# MUELLER Record

JANUARY • 1959

# Blue Flame Whispers

**HAPPY 1959 TO EVERYONE!** For those of you who were unable to attend the A.G.A. convention in Atlantic City in October, we would like to review some remarks made by outgoing President Robert W. Otto.

"I have no wish," said Mr. Otto, "to belittle our industry's accomplishment to date. It has been phenomenal, and we all have a right to be proud of it. The fact is, however, that the big challenges are still ahead of us. And patting ourselves on the back for past achievements isn't going to help us much in meeting these present challenges."

"Briefly, as I see them, the hurdles we have now got to get over . . . are three, and every one of them is critical in its importance and urgent in its need for solution. These are, first, the problem of the increasing cost of natural gas and related questions of appropriate governmental price regulation; second, the problem of increasingly acute competition; and, third, the problem of achieving effective unity and common purpose at all levels of the gas industry."

Mr. Otto then began a precise examination of the causes of these obstacles, naming rapid growth, difficulty in finding new reserves, mounting costs of exploration, heavy spending by the electric industry to offset gas gains in sales, and other causes as contributing factors.

The basic problem, according to Mr. Otto, may be phrased in the form of a question: "What can we do, practically speaking, to get the kind of overall, co-operative, industry-wide, top-to-bottom unity it is so very clear we must have?"

He pointed to the A.G.A.'s PAR (promotion, advertising and research) plan as a great area of accomplishment. "The dramatic story of constant progress in the gas appliance field is being told and sold, repeatedly and effectively, in the A.G.A.'s unprecedented advertising, promotion and publicity program under the banner of PAR. The National Gas Industry Television Program, through the dynamic medium of Playhouse 90, is building greater acceptance of our product, winning new customers and keeping the ones we have . . . I have a special reason for dwelling on the activities of PAR. Here is an example of what can happen when a few industry leaders get together and really map out something positive by way of an industry program, designed to answer specific needs.

" . . . real action is what we need," continues Mr. Otto. "UNIFIED action. It is absolutely essential to a continued high level of progress in the gas industry. The entire industry must speak up in one voice . . . I earnestly ask you to be concerned about the fundamental problems that confront our industry. It is already late to begin to tackle them. We must produce a new kind of enlightened, but very practical statesmanship in our industry. And we must start to produce it now."

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*Freedom:* being able to do what you please without considering anyone except the wife, police, boss, life insurance company, state, federal and city authorities, and neighbors.




# MUELLER RECORD

JANUARY • 1959

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★

Editor
**Jim M. Milligan**

★

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Quality Products for the Waterworks and Natural Gas Industries

★

*Our Cover this month illustrates the problems of terrain encountered by construction crews engaged in construction of a new 12-inch gas line from Corning to Eureka, California. The story of this line begins on Page 8.*

# Contents



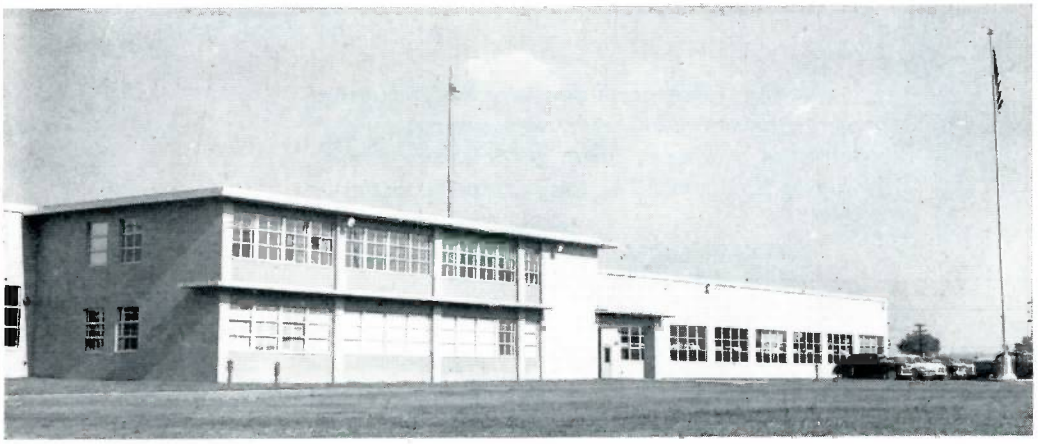
# Preview

**The February issue of the MUELLER RECORD will carry all of our regular features, plus the "general interest" story of the month.**

**Read how the water works department of Cincinnati, Ohio, laid 11,459 feet of 48-inch concrete pipe 18 feet below the ground without moving a single shovel of dirt.**

**It will be an exciting issue, full of latest industry news and reports of things to come. Be with us then.**

*The Charleston Group's New Operating Center*



*St. Albans, West Virginia*

# New Operating Center For Charleston Group

THE Charleston Group's new Operating Center, located near St. Albans, West Virginia, is now in operation. According to Mr. Walter Showen, manager, this centralization is accomplishing service, economy and improved working conditions. Operating departments are getting improved, faster service; economies for the Company are great at the Center; and the new building facilities make it a good place to work.

The centralized receiving, storage and dispatching location is the big reason for economy. Its location on river, highway and railroad gives the advantages of the cheapest transportation on the many thousands of tons of materials purchased every year.

Regular delivery routes have been established between the Center and other Group operating headquarters. Trucks will deliver supplies to these operating locations, and will, at the same time, pick up surplus for return to the Center.

The new garage features plenty of light, space and the most modern labor-saving equipment for mechanics working on the Group's mobile units. Made-to-order bodies are built in the garage's body shop. "We can build better bodies at one-half the cost," says C. D. Simmons, garage foreman.

Centralization of accounting activity will reduce the cost of maintaining the office at peak efficiency.

## Centralization Brings Service and Economy

**The new garage features plenty of light, space, and the most modern labor-saving equipment for mechanics.**

The communications shop contains a large assortment of communications test and repair equipment. Facilities include a copper-shielded radio test room, and a specially-equipped stall for installation and repair of mobile equipment.

The machine shop is actually two shops in one. Designed primarily as a maintenance shop, it is also equipped to manufacture many items needed throughout the Group.

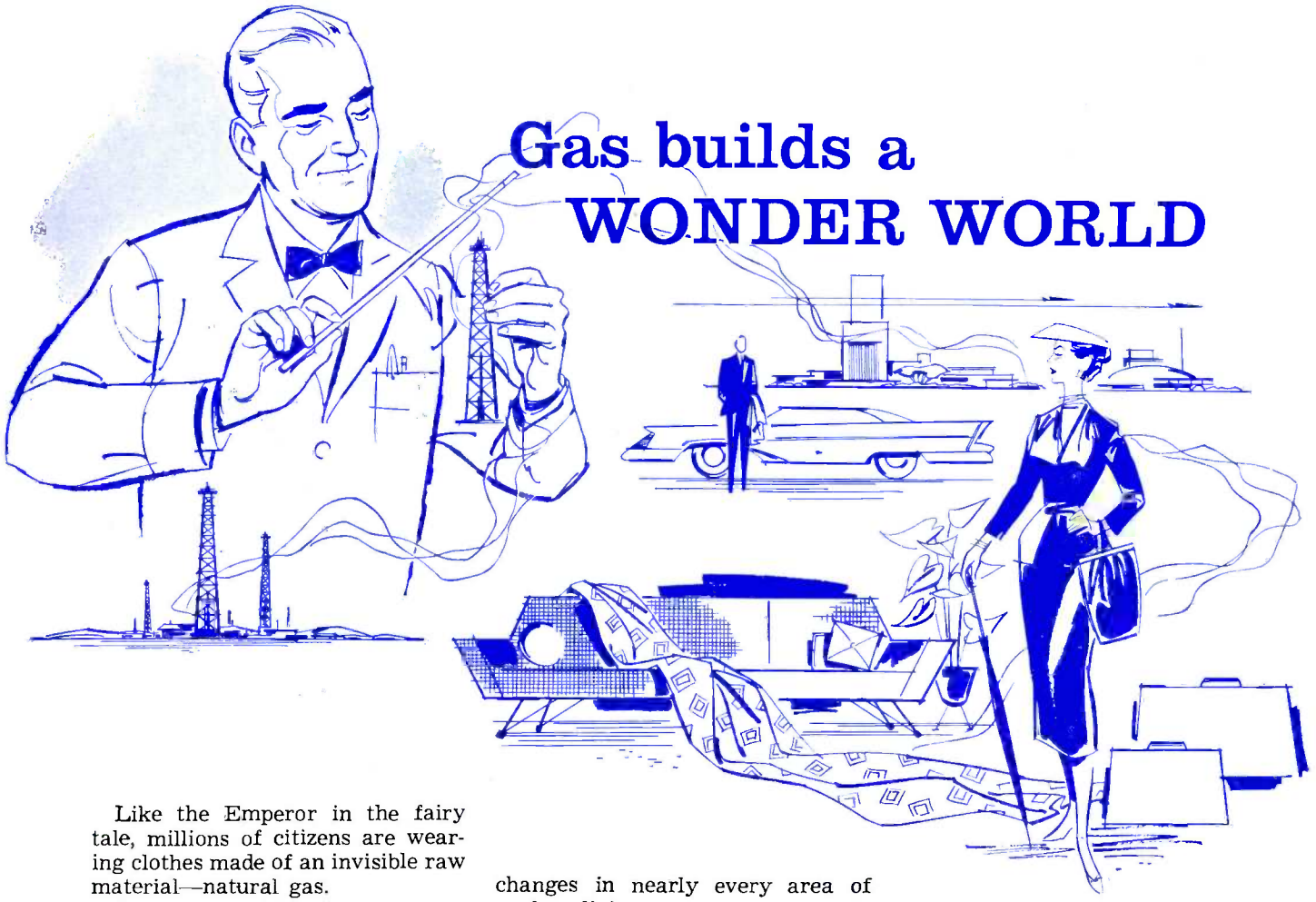
The shop will perform maintenance work for all departments in the Group. Its manufacturing abilities will save money for all departments when it turns out such items as power pistons, cylinder liners, crossheads, compressor valves, and high tensile stud and flange bolts. Eliminating the need to depend on outside machine shops will increase both service and economy.

**Dollies move meters right up in front of meter shop repair bench containing all tools and equipment necessary to do such jobs as dismantling, testing diaphragms, grinding valves and seats, and replacing worn parts.**

**Employees in the new warehouse are handling a few of the many thousands of pieces of office equipment and materials necessary to the efficient functioning of the Group. Service and economy benefit extensively by having shops, stock, supplies, trucking equipment and materials under one roof.**

Construction of the new Operating Center was begun in September, 1956, and employees began moving in in February, 1958. Estimated cost of the structure was $2,620,000.00.

# Gas builds a WONDER WORLD



Like the Emperor in the fairy tale, millions of citizens are wearing clothes made of an invisible raw material—natural gas.

Fortunately, these new garments themselves, unlike the Emperor's, are splendidly visible—from rainproof "straw" hats down to shoe soles with which people are literally walking on gas.

The new fabrics, which we know under such names as Nylon, Orlon, Dynel and Acrilan, also are soft or silky to the touch, long-wearing, tough, wrinkle-resistant, almost anything the chemists wish to make them. For they are made from natural gas through the magic of an important new science: *petrochemistry*.

Through petrochemistry, scientists have not only materialized new clothes out of thin gas, but from this same insubstantial raw material they are miraculously creating a flood of other superior new products which are working changes in nearly every area of modern living.

Plastics of many kinds, detergents, potent insecticides, specialized chemicals entering industry in hundreds of ways, all are being made from natural gas through petrochemistry. The range of products embraces almost the entire roster of the things we refer to as *synthetics*.

Petrochemicals are just what the name implies — chemicals made from petroleum hydrocarbons, chiefly natural gas. A number of these hydrocarbons, happily, are quite cooperative in working with man. They allow their atoms and molecules to be rearranged and recombined easily—almost eagerly, in fact—into an amazing variety of new materials.

Happily, also the petrochemical industry is no stranger thrusting itself onto the scene to compete for a scarce raw material. It is instead a natural-born child of the fuel gas production industry—a lusty child which completes, rather than competes with, the gas industry family.

Fuel gas is made up principally of the hydrocarbon methane. Methane itself is not one of the more cooperative gases as far as petrochemistry is concerned. But natural gas as it comes from the well usually contains certain amounts of the heavier hydrocarbons such as ethane, propane and butane. These normally are "stripped" or refined out before the fuel is sent through the pipeline. It is largely with these heavier hydrocarbons that petrochemistry works its com-

plex miracles. Thus, the raincoats and boathulls, the rubber tires and cleaning fluids, and the thousands of other products which are made from natural gas, are truly by-products — extra dividends for everybody—of the industry which lights the blue flame at your burner tip.

Natural gas is turned into the many wonderful and useful new substances by a kind of chemical legerdemain as fascinating as a magician's juggling act.

Imagine the chemist, if you will, waving a magic wand over a test tube. Inside it we see, highly magnified, a number of atoms whirling in the air like colored balls. For example, we might have eight of these balls, two marked with the letter "C" (carbon) and six with the letter "H" (hydrogen). The eight atoms are those of the natural gas hydrocarbon, ethane.

Making a pass over the test tube, the chemist causes two of the "H" balls to disappear. He has "cracked" the ethane molecule, and turned it into an amputated or "unsaturate" molecule, now called ethylene.

Once more, the chemist makes a pass. Now, in place of the missing "H" atoms, he slips in one or more atoms of chlorine, or oxygen, or sulphur, or some other chemical. And presto! In place of the ethylene in the test tube, we suddenly have another substance altogether. It may be a liquid, or a solid, or even another gas—but its properties will be quite different from those of the original ethane!

By such a process—which of course has been greatly simplified for the purpose of illustration—the chemist may typically turn ethane, propane and butane from natural gas into ethylene, propylene and butylene. Then he may turn these, by combination, into any of thousands of other compounds—alcohols, ammonia, nitrates, acetylene, and so on almost without end. By linking molecules into complex chains, the chemist may also create *polymers,* which likewise are new substances with strikingly different properties. The new substances in turn are transformed through many different kinds of processing into the endless array of synthetic products which we see on shelves and counters everywhere.

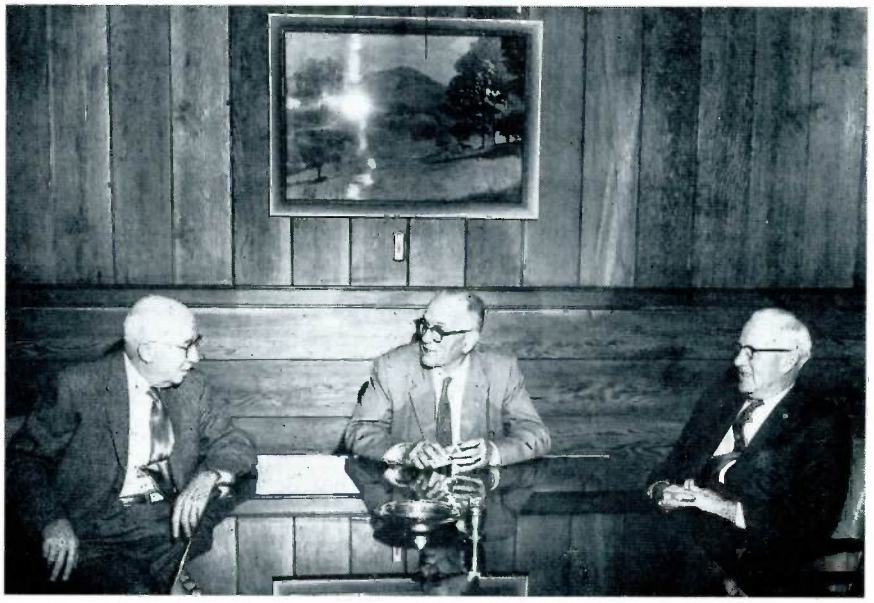
In practice, the chemist uses rather elaborate apparatus to help him in his magic. Instead of a test tube, he has huge cracking plants. In place of a wand, he uses catalysts, electricity, pressure or high temperatures to work his transformations. But the entire vast and growing industry of petrochemicals is still based upon that cooperative little molecule of petroleum or natural gas hydrocarbon.

So swift are the strides made by this industry that it has grown from an investment of only $350 million in 1950 to between $2 billion and $3 billion today. Exact figures are unknown because expansion has been too rapid for statistics to keep pace.

According to recent reports, petrochemicals at present account for approximately 25 per cent of all chemicals produced. Scientists predict that in ten years the figure will rise to 50 per cent, as new petrochemicals are developed, and new uses are found for them.

Petrochemists estimate that with present knowledge, at least 500,000 chemical compounds can be made from petroleum hydrocarbons. In a few years, they predict, they will be able to produce not less than a million different compounds! The possible uses for all these chemicals present an almost infinite vista.

# H. Seevers, P. Hines Retirements Announced



**A. G. Webber, Jr. (left), president of Mueller Co., chats with retirees Harry Seevers (center) and Paul Hines during their recent visit to Decatur.**

Dan R. Gannon, vice-president and general sales manager of Mueller Co., has announced the retirement of Mr. Harry V. Seevers and Mr. Paul L. Hines, both sales representatives with long periods of service.

Mr. Seevers joined the company in 1917 and was assigned to the state of Kansas. At the time of his retirement, he was serving Kansas, parts of Iowa and Nebraska, and the Black Hills section of South Dakota. He has a son, Dick, who is also a Mueller sales representative. Mr. Seevers had the distinction of serving the state of Kansas for 42 years.

Mr. Hines joined the Company in 1920. His sales activities have been concentrated in the South and Southwest since that time, including Arkansas, Louisiana, Mississippi and West Tennessee. Mr. Hines served the state of Arkansas for 38 years.

Their retirement became effective November 30, 1958.

This is a view of the Corning-Eureka gas line on the west side of South Fork Mountain between Dinsmore and Summit, California.

# P G & E Completes New Line

NATURAL gas—in large quantity—began flowing into Humboldt County (California) on August 19, 1958, when Pacific Gas and Electric Company's latest local development, an $11.5 million pipeline extending 163 miles from Corning and crossing rugged mountains en route, was completed and placed in operation.

A group of local leaders was invited by Thomas P. Jenkins, PG&E's Humboldt Division manager, to be present at Tompkins Hill for an informal ceremony during which the line was turned on. The valve which released the new supply was turned on by Elwyn Lindley, Chairman of the Humboldt Board of Supervisors.

"This latest demonstration of PG&E's faith in the area will be followed, we hope, by an expanding community and industrial growth that will benefit everybody who lives," said Jenkins.

Introduction of the new natural gas supply meant an increase in Humboldt County rates, the first since 1951 despite three raises which had been made effective elsewhere in the PG&E system during

The pipe camp discloses lengths of pipe ready for use in PG&E's new gas line.

that period and which were largely attributable to increased costs of gas purchased by the company. "The alternative to meet our growing demands," Jenkins commented, "would have been to mix propane-air gas with the declining output of natural gas from Tompkins Hill, or we would have had to curtail some service. This course would have been more costly for Humboldt County customers than the increase necessary to bring in an adequate supply of natural gas.

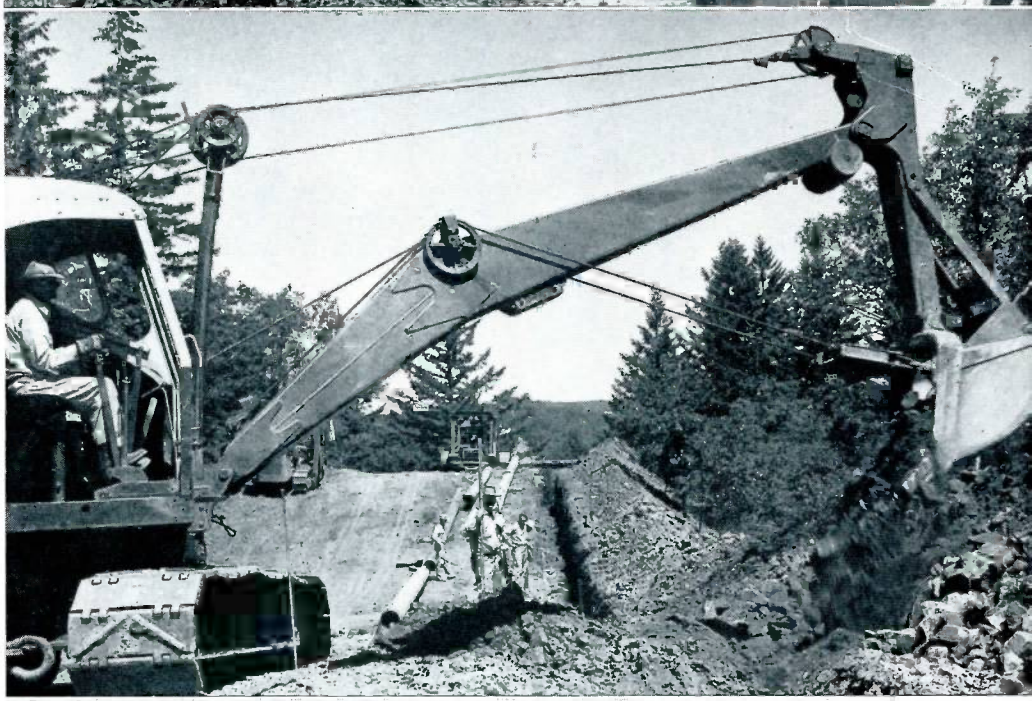
"Now we can distribute a large supply of dependable natural gas to aid the area in attracting new industrial and commercial enterprises."

The gas line project was one of three major jobs in which PG&E had committed funds totalling $54.8 million for Humboldt County's future. Next on the completion schedule is Humboldt Bay Power Plant's second 50,000-kilowatt generating unit. Third will be the company's 60,000 kw nuclear power plant scheduled for completion in 1962. It will generate the first economic atomic-electricity anywhere in the world.

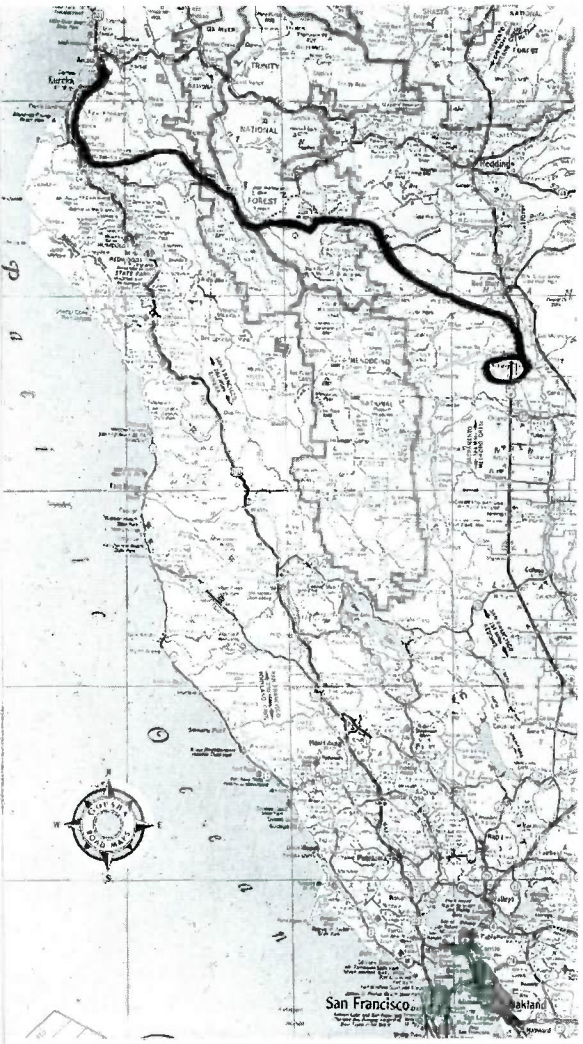
When the valve on Tompkins Hill was turned on, Humboldt County had tapped a natural gas supply of 21 million cubic feet per day, the line's initial carrying capacity. Less than eight million cubic feet daily had been available from Tompkins Hill field.

The twelve-inch steel main extending from Corning is operated at a transmission pressure of 750 pounds per square inch. It traverses a route extending northwesterly from Red Bluff to Fortuna, Fernbridge, Loleta and Eureka, and soon will extend to Arcata.

The great grandfather of Pacific Gas and Electric Company—the San Francisco Gas Company—was incorporated in 1852, and started business by serving 237 gas light customers in 1854. By the end of the next year, the ancestor company had 563 customers—all of

**At the right are dramatic views of construction on the Corning-Eureka 12-inch gas line. You can clearly see the rough terrain encountered by construction crews.**




**Map of Northern California shows location of the new line.**

whom used gas manufactured from coal brought in by schooner from Australia. Today, PG&E serves more than a million and a half gas customers. Manufactured gas is used only rarely for peaking purposes.

At the half-way mark of the twentieth century, PG&E's gas sales totalled 172.6 billion cubic feet annually, and 200 million cubic feet of gas per day was being brought to California from southwest New Mexico and west Texas. Five years later PG&E's total gas pipeline mileage had risen to 18,500, of which 2,900 was for transmission and 15,600 was for distribution. The number of gas customers had increased to 1,406,722. The 1945 figures were 9,900 miles of gas mains and 783,989 customers.

# Virginia Man Retires; Long-Time City Manager

Mr. I. G. Vass, the man who holds the world's record for continuous service as city manager, was honored at a luncheon in Portsmouth, Virginia, on August 15, the eve of his retirement as city manager of that city.

More than 100 Portsmouth leaders gathered to offer Mr. Vass their hearty wishes for a wonderful retirement, and to thank him publicly for his outstanding nine years as city manager of Portsmouth. Mr. Vass had been actively engaged in municipal management and administration for more than 40 years.

A silver tray, to be inscribed by city managers from the surrounding area, was presented to him, along with an appropriate citation.

Orin F. Molting, executive director of the International City Manager's Association, telegraphed:

"Congratulations on your 40 years of continuous municipal administrative experience, including 36 years as city manager of three cities. You hold the record among the 1,600 city managers in the United States and Canada for your tenure of 36 years as manager.

"You also have been a member of the International City Managers' Assn. longer than any other manager in the association now in active service. . . ."

Mr. Vass plans to spend a part of his time after retirement as municipal consultant. He will work from his home in Grayson County, near Galax. In explaining these plans, Vass stated: "Many smaller cities and towns have need of such service, and yet their budgets do not permit a full-time administrator."

**Mr. I. G. Vass**

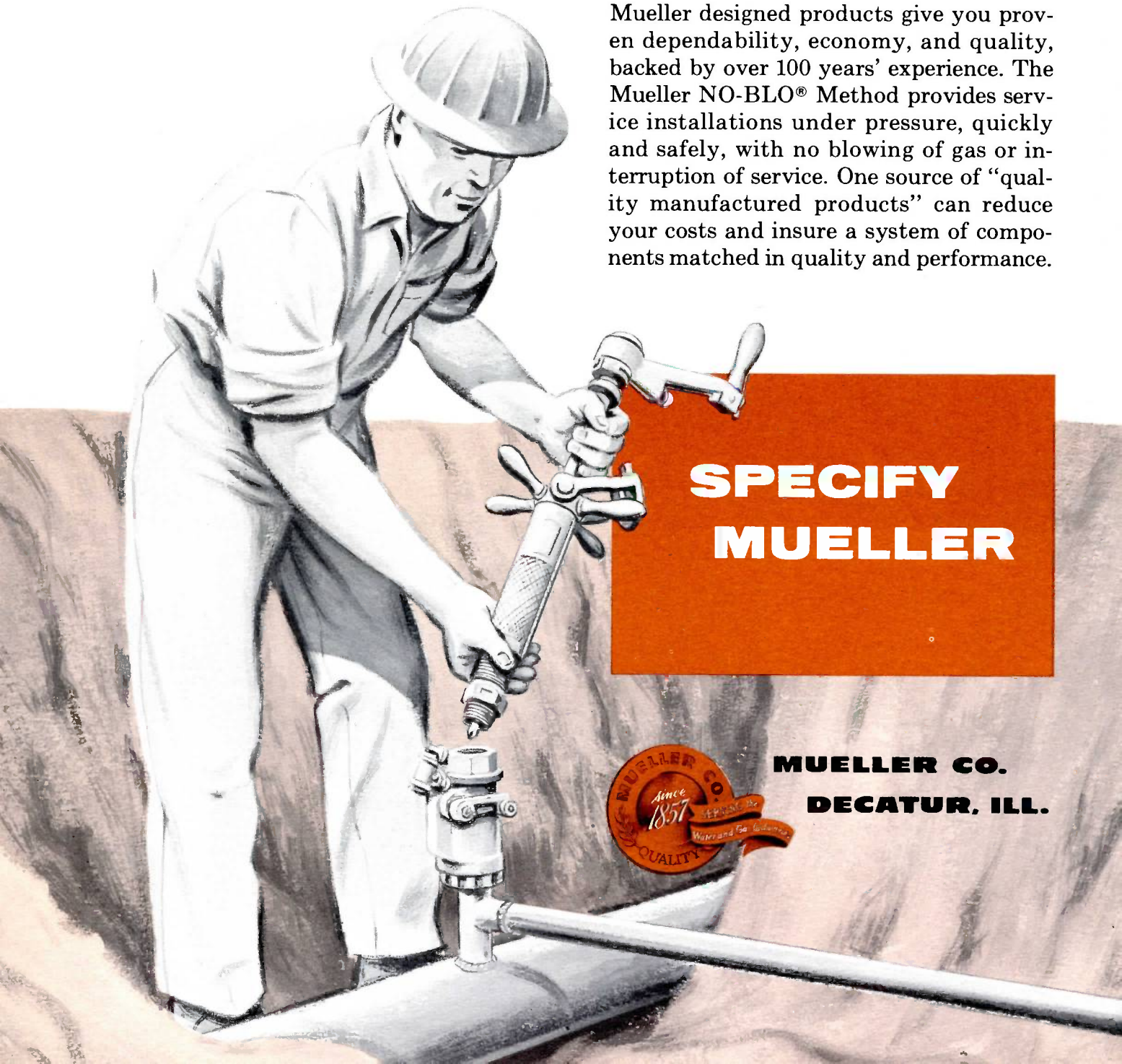
*standardize on*

# MUELLER®

*the complete line of gas service equipment*

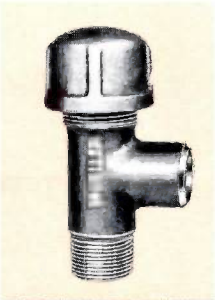
**matched in quality and performance**

Mueller designed products give you proven dependability, economy, and quality, backed by over 100 years' experience. The Mueller NO-BLO® Method provides service installations under pressure, quickly and safely, with no blowing of gas or interruption of service. One source of "quality manufactured products" can reduce your costs and insure a system of components matched in quality and performance.



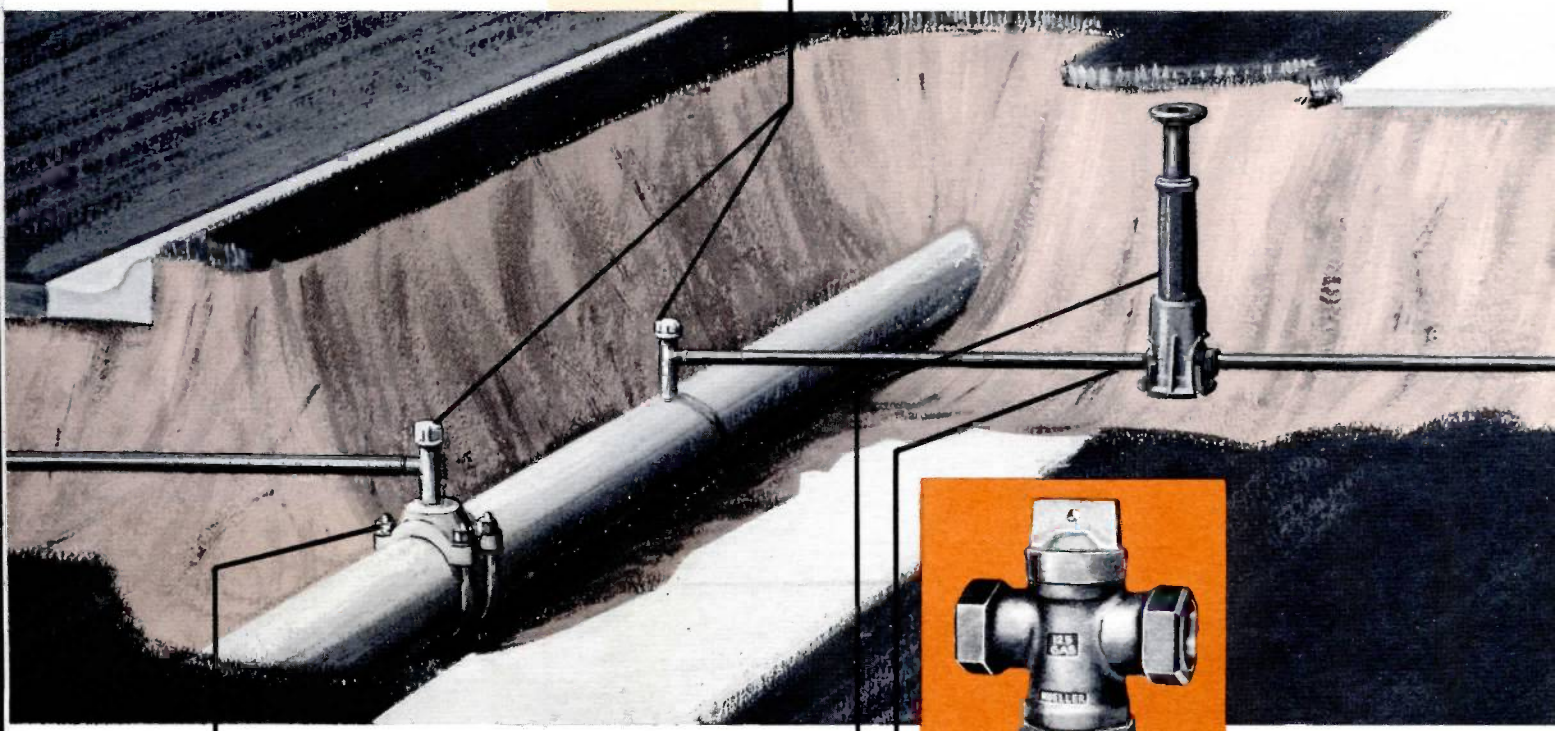
# ENGINEERED . . .

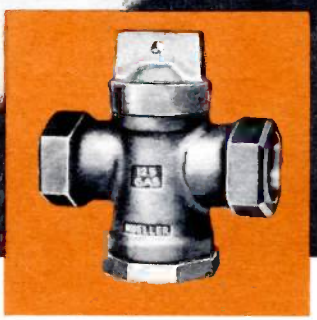
## *service fittings*



### TEES

Service Tees . . . Valve Tees . . . Curb Valve Tees . . . No-Blo design permits fast, safe service connections—under pressure—with no blowing of gas . . . threaded or welded inlet and outlet types available in a variety of sizes.



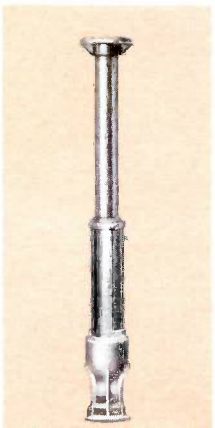


### SERVICE CLAMPS

for quick, safe connections to any type main under pressure . . . single or double strap type for 1″ to 12″ nominal size mains . . . variety of tap sizes . . . neoprene gaskets cemented in place for installation ease, positive seal and long life.

### CURB STOPS

ground key construction . . . precision machined and lapped to insure gas-tight closure . . . inverted key stops available in a variety of end connections . . . forged-steel No-Blo valves available for high pressure service—threaded or welded service connections.



### CURB BOXES

telescopic type to prevent damage to stop or piping . . . large steel upper section will not revolve in base . . . iron to bronze threads prevent seizure, assure easy plug or lid removal . . . with or without stationary rod . . . coated inside and out with tar base enamel to increase resistance to corrosion . . . separate footpiece supports stop and interlocks with curb box—prevents stop from twisting or turning when opening or closing stop.



## METER STOPS

ground key construction . . . precision lapped and fitted for gas-tight closure . . . LubOseal® model with "O" ring seals and lubricated key offers absolute protection against frozen keys . . . variety of sizes and end connections . . . forged-steel stops available for high pressure service—welded or threaded connections.

## METER BARS

solid iron construction . . . accurately machined to permanently locate and align meter swivels . . . union outlets with neoprene gaskets or bevel connectors, which eliminate unions, are available . . . wide variety of swivels, nuts, reducers, and washers to complete the meter installation.

# SPECIFY MUELLER

## ...all along the line




## GAS STOPS

low, medium, and high pressure classifications . . . solid brass . . . ground key construction . . . sizes and types to meet every application in industrial or residential piping.

**MUELLER CO.**

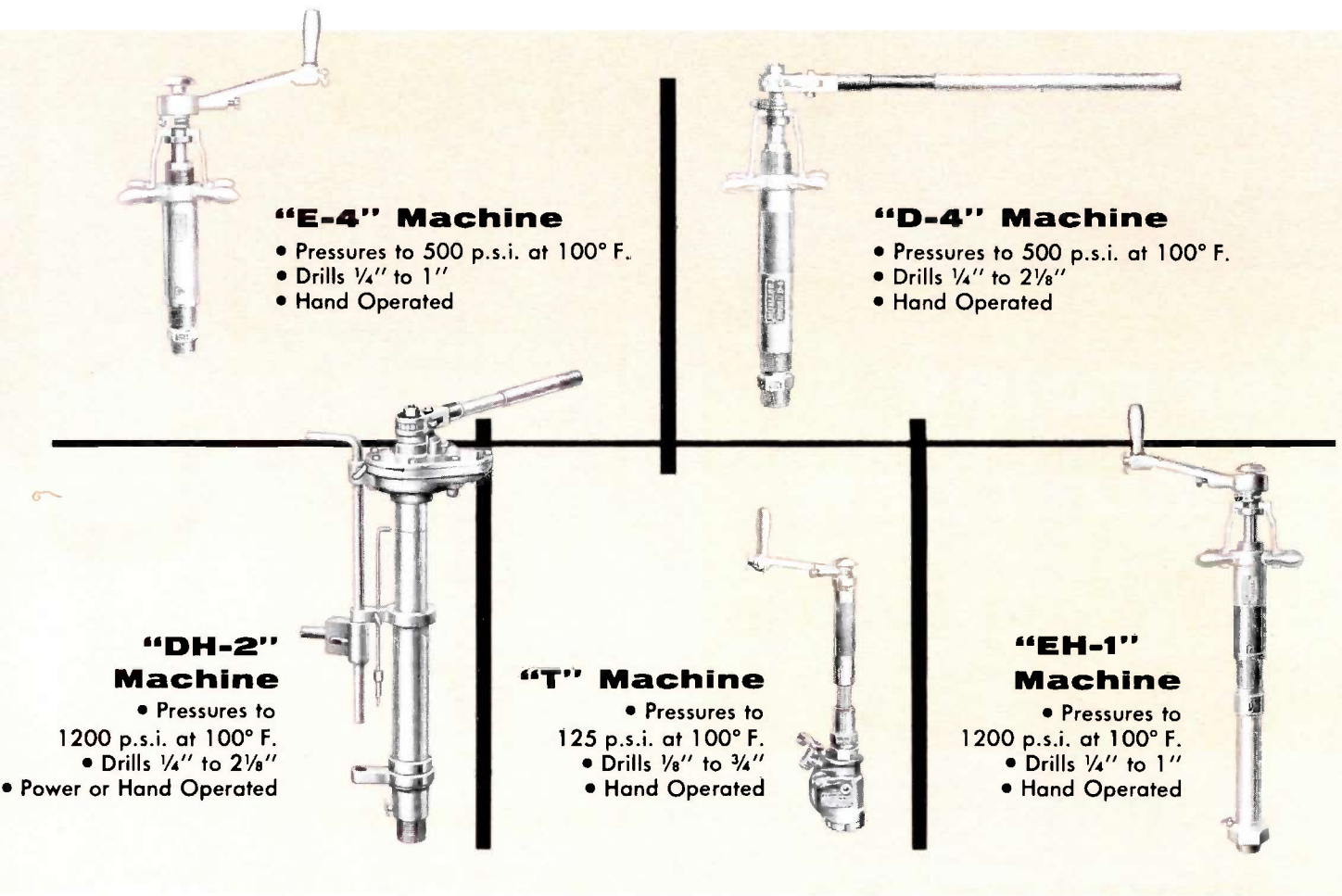
DECATUR, ILL.

# MUELLER NO-BLO Method machines

## let you

- *drill the main*
- *insert and extract plugs or stems*
- *recondition seats*
- *make stop-offs*

*all* under pressure, with no blowing of gas or interruption of service . . . economically with complete safety.



**"E-4" Machine**
- Pressures to 500 p.s.i. at 100° F.
- Drills ¼" to 1"
- Hand Operated

**"D-4" Machine**
- Pressures to 500 p.s.i. at 100° F.
- Drills ¼" to 2⅛"
- Hand Operated

**"DH-2" Machine**
- Pressures to 1200 p.s.i. at 100° F.
- Drills ¼" to 2⅛"
- Power or Hand Operated

**"T" Machine**
- Pressures to 125 p.s.i. at 100° F.
- Drills ⅛" to ¾"
- Hand Operated

**"EH-1" Machine**
- Pressures to 1200 p.s.i. at 100° F.
- Drills ¼" to 1"
- Hand Operated

*Write for your FREE copy of Mueller's "No-Blo Methods and Applications" Booklet No. 5.*

*For additional information and service, consult your Mueller Representative, Catalog G-97, or write direct.*

**MUELLER CO.**

**DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles; In Canada: Mueller, Limited, Sarnia, Ontario

*On December 11, 1958, the Board of Directors of Mueller Co. held its annual meeting in Decatur. One new officer and two new Board members were elected at this time. Dan R. Gannon, general sales manager, was named vice-president and general sales manager. Joining our Board were Harold M. Sherman, Jr. and Joe H. Gardner.*

*Mr. Sherman is vice-president of Guaranty Trust Company of New York, A native of Newport, Rhode Island, he joined the staff of Guaranty Trust in 1930. After thirteen years of handling the bank's business in six mid-western states, he was appointed vice-president in charge of the bank's general organization. A resident of Larchmont, New York, Mr. Sherman is married and has one son.*

*Mr. Gardner, a resident of Washington, D.C., is president and treasurer of the Bingham & Taylor Corporation, Culpepper, Va., and the Opelika Foundry Company, Opelika, Ala. He is also a director and member of the executive committee of the Universal Ball Company, Willow Grove, Pa,. and a member of the board of trustees of Fauquier Hospital in Warrenton, Va. Mr. Gardner was a Navy Commander during World War II.*

*On November 25, Mueller, Ltd. held its annual meeting in Decatur. O. E. Walker, formerly vice-president and works manager of Mueller Co., was elected to the position of executive vice-president and general manager of the Sarnia subsidiary. All other officers and directors were re-elected.*

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R. M. NICHOLSON ..... Vice-President and General Sales Manager
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C. S. BROWETT ..... Assistant Secretary and Plant Controller

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# COUNTDOWN!

IN the not too far distant future a great missile will circle the moon —probing its secrets for the first time. Two hundred and forty thousand miles from earth, the shiny, massive projectile will ride the airless space over silent crater ridges and canyons. It will telemeter priceless information on the earth's only satellite back across the very cosmic space it had persistently journeyed. The orbiting missile will be a modified Atlas I.C.B.M., armed with scientific instrumentation instead of a thermonuclear device.

*Within two years* a much smaller vehicle will gently rise into the thin blue stratosphere after having been liberated from the underside of a mother ship. It will catch the light as it quickly gains power and fiercely ascends out and beyond the atmosphere into the menacing black of outer space. For the first time man's most precious cargo will be aboard—man himself. Scribing a long ballistic arc through, out and then back into the earth's atmosphere, it will have gone higher and faster than any previous manned object—over one hundred miles at 3,600 m.p.h. As it plunges back through the atmosphere, the craft will literally glow red like a blacksmith's forge. In those few moments of roaring hypersonic speed, it will have delivered man into an entirely new exploratory era. This first intrepid spacecraft will be the X-15.

To send these great "birds" and satellites over vast distances with precious cargos, their creators must make them of a metal with an unusually high strength-to-weight ratio. In this way every possible ounce can be trimmed and still leave enough strength to enable the airframe to stand up under the stresses of vibration and tension. Every ounce saved would allow for more range or increased "payload."

Searching for higher energy generating fuels, propulsion experts utilized corrosive chemicals that would eat away at conventional metals. Thus an alloy is needed that is also corrosion resistant.

Designers have also been confronted with a stubborn barrier which rose as speeds increased—as long as the vehicle remained within the earth's friction-making atmosphere. The barrier is called the "thermal thicket"—a thicket that, with enough speed (15,000 m.p.h.), arouses temperatures equal to those on the sun's surface. To cut through this heat producing belt at the speeds required to unleash him into outer space and to descend at ever higher speeds, would raise temperatures to levels dangerous to both plane and pilot.

And lastly, so that satellite instrumentation may be fully protected and "temperature engineered" against the hot and cold extremes while enroute around the earth, a metal is needed which can tolerate such extremes without compromising its physical properties.

**The Metallurgical Answer**

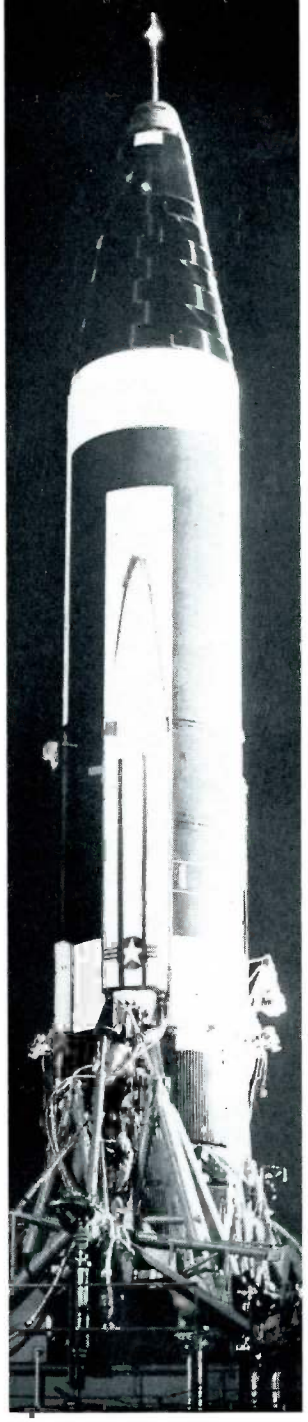
The metallurgical answer to the space age is stainless steel. High strength-to-weight ratio, resistance

to aerodynamic heating, resistance to temperature extremes, and corrosion and oxidation resistance, are all famed characteristics of this chromium, nickel and iron alloy. It is no wonder that the entire skin and integral tanks of the huge Atlas, skin areas and tanks of the X-15, and the nose cones of all the Explorers are stainless steel. Herein lies the story of the almost sudden transition from the wide-winged planes of aluminum to the steel projectiles of the space era. Man had built towering cities and bridges of steel, but generally speaking, stainless had been confined to landbound applications such as food processing equipment, architecture and automobiles. Designers soon realized, as air speeds increased and the missile and satellite era unfolded, that only this alloy could meet the new combination of environments introduced by the space age.

The Air Force's Atlas, slated as a future moon or "lunar probe," is virtually a flying stainless fuel tank. The ultralightweight unit, which comprises the entire missile's skin, also serves as the propellent tanks, holding tons of liquid oxygen and hydrocarbons and supporting a large warhead on one end and a monolithic rocket engine on the other. Convair, builders of the airframe, have submitted a broad space development plan utilizing the Atlas to place huge satellites in orbit and to enable men to operate recoverable satellites or permanent space stations. The plan also includes the use of Atlas to send instrumented "artificial comets" into interplanetary space.

North American's X-15 rocket plane will fly at better than one mile a second. If it had long range at this speed, this radical spaceship could fly from New York to Los Angeles and land two and a third hours before it took off. The perplexed pilot would have lunch before leaving New York and arrive in Los Angeles in time to face a late breakfast.

Without extensive modification, the X-15 may become candidate for the first recoverable manned satellite. Hitched on the second stage of a large missile, it would be boosted out of the atmosphere where it would then detach and reach the minimum orbital speed of 18,000 m.p.h. One 25,000 mile-90 minute revolution around the world would probably be sufficient for the history making first orbit and the pencil-thin ship would be braked by reverse rockets or chutes and glide back to earth.



The nose cone of the Army's Explorer satellite weighs an amazingly light thirteen ounces. Nevertheless, its strength is only partly demonstrated by the fact that it also serves as the nose cone of the entire Jupiter-C launching vehicle that helped propel the satellite into orbit.

Other examples of the transition to stainless are the vital second and third stages of the Vanguard satellite rockets and the Strategic Air Command's latest deterrent to a third world war — the multi-podded B-58 bomber.

The fuels for Vanguard's second stage are white fuming nitric acid and unsymmetrical dimethylhydrazine, both highly corrosive chemicals. These called for stainless propellent tanks whose outer walls, like the Atlas, serve as the Vanguard's skin, making an integral, lightweight structure. The entire third stage, which "kicks" the satellite into orbit, is entirely stainless and as an empty fuel container, it also goes into orbit and trails the Vanguard sphere.

The B-58 is the first production military aircraft to need stainless in large quantities. This plane owes its very existence to this metal. Over one thousand square feet of the bomber's engine pods and wing flaps are covered with glistening stainless honeycomb. Honeycomb design, borrowed from the bees own cavernous version, allows for extremely light but surprisingly strong skin and panels, The deadly delta-winged four engined plane can fly intercontinental distances and jettison a huge thermonuclear pod slung under its long, thin belly.

**Points Beyond**

Manned orbital gliders like the modified X-15, and lunar probes like the Atlas, will represent only the second stage in the space age. The first were the unmanned earth satellites, the Sputniks, Explorers and Vanguards. The third stage will be actual exploratory landing on the moon and complex space stations.

Hovering TV relay satellites will make world-wide television a reality. Space observatories, unhindered by the distortion-generating atmosphere around the earth, will open up a whole new era of astrophotography. Fourth stage will be interplanetary travel—a dream of mankind for centuries. Soaring out into the infinite cosmos, man will set his sights on Martian canals, Saturn's rings, Jupiter's mysterious cloud cover and many points beyond.

# . . . AROUND THE GAS INDUSTRY . . .

## Gas Fire Statistics

Less than three percent of U. S. building fires during 1957 were attributed to gas and gas appliances, the American Gas Association reports after reviewing annual estimates of the National Fire Protection Association (NFPA). The nation's building fires totaled 843,900, with gas as a listed cause of only 22,800.

The NFPA, a non-profit voluntary membership fire safety organization, compiles annual estimates of the country's fire causes and losses from Federal, state and local fire authorities.

Gas fires were charged with an estimated $28.6 million loss. Defective or overheated cooking and heating equipment of all types caused an estimated 117,900 building fires, with losses totaling nearly $114 million.

In the NFPA list of 24 causes of fires in 1957, smoking and matches led with 130,800 fires. Greatest loss from known causes was the $109.5 million attributed to "electrical, fixed services. fires due to mis-use, or faulty wiring, equipment." At the bottom of the list was "thawing pipes," with 3,900 fires and losses of $1.5 million.

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## FPC Hears Southern Natural

January 20 was set as the date for hearings in Washington by the Federal Power Commission on an application by Southern Natural Gas Company, Birmingham, Alabama, seeking authority to construct and operate pipeline facilities at an estimated cost of approximately $55,268,-330.00.

Southern proposes to construct 461 miles of 16 to 24-inch main line loops; 115 miles of various diameter branch lines; 111 miles of field lines and supply laterals; 8,624 horespower in additional compressor capacity; and appurtenant equipment.

These facilities would provide the company with 325,000,000 cubic feet per day of additional pipeline capacity, and would enable it to acquire supplies of natural gas from four new fields. The additional pipeline capacity, Southern's application said, was needed to meet its estimated 1960-61 peak-day requirements. Southern's present main line capacity is about 988,762,000 cubic feet daily.

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## GAMA Tells Range Shipment Totals

Shipments of gas ranges by manufacturers totaled 174,900 units in November, 13.4 percent over the 154,300 in the same month last year, the Gas Appliance Manufacturers Association announced. The percentage gain was the largest of the year.

Edward R. Martin, GAMA director of marketing and statistics, said that November shipments brought to 1,719,500 the total for the first ten months of 1958. This was 6.2 percent below the 1,832,800 figure for the same period in 1957. Free-standing gas ranges accounted for 152,100 of the latest monthly total, up 10.9 percent from the 137,200 in November, 1957. Gas built-ins were up 33.3 percent from 1957 figures, with total shipment amounting to 22,800. Figures are based on a telegraphic survey reaching manufacturers accounting for a majority of national output, with totals expanded to yield national shipment figures.

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## Con Edison Tries New Technique

A new technique for raising pressure in city gas mains has been developed by engineers of Consolidated Edison Co. of New York. Con-Edison recently replaced an old 24-inch low pressure main by inserting a 16-inch high pressure main through it. A survey established the maximum lengths of pipe that could be inserted as complete units. Then a plan and elevation were made to scale, and a site was selected for a feed hole. The new pipe was epoxy-resin coated and fitted with crossing insulators. Forty-foot sections were pulled into the old pipe and butt-welded to a new piece. ConEdison believes it has made substantial savings in construction costs and cut down on traffic interruptions in downtown New York City. A detailed description appears in the December issue of GAS MAGAZINE.

# Off the Record

A loafer is a man who rests before he gets tired.

* * *

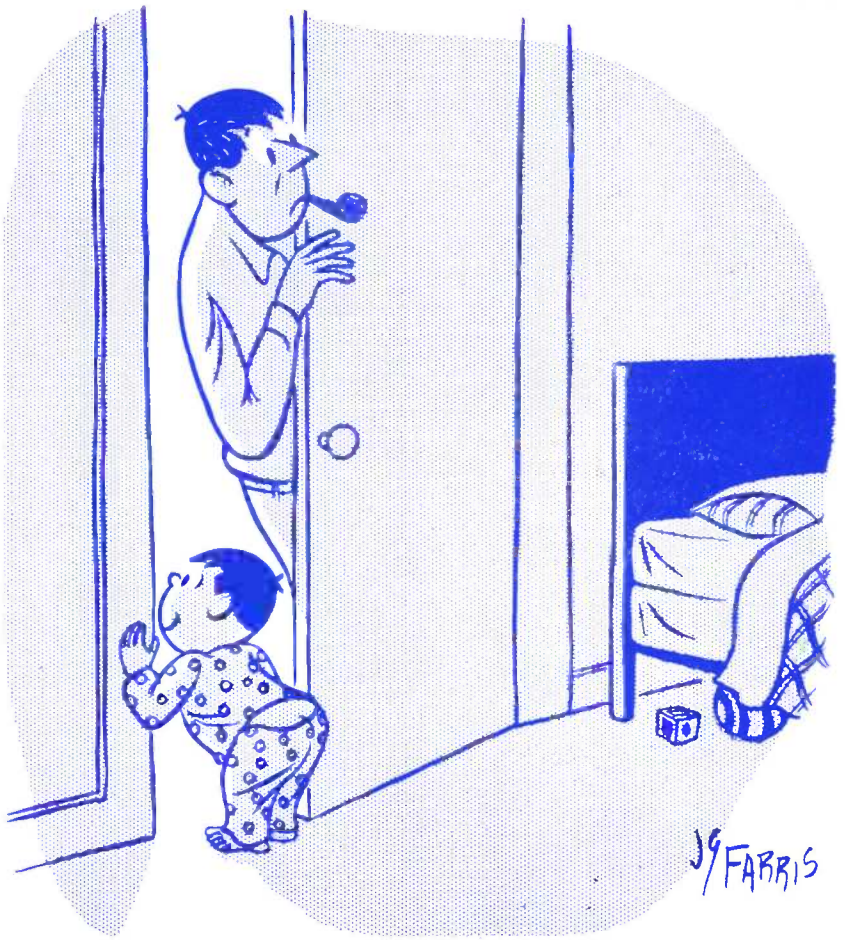
Beware if your doctor says you are sound as a dollar these days. He may mean you are half dead!

* * *

Legally the husband is head of the household and the pedestrian has the right-of-way. Both are safe as long as they don't try to exercise their rights.

* * *

Don't be unhappy if your dreams never seem to come true. Just be thankful your nightmares don't.





**"Today is January 16th. January 16th. January 16th. January 16th. Try to remember it!"**



An optimist is a person who knows exactly how sad a place the world can be. The pessimist is the one who is forever finding out.

* * *

The best way to forget all your troubles is to wear tight shoes.

* * *

Following a good example is not always the wisest course of action —look what happens to a counterfeiter.

* * *

A halo has to slip only a few inches to become a noose.

* * *

Money talks as much as ever, but what is says nowadays makes much less cents.

* * *

There's a line on the ocean which, by crossing, you can lose a day, There's one on the highway where you can do even better.


Rip Van Winkle is the only man who became famous while asleep.

* * *

Dog tired at night? Maybe you growl too much during the day!

* * *

Letter to a correspondence column read: "I'm only 19 and stayed out until 2 a.m. the other night. My mother objects. Did I do wrong?"

The answer was: "Try to remember."

* * *

The good little mink died and went to Heaven where St. Peter met him at the pearly gates.

"You were a good little mink on earth," the keeper of the gate greeted him, "so you can have anything you like up here."

"Well," the little mink replied, "I think I'd like a coat made of little chorus girls."

* * *

The second floor tenant called the party below and shouted: "If you don't stop playing that blasted saxophone, I'll go crazy!"

"I guess it's too late," was the reply. I stopped an hour ago."

A traffic expert has said that if all the cars in the nation were put end to end, some nut would pull out and try to pass them.

* * *

The diamond is the hardest mineral of all. It even makes an impression on a woman.

* * *

Unimportance is the sensation that comes when you make a mistake and nobody notices it.

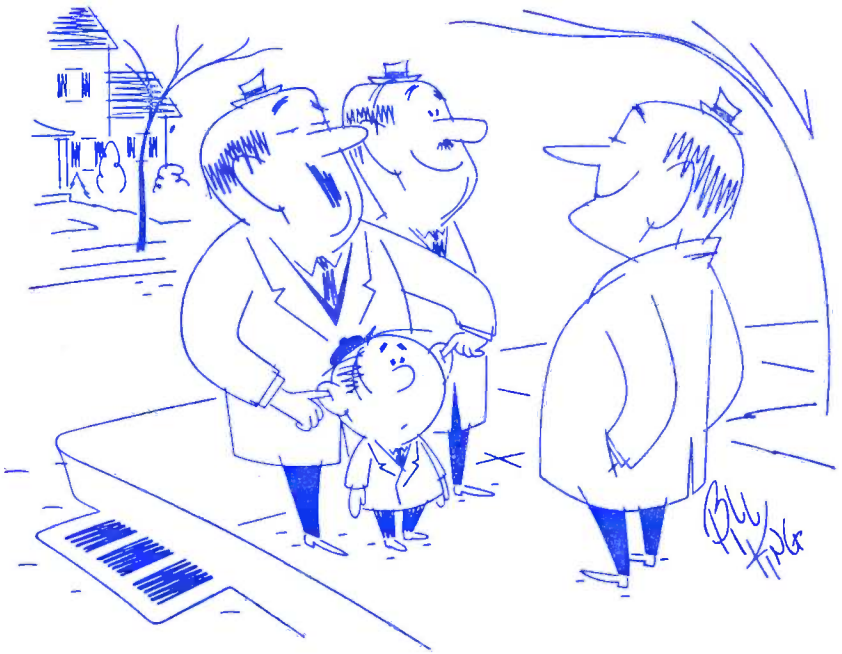
* * *

In some spinal columns, all the bone seems to be in a lump at the top.

* * *

Angry wife: "What insane notion ever possessed you to buy two elephants?"

Inebriated Husband: "The man wouldn't break up the pair!"



**"Tell Charlie that joke you heard at the lodge meeting the other night"**

MRS. WILLIAM E. MUELLER
380 SELBY LANE
ATHERTON, CALIF.

MF

**It's always "welcome home" for the bread-winner when he brings United States Savings Bonds with him. For the future security of yourself, your family and your country, remember that U.S. Savings Bonds are sound investments.**