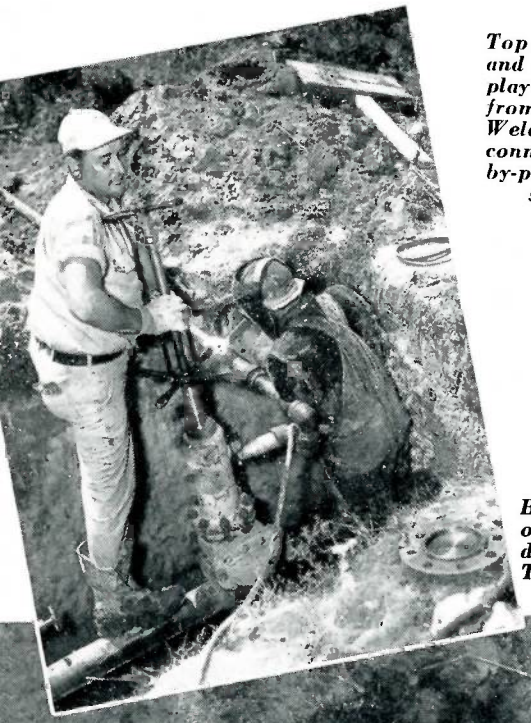
S. R. Phillips, district foreman, made arrangements for cutting down the pressure at Montezuma, Indiana, where the four-inch line takes off the main Panhandle Eastern line, to 175 pounds. Pressure at the Lebanon town border station was 105 pounds.

The line was cut under pressure with a Mueller C-1 power operated drilling machine. Mueller No. 2 line stopper units were used ahead and behind the section of line replaced, and service was continued through a by-pass line.

The new replacement line was already in place in the long trench, and the old line was cut and joined to the new between the stoppers in a comparatively short time.

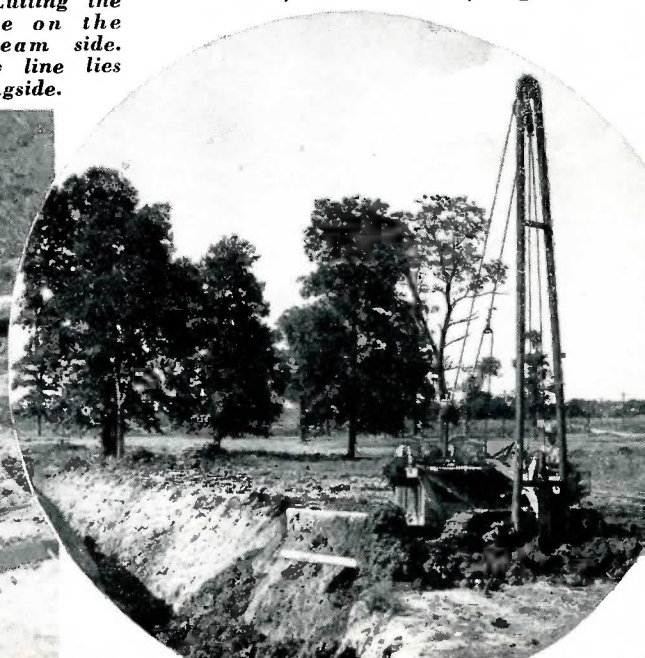
The second stopping machine is being made ready at the downstream end of the section.

Top: S. R. Phillips and Joe Roberts display the coupons cut from the line. Left: Welding a purging connection on the by-pass line (downstream side).



Below: Cutting the old line on the downstream side. The new line lies alongside.

Cars will speed over line on U. S. Highway No. 52 at point near position of bulldozer backfilling ditch.



Mueller Co. Adds Two New Salesmen

Walter A. Arnett to make headquarters at Salt Lake City; W. R. Augustine succeeds W. F. Aaron, retired.

TWO NEW SALESMEN have recently been added as field representatives for Mueller Co. They are Walter A. Arnett and Wilson R. Augustine.

Mr. Arnett, whose headquarters are in Salt Lake City, Utah, has been assigned a territory which includes parts of the states of Washington, Oregon, Idaho, Utah and Nevada.

Mr. Augustine succeeds W. F. Aaron, who retired September 1 after more than 41 years of service with Mueller Co. Mr. Augustine's territory is lower Michigan, and he will make his headquarters in Detroit.

Mr. Arnett was first employed in the Los Angeles factory of Mueller Co. in 1942 as a forging press operator and general die worker in the forging department. Two months later he was made foreman of the department's second shift, a position he held until entering the Army on April 10, 1945. He took his basic training in California and was then sent to the South Pacific, eventually ending up in the occupational forces in Japan.

Returning to the United States in the early part of August, 1946, he was mustered out of service and returned immediately to the Los Angeles plant, where he was placed in sales and engineering in connection with the forging department.

Mr. Augustine, a graduate of Oberlin College, Oberlin, Ohio, had 16 years' experience in the selling field, including retail, office and field, before coming with Mueller Co.

Mr. Augustine is a native of Decatur, Illinois, and Mr. Arnett is a former Texan.

Mr. Aaron joined Mueller Co. in 1904 and was with the company continuously with the exception of a period from 1917 to 1919, during World War I.

Walter A. Arnett

Wilson R. Augustine

Off the . . Record . .

In the Ozarks, where whiskey flows like water, they have their own definition of intoxication. In a village in that section one Sunday, a man lay prostrate in the middle of the road in a hot noonday sun. "He's drunk," said the sheriff. "I guess I'd better stick him in the calaboose."

"He ain't drunk at all," disputed a fellow townsman. "I just seen his fingers move."

■ ■ ■

Inquisitive lady: Tell me, do you ever do anything in the nude?

Artist: Well, ma'am, occasionally I take a bath.

■ ■ ■

The waitress wondered why the elderly man was eating while his wife merely stared out the window.

"Aren't you hungry?" she asked the lady.

"Sure am, daughter," was the reply. "I'm jest a-waitin' till Paw gits through with the teeth."

■ ■ ■

Why are you wearing your glasses to bed?

I want to get a better look at the gal I dreamed about last night.

"Wish we had a fifth for bridge."

"You don't need a fifth for bridge, you dope."

"Well, make it a pint, then."

■ ■ ■

"Marry me, Richard! I'm only a garbage man's daughter, but—"

"That's all right, baby. You ain't to be sniffed at."

■ ■ ■

"Everyone is crazy over me," said the first floor inmate.

■ ■ ■

Sadie: "What shall I do? I am engaged to a man who simply can't bear children."

Suzie: "Well, you mustn't expect too much of a husband."

■ ■ ■

Agent: "Sir, I have something here that will make you popular, make your life happier and bring you a host of friends."

Bill: "I'll take a quart."

■ ■ ■

Little Tobey was telling his mother about the day in school. "Mother," he said, "today our teacher asked me whether I had any brothers or sisters and I told her I was an only child."

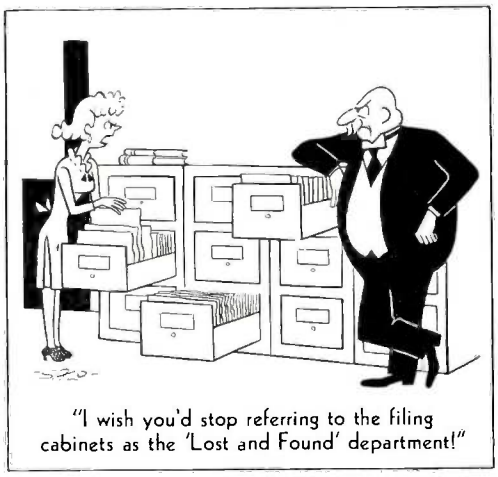
"And what did she say?" asked his mother.

"She said, 'Thank goodness!'"

■ ■ ■

"How is it Bill never takes you to the movies any more?"

"Well, one evening it rained and we stayed home."



"I wish you'd stop referring to the filing cabinets as the 'Lost and Found' department!"

"Ya know, I'll bet I'd look real good in one of those doorman uniforms!"

The minister arose to address his congregation. "There is a certain man among us today who is flirting with another man's wife. Unless he puts five dollars in the collection box, his name will be read from the pulpit.

When the collection plate came in there were nineteen $5 bills and a $2 bill with this note attached: "The other three pay day."

■ ■ ■

Southerner: "Honey, would you mind if I kiss yo' all?"

Honey: "Ain't my lips enough?"

■ ■ ■

Comely Patient: "I want to be vaccinated where it won't show."

Doctor: "All right. That'll be $10 in advance."

Patient: "Why in advance?"

Doctor: "Because I might weaken and not charge anything."

■ ■ ■

"What would I get," inquired the man who just had insured his property against fire, "if this building should burn down tonight?"

"I should say," replied the insurance agent, "about ten years."

■ ■ ■

Help your wife. When she washes the dishes, wash the dishes with her; when she mops the floor, mop up the floor with her.

■ ■ ■

"We simply couldn't live without our darling dog," cooed the pup's proud mistress, "he's just like one of the family." "Which one?" asked the guest.

Three drunks came into a bar late one night, but one of them fell flat on his face inside the door. The other two stepped up to the bar and ordered Scotch and soda. "O. K." said the bartender, "and what'll your friend down there have?"

"Oh, nothing for him!" they chorused. He's got to drive."

■ ■ ■

During the proceedings, a friend of the widow asked her: "Did Mike leave you well fixed?"

"Shure, an' he did that. 'Tis fifty thousand he's after leavin' me."

The friend rolled her eyes heavenward. "Tch tch tch," she said. "Think of that. And him that couldn't read nor write."

"Yes," agreed the widow, shaking her head seriously, "nor swim."

■ ■ ■

A certain gentleman always avoided the smoking car when he commuted—couldn't stand smoking himself, and didn't like to see other people smoke. He found a seat in a non-smoking car one day, but to his dismay a man came in, sat facing him, and lighted up a big, black cigar.

Not wishing to make a scene, the first man waited till the conductor came around to punch their tickets. As he handed his ticket to the conductor, he nudged him and nodded to the brazen smoker. The conductor nodded back, took a second punch out of the ticket, and went on.

"I'd be glad to give you the raise your wife is demanding for you, Hoag, but my wife won't let me!"

"Now what does he want?"

Methods of Classifying Communities for Fire Insurance Ratings

(Continued from page 19.)

mation resulting from studies and analyses of the water system in question. Generally, sprinkler system installations must meet the minimum requirement of 15 pounds residual pressure on the top line, during a period of demand, of 500 g.p.m., and further, all such systems must be equipped with meters, valves and appurtenances of types approved and listed by the Underwriters' Laboratories.

■ ■ ■

Underground Storage

(Continued from page 20.)

of 1943, and two short pipe lines were laid, one connecting the wells to the company's main transmission system, the other connecting the wells to the Tulsa distribution system.

For the next two summers, when the load on the transmission system was small as compared to the winter load, the unused pipe line capacity was put to work transporting gas from far-flung fields in the central and southern sections of the state to the new Osage storage. Then, during the winter of 1943-44, a considerable amount of this stored gas was flowed back out to be utilized in the Tulsa system during peak load periods.

The Haskell storage, located in Muskogee County, is so located that it can serve three cities. Two main lines lead to Tulsa, and the gas also is furnished as necessary to Muskogee and Okmulgee.

The Haskell storage is estimated to have a capacity of about six billion cubic feet—almost four times the size of the Osage storage. Like the Osage storage, the Haskell storage also is in a former producing field. The field's development continued through 1917, and large withdrawals were made until 1925. At that time most of the wells were abandoned. However, a second drilling program was undertaken in 1926 and continued through 1934. There was still some production of the field up to the time the storage project was begun.

Although the first use was made of the Haskell storage in December, 1946, maximum operating pressure will not be reached until this fall. Wells, lines, scrubbers and other installations have been completed.

The operating range of the Osage storage is 450 to 250 pounds per square inch, and that of the Haskell storage is 320 to 175 pounds per square inch. Naturally, the storage pressures vary under different operating conditions. Maximum pressure under which the gas is stored is limited by the original rock pressure of the field; the pipe line capacity between the storage and the market limits the minimum pressure.

What is to prevent the stored gas from escaping through a gas well owned by some other person or company? That's one of the problems for the engineers and geologists. The general rule calls for the leasing of all land covering the storage area—and there is very little possibility of losses through other means.

■ ■ ■

Women Split No Wood in Findlay

(Continued from page 23.)

U. S. Department of Commerce, this number is almost evenly divided between users of natural gas and those using manufactured and mixed gas.

It would be unfair to say that the big turn-out for the Findlay celebration came to marvel only at the wonders gas was making possible in the kitchens of Findlay homes. There were exhibits showing the place of gas in industry and the "mechanical arts." The number was limited, but they served to get across the point that gas was more than a curiosity, that it had a place in industry. Quite possibly, however, the promoters of the fair would have been surprised to learn that gas companies today are serving more than a million and a half industrial and commercial users.

When the celebration came to an end, everyone said that the people of Findlay certainly knew how to make a success of things. It was reported that a good time was had by all.

Mostly Personal

(Continued from page 1.)

intendent of the local chapter, had seen fit to bestow membership upon four other members of the Mueller Co. organization who had performed highly satisfactory service during the time the plumbers were calking on the tapping sleeves. The other new members are C. W. Doherty, John J. Smith, Jack Chepan and Robert Taylor, all of the Mueller Co. engineering department.

Members are placed in good standing by reason of "having served the required time and expended the required energy in supervising the erection of the new home of the J. C. Penney Co."

* * *

The photograph of the drive corporation stop in the last issue of the Mueller Record brought back a memory to W. H. Martz of Michigan City, Indiana. He writes:

"About 12 years ago our city water department removed all service lines and replaced them with copper in the main street of our city as a new concrete pavement was to be laid, and I was one who was renewing these lines.

"During this replacement, I came upon a corporation stop that, after careful examination revealed no thread and was of a different shape.

"The men were cautioned not to strike or molest any connection to it, this being in front of a theater building, while I went to notify the department.

"During my absence, one of the men struck it with a hammer, and when I returned, water was spouting about 30 feet high. You can imagine the hurry up call to shut off valves of mains surrounding that city block, so that a new, modern corporation stop could be installed.

"Tracing back, it was learned that it had been installed about 50 years before we discovered it."

And Floyd V. Johnson, Mueller Co. representative of Nashville, Tennessee, sent along some additional information on the stop shown last time. It was a 1-inch stop, which was installed at Nashville about 1880 and gave good service until 1947, at which time it evidently was damaged by a paving crew.

In addition, he also forwarded a photograph of an old relic (see cut), a three-quarter inch drive ferrule, which was installed in Louisville in 1864. It was

removed in March, 1948, after having given splendid service for some 84 years. Not bad.

* * *

If you keep a file of the A.W.W.A. *Journal*, we'd like to recommend an article by L. A. Jackson, manager-engineer of the Little Rock, Arkansas, Municipal Water Works, "Historical Development of the Fire Hydrant," which appeared in the September, 1944, issue (Vol. 36, No. 9). So far as we could learn, it's one of the most authoritative articles on the subject ever written. To say that we "drew heavily" on it as a reference for our own article on hydrants in the last issue is to put it mildly. It's practically the *only* concise history of fire hydrants.

Mr. Jackson also is represented in this issue in an account of a miniature filtration plant, which is serving to point out to residents of Little Rock just what a water works does in making possible pure, wholesome water. It's an excellent public relations aid.

* * *

Our big ears are still burning slightly over an error which we made, and, worse, compounded. We can only say that *Water & Sewage Works* first made the mistake. In any case, here's the correction. James G. Carns is meter and equipment engineer, American Water Works, New York City. He is *not* J. G. Carnes, Jr., Water Works Service Co., Inc. Guess that took care of the matter, we hope.

* * *

Detailed plans of the three houses shown in the article on Frank W. Sharp

(see pages 7, 8 and 9) may be obtained from *Better Homes and Gardens.* The house shown on page 7 is five star home No. 1807B; that on page 8 is 1807C, and that on page 9 is 1807D.

* * *

For the documentary photographs of the "world's championship tapping contest" we are indebted to James Kelley, Irvington, New York; Malcolm Merritt, Jr., assistant editor of *Water Works Engineering;* and the Westchester County Publishers, Inc., publishers, Inc., publishers of the Daily *Times* of Mamaroneck, New York. The *Times* published the photograph of Nick Iannarelli and Pat Gabriele on its front page.

Far be it from us to show a partisan attitude on this affair, but we do want to express our sympathy to Nicholas Casolara and Sandy C. Martin, who made their tap almost three minutes under the time of the winners and then were disqualified.

We had hoped to run a shot showing the handsome trophy donated by Al Kassay, but every photograph sent us chopped the trophy in two. Since the Westchester Water Works Conference is making this an annual attraction, perhaps we'll be able to get a close-up next time.

* * *

A number of vacation-minded readers have inquired as to the location of our cover shot last issue. We thought that particular water falls was pretty well publicized. Anyway, the photograph was taken in Yosemite National Park. To those who may want to learn the location of this month's cover, including telephone number, we can only say: "Sorry, boys, we don't know, either."

* * *

From our mail it appears that almost everyone has at least harbored the idea of collecting Indian artifacts. Since we found our one and only arrowhead at the age of 12 and then lost it, we're leaving the collecting to Ben Nussbaum, the Fairbury, Illinois, water superintendent.

Alvin Bugbee, Trenton Superintendent, Retires

Had Headed City's Water Department Since 1904.

ALVIN BUGBEE'S RECENT resignation as manager of the Trenton, New Jersey, water system ended a career that began literally in the city's horse and buggy days.

Mr. Bugbee, now nearing 77 years of age, took over the management of the system on May 1, 1904. He recalls that he drove around to the various repair and improvement jobs that came under his supervision in what was called a "six poster." The vehicle had six posts supporting the top.

Those also were "horse and buggy days" for the Trenton water department, but in the 45 years Mr. Bugbee has been water superintendent, he has had a considerable part in expanding the system into an enterprise valued at more than $10,000,000, from which the city derives revenue exceeding $800,000 annually. The plant has been expanded to produce a maximum of 30,000,000 gallons of water daily for the 175,000 persons and the many industries in and near Trenton —and plans have been made for a greater capacity.

Mr. Bugbee was born at Oshkosh, Wisconsin, and went east with his parents as a small child. Later they moved to Wilmington, and he took an engineering position with a bridge company there. He resigned a position in the New York engineering department of the American Bridge Company to take the city position at Trenton.

Commenting on the resignation Mayor D. J. Connolly said: "I accept his resignation regretfully and, at the same time, I understand how deserving he is of it."

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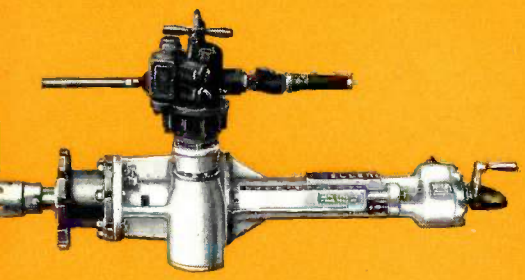

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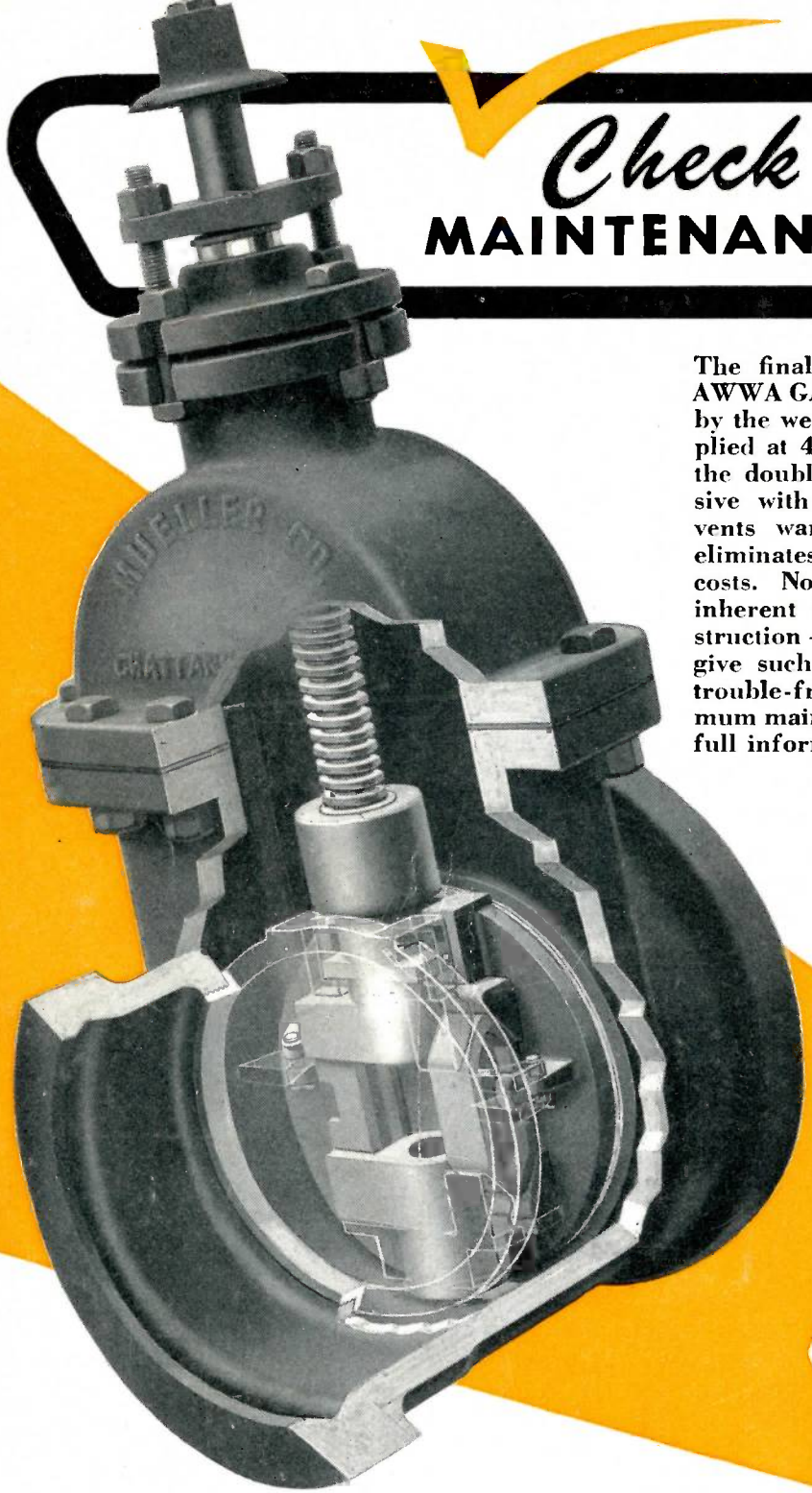

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