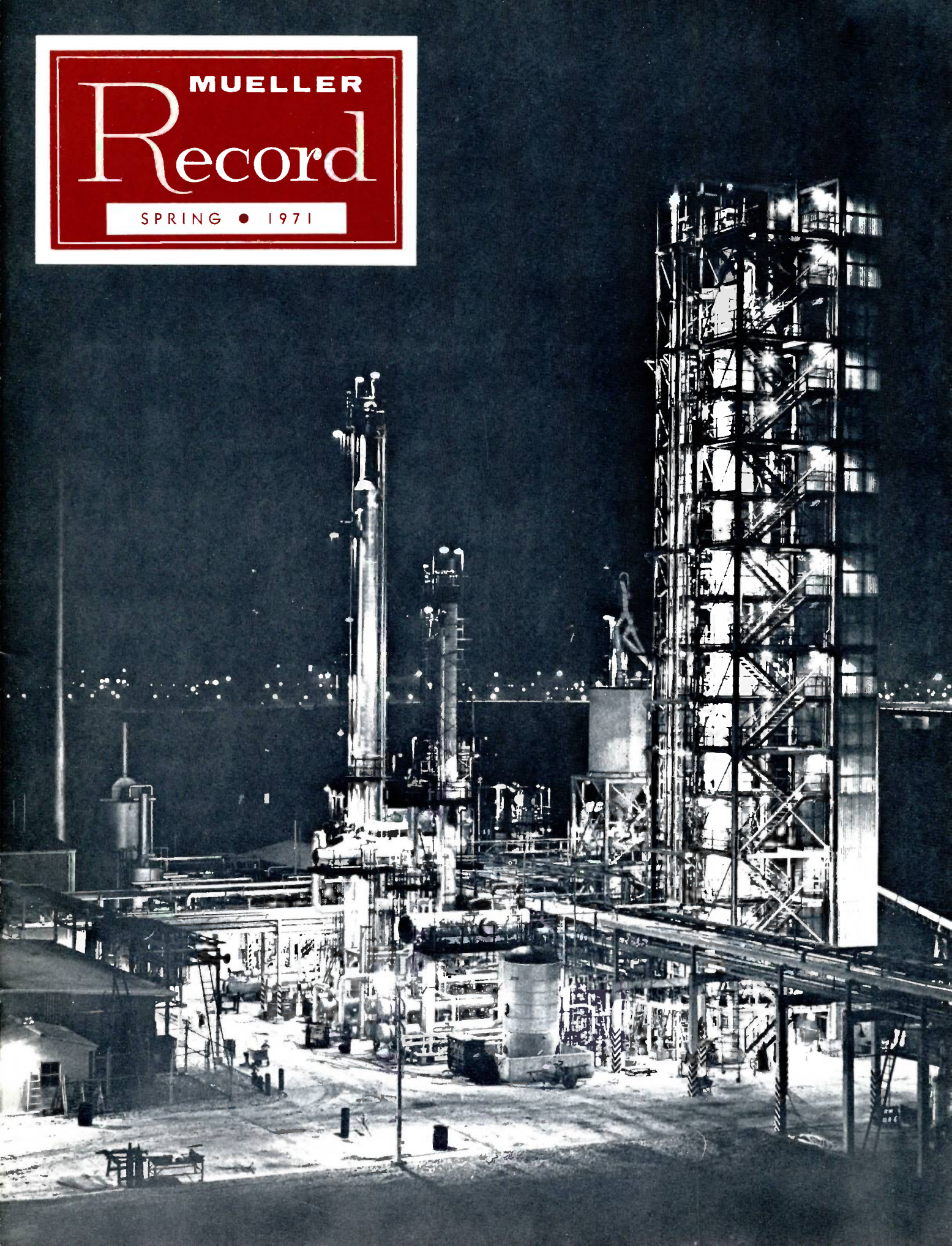
MUELLER Record

SPRING • 1971



MUELLER RECORD

SPRING • 1971

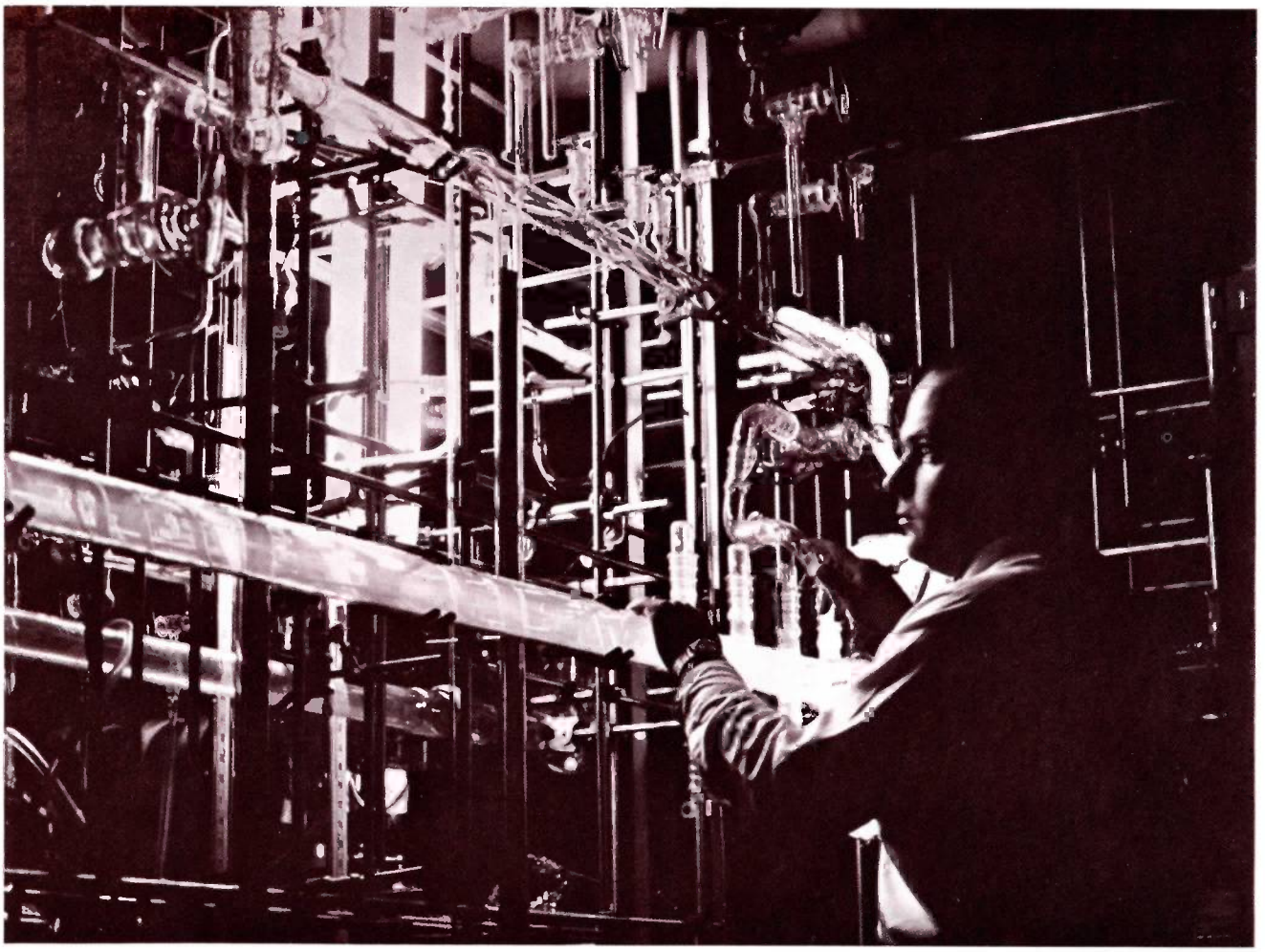
Joe Penne
Editor

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

Member:
Central Illinois Industrial
Editors Association
and
International Association of
Business Communicators

Contents

OUR COVER shows the first of its kind—the HYGAS pilot plant designed to convert coal to a clean burning natural gas equivalent. The HYGAS process was developed by the Chicago-based Institute of Gas Technology, which deals in research, education and information for the natural gas industry. Some of its activities are covered in a story on a few of the succeeding pages.



Working to uncover another of the secrets of natural gas.

SEARCH AND RESEARCH

For Information, Utilization and Education at IGT

The gas industry got its start more than a century ago because of a manufacturing process that made low-grade gas from coal. We have gone from the low usage of gaslights to natural gas and demands that can't be fully met today. Does the industry's future now lie in a *new* method that produces pipeline-quality gas from coal?

This conversion process, known as HYGAS, was developed by the Chicago-based Institute of Gas Technology (IGT) as part of its continuing program of research, education and information aimed directly at the natural gas industry. IGT's contributions to the "use and utilization" of natural gas have been many, but the breakthrough in the area of making gas from coal could answer the problem of the nation's energy needs as well as fill future requirements for gas.

Energy requirements, environmental control and better living are all popular subjects today, but IGT has been working on these areas since it began nearly 30 years ago.

As early as 1939, far-sighted members of the American Gas Association saw a demand for research in the gas field and the AGA's executive board and advisory council named a committee to investigate possibilities. IGT was incorporated in Illinois in 1941, following a study which included a survey of 92 degree-granting institutions across the country. On May 22, 1941, the AGA committee met in Cleveland, Ohio, and recommended "the formation . . . of an education corporation, not for profit, to be affiliated with the Illinois Institute of Technology, which shall specialize in scientific instruction and research pertaining to the production, distribution and utilization of gas and its by-products."

From these beginnings has sprung an organization with a staff of some 240 people with annual programs running over $9 million in value. This compares to an annual program value in 1941 of less than $100,000 and a staff of 12.

In addition to research work, graduate and undergraduate academic courses designed to prepare people for careers in the gas industry are offered at IGT and industrial education programs are available to help those already on the job to better meet the needs of this dynamic industry.

More than 170 utility, gas service, gas appliance and equipment companies (including Mueller Co.) and other industrial corporations are either members of or annual contributors to IGT.

The Gas Developments Corp. (GDC), a wholly-owned subsidiary of IGT, was formed in 1965 to extend the range of services to the gas industry. The activities of GDC embrace domestic and international commercialization of research results as well as technical and management consulting services.

Research programs at IGT fall into two general categories—"in-house" projects and "contract" work. The contract work involves a request from within the gas industry to help solve a specific problem, investigate an idea or follow a program as directed by and financed by the company or utility. A.G.A. sponsored 17 different research projects last year, valued at $1.7 million.

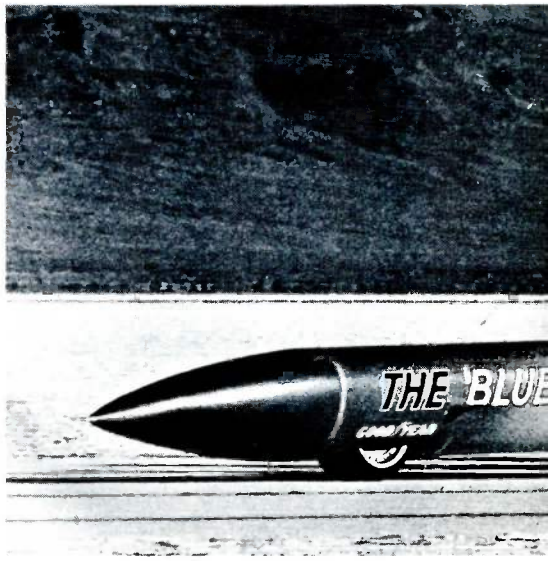
The "in-house" research program is financed largely by member dues and is initiated internally at IGT. The program attempts to: 1. Develop new knowledge and information necessary to advance gas industry technology, 2. Continue to improve skills and proficiency of the staff, and 3. Establish the technical or economic feasibility of new concepts worthy of financial support by prospective sponsors. Many of IGT's presently-sponsored projects started as in-house research.

Dr. Donald L. Klass, assistant research director of IGT, said, "It is not easy to predict the outcome of particular research projects at the beginning of the work, nor is it easy to predict the actual value of the results. Nevertheless, the probility of success in a research program can be increased if the potential value and applications of the results are considered at an early stage in work."

. . . "It is not possible for the scientist to sit isolated in an ivory tower and meditate over the aesthetic value of a particular observation or result. Barring true technological breakthroughs, which are becoming increasingly rare, research to develop knowledge for knowledge sake alone is the most unprofitable pursuit one can undertake. A fine piece of research is worthless if the results are never used to benefit man and his environment. We are therefore constantly on the alert to apply the information accumulated in our research to the real world."

The coal gasification program began in the 1940s as an in-house project. This project got started with a few laboratory experiments and now has developed into a technological advancement sponsored by A.G.A. and the U. S. Department of the Interior's Office of Coal Research. The pilot plant was engineered and constructed by Procon Inc., at a cost of some $7 million.

Standing on a 3.5 acre plot on Chicago's southwest side where the Peoples Gas Light and Coke Co. once made gas from coal for many years, the HYGAS plant is a "test tube" experiment and is not intended to be for commercial use.



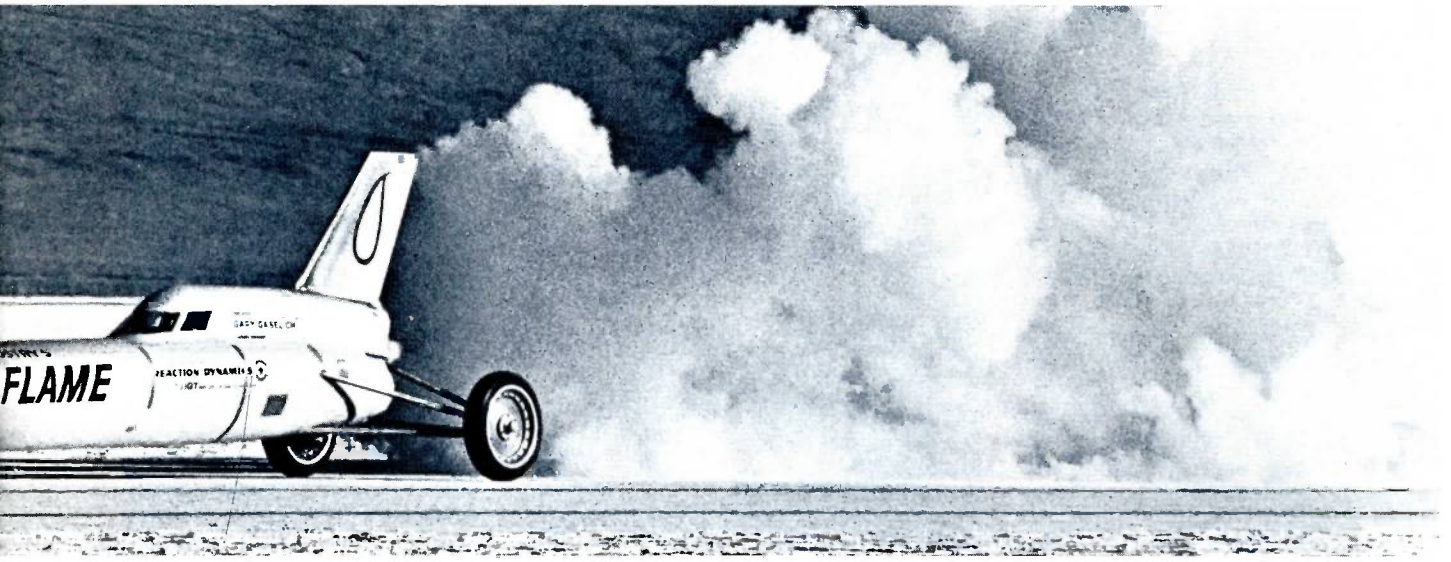
The Blue Flame, the new holder of the world land speed record, starts on one of its runs across the Bonneville Salt Flats. The natural gas industry's rocket propelled vehicle used liquefied natural gas and hydrogen peroxide as propellants. The vehicle traveled at 622.407 m.p.h., about 21 m.p.h. over the previous record.

The plant, dedicated last October is designed to consume 75 tons of coal per day, and produce 1.5 million cubic feet of gas, while a commercial plant will produce about 250 million cubic feet of gas daily.

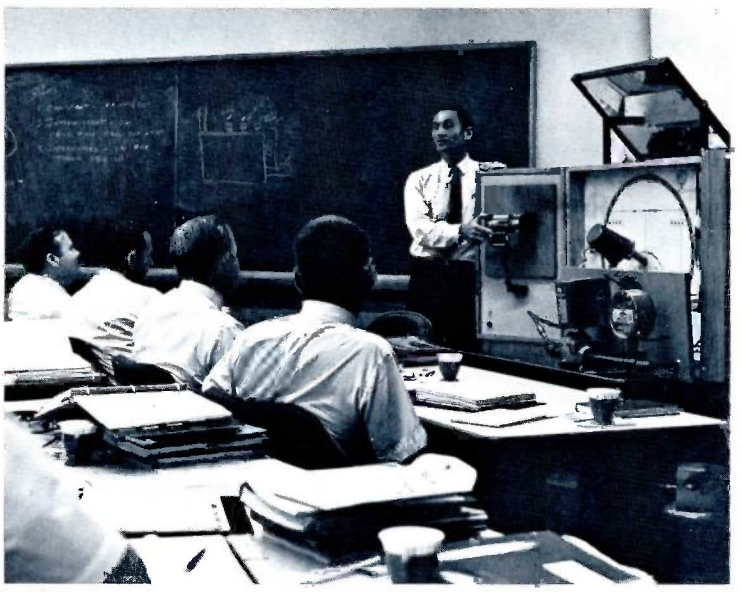
Current plans call for the pilot plant to be in full operation in the spring of this year, and the commercial plant developed by 1977. The A.G.A. was the prime mover in this program as early as 1946 and followed the program through until 1964 when the Department of the Interior got involved.

The making of synthetic gas could be the most spectacular and important program carried on at IGT, but a number of other exciting projects took place during 1970 that are beneficial for the industry.

One of the most newsworthy events involving IGT and the industry was the setting of a new world land speed record last October by The Blue Flame. The record average speed of 622.407 m.p.h. bettered Craig Breedlove's former mark by more than 21 m.p.h. Sponsored by the natural gas industry, the vehicle was designed



Research, testing (below) and working with unknowns are basic at IGT, but some of the more mundane things as classroom work (right) and ways to brew a cup of coffee are also very much a part of the program at the Institute. Receiving a cup of coffee brewed on a reformed natural gas range top is Paul W. Kraemer, IGT board chairman, and president of the Minneapolis Gas Company.



and constructed for IGT by Reaction Dynamics, Inc. of Milwaukee.

The vehicle took two years to build at a total project cost of some $500,000. The engine used to propel The Blue Flame to the new record—similar in design to the one used to land men on the moon — uses liquefied natural gas (LNG) and hydrogen peroxide as propellants.

LNG and standard vehicles have also been included in IGT's programs for some time. More than a year ago IGT sponsored a seminar on natural-gas-fueled vehicles and more than 200 representatives attended the sessions.

IGT projects are many involving LNG and pollution control. LNG storage and handling, commercial development of its markets, shipments, and its properties have all been included in IGT's work.

The use of Liquefied Natural gas-fueled automobiles is another project at IGT. Examining an LNG-fueled car from San Diego Gas & Electric Company are, from left: Martin R. Engler, a SDG&E vice president; G. J. Tankersley, president, The East Ohio Gas Co.; Dr. Henry R. Linden, IGT director; Dr. J. T. Middleton, commissioner of the National Air Pollution Control Administration, and J. W. Heiney, president, Indiana Gas Co., Inc.

COAL TO GAS

A major innovation in the fight against air pollution — the process to convert coal to a clean burning synthetic gas, equivalent in quality to natural gas — was developed by the Institute of Gas Technology.

Resources of coal in the United States are many times greater than the resources of both oil and natural gas combined. Presently known minable reserves of coal could supply some 11,000 trillion cubic feet of gas.

The "HYGAS" process gets its name from hydrogen, which plays a major role in the chemical conversion process, and gas, the resulting product.

The gasification process used in the HYGAS plant takes place as the coal is passed through a series of steps in which it is put under high pressure and intense heat.

First, the raw coal is crushed into particles about same size as table salt, and all moisture is removed.

Two of the process towers at the HYGAS plant in Chicago.

The next step is to destroy the tendency that some coals have to become sticky at high temperature. To do this, air, heated to about 800 degrees Fahrenheit, is blown through the coal particles. The coal is then combined with light oil to produce a mud like mixture.

In this form the coal can be fed into the gasification reactor, the heart of the operation, which puts the mixture under 1,000 to 1,500 pounds per square inch of pressure.

The coal is then injected into the top of the 135-foot-high hydrogasification reactor. As it drops downward it is subjected to heat and hydrogen which causes a chemical reaction to take place, producing methane, the major component of

Recent research at IGT included the continued program on using microbes to convert natural gas to edible proteins, which progressed to the pilot plant stage; field tests of an instrument to determine the condition of buried cast iron pipe; construction of the prototype of a new gas range; the completion of work on a more efficient solid-state ignition system for industrial engines; several cooperative projects to improve heat transfer in industrial furnaces; two important programs of building prototype gas-fired air conditioning equipment; development of a method of breaking concrete pavement with microwave energy; the first three-year phase of research on natural gas-fueled cells was completed and work supporting the development of prototype equipment for field testing was begun.

IGT's study of environmental control sponsored by A.G.A. continues with the cooperation of The East Ohio Gas Company in its "Living Difference" homes in Canton, Ohio. These homes are adjacent and identical except that one is all-electric and the other is primarily gas-fueled. Instruments in both homes allow IGT to collect data on such things as air quality, energy utilization and comfort conditions. A small building between the homes, houses an automatic data collection system that monitors indoor and outdoor climate, appliance operation and reactions of those families living in the homes.

Industry, pollution abatement, air conditioning, appliances, energy conversion, LNG, process research, management sciences, information, education, consultation, and distribution are all needed to describe the activities at IGT.

Its activities are many and demands are extensive. Direction of IGT is given by a 40-man board of trustees consisting of executives from member firms and Dr. John T. Rettaliata, president of IIT who is also president of IGT and a member of its board.

Paul W. Kraemer, president, Minneapolis Gas Co., is board chairman. Members of the executive committee are: Mr. Kraemer; A. C. Daugherty, president, Rockwell Manufacturing Company; J. W. Heiney, president, Indiana Gas Company; Joseph B. Lanterman, chairman, AMSTED Industries, Incorporated; Robert A. Pritzker, president, The Marmon Group; Dr. Rettaliata; Hugh F. Steen, president, El Paso Natural Gas Company; Bernard J. Clarke, president, The Columbia Gas System, Inc., and Robert H. Willis, president, Connecticut Natural Gas Corporation.

In his annual report to the board of IGT, Henry R. Linden, director and executive vice president, recently wrote: "Evidence of the public's increasing concern with energy needs and environmental control is the attention given to them in Congress and the communication media, the involvement of professionals from non-technical disciplines and the creation of a number of high-level Government panels. While all this is undoubtedly constructive, it should be noted that solutions to the problem of energy supply and the effect of its use on the environment can be found most readily through straightforward engineering approaches. Thus, in contrast with most social and political problems, all that are needed are sufficient manpower and money. The manpower seems to be available, but the money is not."

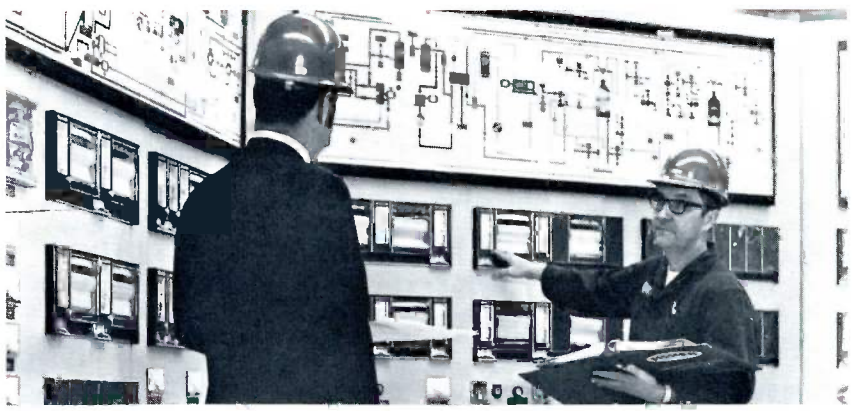
For nearly 30 years, IGT has been working on energy uses and utilization and their relationships to the natural gas industry. The Institute and its staff plans to continue working in these areas that are so vital to the United States.

HOW IT HAPPENS

natural gas. The newly produced gas rises in the reactor as the coal falls. Upon reaching the top of the reactor the gas temperature is about 600 degrees Fahrenheit. It is then cooled and passed through a purification solution.

Thus far, two-thirds of the methane in the final product has been produced. The final third is created by passing the purified gas mixture through a methanation stage.

In addition to benefits to our energy supply, the installation of a commercial HYGAS plant could have broad economic benefits for the area in which it locates. Large commercial HYGAS plants will be located in coal-bearing areas of the country, not only in the well-established mining regions, but also in areas less known for mining. A single typical plant, which could produce 250 million cubic feet of gas daily, could create some 2,300 new jobs directly involved in plant operation and coal mining, plus several hundred supporting jobs.



Some of the details of the control room at the HYGAS plant are explained by an IGT engineer. The sophisticated controls, a computer and six people will be able to run the plant when it gets in full operation.

WHAT'S NEW and NEWS FROM

FRANK MUELLER SUCCEEDS MR. WEBBER AS CHAIRMAN

(Decatur) . . . Albert G. Webber, Jr., chairman of the board of directors of Mueller Co. since 1953, retired for reasons of health at the company's annual meeting held on Feb. 11 in Decatur. His retirement ends a business relationship with the company and Mueller family that spans nearly 50 years.

Mr. Webber is succeeded by Frank H. Mueller, who has been with the company fulltime since 1927 but began working summers as a youth in 1917. Although he retired as vice president—engineering in 1968, Mr. Mueller continued as a member of the firm's board of directors and served as chairman of its executive committee.

Robert V. Krikorian, president of Rex Chainbelt, Inc., Milwaukee, a member of the Mueller board since 1967, succeeds Mr. Mueller as chairman of the executive committee.

NEW DIRECTORS

The company's shareholders also elected three new members to the board of directors. They are: Philip M. Mueller, William E. Murphy, and Harlan A. White. Philip Mueller is a son of Frank and a great-grandson of company founder, Hieronymus Mueller. He is associated with the Boeing Co. in Wichita, Kansas, and lives in Derby, Kansas. Mr. Mueller holds bachelor and master degrees in mechanical engineering from the University of Illinois. Murphy is vice president—marketing at Mueller, and White is vice president and general manager of the company's Chattanooga operations.

Mr. Webber, a navy veteran of World War I, is a 1917 graduate of the University of Illinois Law School, and returned from service to practice law with his father. The senior Mr. Webber worked as a general apprentice during his late teens under Hieronymus Mueller, company founder, beginning a family relationship that is almost a century old. The senior Mr. Webber served as the company's general counsel for many years and in 1934 his son was named assistant counsel.

In 1936, A. G. Webber, Jr., was named general counsel and 10 years later he was elected to the Mueller Co. Board of Directors. In 1947 he was elected the company's fifth president and he became the first to hold this office who was not a member of the Mueller family. He was named chairman as well as president in 1953. In addition, he served in various positions, including president, treasurer and board chairman at Mueller, Limited. On May 1, 1963, John F. Thurston was named president and chief executive officer of Mueller Co., succeeding Mr. Webber, who remained as board chairman.

A. G. Webber, Jr.

Frank H. Mueller

NEW CHAIRMAN

Frank Mueller joined the company on a full-time basis in 1927, following his graduation from Cornell University, Ithaca, New York. He served as a company vice president from 1948 to 1968 and has been a member of the board of directors since 1949.

White has been with Mueller Co. since 1955 and served in a number of administrative, financial and manufacturing capacities. In 1963 he was named general controller for the company and two years later, he was promoted to vice president—administration. In 1968 he was named to the newly-created position of vice president and general manager of the Mueller Co. plant in Chattanooga.

Murphy came to Mueller in 1964 as assistant to the president and in 1965 he was elected vice president—marketing. Prior to joining Mueller Co., Murphy was an officer and director of Charles J. Webb Sons Co., Inc., Philadelphia.

ELECTED TO THE MUELLER BOARD at the annual shareholder's meeting were:

Frank H. Mueller, chairman
Robert V. Krikorian, chairman of the executive committee
Adolph Mueller II
Mrs. Bessie I. Mueller
Philip M. Mueller
W. E. Murphy
E. K. Scheiter
John A. Schluter
Mrs. Lenore Mueller Schmick
Franklin B. Schmick
John F. Thurston
Harlan A. White

COMPANY OFFICERS elected by the board were:

Frank H. Mueller, chairman
John F. Thurston, president and chief executive officer
Paul Hickman, vice president—manufacturing
Lyle R. Huff, vice president and secretary-treasurer
W. R. Leopold, vice president—engineering
Robert W. Mallow, assistant secretary
William E. Murphy, vice president—marketing
Harlan A. White, vice president general manager (Chattanooga operations)

MUELLER

SALES CHANGES MADE IN SOUTHEAST

In an effort to improve customer service, Mueller Co. has realigned some sales territories in the Southeast Sales District and added two new sales representatives on Dec. 1, 1970.

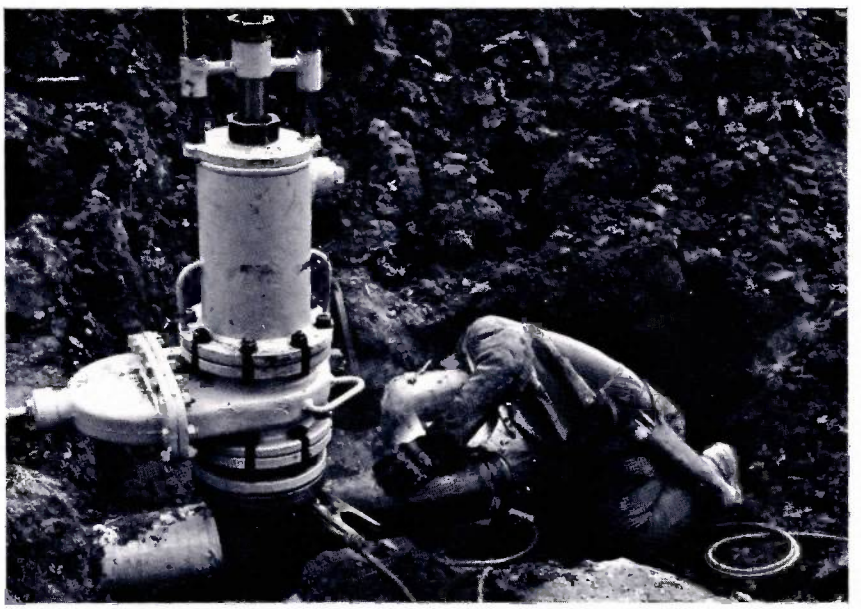
Lloyd E. Murphy, originally from Maroa, Illinois, has been assigned to a newly-created territory, consisting basically of the southern two-thirds of Virginia. C. Robert Fisher, originally from Keokuk, Iowa, is now covering the State of South Carolina.

C. Robert Fisher

Lloyd E. Murphy

MUELLER MACHINES, FITTINGS USED ON RELOCATIONS

As the relocation of gas lines becomes more and more a part of a gas company's regular operations, the use of the Mueller "Bottom Out" line stopper fittings are regularly in demand as the most desirable way to do the job. The specially designed fittings permit full-size (or smaller) new lines to be connected to the base of the stopper fitting. When stopping off a line, with the stopper in position, the flow of gas is directed through the bottom of the fitting, using the special Mueller rubber by-pass stopper or regular steel wedge stopper. This method eliminates the need for a separate by pass line. Workmen can then take the old line out of service with complete safety and cap the stub ends without any interruption of flow or blowing of gas. When stoppers are removed, and the job is "buttoned-up", the flow is through the new line joined to the old line at the base of the two bottom out stopper fittings. The picture below was taken at Chester, Illinois, where a six-inch gas main operating at about 150 psi was being lowered to allow a culvert to be installed. The path of a small stream was to be diverted through the culvert and a new bridge built, allowing the road to be straightened. The Mueller bottom out stopper fitting was perfectly suited to accomplish this, easily, safely and without extra taps.

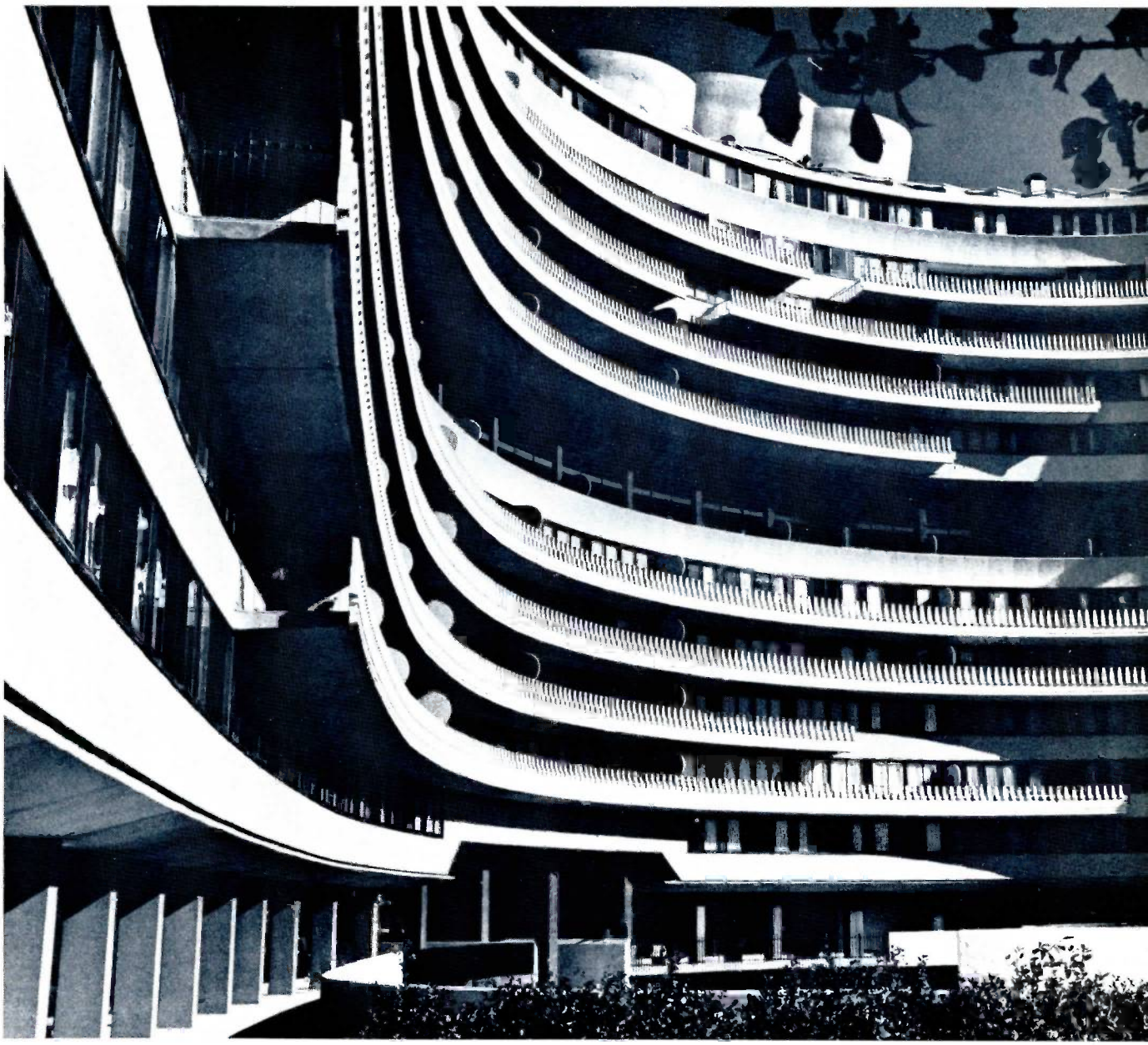


Murphy joined Mueller Co. in 1961 and in early 1970 entered the sales training program. He has served with the Marine Corps in Vietnam and was awarded the Purple Heart. Lloyd and his wife Gwendolyn make their home at 5525 Cardiff Court, Apt. C., Richmond, Virginia 23227. He can be reached by phone at 262-744, Area Code 703.

Fisher, who has been in the sales training program since July of 1969, attended Purdue University and is a veteran of U.S. Army service in Vietnam. Lorin Grosboll, who formerly covered both North and South Carolina for Mueller, will continue living in Charlotte and concentrate his efforts in North Carolina while Fisher covers South Carolina. Fisher's headquarters address is 1330 Johnson Ave., Apt. 5, Columbia, South Carolina 29203. Phone 253-6256, Area Code 803.

P.S.: With two Murphys (unrelated) in the Mueller Co. Sales Division, it is suggested that you use some care in addressing mail. Lloyd is in Virginia, and W. E. (or Bill) is in Decatur. To improve mail delivery to the Murphys, be specific.

Unlike most gas utilities its size, Washington Gas does not serve many large industrial users. Large users are primarily office buildings, laboratories, universities, hotels and apartment complexes such as Watergate (below). This large six-building center consists of luxury apartments, hotel, office space and a shopping mall. A central plant run on gas provides chilled water for cooling, as well as steam for space heating and domestic hot water.



WASHINGTON GAS LIGHT COMPANY

Serving The Nation's Fastest Growing Population Center

A venture to light the grounds of the U. S. Capitol Building in Washington in 1848 with a huge lamp flickered and went out shortly after it was lit, but this attempt "ignited" an interest in gas in the area that eventually grew to be the Washington Gas Light Company.

From serving one customer—the government—Washington Gas has grown to a system which includes about 525,000 metered customers in the District of Columbia, Maryland, Virginia and West Virginia, and having a total plant investment of about $381,000,000.

The Washington area is now the seventh largest metropolitan area of the country, and during the next 30 years this fastest-growing of the nation's population centers is expected to balloon to about 7.7 million people by the year 2000—an increase of 150 percent.

Projections like this are cause for optimism regarding the future of Washington Gas, but with it comes such questions as supply, storage, distribution and service in the future. Working to keep ahead of demands, Washington Gas spent about $30 million on new construction last year and the 1971 budget for construction is expected to be around $31 million. New facilities are being opened, underground storage is being utilized more, and the company is now involved in gas exploration.

In each of the past 48 years the company has sold more gas than it did the previous year and the company's record of continuous dividend payments since 1852 is longer than that of any other utility company listed on the New York Stock Exchange.

The future, indeed, is bright for Washington Gas and the history of the company and the area it serves is exciting.

Congress first met in Washington in 1800 but it wasn't until later in the 19th century that the city changed from an unkept village to an urban center.

On July 8, 1848, four days after laying the cornerstone of the Washington Monument, President Polk signed a bill which incorporated the Washington Gas Light Company, the first public utility still in operation today which was chartered by Congress.

Gas was introduced in Washington a year or so earlier by James Crutchett, who persuaded Congress to mount a huge gas lantern, six feet in diameter, atop an 80-foot pine mast on the dome of the Capitol to light the grounds. The curious lantern could be seen for miles down the Potomac, but it did little for the Capitol grounds and the light was soon removed from its perilous perch.

This was the first of Crutchett's problems and he finally sold his patent rights to a group of interested businessmen who petitioned Congress for the company's incorporation on April 12, 1848.

Congress quickly approved the bill, and by the end of the year the company had mains in the ground, lamp posts erected and the Capitol lit with gas from a manufacturing plant on the Capitol grounds. Lighting of the White House followed soon after.

In 1850 gas was sold to a commercial customer and then it became available to others when the corporation bought the gas mains from the government. The demand for gas was great and by 1856 the company had about 1,700 customers, more than 30 miles of main, about 500 street lights, and competition. In 1854 Congress chartered the Georgetown Gaslight Company and it also began operating in the District of Columbia.

Washington began depending on gas for its lighting and when the Civil War came along, President Lincoln had to use executive pressure on a railroad to assure delivery of coal to the city where it was used to manufacture gas.

The invention of the incandescent lamp by Edison in 1878 could have proved a blow to the company, but it wasn't until the turn of the century that electric lights became popular and by that time gas had become useful for other things and the company continued in spite of tough competition.

In 1931, a new era began for the company; natural gas arrived and was used first mixed with manufactured gas. From then on business began to expand. In 1936, Congress passed a special act permitting the merger of the company with the Georgetown Gaslight Company. This act also permitted the company to issue new shares of stock, which provided financial relief for the growing company. Not since 1896 had it been able to increase its stock capitalization.

In 1939, two small companies serving the area were added to the company's system and in 1946 and 1947 the company undertook the giant task of converting all of the area's gas appliances to permit the use of straight natural gas.

The final unification of small local gas companies into Washington Gas took place in 1953, when all existing subsidiaries became part of the system. During 1959, the company purchased a controlling interest in the Shenandoah Gas Company, an expansion that represented an important change in the company's concept of doing business. Shenandoah supplies gas to a number of heavy industrial and manufacturing plants in the Shenandoah Valley of West Virginia and Virginia.

The service area grew further with the purchase of the Frederick (Maryland) Gas Company in 1963, and then the company entered the operation of a gas field when it acquired the Hampshire (West Virginia) Gas Company that same year. In 1965 the Martinsburg (W. Va.) Gas and Heating Company was also acquired.

The Hampshire subsidiary expects to have its underground storage field in West Virginia available for use next winter, improving the company's ability to provide adequate supplies of gas during periods of greatest demand.

Another subsidiary, the Crab Run Gas Company, was formed at the end of 1970 to explore for natural gas in a part of Virginia about 75 miles south of the Hampshire Storage field. Leases have been obtained on about half of the 90,000 acres which Crab Run hopes to explore.

Washington Gas reached two milestones in 1969. On Dec. 15, the 500,000th meter was installed. It took from 1848 to 1948 to attain the first 250,000 meters, but only 21 years to reach the next 250,000. The other major achievement in 1969 was to exceed sales of more than a billion therms of gas in a year. This figure is well over twice as much gas as the company sold 10 years ago.

With figures like this to only reflect on, management still looks ahead to years of great growth. Supply problems have been of major concern to gas companies around the country, but Washington Gas is optimistic.

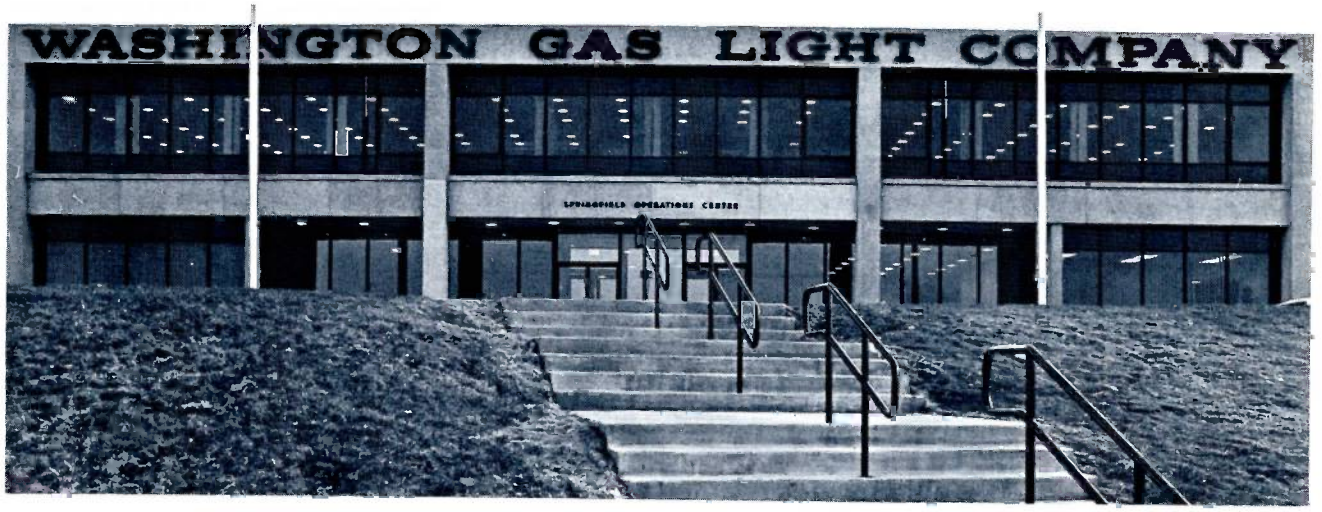
In their annual report to shareowners, Board Chairman Donald S. Bittinger and President Paul E. Reichardt said, "Although recently the demand for all forms of energy has eclipsed supply, we are convinced that in the case of natural gas the problem is a short-range one. Progress is already evident as the gas industry and Federal authorities seek solutions."

Being involved and working on the problems of the people means working with the people. To help accomplish this, Washington Gas in November 1969 formed a wholly-owned subsidiary called City Homes, Inc. Its purpose is to purchase deteriorated houses, rehabilitate them, and then resell the houses to low and middle-income families, thereby helping to reverse urban decay and its accompanying social problems. So far two houses have been rehabilitated and resold. Three additional houses are in various stages of planning and rehabilitation. Both completed homes underwent major rehabilitation and ended up as first class examples of what rehab can do. The VA inspector on one of the homes said it was one of the finest examples of rehabilitation he had ever seen in Washington.

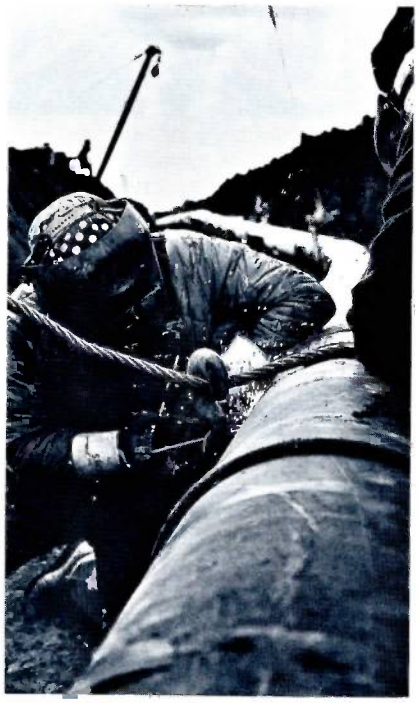
Donald S. Bittinger
Chairman
of the Board

Paul E. Reichardt
President

City Homes was organized as a profit-making organization and hopes to accomplish this by adding gas customers to the Company's lines as well as by making a modest profit from the sale of the homes. It also appears that the public relations aspect of getting so directly involved in a major problem of the innercity, i.e., vacant, vandalized housing, and of using only minority



To keep pace with the spreading service area and new needs of the system, Washington Gas recently opened a new operations center in Springfield, Virginia. This building consolidates a number of operations and serves as headquarters for about 1,100 employees.



Construction is continuous at Washington Gas. The 1971 budget for construction is set at $31 million.

One of the subsidiaries of Washington Gas is involved in the exploration for gas in West Virginia.

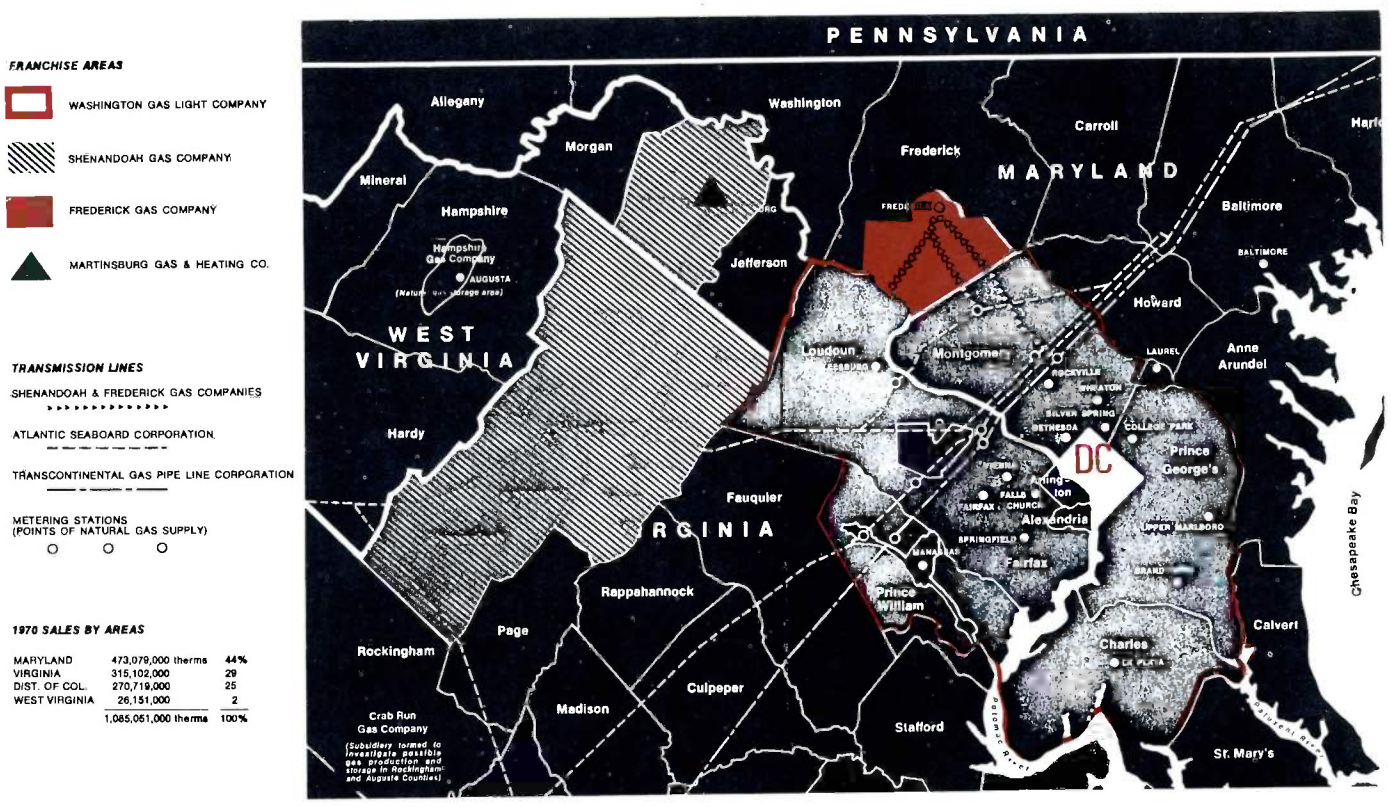
contractors has been most worthwhile.

If this project goes as planned, City Homes hopes to greatly expand this operation in the near future.

Planning and preparing low-cost, nutritious meals is the work of a Washington Gas nutrition counselor who works with inner-city residents. She conducts classes and cooking demonstrations involving marketing, meal planning, nutrition, budgeting, recipes and special diets. She prepares and distributes weekly menus featuring the current best buys from the local stores.

Another innovation introduced to improve understanding in the community, involves a special six-hour course on meter reading, billing and credit procedures. The program is available to neighborhood groups. This program and booklet have been translated into Spanish for use in certain areas of the community.

Unlike most utilities its size, Washington Gas has few large industrial users, but several large industrial customers are served by its subsidiaries. Large users on the Washington Gas lines (not subsid-



Service Area

iaries) are primarily office buildings, laboratories, universities, hotels and apartment houses. The largest Washington Gas customer (171,000 cfh) is the National Bureau of Standards' 20-building complex in nearby Gaithersburg, Maryland.

Although the utility is named for Washington, the District of Columbia only accounts for 25 percent of the total therms sold in 1970. Sales in Maryland accounted for 44 percent, Virginia 29 percent and West Virginia two percent.

To cope with growth in a wider area, the company opened a new operations center in Springfield, Virginia. Completed last summer at a total cost of $9.1 million, this building consolidates a number of operations and serves as headquarters for about 1,100 of the system's 3,000 employees. It provides much needed space for offices, laboratories, shops, and storage of materials. The building is served by a gas-fueled Total Energy system which supplies not only heating and cooling but all of the building's electrical requirements as well.

A new substation near Rockville, Maryland, was also built and placed in service last year at a cost of about $1.1 million. It provides an operating base for employees who serve the Northwest part of the company's service area.

Last September, work was begun on a 24-inch replacement transmission main extending 4.8 miles from the Maryland-District of Columbia boundary line into the Northwest section of Washington.

Gas is a good buy in the Washington area and an effective marketing job is being done by Washington Gas. Of the new homes built last year, 97 percent of those in the area of the company's facilities in Metropolitan Washington specified gas heating. Gas ranges in new apartment units have risen from a saturation of 97 percent in 1969 to 98 percent in 1970; gas heating and water heating went from 60 percent to 94 percent and gas was specified for air conditioning in 29 percent of the new apartments last year.

Leading the company in its growth and plans for the future are:

Donald S. Bittinger, Chairman of the Board

Paul E. Reichardt, President

C. Oscar Berry, Senior Vice President & General Counsel

Richard H. Bussard, Senior Vice President—Operations

Robert T. Keith, Vice President —Employee & Public Relations

Edgar R. Mellon, Vice President & Treasurer

Carroll C. Pike, Vice President & Chief Financial Officer . . . . . .

Richard C. Vierbuchen, Vice President—Marketing

Howard A. Davis, Comptroller

Rodney W. Reamy, Secretary

Frederick W. Amadon, Jr., Assistant Vice President & Director of Personnel Services

Norman W. Laird, Assistant Treasurer

Stewart W. Reynolds, Assistant Treasurer

C. Bruce Dickinson, Assistant Secretary

Washington Gas Light Company started serving one customer—the U. S. government—in 1848. Today the gas utility still numbers the Federal government among its 525,000 customers, but they now include the First Family, Congressmen, representatives from around the world, government agencies and most of 3 million citizens who make the Washington Metropolitan area the nation's fastest growing urban center.

Brooklyn Union Gas

Emergency Shop On Wheels

A quick response, trained men and proper equipment are the keys to handling an emergency situation and at Brooklyn Union Gas Company, Brooklyn, New York, these criteria are used as guides for service work as well as emergency situations.

At Brooklyn Union Gas, with nearly 1,150,000 meters in service in three bustling boroughs of New York City, there seems to be an urgency in every job undertaken in this vast metropolitan area.

In the Staten Island section of the Borough of Richmond, Brooklyn Union covers the island's 60 square miles of area and serves a population of about 300,000. To keep up with the pace and demands for equipment, the gas utility took a new truck, customized a body and converted it to an emergency workshop on wheels.

It contains everything needed to control and shut off service lines and distribution mains through eight inches in all normal pressure ranges. The truck includes a power take-off air compressor, emergency repair clamps and fittings, Mueller drilling machines, Mueller line stopping equipment, a 1,000-pound capacity boom, and a hydraulically operated tailgate.

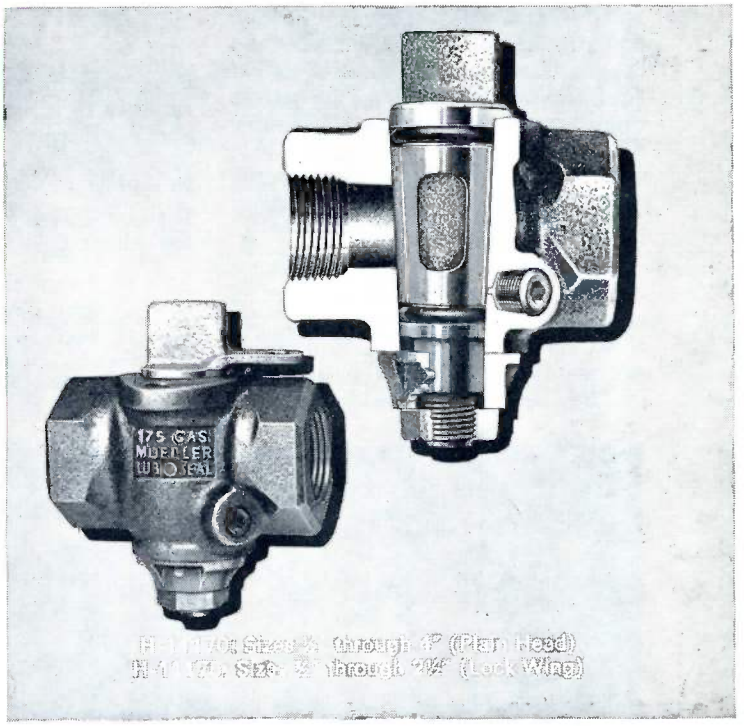
All of the necessary equipment and parts to do a job are neatly and conveniently stowed in the truck for immediate use. It is radio-equipped and when a call comes for the services it provides, there is no searching for proper tools or running to a warehouse for fittings and equipment. The truck contains everything that is needed and Brooklyn Union Gas responds with the speed and effectiveness for which it is known.

A Brooklyn Union Gas employee uses the manually operated crane on the back of the customized truck carrying equipment to meet emergency control situations. The vehicle contains equipment, fittings and tools to shut off and control gas lines through eight inches. In this photo, the workman unloads a Mueller line stopping machine Unit No. 3 designed for use on six or eight inch fittings.

This interior photo shows how carefully the equipment is stowed, assuring that it is easily available, and protected when not in use.

Improved Mueller® LubOseal® Meter Valves...

comply with new D.O.T. requirements for working pressures to 175 psi



Recently announced improvements in the grease system of Mueller LubOseal Meter Valves have made it possible to increase the working pressure rating from 125 psi to 175 psi.

The tamperproof design of LubOseal Valves complies with new D.O.T. requirements for gas services at working pressures up to 175 psi.

The best news is that Mueller LubOseal Meter Valves have been increased in pressure rating with no increase in price. Ask your Mueller Representative for full details.

For lower pressures, non-lubricated Mueller tamperproof meter valves comply fully with new D.O.T. requirements and cost only a few cents more per valve than valves that are not tamperproof.

G-060

MUELLER CO. / DECATUR, ILL.

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

serving the water and gas industries since 1857

NO-BLO®

Strictly Off the Record

A shipwrecked sailor who had spent three years on a desert island was overjoyed one day to see a ship drop anchor in the bay. A small boat came ashore and an officer handed the sailor a batch of newspapers. "The captain suggests," he told the marooned sailor, "that you read what's going on in the world—and then let us know if you still want to be rescued."

* * *

"Drive carefully," read the weekly church bulletin. "It's not only cars that can be recalled by their maker."

* * *

The young man took his date to an expensive restaurant. After scanning the menu with horror-stricken eyes, he turned to the young lady and asked, "Have you decided what you'd like to order, Fatty?"

* * *

Two Scotsmen were locked in a bitter golf match under a broiling sun. When one of the Scots had a stroke, his opponent made him count it.

* * *

A pretty young guest of a resort hotel in the mountains took a walk through the woods one day and came upon a lovely lake. It seemed ideal for a swim except for a prominently displayed sign reading "Town Reservoir. No Swimming Allowed". Disregarding the warning she slipped out of her clothes and was poised for a dive when the superintendent of water supply stepped from behind the bushes. "There's a law against swimming in the reservoir, young lady," he told her sternly.

"Why you—you—you" she screamed indignantly. "Why didn't you tell me before I undressed?"

"The sign doesn't say anything about undressing," he said.

"My," said Mrs. Jones, an auction fan, "here's an item in the paper about a pitcher bringing $1,900 in a sale."

"Hummmmmph!" said Mr. Jones. "He can't be much of a ballplayer."

* * *

Parenthood has its stresses, especially in the early stages. No one is more aware of this than the hospital nurse who answered an emergency telephone call from a nervous prospective father. Trying to calm him down she asked soothingly, "is this her first baby?"

"Oh, no," replied the caller, "this is her husband."

* * *

"How are you getting along?" asked the old-timer of a new traveling salesman.

"Lousy," was the instant reply. "I've been insulted in every place I've made a call."

"That's odd," said the old veteran salesman, "I've been on the road for nearly forty years. I've had all my samples thrown out in the street, been tossed out of an office bodily, man-handled by janitors and kicked in the seat of the pants, but insulted—never!"

* * *

"Well, I've finally got to face it. My vacation starts tomorrow!"

"My teenage daughter is at that awkward age," one mother said to another. "She knows how to make phone calls but not how to end them."

* * *

Do you ever get the uncomfortable feeling that perhaps your gray hair isn't premature?

* * *

A youngster's definition of nervous: "I feel in a hurry all over but I can't get started."

* * *

People who don't count their calories usually have the figures to prove it.

* * *

A drunk had been wandering around Times Square and finally went down into the subway at 42nd street. About half an hour later he emerged at 44th street and bumped into a friend who had been looking for him. "Where on earth have you been all this time?" the friend asked.

"Down in some guy's basement," the drunk said. "And, boy, you should see the set of trains he has!"

* * *

The trouble with good advice is that it usually interferes with our plans.

* * *

Testing a Sunday School class, the minister asked, "What are the sins of omission, my child?"

Little Joe replied: "They're the sins we ought to commit and don't."

* * *

The man who hid behind a woman's skirt used to be called a coward. Today he could qualify as a magician.

* * *

One of life's big disappointments is discovering that the man who writes the advertising for a bank is not the same guy who makes the loans.

* * *

A little boy, caught in mischief, was asked by his mother: "How do you expect to get into heaven?"

He thought a minute and then said: "Well, I'll just run in and out and in and out and keep slamming the door until they say, 'For goodness sake, come in or stay out.' Then I'll go in."

Blue Flame Whispers

GAS INDUSTRY MARKS NEW RECORDS IN SALES, REVENUES, CUSTOMERS, ASSETS DURING 1970

The gas utility and pipeline industry reached new all-time records in sales, revenues, and numbers of customers during 1970. Demands from residential, commercial, and industrial customers all increased, according to the American Gas Association, the industry's national trade organization.

Sales climbed 8.3 percent and revenues were up 10.5 percent, based on preliminary year-end estimates. The number of customers reached a peak of over 42 million. Plant investment, in which the gas industry ranks sixth in the United States, rose to $39.8 billion.

In the past 25 years, the industry has grown ninefold in terms of the book value of total assets, expanding from a $5 billion industry to approximately $46 billion at the end of 1970 .

The continued rapid growth of the industry intensified concern over gas reserves. In 1969, for the second straight year, proved reserves of natural gas fell, reflecting a decline in exploratory well drilling of 40 percent since 1956.

Since proved gas reserve figures were first compiled in 1945, approximately 408 trillion cubic feet of gas has been added. Meanwhile, the nation has consumed 282 trillion cubic feet, with use rising steadily each year.

"This has been another year of rapid expansion for the industry", says G. J. Tankersley, president of the American Gas Association.

Tankersley, president of The East Ohio Gas Co., Cleveland, says, "For the future we are hopeful that our main problem—falling exploration—will be overcome by realistic wellhead prices. But," he cautions, "if this is not done, the industry will find it impossible to maintain its recent rate of advance. This can only be to the detriment of our present and potential customers.

"The gas industry itself is conducting major campaigns to help expand supply and encourage the most efficient use of gas," Tankersley points out.

This annual A.G.A. review goes on to say, more than 900,000 customers were added during 1970, bringing the year-end total to over 42 million. This included nearly 39 million residential users, more than 3 million commercial customers, and some 250,000 industrial and other customers.

Revenues from gas sales climbed to $10.5 billion, an increase of 10.5 percent over revenues of $9.5 billion in 1969. Residential sales accounted for $5.3 billion, a gain of 8.7 percent; industrial customers paid $3.3 billion, up 12.5 percent, and the commercial category gained 12.2 percent to $1.6 billion.

The 8.3 percent gain in sales volume added up to a record 168.7 billion therms. Commercial sales increased 11.1 percent to 20.7 billion therms, industrial 10.6 percent to 92.3 billion, and residential usage was up 3.4 percent to 49.6 billion.

Projections recently completed by the A.G.A. Department of Statistics indicate that more than 22 million customers will be added by 1990. Meanwhile, sales are expected to climb 157% to 433 billion therms and construction expenditures will average $3.2 billion annually to increase gross plant investment to $96 billion.

Construction during 1970 was $2.3 billion. Transmission facilities involved an outlay of $943 million, while $839 million was spent for distribution facilities, $209 million for production, and $188 million for underground storage.

About 34,000 miles of pipeline and mains were added to the vast underground network which transports gas from wells to consumers. The total now stands at 927,000 miles and is expected to exceed one million miles before 1973.

DOG & PIG WORK ON PIPELINE JOB

Teamwork and cooperation are necessary for pipelining but a barking dog and silent pig seem like strange teammates in an 18-inch transmission line—but it worked. The Northern Gas Board of Sunderland, England, was replacing a 180-foot section of 18-inch pipe because of highway construction. Contractors were William Press and E. Peart & Co. Ltd., Hyde, Cheshire. After the pipe was in place, preparations were made to clean the new section inside, but how were the contractors going to pass a line through the section to draw a "pig" along when the pipe contained a bend and a sharp rise. Foreman Joe Cooney's three-year old terrier Judy was accustomed to knocking around construction sites, and in the past had amused herself by running through sections of pipe. Would she go through the 180-foot section? A nylon line was attached to her collar, and Judy was placed at one end and Mr. Cooney called her at the other end. Dirty, but none the worse for her experience, she emerged, having threaded the line through the pipe. Once untied she had to be restrained from scrambling back down the pipe for an encore to show how much she enjoyed her work. Foreman Cooney summed it up by saying, "It only goes to prove what I have always said — pipelining is really a dog's life."

Although the A.G.A. report for the year indicates continued growth, there is major concern in the industry regarding improvement in the supply situation and a greater awareness in the nation over the growing crisis that involves *all* forms of energy.

The supply problem in the gas industry formed over the many years and solutions to it could take at least five years, according to some sources. For at least two

years, actual consumption of natural gas has exceeded proved new reserves during that time.

A growing awareness in the nation concerning air pollution has brought on great new demands for industrial users of gas and even greater supplies or natural gas have been diverted to generate electricity.

Some circles feel that the natural gas shortage is not a national situation, but rather a number of local problems that have gotten broad publicity to make it appear much wider in scope. For some reason, electrical shortages have been viewed as being limited to a few areas and the *total* energy crisis has not been viewed by many in the same perspective as that r e l a t e d to natural gas.

This type of publicity has affected all of the gas industry and its suppliers, and the industry in general has suffered.

R. L. O'Shields, president and chief executive officer of Panhandle Eastern Pipe Line Company, recently told the Natural Gas Men of Oklahoma, that the energy problem is a most serious national issue with far-reaching implications — "for what we do to meet what is now commonly termed the energy crisis will help shape the future of the nation. . . . I am convinced that this problem will be with us through much, if not all, of this decade and perhaps beyond," he said.

Mr. O'Shields said, "It is generally conceded that the immediate cause of the problem in the electric energy field was the failure of nuclear generation to keep pace with the plans and hopes of the industry." He added that the misjudgement of the portion of our power needs which would be met from nuclear energy "has imposed a severe strain on all other energy sources, especially the fossil fuel sources." He said that the diversion of other fuels to generate electricity has produced a domino effect, aggravating shortages which were also becoming evident in the other energy industries.

Later in his speech, he said, "It is ironical that the problems of the electric energy industry, and in turn, the coal industry, have imposed sharply increased demands upon oil and natural gas just at the time when near-term deficiencies in gas and oil supplies were arising for largely unrelated reasons."

He said that the 1968 reserve report of A.G.A. showed for the first time that reserves added failed to equal production. This has continued, and during recent months, almost all major interstate pipeline companies have been obliged to notify their utility customers that they cannot expand pipeline sales capacity until substantial new gas reserves become available, he said.

In a recent sub-committee hearing in the House of Representatives other thoughts were voiced. "This crisis has developed slowly over the last decade, and the subcommittee concludes that it will take several years for the necessary production facilities to effectively relieve the current shortage. T h i s current shortage will certainly result in a hesitancy on the part of present and future potential natural gas customers to voluntarily choose this raw fuel for heat and electrical generation purposes. Unless steps are immediately taken to develop the necessary additional production facilities and a coordinated policy is established to assure a continued supply of natural gas, large numbers of present and future users will be forced to rely on other energy forms."

The members of the committee did not list what, if any, forms of alternate energy that were available, but then added "that immediate steps must be taken by the natural gas producers and the Federal Power Commission to assure adequate and reasonably priced sources of natural gas for present and future use."

The problems are immediate. The solutions demand time. Time for construction, exploration and adjustment. The pipelines are operating near capacity in many cases, and these companies can not expand unless new supplies are assured. New supplies will be forthcoming only when prices warrant costly exploration and drilling. Local utilities can only expand their facilities and promote natural gas when they know supplies will be available. Where do we begin?

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
