

Mueller Record

NOVEMBER • 1967

**SEARCH
AND
RESEARCH** Page 3



MUELLER RECORD

NOVEMBER • 1967

Joe Penne
Editor

Published by
MUELLER CO.
500 W. Eldorado St.
Decatur, Illinois 62525

Member:
Central Illinois Industrial
Editors Association
and
International Council of
Industrial Editors

Contents

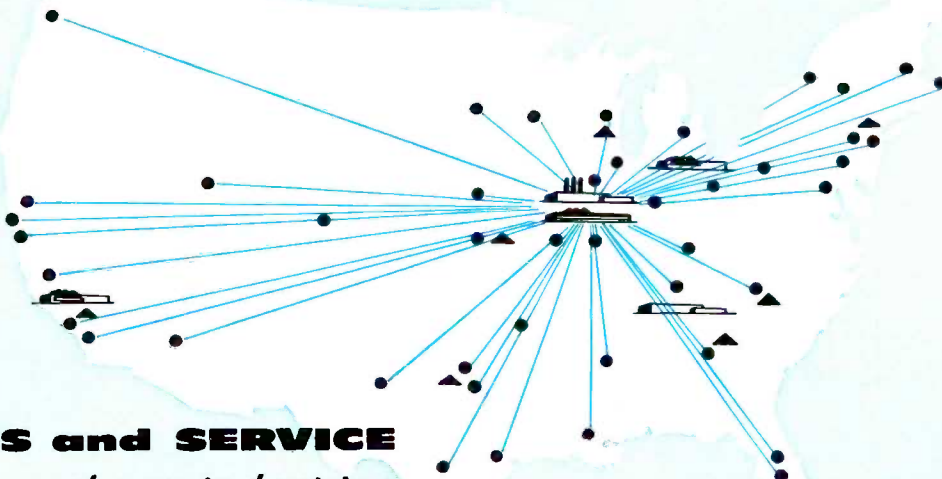
- 3 **SEARCH AND RESEARCH**describes unique testing facility for Mueller gas products.
- 8 **BEGINNING ITS SECOND CENTURY OF SERVICE**outlines the first 100 years of the Southern California Gas Company.
- 10 **MUELLER MOBILE SCHOOL RETURNS TO NATIONAL TOUR**tells of the past and the plans of the No-Blo demonstrations.
- 12 **COOL FUEL**looks at some of the LNG activities of SDG&E.
- 14 **MUELLER PRODUCTS AD**
- 15 **TRAINING BY DOING**briefs the reader on a school introduced by Northwest Natural Gas Company, Portland, Oregon.
- 18 **BLUE FLAME WHISPERS**industry news briefs.
- 19 **STRICTLY OFF THE RECORD**is to be taken lightly.

OUR COVER shows a number of plastic tees under pressure and undergoing exposure to the elements at Mueller Co.'s Outdoor Research Station.

Since 1857

Quality Products for the
Waterworks and Gas
Industries

MUELLER® SALES and SERVICE
...serving the water and gas industries



SEARCH AND RESEARCH

Outdoor Laboratory Is Another Extension of Mueller Co.'s Engineering Program

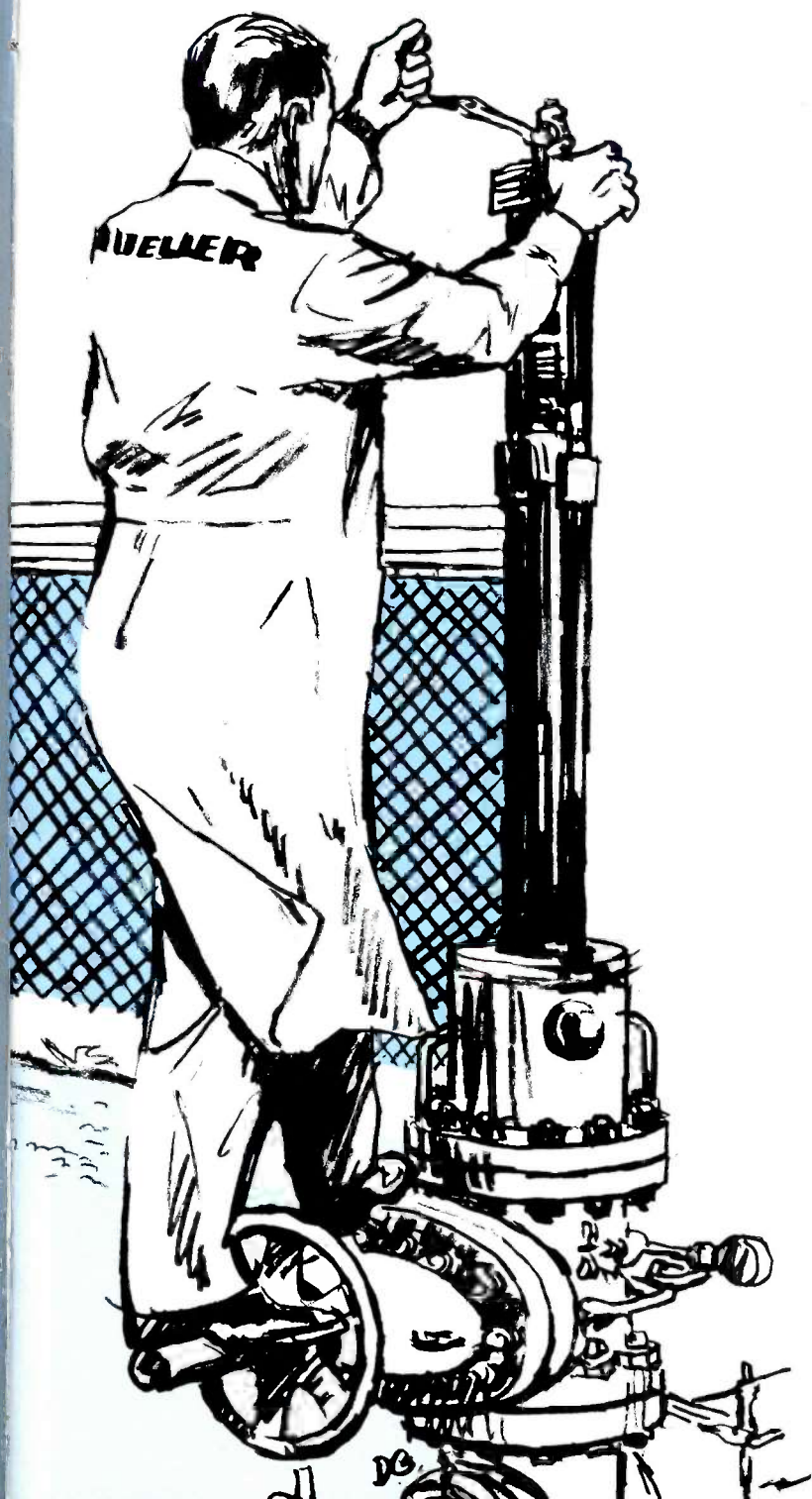
Some things can only occur with the passing of time—so you wait, not idly and usually not patiently, but you watch and wait.

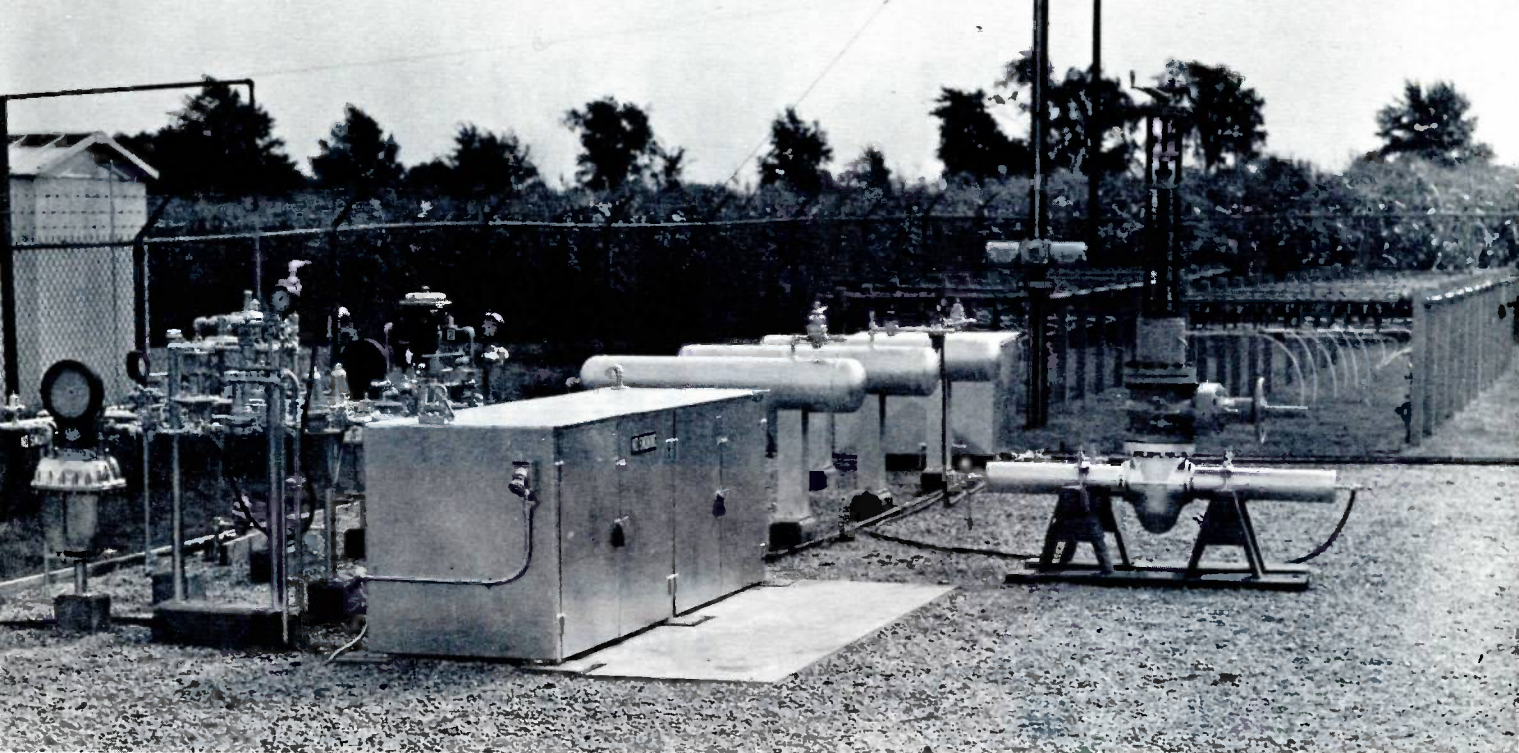
This "Waiting Game" is played seriously by Mueller engineers and technicians, but while they are waiting they are noting the things that are continually happening at the company's outdoor research laboratory near Decatur. Seldom will the casual observer driving past on the gravel road realize that important things related to the gas industry are constantly taking place there. The gate may not be unlocked for days, but the action above and below ground is being monitored and watched by instrumentation, and through periodic selective testing, Mueller engineers are able to evaluate what the elements, use, and operation have done during the passage of time.

Research work at this facility unprotected from the weather is a part of the general testing and research program carried on by the Mueller Engineering Division. The material and information gained through the selective studies and special projects at the outdoor laboratory supplement and substantiate other data and knowledge that have been accumulated during Mueller Co.'s more than 100 years of operation and experience.

Products long a part of the Mueller line, as well as new products, are checked, tested, and reexamined at the test laboratory at the company's Engineering Offices in Decatur. Through mathematically designed tests and sophisticated setups designed to duplicate or exaggerate a particular situation or installation, products' strengths and weaknesses are measured and observed. The man-and-machine produced situations in the laboratory are exacting and reliable, but the outdoor testing is a form of double check and gives the engineers material with which to correlate tests.

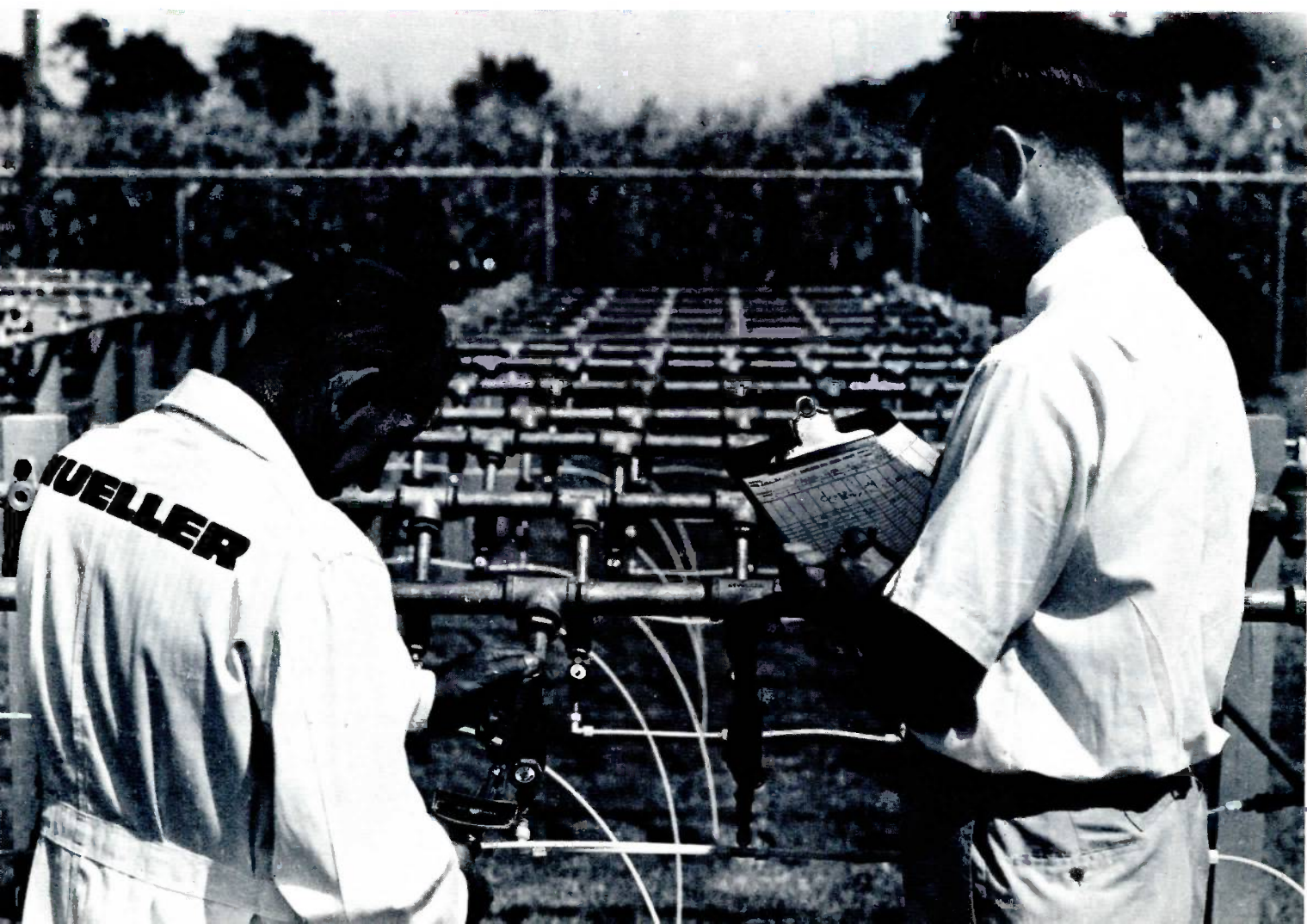
The use of "bench marks" or points of reference for indoor tests was deemed important enough to lead to the construction of the Mueller Outdoor Research Station in 1959. The site was selected primarily because of a nearby transmission line which makes available gas pressures up to 800 pounds per square inch (psi) and in quantities unavailable in most places. Adjacent to the Mueller research layout is a regulator station for the





Among the numerous tests on these rows of gas stops is a check of the turning force necessary to open and close each one. Each bit of information gained goes toward building the complete case history on every stop.

This portion of the research station shows some of the instrumentation and controls where gas from the transmission line and the local distribution system enters the Mueller site.



The controlled tests on the gas stops are carried out under static conditions or with gas flowing through them. Each is carefully installed, identified, and valved.



local gas distribution system which provides another necessity—a substantial supply of gas at pressures of less than 150 psi. Due to the unusual setup, supplies of gas are available either odorized or unodorized. In addition, Mueller has equipment for adding odorants in determined quantities so that it is possible to test whether odorants have an effect on some products.

MEASURED, RECORDED

The characteristics of the gas entering the Mueller Research Station on the two lines are carefully measured and recorded according to volume, flow, temperature and pressure. In addition, each line is protected with a Mueller Gas-Phase which automatically shuts off a line that has excessive, sudden, high flow. After passing through the various test setups, the gas is again metered and returned to the distribution system at 15 psi.

This research facility not only provides a place for specialized programs but also makes available a place to dig trenches and ditches which are needed for some projects. In these earthen surroundings, technicians and engineers set up drilling machines and line stopping equipment to check their ease of handling in the ditches. These men realize that it is one thing to attach a line stopping machine to a fitting on a concrete lab floor where heavy hoists are at hand and that it is something else to do it within the confines of a ditch. For this reason your "MEN FROM MUELLER" dig and work in a ditch and seek the best ways

for handling our equipment while searching for improved methods to make the machine simpler to operate in the limited area of an excavation.

FIELD SITUATIONS

In other ditch situations, technicians might run high pressure tests to check the durability of a covering for a line stopper fitting when the thermometer registers more than 100 degrees. A few months later you might find an engineer running a large drilling machine on a sub-zero day to see how a particular lubricant reacts to frigid temperatures.

At other times, it might be weeks before you see anyone at the station—but there are things going on. Except for the regulators, meters and equipment box, the most obvious thing you will see is a maze of pipes mounted on posts above ground. These banks of gas stops and fittings with the name "Mueller" on some and the names of its competitors on others are all carefully marked, valved and gauged. They don't seem to be serving any particular purpose, but to the trained technician and engineer each stop has a case history and each is significant. The test products are specially programmed and selectively checked, and as each bit of new information is gained and correlated with previous data, the engineer gains more material to supplement and reinforce previously-known facts.

Many of the stops are closed and tested under static conditions, while others have gas continually flowing through them. Periodically, some may

be removed from the manifold and taken to the Engineering Office lab to be microscopically examined for wear and deterioration. Others will remain in the system and be checked later for wear that may result from longer use. Methods vary, but all tests are designed to give precise, accurate information.

BURIED LINES MONITORED

One of the most interesting tests underway at this time involves piping material and the effects of ground movement, moisture and temperatures upon service lines. Mueller has installed a number of simulated service lines using various types of plastic, copper, and steel pipe, with different coatings. These pressurized lines use many kinds of Mueller tees with various types of connections and outlets. Each line runs 60 feet and then comes back above ground with a meter riser pipe and a stop on the end, just as it would be if it were installed on a home service. These lines have strain gauges mounted on them which are read electronically, recorded, and calculations made to determine the stress on the lines as the result of tensile and compression changes which are taking place because of ground movement and weather conditions. Information of this type has not been generally available in the industry and Mueller engineers want to know.

Other service lines, tees and curb valves have been buried for some time in a nearby plot, but interest in them is not dead. During the time these Mueller products are subjected to

Handling and operating a large line stopper machine can sometimes be difficult in the confines of a ditch. Seeking the most efficient methods, your "MEN FROM MUELLER" literally place themselves in the field and operate the machines at the outdoor station.

weather and ground conditions, they are being checked regularly, and ultimately they will be taken out, returned to the lab and examined to determine resistance to corrosion and deterioration.

The completion of a test on a particular product at the research station does not mean that this item has passed its final examination or that a new piece of equipment is now fully cleared for introduction to the industry. This testing is just another Mueller safeguard.

W. R. Leopold, Director of Engineering, says that the research station is an extension of the company's total research and development program. "It reinforces what we have already learned or known, in many cases. In other instances, it tells us something new, but in both circumstances the work at the outdoor research station helps us do a better total job of producing a top quality product that is thoroughly tested and proved before it enters the customer's system," he said.

Today, one of the greatest challenges to the gas industry and its suppliers is keeping pace with progress. Gas companies have always demanded the best, and it is the responsibility of manufacturers to continue to meet these demands. A modern company must continually reevaluate its established products and look at



In the upper photo, a technician takes strain gauge readings electronically to determine the stress on a number of simulated services.

In the center photo, typical installations have been made, using a variety of tees and methods for connecting the buried service lines.

The bottom right photo shows Manager of Engineering Services George F. Binkley (standing) and Senior Project Engineer Larry Luckenbill talking to Technician Ed Turner as they conduct a "ditch" test. On the left can be seen the instrumentation for the simulated service lines.

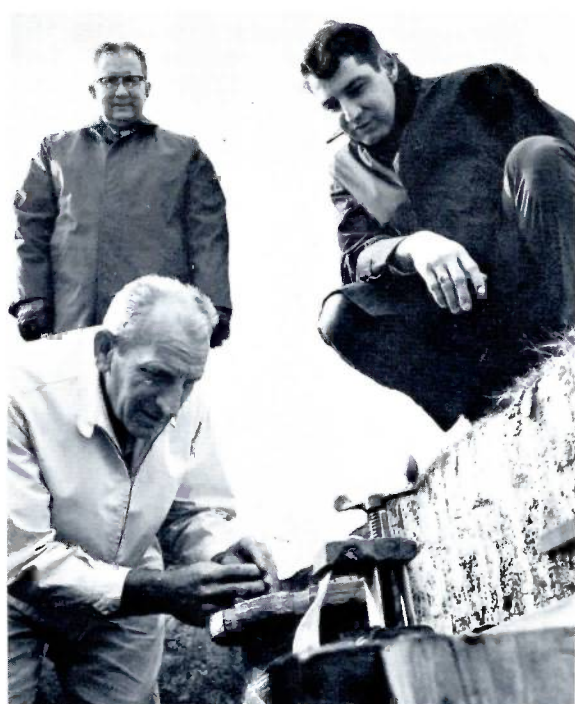
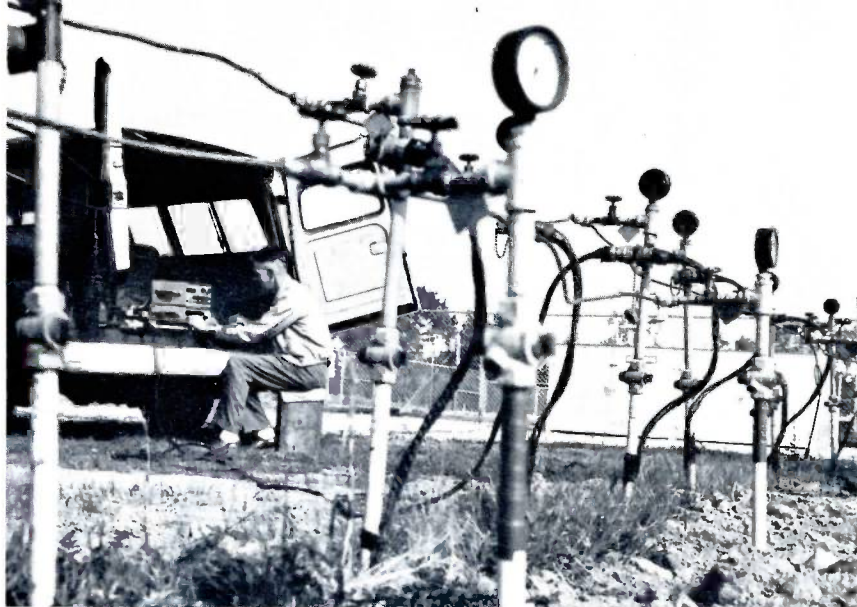
them in relation to new methods and new materials that are being introduced. In addition, a company like Mueller must continue to play the part of a leader, searching for new and better ways to do a job. An appraisal of a product includes cost—not just initial price, but total useful life cost which takes into account dependability and maintenance.

To make these evaluations a company must have a full research and development program. Also it takes a total testing program, and it is here that the Mueller Field Research Station—believed to be unique among suppliers of the gas industry—plays such an important role.

Complete testing requires time. To prove or disprove an idea, a design change or a new product through a complete testing program demands patience as well as time. Sales and Manufacturing divisions grudgingly give Engineering the time it requires; and the customer gives time reluctantly. Some say we take too long as we strive to prove a product before it enters the customer's system.

Latin writer Publilius Syrus, in one of his time-proven maxims written before the time of Christ, said, "It takes a long time to bring excellence to maturity."

It takes a long time to prove excellence in a product, too.



BEGINNING ITS 2ND CENTURY OF SERVICE



SOUTHERN CALIFORNIA



gas

COMPANY

Due to the great influx of people to California, residents of the state joke about the difficulty in finding a true "native" Californian. Qualifying as one of the oldest residents of the state's business and industrial community is the Southern California Gas Co. which recently celebrated its 100th anniversary of operation.

In 1867, only 17 years after California became a state, the first Los Angeles Gas Co. was born, with 25 gas street lighting customers around the old Plaza near Los Angeles' Olvera Street. One hundred years ago the five gas company founders had the important objective of making streets safe at night. A century ago the first gas serviceman was seen making the rounds on Broadway aboard his bicycle.

Today—100 years later—the gas company has nearly 2,000,000 customers in many of the cities from Fresno County to the Mexican Border and from the Pacific Ocean to the California-Arizona border. It has the important responsibility of providing much of the energy needs of more than 6,400,000 southern Californians.

The story of the gas company's first 100 years, which included many changes in the southern California gas industry, actually started in a little plant adjacent to the old Los Angeles Plaza. Here gas was manufactured for street lighting purposes and here the "Southland Gaslight Era" was born.

As colorful as that era was, it was short-lived—gas had too much potential to remain only in lamps. In 1883 the gas company began selling and renting gas cooking stoves. Gas cooking led to gas heating, and birth was given to the modern gas era.

As the 1900s got underway, the gas company made abrupt changes because of the availability of natural gas, following its discovery in the fields of southern California.

By 1913, the Southern California Gas Co. was mixing natural and manufactured gas and by 1927 the company's entire system had been converted to natural gas.

During the next 20 years the gas company continued to grow, but the company's management knew that the growth yet to come would be so great that huge new supplies of gas would have to be available some day

for the ever-growing southern California market.

In 1947 Southern California Gas Co., along with its affiliated companies in the Pacific Lighting system, began laying hundreds of miles of pipeline that stretched to the California-Arizona border where they met with the lines of their new supplier, El Paso Natural Gas Co.

On Nov. 13, 1947, natural gas from the abundant fields of the southwest began to flow into southern California. As the gas demands continued to grow, the Transwestern Pipeline Co. constructed an independent line to supply additional gas. By the 1960s this company's two out-of-state suppliers increased their deliveries even further.

Today, Southern California Gas Co. has a vital role in the residential, commercial and industrial development of southern California as it meets the fuel needs of millions of people who cook, heat and air condition with gas and as it serves hundreds of industries that have innumerable uses for this dependable fuel.

Today, the Southern California Gas Co. is looking forward to its second



Civic and community leaders witness the placement of a time capsule and plaque commemorating the 100th Anniversary of the Southern California Gas Company near the original site of the investor-owned utility. Universal Pictures starlet Susanne Benton fills the capsule with the aid of F. M. Banks, (left) Chairman of the Board of the gas company, and John Anson Ford, Chairman of the El Pueblo de Los Angeles State Historical Monument Commission.

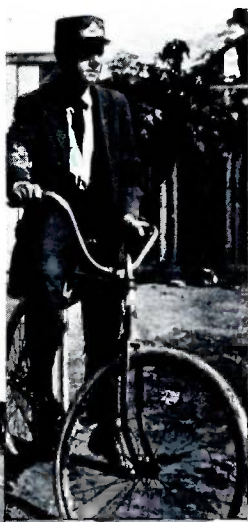
century when natural gas will still be the most modern fuel, providing even more services to its millions of customers.

Chairman of the Board and Chief Executive Officer F. M. Banks said: "Indeed, the Southern California Gas Co. has grown from modest beginnings to keep pace with the vibrant population complex it serves so efficiently.

"Yet, as we analyze the future, the paramount objective to keep in mind is that we continue to meet challenges and continue to grow. To do this we must incorporate technological advances and contemporary business ideas into our daily operations.

"Unquestionably, our past has been gratifying. But our future—I am convinced—will be even brighter if we use the lessons of the past in conjunction with new data and a positive approach and apply them to the needs of the future.

"Only in this way can the outstanding contribution the Southern California Gas Co. has made to the natural gas industry and to its southern California customers in its first century be surpassed in its second century."



These vehicles are symbols of the growth of the Southern California Gas Company, which was founded in 1867. The gas serviceman on his bike was familiar to the 25 gas street lighting customers who were the first users of the company's service. The lower photo shows only a portion of the equipment and manpower needed to serve the 6,400,000 Southlanders in today's system.



MUELLER NO-BLO

MUELLER MOBILE SCHOOL RETURNS TO NATIONAL TOUR

"I want to commend your company," says one gas superintendent.

"We would like to thank the Mueller Co. for the excellent presentation and demonstrations of the No-Blo equipment," said a company vice president.

"... a very informative session and display," comments a general foreman.

"It was my privilege to attend this school for one day. The school was well conducted, and from all reports it was well-received and profitable for those attending," writes a division manager.

With written endorsements such as these from gas company men to send it off, the Mueller No-Blo® Mobile Training School recently began the last leg of a tour which will end this spring in a full circuit of the United States.

The demonstration of Mueller No-Blo products, as presently set up, first took to the road in October of 1965, and since that time about 6,500 gas distribution men across the country have participated in the school which instructs them in the proper, safe and economical uses of Mueller No-Blo equipment. No-Blo is the registered trade name for Mueller-designed products which allow work to be done on gas distribution piping in a safe manner, under pressure and without interruption of customer service.

The familiar blue Dodge van has traveled more than 35,000 miles in order to carry the important information to the men who are responsible

for safely installing and maintaining millions of gas services in this nation.

By the time the school came back to Decatur for a summer layoff, more than 250 day-long demonstrations had been conducted. During July, August and September, gas company crews were busy in the field and couldn't be spared for class, but this brief respite gave "Your Men from Mueller" a chance to refurbish the equipment and to give the truck a mechanical check-up and add some new equipment and products.

It was back on the road as of October 1st, opening with its first show of the season in Minot, North Dakota. From there it will cover both Dakotas, Minnesota, Iowa, Nebraska, Kansas and Missouri and wind up this spring in southern Illinois.

When this segment is completed in the spring, the school will return to Decatur where its entire program

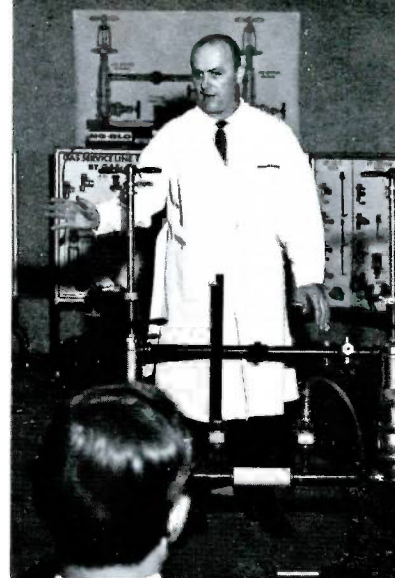
will be studied, reviewed and evaluated. Following this, a schedule will be made for introducing a new series of demonstrations which will include new subjects, the latest new products and the most current methods of using Mueller fittings and equipment.

Acceptance of the No-Blo School by the gas industry for so many years has been gratifying to Mueller Co.

The first demonstrations began in the late 1940s when gas distribution projects were beginning again in earnest after delays due to World War II. The No-Blo method of handling gas was relatively new at that time, and gas distribution men were hungry for information and help. Recognizing this need, Mueller set up training sessions at its plant in Decatur, Illinois, but they were limited in scope because of being stationary. As demand and interest continued to rise, Mueller decided to take the demonstrations to the men, rather than having them come to it. Two portable units were made available early in the 1950s, and these were set up in central locations in major cities where they could draw from a number of companies in a general area. Mueller knew, however, that it was still taking too much of the time of employees to travel to the schools, so it again improved its method and introduced the mobile unit which could be taken easily from



Jackie McWard, Secretary in the Advertising and Sales Promotion Office, locates the Mueller No-Blo demonstration unit during its Midwestern sweep. The dark flags indicate locations of completed schools and reveal the national coverage of the mobile unit.



Wayne Black discusses some of the fine points of the Mueller line stopper equipment.



Tom

Cec

one company to another or even to districts within the same organization. In 1952 a station wagon towing a trailer began covering the country, and since that time, at various intervals, Mueller has been discussing and showing the best ways to use its equipment with mobile schools.

Through the years, many names have been associated with the No-Blo schools, but those of Cecil Williams and Tom Little are most closely linked with the recent tour. Cec, who had handled most of the demonstrations since 1965, is now on a field sales assignment in New England and lives in Ashland, Massachusetts. He was capably relieved by Tom, who now lives near Orlando, Florida and has a field sales assignment in that area.

As these men began preparing in the early summer for their field assignments, Dave Linn and Wayne Black moved into the duties as No-



Dave Linn, No-Blo Demonstrator, loads some of the school's equipment as he prepares to move to another location and another audience made up of gas distribution men.

Blo School instructors and are now handling the present tour through the Midwest Sales District.

Both Dave and Wayne are natives of Decatur, but Wayne has spent little time there because he spent 21 years in the U. S. Army. Five years prior to his discharge, he was at the University of Illinois where he served as an ROTC instructor. Among many experiences in the Army was a year of study at a service language school, so if you need a No-Blo demonstration delivered in Japanese, call on Wayne.

Dave Linn is a graduate of Southern Illinois University and spent three years in the Army. For many months these men have been working almost

exclusively with Mueller gas products. This specialization includes research, classroom study, actual field work and time in the factory production areas where the No-Blo products are manufactured.

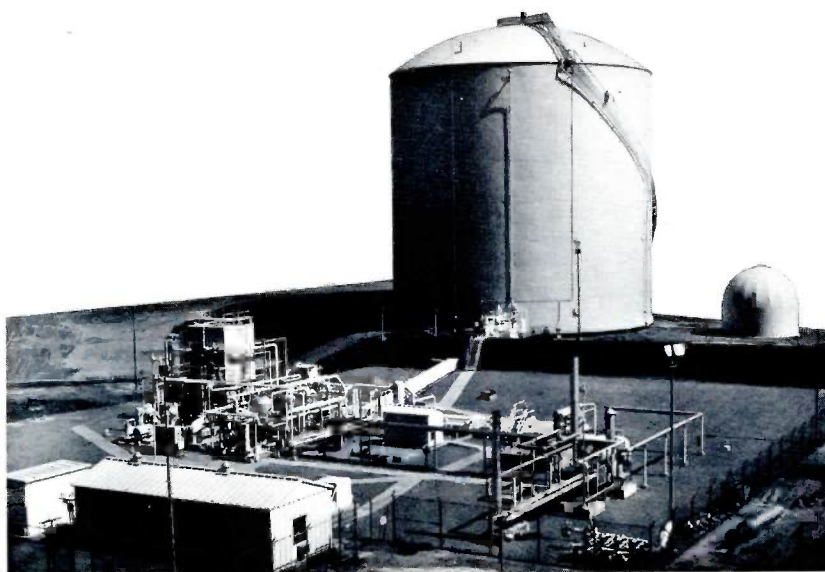
During succeeding months, Dave and Wayne, along with their No-Blo School, will be visiting and working in the Midwest. If you have a problem, they welcome your inquiries and are pleased to provide their help.

This means of contact with the gas industry has given Mueller insights into general problems and has brought the company new opportunities to be of service—just as it serves the industry through its No-Blo demonstrations.



COOL
FUEL

Liquefied Natural Gas Furnished Portable Supply



SDG&E, an industry leader in the liquefaction and cryogenic storage of natural gas, put this LNG plant into operation in 1965. The 175,000 barrel storage tank holds the equivalent of 620 million cubic feet of natural gas. It would take 600 tanks of the same size to hold this amount in vapor form.

This is one of the two tankers used to transport 25,200 gallons of liquefied natural gas from Chula Vista, California to Vancouver, British Columbia. The LNG was used by Cryogenic Enterprises, Ltd., to start gas service to the community of Squamish.



San Diego Gas & Electric Company's liquefied natural gas (LNG) plant, built primarily for peak shaving purposes, has stimulated research into new applications of LNG by providing a ready source of fuel supply.

Studies of this versatile super-cold product, which is liquefied at 258 degrees below zero Fahrenheit, are underway on several fronts.

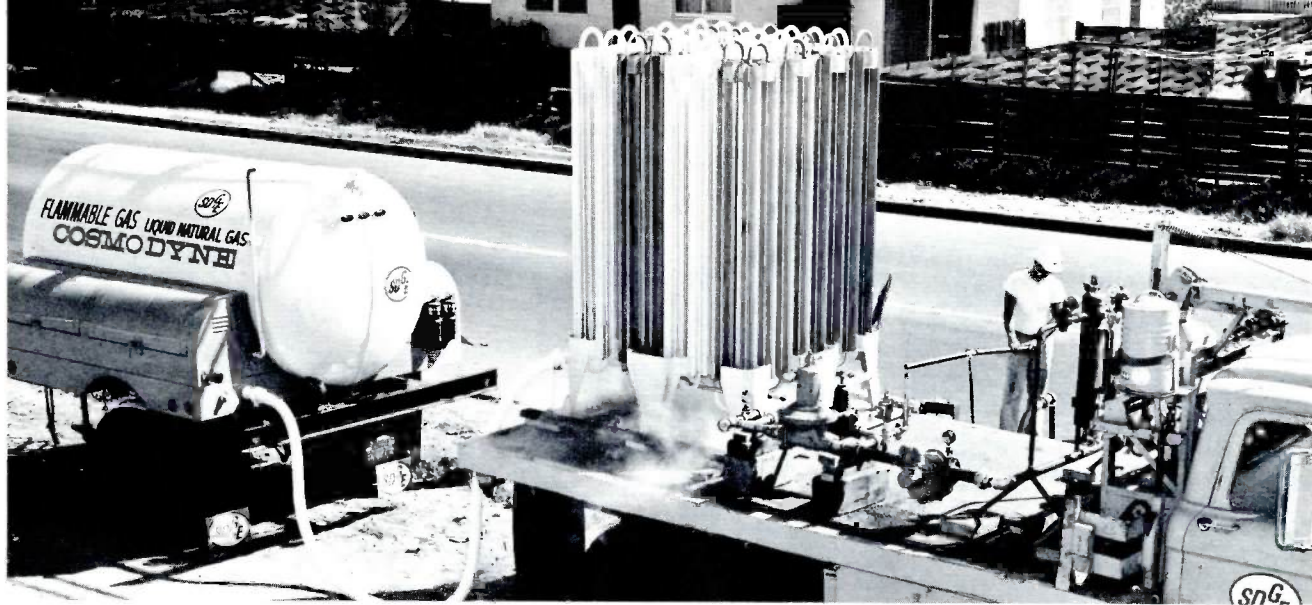
While keeping close watch on all developments in the field, SDG&E has been directing its own efforts toward demonstrating the technical and economic feasibility of using LNG as a portable fuel.

What makes it particularly attractive for such use is that it occupies 1/600ths of the space required in the gaseous state. This permits compact storage of large quantities of the gas, which can be transported easily and safely in cryogenic tanks. Vessels suitable for this purpose are readily available in various sizes from several sources.

Because LNG is clean-burning, company engineers currently are testing it for use in motor vehicles as a possible means of reducing smog. The tests also will determine the operational efficiency and costs of LNG as compared with gasoline.

On another front, SDG&E has conducted considerable research into the use of LNG as a transportable fuel to supply communities beyond the economical reach of existing gas lines and to serve communities that have been purposely isolated from

MUELLER RECORD



This trailer tank of liquefied natural gas (LNG) from San Diego Gas & Electric Company's LNG plant in Chula Vista, California, recently supplied the community of Poway for 3½ hours. Wisps of frosty air circulate beneath the truck-borne

atmospheric vaporizer as the supercold LNG—minus 258 degree Fahrenheit—flows into it to be regasified before entering the distribution system.

existing pipeline supplies to permit construction work.

SDG&E first demonstrated how LNG could be used to serve remote communities when the company trucked 600 gallons of the product to Poway, California to supply 1,700 gas customers while a construction crew installed a valve in the main transmission line from which the community normally receives gas.

The LNG was carried to the community in a cryogenic trailer furnished by Cosmodyne Corporation of Torrance, California, a manufacturer of cryogenic tanks, trailers, pumps, vaporizers, and other equipment for the aerospace industry and cryogenic gas manufacturers.

The trailer was equipped with pressurizing equipment for removing LNG from the tank. A star-fin atmospheric vaporizer was used to regasify the LNG. Other equipment included gas control valves, pressure reducing valves, relief valve, thermometer, displacement gas meter, odorizer, and interconnecting piping, all of standard proven design.

PORTABLE SUPPLY

The portable LNG system was set up on a roadside right-of-way at the junction of a 400-psi transmission line and a 60-psi distribution line. A conventional line tap was made in the distribution main to receive the gas from the portable supply.

The flow of LNG from the cryogenic trailer was started by opening a control valve to let liquid into the

pressurizing coil. This apparatus converted the LNG into gas, which was fed into the top of the tank to build up pressure. This pressure forced the LNG into the vaporizer, where it was gasified by a ambient heat. The gas flowed through a pressure reduction valve, displacement gas meter, pressure gauge with odorizer, and into the distribution system.

The 600-gallon supply of LNG—equivalent to about 50 thousand cubic feet of vaporized gas—would have supplied customers in Poway for approximately six hours. The actual use, however, lasted three and one half hours, during which 370 gallons of liquid were consumed.

During the substitution, a spot check was made of customer appliances in the area. All operated normally.

In a more recent project, SDG&E supplied 25,200 gallons of LNG—equivalent to 2,100,000 cubic feet of gas—to Cryogenic Enterprises, Ltd., of Vancouver, British Columbia, in response to an urgent telephone request.

The LNG was trucked 1,500 miles from SDG&E's plant near San Diego to Richmond, B.C. for use in the community of Squamish, 40 miles north of Vancouver. It was believed to be the longest overland haul of LNG yet made.

TO MEET DEADLINE

The LNG was needed to meet a start-of-service deadline in Squamish

when deliveries from Cryogenic Enterprises' new LNG plant were delayed by unforeseen startup problems. The deadline was only 10 days away.

The Canadian company had operated its new plant, but additional LNG was needed to guarantee a continuous gas supply to customers and to demonstrate the availability of the product from other sources in event of an emergency plant shutdown.

The San Diego Gas & Electric Company agreed to provide the LNG if Cryogenic Enterprises could obtain necessary clearances from various regulatory agencies to permit hauling and export of the LNG, and if Cryogenic Enterprises would furnish the trucks for hauling the gas.

Cryogenic Enterprises already had one tanker. It obtained a second from Cosmodyne Corporation. Tractors and trailers were obtained from Allyn Transport Company of Los Angeles and from another firm in Vancouver.

Within four days from the initial telephone request for LNG, two insulated tank trucks were at the SDG&E plant to pick up their first load. By driving day and night, the truck crews delivered that load and were back for seconds four days later.

The overall operation was considered to be an outstanding demonstration of the versatility that LNG provides to a gas distribution company and one that indicates the tremendous impact that this new product may have on the industry.

there are now more than 20 No-Blo® Methods

If you're looking for new ideas, safe and proven methods and equipment for working on gas mains and service lines, you'll find them in this new brochure from Mueller Co.

This brochure contains brief descriptions of what can be done and what is being done with each

No-Blo procedure — from stopping off large lines to changing meters or regulators.

If you'd like copies for a "refresher" course for your gas service people, write us. We'll be pleased to send you enough copies to satisfy your needs. Ask your Mueller Representative or write us direct for Brochure #800.

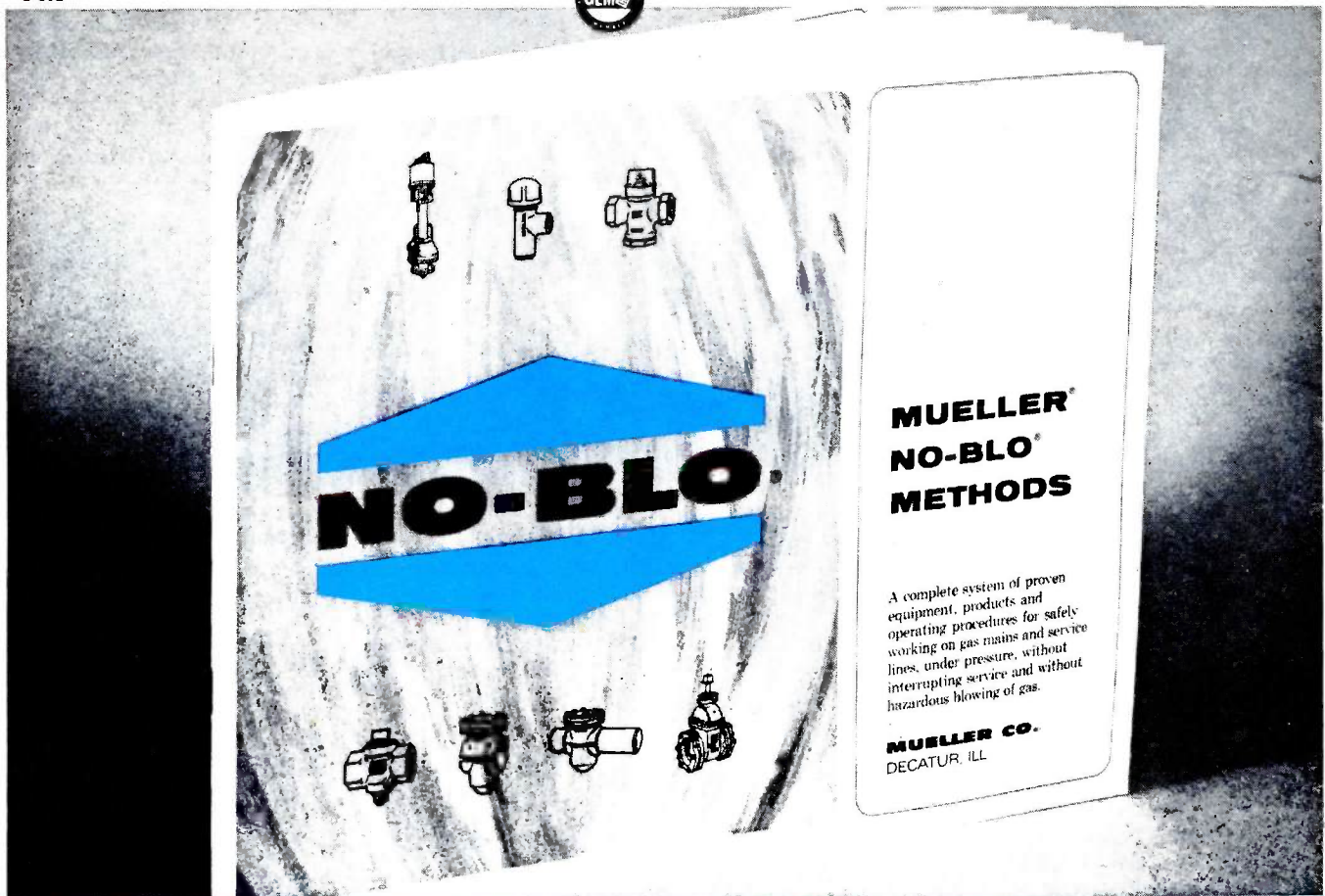
MUELLER CO.

DECATUR, ILL.

FACTORIES AT: DECATUR, CHATTANOOGA, BREA (LOS ANGELES), MUELLER, LIMITED, SARNIA, CANADA

serving the water and gas industries since 1857

G-612



MUELLER NO-BLO METHODS

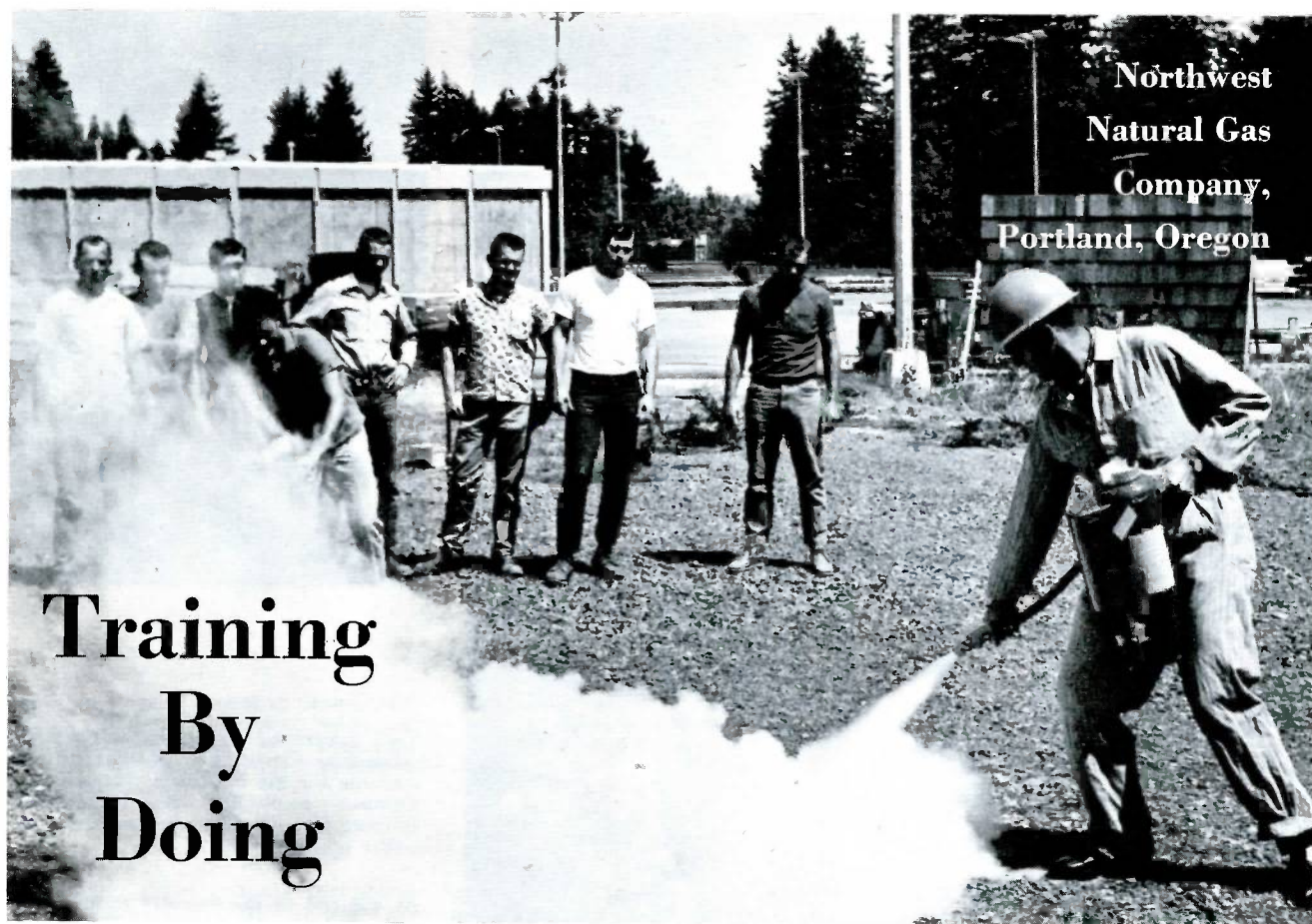
A complete system of proven equipment, products and operating procedures for safely working on gas mains and service lines, under pressure, without interrupting service and without hazardous blowing of gas.

MUELLER CO.
DECATUR, ILL.

Drilled Services
Perforated Services
Farm Taps
Clamped Services
Plastic Services
Autosafe® Protection

Changing Meters or Regulators
Transferring Services
Testing Services
Cutting-In Curb Stops
Controlling Service Turn-ons
Stopping-off Lines

Saving Valves
Extending Lines
Lateral Connections
Cast-Iron Connections
Relocating Lines



A distribution training program developed by Northwest Natural Gas Company of Portland, Oregon a decade ago rapidly is gaining wide acclaim as one of the most outstanding among gas distribution companies around the nation.

The program is designed as an annual orientation for the company's distribution personnel and combines classroom lectures with actual field instruction. Called unique in the industry, its purpose is threefold: to review new tools and changes made in field procedures, to review any field procedures and methods that have presented problems and to keep employees abreast of any current conditions or changes on a company-wide basis.

The idea for such an ambitious program goes back to the early 1950s when an employee suggested revision of an outdated distribution handbook. It took nearly two years of research to compile a complete guide for all of the department's crew leaders and

supervisory personnel. Through annual additions and revisions, the manual has expanded from its original 200 pages to the present-day 500-page "bible" for distribution employees.

As a supplement to the manual, training classes later were developed utilizing as instructors the department's supervisors, each an expert in his own field. "And the training has

***Annual orientation
combines class-
room lectures with
actual field in-
struction.***

really paid dividends," according to Paul Howe, Manager of Distribution. "For example, our unit costs/foot of new construction have remained fairly constant despite continually increasing costs in material, labor and overhead during the past six years."

A Distribution employee at Northwest Natural Gas is a member of the largest department in the company—currently 452 employees, or nearly 40 per cent of the firm's total work force. He is responsible for laying new mains and services, making pipe replacements and doing reconstruction and maintenance work. The department has the responsibility of maintaining the 9,000 miles of pipe in the company's service system, last year laying some 305 miles of mains and 192 miles of services. The system serves northwestern Oregon and some cities along the Washington border.

In January, a team of instructors kicked off the year's program by traveling to the firm's seven outlying districts for half-day orientations



Tool Supervisor Lloyd Shannon reviews techniques for using a Mueller drilling machine for the Northwest Natural Gas Company employees who, during their training period, will make a cut on a line under pressure.

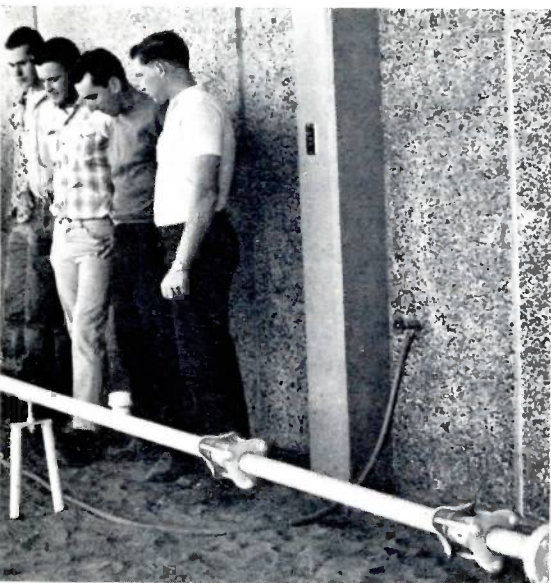
At the end of the four-day training session, "students" are tested on the material covered in the lectures and field practice. The tests are part of normal job progression requirements at Northwest. Administering the test is Training Supervisor Cliff Phillips.



on contractual changes, safety, liquefied natural gas and general company information—in short, an indoctrination for the school to follow.

The 223 employees who later participated in the distribution training classes at the Portland headquarters represented all areas of the service system and several job classifications including Pipeman B, Pipeman-Welder, Utility Crew Leader, Main Crew Leader and Distribution Crew Leader. The training also was a requirement for all the department's supervisory personnel.

In the modern Natural Gas Building training room, employees spent their first day participating in hourly lectures on damage to underground structure, corrosion, leakage, budget and cost controls, bulletin and manual changes, crew efficiency, job responsi-



This setup, which is used to demonstrate fittings, methods for extending mains, and line stopper equipment, is in a covered area, but just outside of the distribution training school building.



Classroom-learned procedures for making a "live" connection on a high pressure gas line are put to practical use in this training pit adjacent to the company's Tualatin Service Center, 12 miles south of Portland, Oregon.

bilities and other subjects pertaining to their on-the-job performance.

Visuals were used, too. Over 100 slides during the presentations graphically displayed much of the lecture material, along with a 20-minute film on the effects of underground interruptions.

But instead of following the past formats of strictly lecture-type classes, field personnel were faced this year with a concentrated two to four-day program focusing on several new concepts. Students were introduced to advanced field work at Northwest Natural's new field training facilities at its Tualatin Service Center where a sheltered work area permitted simulating open field conditions while protected from the prevalent Pacific Northwest winter rainfall. A welding and demonstration activity room is located adjacent to a well-equipped classroom for lecture and visual-aids, while fire pits and buried piping areas are located within several hundred feet of the building. Customer Service training also is conducted in the same area.

"The major impact of the program," says Training Supervisor Cliff Philips, "is slanted towards a 'training-by-doing' philosophy. The fellows

get out and actually do the work rather than listening to someone talk about it. Instead of merely hearing a lecture, they might be locating a stoppage in a one-inch main, drilling a main, checking a low pressure service to find water traps, or replacing an old main with new steel pipe."

Six instructors review the material scheduled for the morning and afternoon sessions before splitting into smaller, four-man groups and putting the lecture material into actual practice. Their training aids include both low and high pressure underground systems; a four-inch line simulating special connections on feeder mains; one, two and four-inch lines used for demonstrating the installation of clamps, live connections and welding.

That's where Mueller equipment comes in. Two hours of each student's training are devoted to a familiarization with drilling and tapping machines, shut-offs of mains and emergency repair work—all on Mueller equipment. Northwest Natural's "Mueller equipment trailer" carries a Cl-36 drilling machine for cuts of two inches through 12 inches, stopping machines and special adapters. It has also been called upon for cuts on lines up to 500 pounds in pressure along

the company's new coastal pipeline expansion.

None of the department's work is simple. But the training already has standardized solutions to various distribution problems throughout the company's service area. It provides working examples of virtually every problem that a pipeline worker encounters. The results have been a marked improvement in the safety records, much more efficient workers and a substantial saving in job costs.

"The crew leader today is much more of a technical man than the one of 15 years ago," says Mr. Howe. "Each year we will introduce more ideas, more refinements and more improvements. The year-to-year training will never be repetitious but, rather, more complete. The end result is an employee much more accomplished in his field and, for many, a more rapid job progression."

Different jobs call for different techniques and it takes a quick-thinking, hard-working employee with a thorough knowledge of his work. Working as a team, each crew must be ready to handle the unexpected. At Northwest Natural Gas, the "unexpected" is just another part of the preparation.

Blue Flame Whispers

Mueller Vice President Elected Chairman of GAMA Division

William E. Murphy, Vice President—Marketing of Mueller Co., has been elected chairman of the newly formed general equipment division of the Gas Appliance Manufacturers Association.

Murphy was elected at the initial meeting of the division, which the GAMA board of directors has authorized to serve the interests and needs of companies engaged in the manufacture of apparatus, equipment, supplies and materials used in the exploration, transmission, storage and distribution of natural, manufactured or liquefied petroleum gases, or mixtures thereof.

The formation of the new division was requested by the members of GAMA's gas meter and regulator division, who have formed the nucleus of what could become GAMA's largest division. In addition to the 10 companies that made up the now-terminated gas meter and regulator division, some 70 firms currently enrolled in GAMA are eligible for membership in the new division and more than 50 have signed up in this new division.

The statistical, traffic, standards, codes, government regulation and intra-industry activities of the general equipment division are expected to attract a number of other manufacturers that are not now members of GAMA.

Elected with Murphy, at the division's organizational meeting in St. Louis, were Roy R. Bush, vice president of Rockwell Manufacturing Co., as vice chairman, and as members of the division's executive committee: Gilbert N. Bell, vice president of Sprague Meter Co.; James F. Cogdell Jr., product specialist for E. I. du Pont de Nemours & Co.; Fred B. Crandall, manager of marketing for T. D. Williamson, Inc.; Murray S. Hitchcock, executive vice president of American Meter Co.; A. J. Middleton, vice president of Gas Machinery Co.; R. P. Newton Jr., president of Applied Engineering Co.; James E. Pierce, general sales manager of Jones & Laughlin Steel Corp., and Seth T. Roberson, vice president of natural

gas odorizing division of Helmerich & Payne, Inc.

GAMA is a trade association representing the nation's manufacturers of residential, commercial and industrial gas appliances and equipment.

Researchers Plan \$12.2 Million Plant to Produce Pipeline Gas

A pilot plant to produce synthetic pipeline gas from coal will be built in the next five years through the joint participation of the American Gas Association, the Office of Coal Research and the Institute of Gas Technology.

Henry R. Linden, Director of the Chicago research institute announced the extension of a contract with the OCR, Department of the Interior, and the agreement of A.G.A. to continue its financial participation of \$300,000 a year on a year to year basis.

The A.G.A.-IGT hydrogasification process has been researched and developed in a technical and feasibility study that has continued over the last three years. The contract calls for expenditures of \$12.2 million over the next five years, most of it from the Office of Coal Research.

When fully operational, the plant will process from one to three tons of coal an hour and produce from one to two million cubic feet of natural gas equivalent a day.



Manzoor Kahn (right) who is in charge of maintenance for the Karachi Gas Co. in Karachi, Pakistan, learns about testing procedures for line stopping equipment from Bob Roos, a Senior Project Engineer at Mueller Co. Mr. Kahn spent a week at the Mueller plant recently discussing products. The name Mueller is a familiar one with personnel at the Karachi Gas Co. since Mueller products have been used there since 1959.

Mother of a small boy to child psychiatrist: "Well, I can't say whether or not he feels insecure, but everybody else in the neighborhood certainly does!"

The hostess, giving instructions to a new maid just before a party, cautioned: "Now remember, Marie, when you serve my guests, don't wear any jewelry."

"I haven't anything valuable, madam," answered the maid, "but thanks for the warning just the same."

Nursery Teacher: "Everyone in the United States is free—everyone in this room is free."

Little Boy: "I'm not free—I'm four."

The youngster ran all the way home from school to tell his father: "Dad, I've got my first part in a play. I'm going to be a man who's been married for twenty-five years."

"Cheer up," said his father. "Just keep at it and maybe next time they'll give you a speaking role."

Having wandered helplessly into a blinding snowstorm, Sam, a notorious drinker, was greatly relieved to see a sturdy Saint Bernard dog bounding toward him with a keg of brandy strapped to his collar. "At last," cried Sam, "man's best friend—and a great big dog, too!"

The Hollywood star had had five wives, each of whom had promptly divorced him. He was now declaring his love to the prospective sixth.

"But, I've heard some ugly stories about you," said the girl.

"Don't worry about that," replied the star. "They're only old wives' tales."

On the subway, the young man kept mumbling, "Call me a doctor. Call me a doctor."

"What's the matter?" asked a fellow sitting next to him. "Are you sick?"

"No," the young man answered. "I just graduated from medical school."

A jet plane encountered severe turbulence in a thunderstorm. A lady appealed to the minister seated beside her. "Please," she said, "I'm sure we're going to crash. Can't you do something to save us?" "I'm sorry, madam," he replied, "but there isn't

Strictly

Off the Record

much I can do. I'm in sales, not management."

The latest thing N.A.S.A. is going to send into space is 500 cattle. It'll be the herd shot round the world.

Used car dealer (driving up a hill): "This is the opportunity of a lifetime."

Customer: "Yeah, I can hear it knocking."

Little Bobby was given a stick of candy by one of the clerks in the store.

"What do you say now, Bobby?" his mother prompted.

"Charge it," said Bobby.

"So you're getting discharged?" the sergeant snarled. "And I suppose after you get out you'll just be waiting for me to die so you can come back and stomp on my grave?"

"Oh, no, Sarge," said the private. "When I get out of this here Army, I'm never going to stand in line again."

When Dudley, the slow-moving clerk in a small store, was not around one morning, a customer asked, "Where's Dudley? He ain't sick, is he?"

"Nope, he ain't workin' here no more."

"That so," said the customer. "Got anybody in mind for the vacancy?"

"Nope, Dudley didn't leave no vacancy."

An anxious father stopped his son who was on his way to a party. "Son, when Abe Lincoln was your age, he studied law every night."

"Yeah," said the unimpressed boy, "and at your age, he was President."

Latin American: "Our favorite sport is bullfighting."

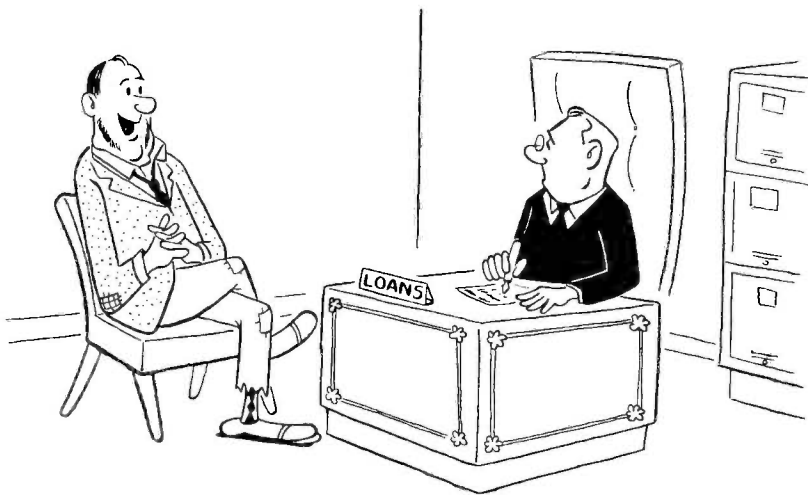
American: "Isn't it revolting?"

Latin American: "No, that's number two."

Wife: "You know, dear, you don't seem as well dressed as you were when we were married, ten years ago."

Husband: "I don't know why not. I'm wearing the same suit."

"Look at you!" shouted the sergeant indignantly, as he inspected a bunch of new recruits. "Your ties are crooked! Your shoes aren't polished! Your trousers aren't pressed . . . Suppose some country suddenly declared war?"



"Would it make any difference if I said I was looking for a job?"

MUELLER CO., DECATUR, ILLINOIS

RETURN REQUESTED

BULK RATE
U. S. POSTAGE
PAID
DECATUR, ILLINOIS
Permit No. 1

MRS. WILLIAM E. MUELLER
221 SOUTHMORELAND PL.
DECATUR, ILL. 62521

MF

MUELLER®

Low Pressure Line Stopper Fittings

**FAST, SAFE
STOP-OFFS UNDER
PRESSURES TO
60 PSI.**

Rugged forged steel body.
O-ring sealed completion
plug and cast iron comple-
tion cap. Easy to weld to
main. Only one coupon cut
from pipe. Size $\frac{3}{4}$ " - 4".
Write for details.



H-17190

MUELLER CO. / DECATUR, ILL.

FACTORIES AT: DECATUR, CHATTANOOGA, BREA (LOS ANGELES), MUELLER, LIMITED, SARNIA, CANADA

serving the water and gas industries since 1857



G-637