

THE *Sohioan*

October 1971





WORKING WITH PEOPLE

The warm smile of Rachel Entekin tells a story about oil too often overlooked. The lifeblood of the oil industry is petroleum, but the heart of our business is people—not only employees but also our customers who depend on oil.

Rachel, senior clerk at the BP distribution center in Charlotte, North Carolina, has daily contact

with area BP dealers, processing orders for gasoline and motor oil products. "I enjoy working with people," she says, "and the challenge of keeping customers satisfied."

Off the job, Rachel enjoys making her own clothes, reading, bicycling, and beating her husband Larry at badminton.

Sohio Watches Over Beaver Neighbors

When Sohio builds at a new location it makes every attempt to be a good neighbor, even if the neighbors happen to have long hair and wild living habits.

Soon after Sohio purchased the 17-acre site for the newly opened Boron Oil Company truck stop near Barkeyville, Pennsylvania, a small colony of beavers was discovered in a swamp on Sohio's property. The beaver dams were located several hundred feet from the truck stop, and Sohio decided to preserve the beavers' natural habitat.

The task fell to Carl T. Schueren, environment health coordinator for Sohio's Marketing Department. "The big problem," he explains, "was to guarantee that water runoff from the truck stop—possibly contaminated with oil or chemicals—would not drain into the beaver swamp."

This problem was solved rather simply: As dirt fill was needed to level off the truck stop driveway, it was scooped out of an area just 100 feet above the beaver swamp. The resulting indentation was then converted into a pond to collect water runoff from the truck stop and keep it from polluting the beavers' environment.

Nor need the beavers worry about large spills in the load area. Oil separator systems were installed to guard against such accidents; in case of a spill, the oil will be trapped by the separators.

The pond also serves as the final drainage area for sanitary effluent water from the truck stop's motel and restaurant. Sewage water is treated first in an aerobic system, then passes to a retention pond, and finally to the pond above the beaver swamp, where it evaporates or seeps into the ground.

"Sohio believes in doing everything possible to reduce potential pollution problems," comments Schueren. "Of course, the ecology of every location is unique and must be approached individually."

Because Sohio took the time to safeguard the ecological individuality of the Barkeyville site, four beavers continue to live peacefully—just a few hundred yards from an interstate truck stop.

Forests have a fascination anytime, and the crisp and colorful days of autumn are perhaps the finest time to explore them. The woodland scene on our front cover was photographed on Little Mountain, east of Cleveland.

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Editor, F. M. Paulson; Associate Editor, Clyde Wimer; Editorial Staff, June Eppink, Jack Ott, Joe Franko, Carl Japikse.

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GAS FROM ALASKA

RESEARCH FOR A WILDERNESS PIPELINE

SOHIO has become the first major company to convert part of its extensive oil interests on the North Slope of Alaska into ready cash. In an agreement concluded in August, Sohio sold for a \$200-million advanced payment a small portion of its crude oil that will be produced at Prudhoe Bay.

The transaction involves immediate payment to Sohio of \$60 million, with payment later of an additional \$140 million.

Purchaser of the oil is The Columbia Gas Systems, Inc., of Wilmington, Delaware. Under the arrangement Columbia obtained purchase rights to a substantial portion of Sohio's Prudhoe Bay gas. Columbia said it took the action to assure that its customers will have sufficient natural gas later in this decade.

The statement underscores the concern America's energy companies feel for meeting the nation's needs a few years hence. A few statistics explain their concern.

Last year Americans burned a record 22 trillion cubic feet of natural gas in 42 million homes, apartments, and businesses, and in great industrial boilers and furnaces.

But thousands of prospective customers were turned away on both coasts and in the Midwest.

The situation is expected to worsen, because we are consuming more natural gas than is being discovered.

Not counting the recently discovered great Alaskan gas reserves, which still are years from market in the lower 48 states, the nation's natural gas supplies have diminished to a 12-year supply—a figure based on the present rate of usage. Demand is increasing at the rate of 7 percent annually.

Gas men are looking hopefully toward the Arctic and sub-Arctic regions of the North American continent. Proved reserves underlying those areas would add years to our country's natural gas supplies.

In Alaska's Prudhoe Bay reservoir alone there are proved reserves totaling 26 trillion cubic feet. Additional discoveries have been made across the border in Canada.

A consortium of companies, including Sohio, is studying the feasibility of building a pipeline to get Arctic gas to where it is needed—United States and Canadian

homes, businesses, and industries.

Representing more than a \$2.5-billion investment, the pipeline would be the largest single construction project ever undertaken by private industry. Traversing some of the most severe climatic regions known to man, the pipeline would stretch 2,500 miles from Prudhoe Bay southeast through the Brooks Range, down the Mackenzie River valley, and across Alberta and Saskatchewan to Emerson, Manitoba, where it would tie in U.S. domestic pipeline systems.

The study by the consortium, called the Northwest Project Study Group, is scrutinizing all aspects of the proposed pipeline, including ecological investigations, engineering and design, gas reserves and availability, and financing and economic feasibility.

"A very important part of this study," explains Earl W. Unruh, Sohio vice-president for Transportation, "is consideration of the impact the pipeline would have on the environment."

Mr. Unruh is a member of NPSG's management committee. Richard M. Donaldson, Sohio vice-president and general counsel, is chairman of the study group's important public affairs committee.

MEMBERS of the consortium include Atlantic Richfield Co., Humble Oil and Refining Co., and Sohio—all petroleum companies with oil and gas production interests on the North Slope of Alaska—and TransCanada Pipe Lines Limited, Michigan Wisconsin Pipe Line Co., and Natural Gas Pipeline Co. of America, all natural gas transmission companies.

The NPSG built a \$3.5-million Arctic pipeline test facility to simulate operating conditions in an actual Arctic gas pipeline transmission system. It is located on the Mackenzie River, just below the Arctic Circle and 65 miles north of Norman Wells, Northwest Territories.

In operation since last February, the facility consists of five 500-foot-long sections of 48-inch-diameter steel pipeline. Four sections are buried in permafrost—permanently frozen ground—each in a different soil type. The fifth section is

partially aboveground, mounted on pilings set deep into the frozen soil, and passes through the active layer into permanently frozen, fine, high-ice-content silt.

A thousand electronic sensors measure and record the magnitude and nature of forces, if any, exerted on the pipe by frost action or other causes.

Compressed air, chilled to a temperature range of 15 to 30 degrees, is used in a "cold loop" to simulate the flow of natural gas. A "cycling loop" tests the effects of alternately cycling hot and cold air to simulate the loss of a refrigeration unit at a main-line compressor station.

SIX inactive sections of pipe are installed underground at varying depths. They are covered with differing surface materials to determine the effect of the disturbance on surface drainage.

The NPSG also is taking ground temperature measurements along prospective pipeline routes, conducting terrain studies, and studying possible pipeline routes most favorable for the pipeline with minimum ecological and environmental effects.

Initial findings at the test facility are encouraging. They indicate the pipeline can be built without irreparable injury to the delicately balanced Arctic environment.

Study group project manager Lee G. Hurd calls the preliminary findings "highly reassuring."

"In addition to what we are learning from the test facility," explains Vice-President Unruh, "we have the benefit of the enormous amount of engineering data and studies made for the trans-Alaska pipeline by Alyeska Pipeline Service Co." Mr. Unruh currently is serving as deputy president of Alyeska on an interim basis.

All studies made for the trans-Alaska pipeline are available to the gas pipeline group. The oil companies are members of both organizations.

The start of the pipeline is dependent upon construction of the trans-Alaska pipeline, which will move crude oil 800

Snow, cold come early, stay long at Arctic test site. Worker views 16-inch-diameter aboveground connector pipe.



miles from Prudhoe Bay to the warmwater port of Valdez on Alaska's south shore. Since oil and gas are produced together, it would do no good to have a gas pipeline if there were no way to dispose of the oil. The oil pipeline has been held up for two years, awaiting U.S. government approval, litigation of suits pending in Federal courts, and settlement of the native claims bill in Congress.

It will take an estimated three years after the necessary approvals to construct the crude-oil pipeline. Completion of the natural-gas-line construction through Canada would follow by several years.

SOHIO'S leases at Prudhoe Bay cover gross proved recoverable reserves of 5.068 billion barrels of crude oil and condensate, according to a survey this spring by DeGolyer and MacNaughton, Dallas petroleum engineering firm, based upon 26 wells drilled.

The estimate also indicates that natural gas reserves under Sohio's leases total 6.385 trillion cubic feet, or almost a fourth of the gas in the Prudhoe Bay field.

The \$200-million Sohio-Columbia Gas transaction made headlines in national business and trade journals.

Sohio received the first \$60-million advanced payment when the transaction was closed August 3.

Subsequent payments totaling \$140 million will be advanced prior to mid-1975, subject to issuance of a permit by the U.S. Department of Interior for construction of the trans-Alaska pipeline, approval of construction by various government agencies, and elimination of legal impediments to construction.

"This unique financial arrangement is very beneficial to Sohio," explains John L. Ross, senior vice-president for Natural Resources. "The funds being advanced will provide a large portion of the future development costs of our Prudhoe Bay properties."

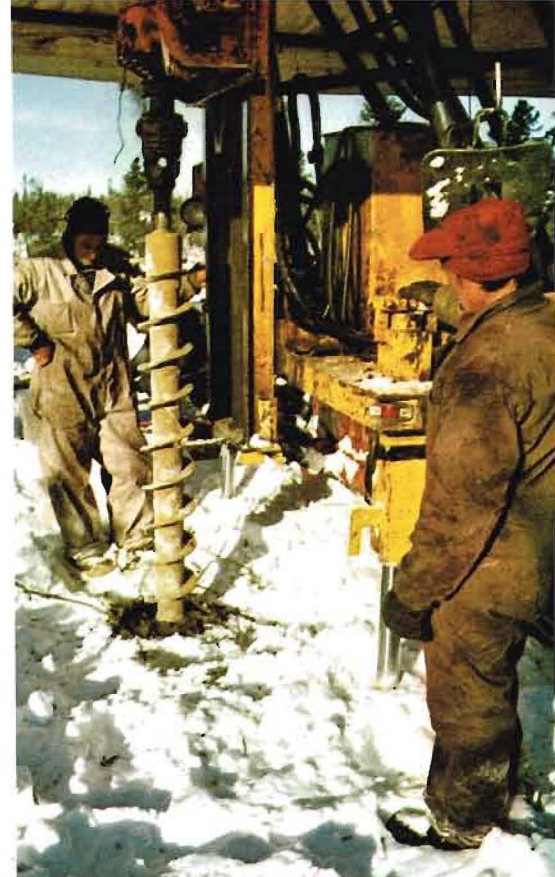
The advanced payments, Mr. Ross emphasizes, are to be paid back solely out of crude oil production.

The amount of crude oil actually turned over to Columbia will be determined at the going market price at the time.

Less than half of the initial crude produc-



Whiskers protect the face against cold, become ice-covered when breath freezes.



Drillers bury sensing devices for automatic stations spotted along possible pipeline routes to record ground temperatures.

tion, however, will go toward Columbia's \$200-million share. Sohio will retain over half of the initial production and will be agent for the sale of Columbia's oil.

When natural-gas deliveries are imminent, Columbia Gas and Sohio will enter into a contract for the natural gas. Columbia could purchase virtually all of the gas produced from Sohio's leases—in excess of six trillion cubic feet.

Columbia says the agreements help

assure new natural-gas supplies for the last part of this decade.

Indeed the crude oil and natural gas under the frigid Arctic can be an important source of energy for Americans north and south of the Canadian border. But these vital energy sources must be brought to market.



Forty-eight-inch-diameter pipe is lowered into place at test site.

Private Enterprise and the Public Welfare



What kind of role should private enterprise play in today's society? This question was asked of 195 business leaders from 56 nations in a survey conducted recently by The Conference Board, a nonprofit institution that conducts research in business matters.

A preliminary report on their response indicates that most of the executives surveyed recognize that the public now expects more from business enterprises than their traditional contributions to society—efficient production of goods and services. Business is expected to help solve social problems—race relations, pollution control, urban decay. I was interested to find that these expectations seem to exist throughout the world, although there is considerable debate as to what business can or should do regarding them.

My own view regarding business' role in connection with social matters is fairly pragmatic, I think. I feel we should direct our efforts to those aspects of social problems that most directly affect our company and which we can most effectively help solve.

This corporation can't solve all the problems and conflicts of race relations in the United States, for example. However, we can—and do—assure equal employment opportunity in our own operations. We can join in offering training to those who do not have the job skills needed to compete in our economy. We can make special efforts to hire the "hard core" unemployed to help get them started on useful working lives.

We operate in a continually changing socioeconomic environment in which business must change as public and consumer expectations change.

Public concern about protecting the environment is a good example. This nation's industries and cities developed in times and circumstances in which the primary concern was building as rapidly as possible a prosperous and materially healthy and secure society. Today, attitudes and values are changing, and it is important that industry conform to the new standards for protection of our environment that are evolving.

What are the other social goals industry is expected to help with? Eliminating poverty? Caring for the elderly? Putting medical care within reach of everyone? Improving education?

Most corporations, including Sohio, have benefit plans that play a major role in meeting these needs for their own employees. Do they have a responsibility to provide this protection to the unemployed and handicapped? I think they do—in the sense that all citizens have a moral responsibility to care for those unable to care for themselves. And corporations are citizens. They are influential citizens, and it is particularly important that they be good citizens, leaders in accepting and carrying out the responsibilities all citizens have toward their fellowman.

Sohio accepts this role. I and other members of the management of this company regularly serve in efforts to solve community problems. We take money from our corporate treasury that might otherwise be invested to produce profits for our stockholders and jobs for employees and contribute it to programs designed to care for the unfortunate, solve urban problems, or support education.

I don't regard these as revolutionary concepts of social service by a corporation. In fact, I found them as long-standing and well-established policies and practices at Sohio when I first became an officer. I am sure many major corporations long have followed similar policies.

There are those who say that a corporation has an economic function to fulfill, and nothing more. It should not spend its stockholders' money on social service. It should not take money from its customers and contribute it to charities and social causes in which they may have no interest.

I think this reasoning has considerable merit in the sheer logic of economics, but it ignores some practicalities of corporate life in the United States. Public attitudes and expectations influence government. Government responds in ways that affect industry. If industry does not control pollution, the government will impose regulation—and tax us to pay the regulators. If we do not support volunteer efforts to help the unfortunate, government will take over the job—at considerably greater expense plus unending red tape for those it presumably is helping.

As a pragmatic matter, I simply do not see how a business leader (which our company definitely is) can afford to be passive about social involvement. A well-supported plan of activity in this field is comparable in importance to an effective product pricing and merchandising policy and good corporate financial and business planning.

We are deeply involved in the communities around us. Nearly everyone is our customer, or a potential customer. Our employees come from the community's schools and colleges. We have an enormous stake in the continued economic and social health of the communities we serve and the nation as a whole. In our own interests, we must do our share to make this a better place to live and work and do business.

A handwritten signature in black ink that reads "Charles E. Spahr". The signature is fluid and cursive, with a prominent initial "C".

CHARLES E. SPAHR
CHAIRMAN



Charles W. Jones, executive director of NOAH, stands proudly before 38-apartment housing project his group is completing.

NOAH AND MR. JONES

by Clayton Sutton

NEARLY everyone has heard of Noah, who became the ancestor of all mankind after the ark he built at the Lord's command housed his family through the great deluge of 40 days and 40 nights.

Not nearly so many have heard about NOAH (Neighbors Organized for Action in Housing), which is creating new dwellings in the heart of Cleveland's Hough area, ravaged by years of decay and neglect

culminating in the much-publicized riots of 1967. Not unlike the original Noah, NOAH the organization is seeking to rebuild upon the ashes of catastrophe.

Since its formation as a private, non-profit organization less than three years ago, NOAH has rehabilitated five large homes, erected an 18-suite apartment building, started construction of a 38-apartment garden-type complex, launched an ambitious land-acquisition program, and developed plans for a new concept in modular housing.

NOAH holds particular interest for Sohioans. At its helm as executive director is lean, quiet-spoken Charles W. Jones, a Sohioan for some 18 years. He left his job as a senior recruiter of technical personnel for Sohio at the close of 1970 to take on the broadening challenge of bringing attractive, economical housing into the lives of many less able to fulfill their aspirations for this basic element of living.

"It is an opportunity, an opportunity to work with both blacks and whites toward eliminating or bridging racial misconceptions that block growth and progress for everybody," he says. "Adequate housing is a key ingredient for fostering the hopes and ambitions of people everywhere for mutual understanding and trust."

THAT practical and uncluttered philosophy reflects the thinking behind the birth of NOAH. Though it is now an entirely independent and unaffiliated organization, it grew out of the concern of members of Calvary Presbyterian Church, Euclid Avenue and East 79th Street, over the housing deterioration of its neighborhood. Late in 1967, a dedicated group of church members began laying the groundwork for an action program.

To gain a broader community involvement the group invited and received the cooperation of St. Agnes Catholic Church, Euclid and East 80th Street, and the Hough Area Community Council. Subsequently, in 1968, NOAH was incorporated as a non-profit corporation. Much work already had been done when Charley Jones was named last year as the first paid staff official.

"When I first was approached about the opportunity I went home and explained to my family what kind of changes it would make in our lives—as nearly as I could judge—and I asked them to think about it a while and then we could sit down at the dinner table one night and discuss it. Both my wife Margaret and my son Peter spoke up that very evening and said that I should do it."

FROM his orderly NOAH office at 7829 Euclid Avenue, the 53-year-old former Sohioan now coordinates property acquisition, new construction, management of the renting and/or sale of completed housing to nonprofit groups, and relationships with Federal and other government housing programs.

A large, detailed wall map opposite his desk sets forth the 20-block area of NOAH's prime concern—East 70th to East 90th streets between Hough and Chester avenues. Some of it is vacant lots. Much of it is pockmarked with vandalized structures and high-density, vermin-infested, decrepit housing. Still remaining are some of the scars of the riots four years ago.

Yet, some results of the efforts of NOAH and like organizations already can be seen.

One of these is the NOAH Woody Woods Estates project now under construction at Hough Avenue and East 73rd Street. The 38 dwelling units, including suites of four,

three, and two bedrooms, are being grouped in separate buildings erected on six different ground levels. The design is functional and attractive for urban living.

This \$725,000 town house complex, which began receiving its residents in September, was designed by H. David Howe, Jr., a Cleveland architect and a member of the original Calvary Church study group that created NOAH. It is being financed by Cleveland's West Side Federal Savings and Loan Association, which has worked closely with NOAH as a funding source for its housing efforts.

LOCATED almost in the center of the Hough area, Woody Woods Estates will provide NOAH "with good visibility and exposure as an organization," Jones notes. "It also should be a source of hope and encouragement for residents in the area."

NOAH's first major construction effort was an 18-suite apartment house costing about \$80,000, located at 1877 East 97th Street. It already is fully occupied, and arrangements are being completed for its sale to a nonprofit organization to operate.

"This will be the procedure wherever possible in all NOAH projects," says Jones. "It is not our objective to become property owners or operators. We see our purpose as the creation of quality, attractive housing through land acquisition, financing, and construction. On completion, it is our intent to sell units to individual residents or nonprofit groups, assisting them wherever necessary to obtain their own financing. By revolving our funds we can constantly be moving ahead to new projects."

Among NOAH's first projects, for example, was the acquisition of five large individual homes which were rehabilitated

Jones explains map of Hough area to Mrs. Amy Ferguson (left), a member of NOAH's neighborhood advisory committee; Mrs. Carlee Crew (center); and Mrs. Maude Raye, a member of NOAH's board of trustees.



Paintings of their ideal home by children at nearby Crispus Attucks Elementary School will be displayed at NOAH's new housing project.





Jones credits architect David Howe with being one of the driving forces behind NOAH as well as designer of its modular homes.

and completely modernized with appropriate FHA funding. Three of these have been sold. Arrangements are being completed for the sale of the other two. NOAH now has FHA applications pending on six older apartment houses involving about \$500,000 in rehabilitation work. These are expected to provide 60 new dwelling units.

NOAH has been doing its job without Federal grants or subsidies. Grants from the George Gund Foundation provided some much-needed funds. An early \$60,000 loan, now repaid, was received from the Presbyterian Economic Development Corp. in New York City. Contributions from individuals and church groups have been welcomed, and assistance from corporations and foundations will be enlisted to help balance a modest annual operating budget of some \$100,000.

"One of the major reasons for the success of our organization has been the participation of residents of the neighborhood," Jones says. "When we were designing our modular homes we took a group of residents to visit a modular housing factory in New Hampshire. The ideas they contributed on adapting this type of construction to urban living were a major factor in the design of our modular units."

ELEVEN members of the 17-member NOAH board of trustees are neighborhood residents.

"A key boost for local housing renewal programs such as NOAH would be Federal assistance in acquiring dilapidated and uninhabitable properties from present owners," declares Jones. Too often, he says, landowners seek exorbitant prices for their property with the result that new housing efforts are stymied.

NOAH, nevertheless, has launched an intensive land acquisition program, particularly in the Hough area. It seeks to purchase contiguous properties piecemeal so that cost savings from larger construction projects can be realized. NOAH aims for a minimum of 12 dwelling units on a site. NOAH has arranged a \$200,000 line of credit from Cleveland banks to be used solely for land purchases. Thus far, 20 parcels of land have been contracted for. More than a dozen others are under option.

THESE and other parcels to be acquired under the current program are expected to accommodate 200 to 225 additional town house units. Funds to start construction, scheduled for late this year, have been obtained from Cleveland's Inner City Housing Corp., a group of Cleveland banks.

With evident respect, Jones recounts that NOAH's volunteer leaders have demonstrated unusual innovation and imagination in housing. For example, David Howe, NOAH's staff architect, has designed a modular dwelling plan permitting the use of a basic building unit in many different ways while retaining economy in construction.

His plan has been adopted by the housing subsidiary of Avco Corp., a large diversified firm, for marketing nationally. NOAH has a preliminary agreement with Avco's subsidiary, located in Richmond, Indiana, to market the modular homes in Cuyahoga and contiguous counties.

To carry out this marketing operation, NOAH has formed a subsidiary to be known as SHEM (Superior Homes for Every Man). Biblical scholars will note the singular aptness of the name: Noah's eldest son.

NOAH's profits from this venture will be employed in its ongoing work of

bringing quality housing to low-income neighborhoods, not only in the Hough area but wherever the need exists for assisting "friends of every race and creed . . ."

NOAH's road ahead, as in its short past, is not likely to be without hurdles. But for its former-Sohio executive director, who took the high and low barriers smoothly as a crack trackman at Ohio University, hurdles have merely to be taken in stride.

A visit with Charley, as he's known to most associates, leaves the solid impression of a man capable of taking all obstacles in stride. In his high school days in Camden, New Jersey, he was the school's first four-sports letterman. And today his trim six-foot, 197-pound build "is only a bit heavier than when I was in high school."

At Ohio University, before receiving a bachelor of science degree, he won stardom in track in both the hurdles and one-mile relay. There, he remarks with pride, he met his wife Margaret when he was a senior and she was a freshman.

It's with a kindred pride that he speaks of their son Peter, a graduate of Shaker Heights High School and a winner this year of a Sohio scholarship which will be taking him to Harvard University this fall.

Charley Jones came to Cleveland in 1947 after a stint in the U.S. Air Force and entered Western Reserve University to study for a master's degree. He intended to become a biology or chemistry teacher. He taught night classes while earning his master's degree, but with the degree in hand there were no teaching jobs to be had. Hence he joined Sohio in 1952.

For the switch in careers he has no regrets. His first Sohio assignment as a senior technician in Research and Development later led to his appointment as employment supervisor at Home Office. This was followed by service as a senior recruiter of technical employees, involving a full schedule of visits to college campuses around the country.

THEN last year he was recruited himself by NOAH as a man with a deep understanding of human motivations and values, one with bright hopes and ambitions and a quiet way of achieving them.

NOAH, in the course of stating its objectives for ending racial bigotry, offers a reply to Cain's question of whether he was his brother's keeper. It is: "No, but I am my brother's brother!"

In Charley Jones, NOAH had no need to look farther for an apt example of that answer.



LAUNCH SOHIO RESOLUTE

WITH splendid timing, Helen Whitehouse, wife of Sohio President Alton W. Whitehouse, Jr., crashed the bottle of champagne over the SS Sohio Resolute's bow as the big ship began a long slide down the ways to the Delaware River at the Sun Shipbuilding and Dry Dock Co.

The Resolute will join her sister ship, the SS Sohio Intrepid, in domestic and foreign trade, and ultimately is destined to transport Alaskan crude oil from Valdez to West Coast ports.

The dimensions of the Intrepid and

Resolute are the same: 80,000 dead-weight-ton capacity; hull, 811 feet; capacity, 595,000 barrels of crude oil; speed, 17.4 knots. Both feature the latest marine design, including a bulbous bow to improve speed. It is below water level when the ship is loaded.

Both ships are chartered by Mathiasen's Tanker Industries, Inc., to BP Oil Corporation, wholly owned subsidiary of Sohio. About 85 percent complete at launching, the Resolute will undergo several weeks of outfitting before heading for sea duty.



IT'S called the "Third Pollution," the blight of solid wastes that is sickening our cities and countryside, giving the lie to "America the Beautiful." And, because it is related to the other pollutions—air and water—the refuse problem cannot be ignored if our affluent society is to continue to enjoy the "good life."

Consider these statistics.

The value of the goods and services produced in this nation each year totals more than one trillion dollars. Of that total, \$4.5 billion is spent annually just to collect and dispose of 360 million tons of municipal, agricultural, and industrial solid wastes. Experts say that unless we find better ways of getting rid of our trash, the cost will increase to \$7 billion a year by 1980.

Yet the trash keeps tumbling across the landscape and, near coastal areas, into the oceans. Almost 85 percent of the refuse collected, reports the Federal Environmental Protection Agency, is pitched into open dumps—smoldering, rat-infested eyesores. Another 5 or 6 percent is buried in sanitary landfills, most of which are little better than the open dumps.

Another 8 percent is fed to municipal and private incinerators. These devices reduce the volume of refuse that eventually must be buried. But they also can spew soot, fly ash, dusts, and gases into the air we breathe, confounding efforts to reduce air pollution.

Dumps often contaminate streams, and poorly located landfills leak pollutants into underground waters. Roadsides littered with garbage and trash also seep residue into streams. Much of this roadside debris comes from 12 percent of the nation's householders who have no regular collection service.

Solving the solid waste problem will take more than a massive cleanup campaign. It will take new technology and new approaches about the wise use and reuse of resources—woods, minerals, and especially lands and waters.

Consider the car, for example.

Recycling involves sorting out basic materials such as metals, glass, plastics, and paper from rubbish and shipping them off to reprocessing plants for conversion to useful products. It faces both economic and technological hurdles.

TECHNOLOGY vs TRASH

by James A. Schwartz

Environmental writer, Louisville *Times*

Every day in New York City some 2,000 autos are abandoned on the streets. These are among the 7 million cars that are discarded each year by Americans.

Reclaiming the typical 3,600-pound auto, the Institute of Scrap Iron and Steel reports, yields about 2,500 pounds of steel, 500 pounds of cast iron, 32 pounds of copper, 54 pounds of zinc, 51 pounds of aluminum, and 20 pounds of lead. Another 400 pounds of nonmetal materials remain.

Meanwhile, a new American is born every eight seconds. By about 2035, when the nation's present 200 million-plus population is expected to double, all resources will be even more precious than they are today.

Richard D. Vaughan, former director of the EPA's Bureau of Solid Waste Management, has noted that most resources can no longer be regarded as something to be used once and disposed of in the cheapest manner.

"Instead," he added, "solid wastes should be regarded as a resource out of place, to be recovered and reused whenever possible."

IN a typical year, his agency reports, Americans will discard over 30 million tons of paper, 4 million tons of plastic, 48 billion cans, and 26 billion bottles. Not only are our wastes increasing, they are changing in character.

"Thirty years ago," science writer Henry Sill has noted, "solid refuse was 65 percent organic. Now it is only 35 percent. Organic matter, from lettuce leaves to dead horses, decays rapidly and returns to nature. It becomes food for living organisms and soil for growing plants. Not so with aluminum beer cans or plastic food containers, which may resist corrosion and decay for hundreds of years."

Each American generates about seven pounds of refuse a day, for a staggering national total of 250 million tons a year. Most of these wastes pass through some 300 municipal incinerators or to almost 14,000 land disposal sites scattered around

the nation.

Until 1965, when Congress passed the Solid Waste Disposal Act, such methods of handling wastes were a generally accepted facet of our "throwaway" economy. For most citizens, household wastes were disposed of once the garbage can was emptied and the collection truck disappeared around the corner.

TODAY, new concepts of disposal are being tested. "Recycling"—reclaiming still useful materials—is catching on. Already there are at least 725 corporations proving that recycling is a profitable way to save natural resources.

Some 20 percent of the paper industry's raw materials now comes from recovered wastes—the equivalent of 200 million trees. Newspapers in Louisville, Chicago, and New York, for example, are using greater quantities of "old" newsprint that has been de-inked and repulped.

Aluminum and glass recycling centers are being set up around the country. Besides the new beverage cans, bottles, "glasphalt" road paving, and other materials that result, the centers enable citizens to participate in the ecology movement by collecting cans and bottles.

Sohio's Borex 210 resin, which produces bottles that can be incinerated, may solve this particular problem gradually as the bottling industry converts to it. Bottles made of this newly introduced resin protect the contents, such as soft drinks, because of the resin's oxygen-barrier properties. They protect users and shippers because of the plastic's resistance to breaking. And they protect the environment, since they can be easily and safely disposed of in incinerators. PepsiCo, Inc., and other bottling companies are conducting market tests of the new bottles.

At Akron, Ohio, a pilot plant is reclaiming rubber tires for carbon residue and useful gases and liquids. Research is under way at the University of Texas to recover and recycle many of the plastics used to make and package products.

In Delaware, a proposed \$10-million recycling plant will handle 500 tons of wastes a day. It will churn out soil conditioner from organic wastes and separate metals and glass for recycling. Franklin, Ohio, is the site of a 50-ton-a-day plant that pumps raw trash in water, much like a kitchen blender, and removes valuable wood fiber, glass, and metals. A city-wide paper recycling project is under way at Madison, Wisconsin.

Another treasure of trash lies in its use as an energy source. High-temperature incinerators, which are virtually pollution-free, can generate steam to run electric plants or to heat buildings.

At Menlo Park, California, gases from shredded and burned garbage are powering a stationary jet engine. Some scientists believe that solid wastes can be made to yield synthetic crude oil and that refuse vaporized by nuclear power can be returned to basic chemical elements.

While the search for solutions continues, however, the nation's cities are faced with the expensive task of disposing of wastes now. Chicago and Akron already have exhausted their present space for landfills, and the former city has just built the largest incinerator in North America.

Less than two years of landfill space at present locations remains for Cleveland, Washington, Houston, Louisville, Philadelphia, Oklahoma City, and a number of other large cities. New York's landfills will be clogged with refuse sometime between 1975 and 1980.

WHAT is needed, experts agree, is a computer-oriented systems analysis of all facets of waste management, a system based on land-use planning.

"Until such a time as we can reach the goal of complete recycling of solid wastes," a popular technical magazine has noted, "it is only prudent that we face the facts of life and work out rational plans for disposing of the wastes that we have not yet had the intelligence or foresight to reuse."



YOU CAN DO BETTER

by Richard Guyon / Manager, Training and Development

IN these unsettling times, people frequently ask me what they can do to insure and reinforce their job security.

They see technological change, and they want to know how to adjust to it.

They see the company's job needs shifting, and they want to know how to protect themselves.

They see the company entering new ventures, and they want to know how to capitalize on the new opportunities.

In every case, be it a worried worker or an ambitious one, my answer is the same:

Develop your abilities, make the most of your assets. Strive to define and achieve your full potential. Don't be satisfied with the education, training, and experience you have now. Continue to prepare yourself for the chance that might come to you next.

Robert J. Sullivan knows what it is to be the victim of changing corporate needs.

Bob joined Sinclair Oil Company in New York City in 1956 as a mail boy, straight out of high school. He transferred to Accounting and moved up slowly through the clerical ranks. He felt secure and fairly comfortable until 1966 when a consolidation made him surplus. He was, in effect, demoted and moved to Atlanta.

That made him mad. "I knew I could do better," Bob recalls. "But I also knew I would need a college education to start the climb back up."

He signed up at Georgia State University night school and went through it at the pace of a regular student—nonstop for four years. He carries a near-perfect 3.7 grade average, has made the dean's list nine times, and will graduate in January in the top 5 percent of his class.

Two months ago he was transferred to Home Office Accounting where he is now

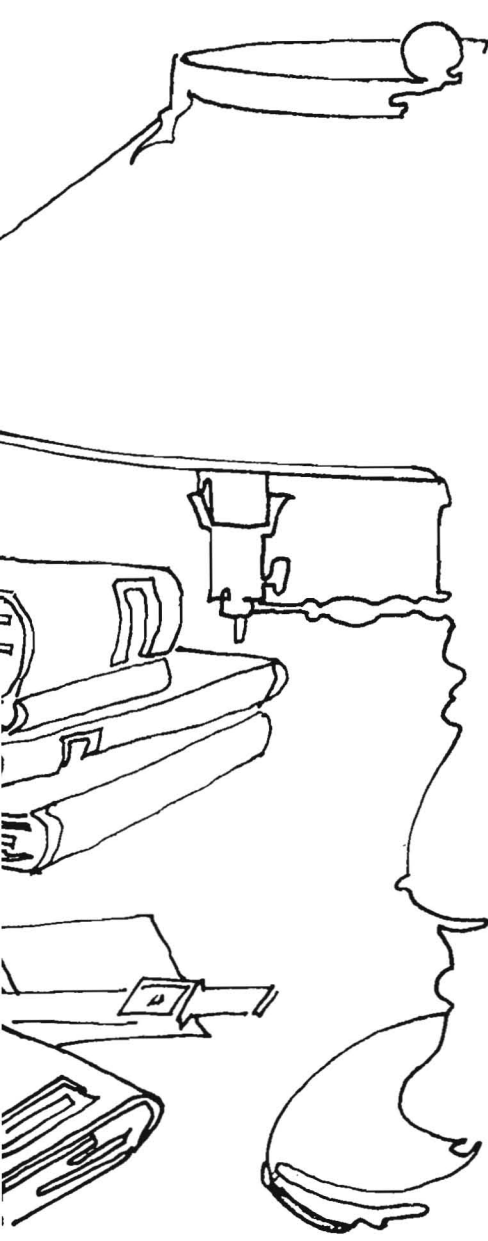
supervisor of Accounts Receivable for BP Wholesale Accounting. Two more courses at Cleveland State University will complete his degree requirements. Then, he says, it's on to a master's degree.

Demotion built a fire under Bob Sullivan. Promotion set Louis R. Schmidt in motion.

Lou joined Sinclair as a truck driver in the New York City area in 1955. Twelve years later he was still a truck driver. Then he was named assistant bulk plant superintendent.

"That promotion changed my whole way of thinking," Lou says. "I had never finished high school, and after so many years as a driver I became reconciled to the idea that this was as far as I was going to go.

"But when I got that job I realized that I must have something, so I set out to do even better."



one has in fact become."

Employees like Lou Schmidt are doing everything they can to narrow that gap. They say to themselves, "I can do better." They make the sacrifices, they make the commitment, they set their targets—and they do it.

As of September 1, more than 500 employees were enrolled in development programs under the Sohio Education Plan. The plan reimburses employees 75 percent of the cost of a course that improves their skills.

Some are using the plan to pursue high school or college degrees. Others are taking courses in areas they simply want to know more about that will improve their work on the job. Some are enrolled in speed-reading, the Dale Carnegie school, or a toastmasters club.

WHAT good is a toastmasters club? Richard G. Amos can tell you. He is a safety coordinator in Home Office Safety and Workmen's Compensation.

Dick took speech courses in college and through the years has delivered many speeches in what to most of us would be a thoroughly acceptable manner.

"When you give a speech," Dick says, "people are nice to you. They say thank you and tell you what a fine job you did. They never say you've bombed. The toastmasters do. The purpose of the club is to help you improve, no matter how good you were before."

Dick is a member of Sohio's Speakers Bureau. He frequently makes presentations to employees on new safety laws and programs.

Other Sohioans are using even less formal ways to develop themselves.

Some belong to Great Books discussion clubs. Others do volunteer work in church or community. They have found that carrying out civic responsibilities polishes their managerial skills.

A number of Sohioans are involved in politics or local government. Ask them why, and, among other reasons, they will tell you that they care about their community and want to have an influence in its affairs. It's a great source of satisfaction, and it returns rewards in personal enrichment. No one can be a public official and not learn from the experience.

Many Sohioans work with Junior Achievement, the program under which sponsored high school students organize and operate small, real companies. James F. Beasley, cash management associate on the Treasurer's staff, found Junior Achieve-

ment an excellent way to get a bird's-eye view of an entire business operation.

"A Junior Achievement company is a miniature business enterprise," says Jim, a Junior Achievement sponsor for three years. "You work directly in all phases from manufacturing to marketing. You can't get that kind of total view of a large corporation from your individual position unless you're at the very top."

Jim isn't working with Junior Achievement this year because he has enrolled in law school. He already holds two undergraduate degrees and a master's degree. But he wants to know more about law, partly because his job involves legal-type work but also because he thinks it's useful knowledge in personal affairs.

The road to self-improvement can be long and demanding. It requires sacrifice and help from an encouraging family.

Ronald E. Nelson won a bachelor's degree in business administration in 1969 after eight years of night school. Ron started with Sohio as a service station salesman. He is now a service station supervisor in Youngstown Division. He and his wife Patricia have five children.

"Night school became a way of life in our family," says Ron. "The kids grew up during that period. Our home life, vacations, leisure activities were all pegged to helping Daddy get through college. I couldn't have done it without Pat."

He adds that Sohio's Education Plan refund was another crucial element. "I would have had a rough row to hoe, what with five children, without Sohio's financial help."

AS a result of Ron's example, and encouragement, four of his station managers, three office employees, and his brother Lawrence, himself a station manager, have enrolled in college.

"I tell them 'Sure, you can get ahead at Sohio without an education. But it will be a lot easier if you have an education.'"

When an employee undergoes a development activity he should inform his supervisor so that he has a complete picture of the employee's developmental efforts.

The world is changing rapidly and so is Sohio. Jobs exist today that didn't just a few years ago. There will be more new jobs tomorrow as technology changes, as our company grows, and as new opportunities emerge. And, of course, some of today's jobs won't exist tomorrow.

But through it all, the company's most important asset will continue to be the skills of its employees.

Lou took some in-company training courses. He stepped up his reading of trade journals. He enrolled in a night study course to complete high school. Last year he took a 14-week Dale Carnegie course to master public speaking.

Upon earning the high school diploma in 1969, Lou was named bulk plant superintendent. He has had two promotions since and now is supervisor of the Mount Vernon, New York, Distribution Center, one of the largest in BP Oil Corporation.

Lou Schmidt is not unusual. He is one of hundreds—perhaps thousands—of Sohioans who are striving to improve themselves, trying to reach their full potential.

The noted anthropologist Ashley Montagu has said, "The deepest personal defeat suffered by human beings is constituted by the difference between what one was capable of becoming and what

the colorful world of plastics

by Carl Japikse

IN perhaps the most-quoted line from the motion picture *The Graduate*, a middle-aged businessman takes Dustin Hoffman aside at a party to guide the young bachelor into a successful career. Amid the hubbub of music and small talk, he confidentially whispers:

“Plastics.”

The businessman has a good point. From unbreakable dishware to patio roofing, from lightweight sousaphones to non-melting igloos, plastics have become the most innovative building and manufacturing material since man entered the Iron Age eons ago.

But what is plastic? Does it grow on trees? Is it mined from the ground? If you've seen one plastic, have you seen them all?

Plastics are man-made. Virtually all plastics contain carbon. A few are made from wood, milk, or coal, but roughly 90 percent are derived from petroleum. A plastic, however, does not look, smell, or in any way resemble petroleum. In becoming a plastic its basic molecular makeup is dramatically changed through a process

known as polymerization.

Most importantly, plastics can be molded. The only way to change the shape of a block of wood is to cut away hunks of it. But raw plastic, by softening it with heat, can be expanded, injected, extruded, compressed, inflated, rotated, or cast to form products as thin as transparent food wrappers or as large as the hull of a boat.

There are two fundamental kinds of plastics. *Thermoplastics* can be softened and reshaped as often as desired without changing any basic characteristics, much as wax can be melted and remolded. *Thermosets* can be melted and formed only once; after that they are permanently “set,” much like an egg that has been hard-boiled. If heated again, they will not melt.

NOT all thermoplastics or thermosets are alike, however. Indeed, there are 39 “families” of plastics, with about 2,000 individual varieties. (A “family” is a group of plastics, like polyethylene or polypropylene, which all have the same chemical ingredients but vary in quality and texture.)

Among the 2,000 types some are tough, some are elastic. Some are opaque, others are clear. One plastic may withstand high temperatures while another burns readily. There is virtually no limit to the number of plastics scientists can formulate.

To theoretically create a plastic, a scientist begins with a single, simple molecule. It could be any molecule containing hydrogen and carbon (known as a hydrocarbon). Let's pick ethane, which is easily derived from natural gas.

An ethane molecule contains two carbon atoms and six hydrogen atoms. By robbing the ethane molecule of two of its six hydrogen atoms, the scientist can change it into a different molecule: ethylene. Now he has one ethylene molecule. But what has been done once can be repeated. Soon the scientist can have a laboratory full of ethylene molecules—as many as he wishes.

ALL that's left to do is to combine a few thousand ethylene molecules together into a single *polymer* chain, much like stringing popcorn at Christmastime—only the scientist doesn't do it by hand. The result is polyethylene, the most common of all plastics. If the polymer chains are straight, the polyethylene will be rigid, like a comb; if the chains are crooked and irregular, the plastic will be flexible, as in ice cube tray dividers.

A polymer, then, is merely a grouping of hydrocarbon molecules in a chain, often numbering in the thousands. The process of forming a polymer (which means “many parts” in Greek) is called *polymerization*. Generally speaking, the more complex the structure of the polymer is the more highly refined the plastic will be. Very complex plastics, like ABS (acrylonitrile-butadiene-styrene), are formed by grafting and blending different polymers together.

Simple, right? On paper, it is. But it's a bit more complicated on the production line. For one thing, the ethane molecule needs encouragement before it will sacrifice two of its hydrogen atoms and change into ethylene. Similarly, ethylene must be produced into linking up in polymers.

Ethane is converted into ethylene by the “cracking” technique used to refine oil. High temperatures, combined with a catalyst, loosen the bonds which fasten the carbon atoms in ethylene together. At the same time, high pressure is forcing the ethylene molecules closer to each other. In fact, the gas becomes a liquid. With the molecules near each other, the loosened carbon atoms form new bonds with their neighbors: they stick together in a chain.

This bonding draws the molecules in even closer, and the result is a waxy solid—plastic.

This raw plastic, be it polyethylene or others such as polystyrene, melamine, or polypropylene, is then cooled and either ground into a powder or chopped into pellets. The powder or pellets are then packaged and shipped off to a manufacturer of plastic toys, plastic dishware, boats, or whatever.

The manufacturer, of course, uses the plastic to make a commercial product. But plastics promise to become increasingly individual, too. Already kits are available which allow children to mold their own plastic toys. Middle-aged men use reinforced plastics such as fiber glass to build homemade yachts in their backyards. Schools teach molding techniques and use plastics in art classes.

IF you have read this far, you already know more than most people do about this subject and undoubtedly are a perceptive and intelligent individual. If you're thinking of a career, here's a word of advice:

“Plastics.”



Plastics add flair to furniture. Home Office Clerk Ingrid Schumacher of Specialty Sales and Legal Secretary Janet Telisman relax amid all-plastic splendor.



Fall fabrics woven from acrylics are high fashion. Home Office Clerks Kathy Wincek of Reproduction and Donna Suzich of Fleet-Wing model “in” styles from Higbee’s Department Store.



A substantial part of Sohio's \$18,000 contribution to the University of Dayton since 1966 helped finance new \$4.7-million library behind the studying students.

aid for education

Sohio matches
employees' gifts
to colleges

AMERICA'S colleges and universities are, as a whole, in serious financial trouble. Costs are rising, and income is not keeping pace.

Public institutions, even with support from state or local tax dollars, are hurting almost as badly as private colleges which subsist on student fees and donated dollars. The tax-supported universities look to private contributions for enrichment funds, money that enables them to broaden their programs.

For generations American industry has provided financial support to education. Generally, this was in the form of grants for capital improvements, research programs, or scholarship funds. Most corporate contributions still follow this pattern.

But in the past decade a new form of corporate giving has evolved that invites employees to participate and lets them determine where the corporation will invest some of its educational dollars.

At Sohio it is called the Matching Gift Plan. By one name or another, thousands of companies have programs like it. Through these programs, companies and their employees give millions of dollars yearly to educational institutions.

Sohio is a charter member of a group of Cleveland companies that have pledged to contribute 1 percent of taxable income each year to education. Over the past decade Sohio has contributed more than \$3.7 million to education in one form or another.

A small but meaningful portion of that money has been contributed through the Matching Gift Plan.

Since the plan was instituted in 1965, the company and employees together have contributed \$340,105 to qualified educational institutions. Many of them are small, private schools to whom even a modest donation means a great deal.

Under the plan, the company matches—dollar-for-dollar—individual employee contributions of at least \$25 up to a maximum of \$2,000, with a limit of \$1,000 per institution per year for each employee. The employee makes his own contribution directly to the school of his choice and encloses with it a Matching Gift form, which can be obtained at his Employee Relations office. The institution receiving the gift need only complete the form and return it to Sohio, and the company will match the gift in March of the following year. The employee need not have attended the institution.

All regular, full-time employees of Sohio, Vistron Corporation, BP Oil Corporation, and other designated subsidiaries are eligible to participate in the Matching Gift Plan.

ELWOOD G. (Woody) Glass, Jr., coordinator of the plan, says the most popular time to donate to a school through the plan is the last third of the calendar year—especially December—when contributors are adjusting their income tax position.

Employees who may have forgotten about the plan and made a donation to a school already this year can still have their contribution matched by sending the school a Matching Gift form to fill out and return, says Glass.

Contributions can be in cash or securities. Sohio will match the market value of the securities on the date of the contribution.

Since the company matches their gifts, employees can, in effect, double their contributions to colleges they wish to support. They also can control where this portion of Sohio's contributions to education is spent.

The effect has been to increase contributions to small, little-known schools. These institutions are largely overlooked when the huge foundations and other philanthropic organizations are bestowing grants. They are not blessed with the high-power alumni organizations that provide fund-raising muscle for the larger, more prestigious colleges and universities.

Any accredited public or private institu-



State schools, like Ohio's Kent State, rely on private donations to help enrich programs beyond what tax support provides.

tion above the high school level in the United States is eligible to receive funds through the Matching Gift Plan.

Of the ten schools that have received the most money from Sohio through the plan, only three have enrollments exceeding 2,400 students.

Case Western Reserve University is the number one beneficiary of Sohio Matching Gift contributions, with Baldwin-Wallace College second. Both are Cleveland-area schools.

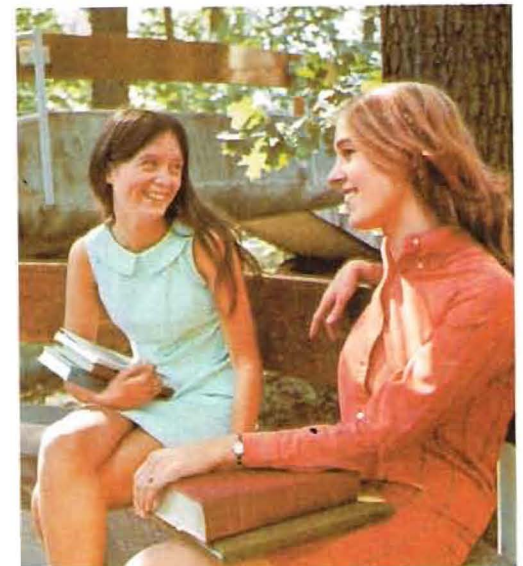
THE remainder of the top ten includes such small schools as (enrollment in parentheses) St. Joseph College, Emmitsburg, Maryland (528); Cedarville (Ohio) College (900); College of the Ozarks, Clarksville, Arkansas (975); Bryan College, Dayton, Tennessee (326); and Moody Bible Institute, Chicago (936).

Little St. Joseph College has received \$5,000 from Sohio and \$7,710 from Sohio employees over the life of the plan. This can be material help to a college of this size.

The big schools and the tax-supported schools also welcome the financial help. James E. Hoff, director of development at Ohio's Bowling Green State University, says private contributions enable Bowling Green to "enrich its various programs beyond the limit available from total dependence on state allocations and student fees."

Glass, who is manager of Sohio's Professional and Technical Recruitment staff, points out the Matching Gift Plan provides no direct benefit to the company's recruiting program.

"Sohio is not in this to get something out of it," says Glass. "The company believes it has a stake in the welfare of higher education, and the Matching Gift Plan is a way to meet that responsibility while stimulating employees to help, too."



Matching Gift Plan is boon to small schools like all-girl Lake Erie College.

A CAREER IN **HOSPITALITY**

by Mary Jane Gallaher



JOYCE Connors fits her job like that slipper fit Cinderella. As sales representative for Lexington, Kentucky's, popular Hospitality Motor Inn, she developed her territory so well that she's just been moved north to get a newer inn at Grand Rapids, Michigan, off to a good start.

Hospitality Motor Inns, a wholly owned Sohio subsidiary, operates 11 motor inns in Ohio and surrounding states.

Joyce is a vivacious blonde with a beguiling huskiness in her voice. I first met her when we chatted in the Lexington inn's



Preparing for a meeting, Joyce checks with First Cook Charles Morris of the Lexington, Kentucky, inn.



Joyce schedules meeting facilities with inn Secretary Nancy Miller.

lounge, an attractive room called "The Starting Gate" in honor of Kentucky's horse-racing heritage. She was telling me about her job selling and directing the inn's convention and sales meeting business. She also served as banquet and meeting coordinator and filled in as manager of the inn one day a week.

As we talked, Joyce caught a signal from a waitress in a doorway. She excused herself and took only a few minutes to solve what apparently was a problem in shifts of waitresses for a coming busy holiday weekend.

RADIATING the quiet confidence of one who understands and is well able to cope with her job, she explained that a good part of each week she is out selling the meeting facilities of Hospitality Motor Inns.

"Central Kentucky had a real need for a place equipped to accommodate medium- to large-sized groups. We have a capacity of 350, making us one of the most versatile facilities in the area," she noted.

"And a strong selling point," she continued, "is the fact that Hospitality Motor

Inns are located and built with the needs of meetings in mind. We have conference rooms and dining facilities designed specifically for this type of business."

SHE went on to say that seminars and meetings account for better than half of Hospitality's revenue.

"I love to have groups here for three to four days. They bring a built-in enthusiasm with them and are receptive to new ideas. They nearly always want to try local food specialties.

"I've used such well-known Kentucky dishes as a hot brown, burgoo, and even a grits casserole. They went over so well we now often include them in our regular dining room menu."

Joyce has discovered that she has a decided flair for special events or "theme" parties that are part of almost every convention's program.

"We had a Mardi Gras buffet for one group and a luau for another. For a CPA group we turned the ballroom into a Las Vegas gambling hall, used play money, and they loved it.

"We had a hillbilly buffet for families that

are members of our swim club—that means fried chicken and a roast pig. We cook that pig for hours and hours, and it's delicious."

Joyce lived in Lexington about a year. She philosophizes that while sales calls are almost the same in every area (she previously did this type of work in Ohio), "You have to get to know people before you can interest them in whatever commodity or service you are offering."

True to Southern tradition, she found that "the men I deal with here are a bit more friendly than they are further north, but that doesn't stop them from being good businessmen. I found out right away they can spot whether or not you know your business."

THE key to how Joyce happens to be in this business is too much leisure time, she says.

"After high school, I went to college for a year and a half, then did secretarial work for several years. We worked short hours and had long holidays. I can't stand to have a lot of free time—it makes me fidgety. So, I started acting as hostess a few hours each week at Imperial House



Showing conference rooms to Exchange Club members, Joyce booked meeting of their Kentucky-Indiana district into the Lexington Hospitality Motor Inn.

outside of Columbus. I found myself really getting interested in the food industry operation. I inquired, and pretty soon there was a job opening as banquet manager. I took it.

"It was with Imperial House that I learned about ordering food. Now I have worked so much with kitchen departments, the food-ordering part is just automatic. However, we have our share of emergencies—I learned early not to panic."

Joyce admits that one of her nightmares is a wedding reception that gets beset by gremlins.

"The seemingly easy-to-handle wedding cake always terrifies me," she says, shuddering at the thought of that all-important, elaborate confection. "First there is always the danger that somebody will drop it. The way it's tiered gives it a funny balance, and there's no replacing it at the last minute if there's an accident.

"We recently had a wedding reception in which everyone thought someone else had ordered a top for the cake—flowers or the traditional bride and groom.

"At the last minute, I began to worry about the top situation. Sure enough, we had a topless cake on our hands. As soon as the bride came in, I made straight for her, and all she could say was 'What top?' Just as the last guest was coming in, we found a slightly used top packed away in the kitchen. I've been careful to keep a spare ever since."

Joyce is a good representative of today's American career women. When she ex-

presses her opinions on current issues and her work status, her thoughts are well organized and obviously carefully considered. Since the current tug-of-war between the sexes over Women's Lib has grown so heated, I asked her which she'd rather plan meetings for—men or women. The true female surfaced.

"Basically, men are easier to work with. If an organization is planning a dinner and appoints a man to make the arrangements, he will ask what you suggest. Women want to do the deciding—a man generally appreciates that the restaurant representative is an expert and lets us cope."

THERE was little, if any, hint that she worries about losing ground in her work to a man.

"I think as long as they are capable, women should be advanced as fast as anyone else. There are good opportunities for advancement by women in the food service industry. Hospitality, particularly, has attractive opportunities. There are all men in the top executive positions now, but I think changes will come."

Joyce keeps the odd hours that are the norm in the food service industry. In her free time, she does a lot of reading, both fiction and nonfiction, plays tennis, and swims in the pool at her apartment house. Her main civic interest is the March of Dimes.

"The March of Dimes concerns itself now with crippled children and birth defects. I have a niece who was born with a

serious birth defect and I visited her frequently when she was at Children's Hospital in Columbus, Ohio. I saw that all the money collected by the March of Dimes went right toward buying equipment and helping those children. The March of Dimes did so much for my niece—I try to work for it whenever I can."

Despite her transfer to the Grand Rapids, Michigan, Hospitality Motor Inn in August, and her unusual working hours, Joyce has an active social life. She shrugs at the schedule limitations and says, "My work is hard on dating, but I find men usually understand."

Since she took over as sales representative in Grand Rapids, Joyce has faced the task of breaking into a new territory, a job a lot of salesmen have faced. Joyce has done it before, as well as any man. That's why she's there.



Joyce visits Spendthrift Farms, one of Lexington's colorful attractions.



Sherman and Suzanne Kemmer entertain foreign businessmen Juro Kawai and Ichisaburo Sato of Japan in stroll at the Kemmers' suburban home.

PROFITS FROM PATENTS

SINCE Sherman J. Kemmer came with Sohio two and a half years ago he has become a world traveler. And so have some of those who work with him in Patent and Licensing division on the staff of Sohio's General Counsel.

As general manager of Patent and Licensing, Kemmer, an attorney, is charged with selling and protecting extremely valuable Sohio property—licenses to other companies to use inventions and discoveries patented by Sohio's scientists and engineers.

This has become a highly profitable business, as evidenced by Sohio's annual

report to stockholders. Royalty from licenses added more than \$75 million to Sohio's earnings in the last seven years.

Sohio's patented process for manufacturing acrylonitrile, the intermediate chemical for making acrylic fibers and various consumer products, provided a substantial portion of this royalty income.

The Boron additive for gasoline, developed years ago by Sohio scientists, still produces royalty. In all, 60 licensees pay Sohio for the use of its inventions.

Barex 210 resin, another Sohio research discovery, is currently being licensed to foreign manufacturers of plastics. Royalty

income to Sohio should follow.

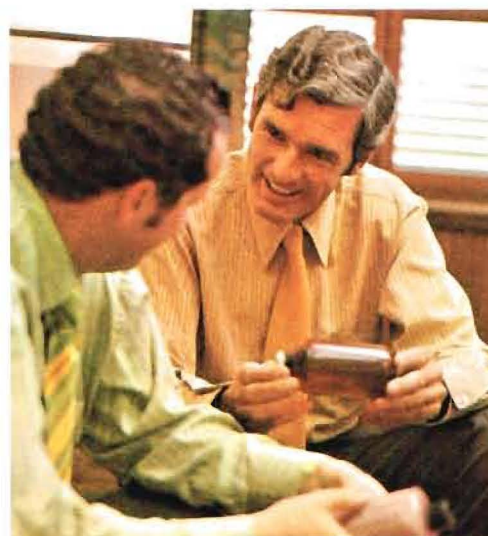
"The beauty of royalty money is that most of it is clear profit for the company," explains Kemmer. "We can make a substantial contribution to earnings in the next few years when the company is in need of capital to develop its Alaskan oil interests."

Kemmer's own philosophy has much to do with his unit turning to world travel. "I view my licensing responsibility as primarily a marketing function. We don't want to be thought of as order-takers. My goal is to have an aggressive, sales-oriented organization," he says.

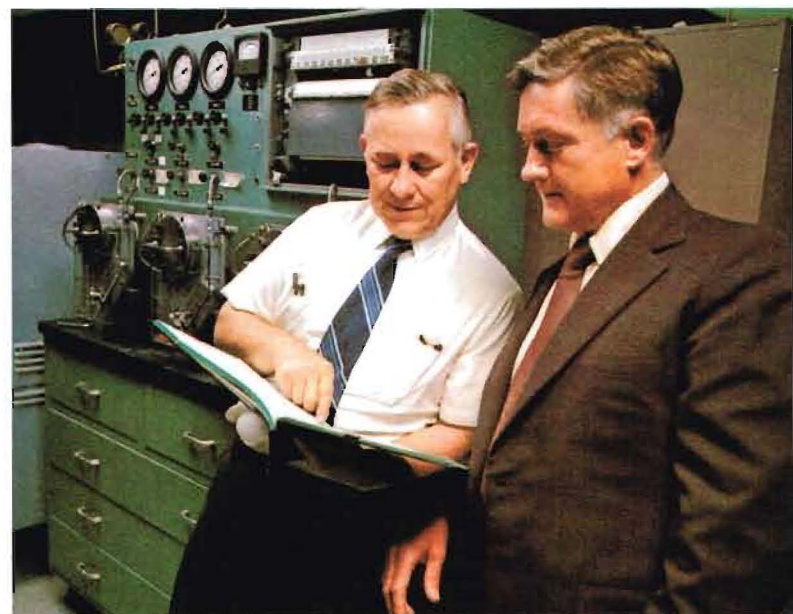
Kemmer traveled 195,000 miles last year



World travel is an important part of Licensing activity. Larry Evans visited India, Romania, Western Europe by air.



James A. Waters, Jr., chats with Kemmer before undertaking new assignment.



John Jones (right), who works closely with Sohio scientists, talks with Charles L. Blanchard at Warrensville Laboratory.

—to Europe half a dozen times; Japan twice; South America, India, and Romania.

LARRY W. Evans, Patent and Licensing counsel, who combines his law degree with a degree in chemical engineering, racked up some 100,000 air miles in trips to India, Romania, South America, Western Europe, Turkey, and Finland.

Both men hosted a stream of foreign businessmen visiting Sohio's Cleveland headquarters during the usually drawn-out negotiations that precede the signing by a

licensee.

James A. Waters, Jr., who joined Kemmer's staff as Licensing manager this summer, is relieving Evans and Kemmer of some travel duties, which—contrary to common belief—become burdensome. Waters is concentrating on Barex 210 resin licensing.

John F. Jones, patent counsel, works closely with Sohio's researchers in obtaining patents for their discoveries and protecting them from infringement by others.

Sohio's licensing is rooted in research.

"Sohio's policy is not to originate research for the sole purpose of developing technology that might be licensed," Kemmer explains. "It's too risky. Sohio is primarily an energy company, and our research is mostly along lines either leading to products that can be marketed or to improvements in present production processes."

There is a natural "fallout" from these efforts. A researcher searching for one thing may find another. Or he may further develop the process he set out to improve. In either case, other companies may be

willing to pay Sohio for use of the invention.

This is where John Jones' expertise is invaluable. He works closely with Sohio research, reading stacks of research reports and keeping current on what may be marketable and what has been patented by others. Sometimes it is up to Jones, who has an overview of industry needs, to inform a scientist that he indeed has a discovery. Often the scientist comes to him with an idea, or what he believes to be an invention. Jones, whose law degree is backed by a master's degree in chemistry, can tell him whether his idea is patentable.

If it is, Jones applies for a patent with the U.S. Patent Office in Washington, D.C. Theft of an idea before the long patenting process begins could deprive the corporation of years of royalty income from licensing, so counseling scientists to protect inadvertent disclosure of secrets is important.

JONES counsels all Sohio subsidiaries on patent applications, including inventions dealing with coal mining, cleaning up oil spills, and new-style toothbrushes. Sohio averages 30 to 40 U.S. patent applications each year. Patents for many discoveries also are applied for overseas, sometimes in as many as 40 foreign countries.

Once there is legal protection, another part of Kemmer's group may make inquiries of prospective buyers of licenses to use the invention.

"We keep an eye and ear open for possible licensing," says Kemmer. "Interest in technology comes and goes. It used to be you didn't license anything that was not fully developed, but now companies are more aware of what they have and what others need.

"I noticed the other day in *The Wall Street Journal* that some companies were reexamining the fuel cell for certain purposes. We hold some patents in this technology, so naturally we've gotten interested."

Another example is a process Sohio scientists developed for making acrolein and acrylic acid. Although never practiced commercially by Sohio, it is a modest source of royalty income.

"There was a round of licensing of this process some years ago," Kemmer explains. "Now interest has revived, and we expect that this process will be licensed extensively by us in the years ahead. Recent improvements have put us far in front of our competition. The improvements are contributing to the revival of interest. Sohio's competitive lead is not well known but will become better known as our licensing efforts bear fruit."

SOHIO'S process for manufacturing acrylonitrile is another matter. It is well known. Manufacturers around the world pay royalty to Sohio to use the economical process. Some 90 percent of the world's acrylonitrile is manufactured with the Sohio process. These manufacturers are in direct competition with Sohio, which has one of the world's largest acrylonitrile plants. Located in Lima, Ohio, its design capacity is 200 million pounds per year.

Kemmer, who holds degrees in law, chemical engineering, and business administration, has initiated licensing activities with industries or governments in what he calls "developing countries." Acrylonitrile licensing is receiving the most attention at present, but he hopes to add other Sohio inventions and processes.

"I believe there are licensing markets to be developed outside the major industrial countries," he says. Manufacturers in Brazil and India, for example, are among those currently negotiating with Sohio.

Negotiations with foreign manufacturers take many forms and may go on for months and even years, as one detail after another is ironed out.

In addition to cost of the license, negotiations often include details as to the amount of technical help Sohio will provide during planning, construction, and startup of a plant; when the technology will be delivered; various warranties; secrecy agreements to protect the technology; engineering services and costs; and arbitration clauses.

"Negotiating customs vary from country to country," explains Kemmer. "In the United States, it is the custom to negotiate on a one-to-one basis. If they have four people, you have four people across the

table from them. But in foreign countries it's not unusual to sit alone across from half a dozen or more, and they take turns haggling with you."

Language is not a real barrier, since English is the business language of the world. But thick accents can make negotiations extremely tedious.

Negotiations often call for a delicate balance of brashness and finesse. Kemmer always arrives at the table well supplied with statistics and facts for verbal ammunition. Usually an economic analysis is prepared with the help of Research and Engineering and other Sohio departments, before leaving Cleveland.

Since most foreign businessmen realize Americans do not know their language, they often confer among themselves without leaving the room.

This worked to one group's disadvantage when Kemmer knew just enough of their language to recognize key numbers they were discussing. He was able to negotiate a considerably better arrangement than he had expected.

Negotiations in foreign countries have other disadvantages. Travel is tiring. Strange hotels and language barriers take their toll in day-to-day business living, where the pace is faster than that of a tourist. The food often does not agree with Americans. Jetting through several time zones can be disconcerting for the hardest traveler.

TECHNICAL and engineering expertise normally is part of the license transaction. Often Sohio engineers visit foreign construction sites and counsel the licensee until the plant is in operation. Research may be called on to run analyses and perform other services, even after the plant is in operation.

"Our unit couldn't get along without the support of Research and Engineering," Kemmer says. "On the other hand, our operation accounts for very little of the Engineering and Research budget."

Despite the travel and other expenses, Patent and Licensing costs the corporation little in comparison to its contribution to corporate earnings. It provides frosting on the cake.



PIPELINE COSTS DOUBLE

Estimated cost of the trans-Alaska crude oil pipeline has more than doubled during the nearly two-year delay in construction, Sohio Board Chairman Charles E. Spahr reported in a speech before the Indianapolis Society of Financial Analysts. Initially, it appeared that the line could be built for \$900 million with an initial capacity of 600,000 barrels per day. It is now expected to cost more than \$2 billion for the same capacity, and it will cost an additional \$400 million later to increase the line's capacity to 2 million barrels per day. Mr. Spahr cited inflation, better engineering information, and environmental protection requirements as main causes of the cost escalation.

"On the other side of the ledger," he added, "crude oil prices advanced generally 25 cents per barrel last fall, and the looming energy crunch makes it quite likely that prices will remain strong."

He went on to say, "Sohio is no longer a moderate-sized regional refining and marketing company faced with a chronic shortage of crude oil. We have become a large domestic marketing and refining company with the potential of being a crude-surplus company. This might be modestly described as a joyous prospect that contrasts rather notably with the prospects of some of our competitors."

O'CONNOR NAMED VP

Lawrence J. O'Connor, a member for ten years of the Federal Power Commission, has been elected a vice-president of Sohio and appointed the company's Washington representative. Mr. O'Connor was appointed to the FPC by President John F. Kennedy in 1961, and was reappointed to a second five-year term by President Lyndon B. Johnson in 1966. He served as the commission's vice-chairman in 1962 and 1968.

BP ACCOUNTING MOVES

BP Oil Corporation's marketing accounting systems have completed the move from Atlanta to Sohio's Cleveland headquarters. All BP accounting and data processing functions now are located in Home Office. They are linked directly to all BP marketing regions through newly established Integrated Data Processing centers in each region. As part of the shift, a number of BP employees moved to Cleveland, while more than 100 Home Office Sohioans were shuttled to Atlanta and back to learn the BP accounting system.

LUBE PLANT TO CLOSE

Sohio will close its lubricant compounding, blending, and packaging plant in Cleveland by mid-1972 and transfer those operations to the Lima and Marcus Hook refineries.

The plant blends stocks from Lima Refinery into industrial oils and other finished products and packages many of its products into barrels and smaller containers.

NEW CITY PICKS BP

BP Oil Corporation has been picked to build the only service station in the town square of Harper's Choice, one of seven villages comprising the new city of Columbia, Maryland.

Located midway between Baltimore and Washington, D.C., Columbia is planned for a population of 110,000. It is expected that the new BP superservice station, scheduled to open Dec. 1, will eventually pump 150,000 gallons of gasoline a month. BP was chosen to build the showcase station because of the attractive mansard lines of its stations.

DUTCH PANTRY EXPANDS

Hospitality Motor Inns' network of Dutch Pantry Restaurants will expand to 21 with the completion of its newest addition at the Interstate 77 exit in Williamstown, West Virginia. Scheduled to open during the first quarter of 1972, the restaurant will be across the river from Marietta, Ohio.

BP SETS RECORD

In its first attempt ever to solicit credit card applications from college seniors last spring, BP drew the highest response ever netted by such a program in the United States.

Over 22,000 students—16.6 percent of those solicited—asked BP for a credit card. The previously highest response was 14.2 percent. Twelve percent is considered average.

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GEOMETRY ON A ROOF TOP

Everyone knows that in a right triangle the sum of the squares of the two sides equals the square of the hypotenuse. Occasionally, it comes in handy.

Take a floating-roof storage tank, for example, like the ones at Toledo Refinery. The roof drops as the level of the product inside drops. As a result, no vapors are formed within the tank, which in turn cuts down on pollution, safety hazards, and loss of valuable gases.

But as the roof drops, so must the ladder extending to it. And that's a tricky problem unless the ladder is the hypotenuse and the bottom side is a track on which the ladder can roll.

Then it's all as simple as 3, 4, 5.



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