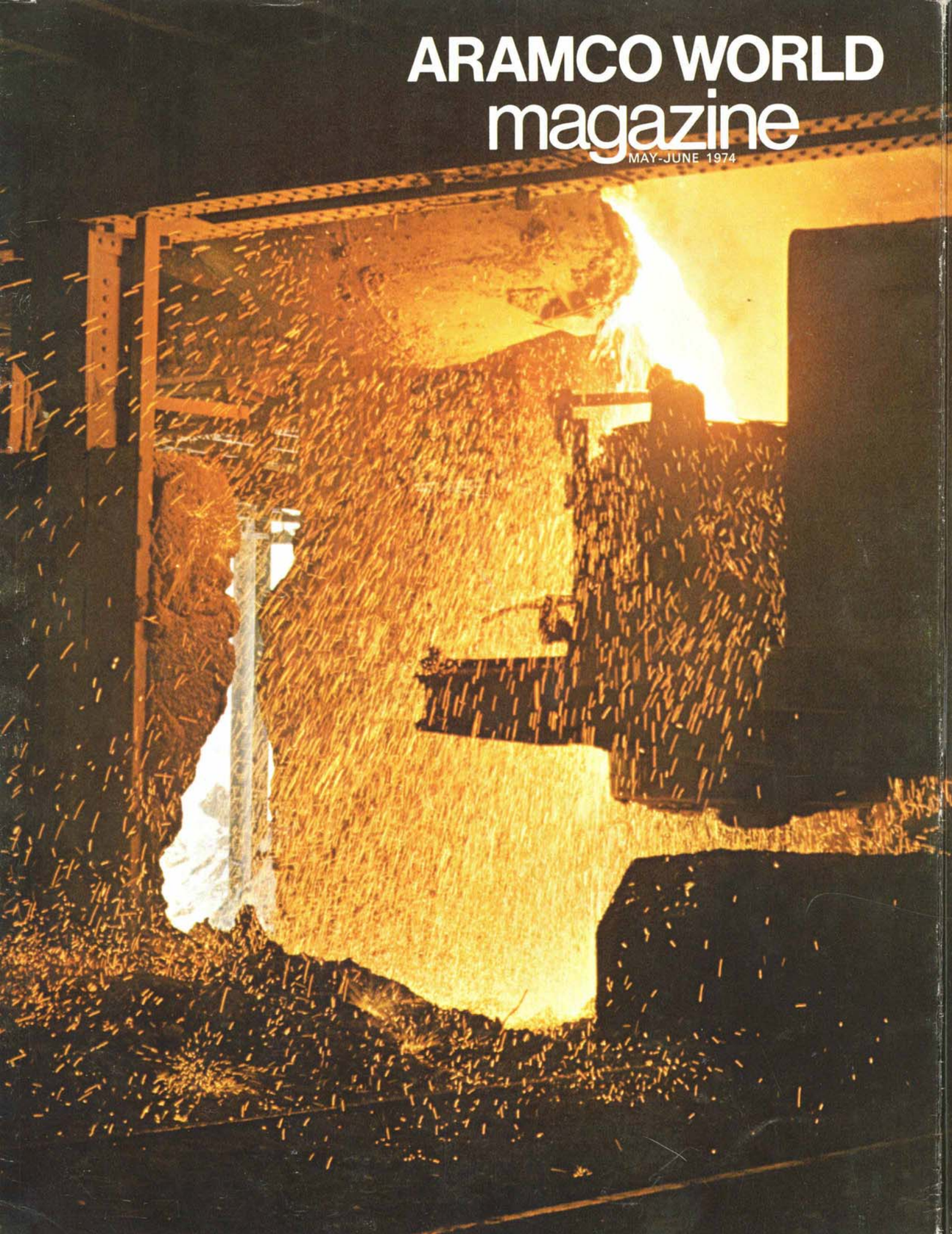
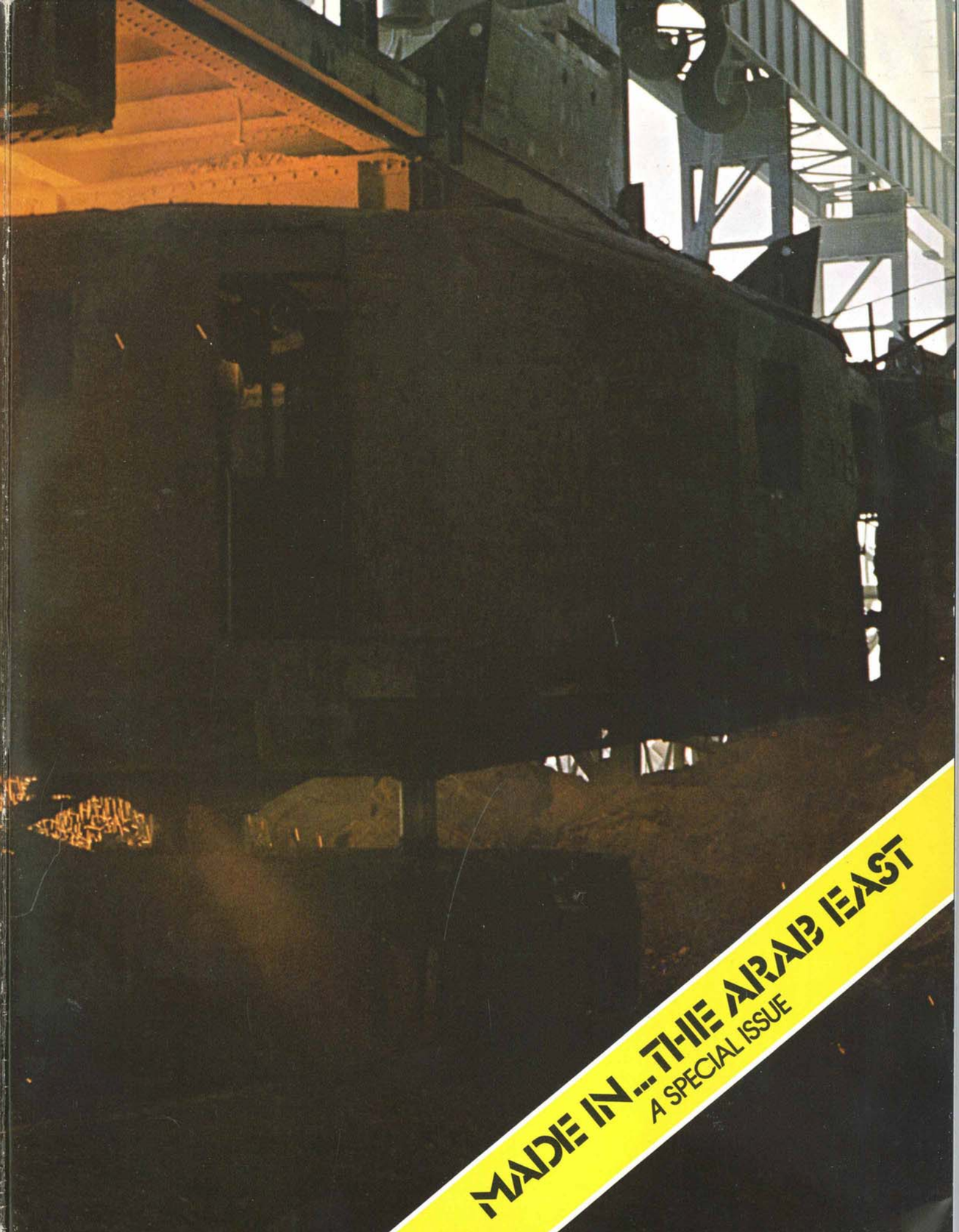
ARAMCO WORLD magazine

MAY-JUNE 1974





MADE IN... THE ARAB EAST

A SPECIAL ISSUE

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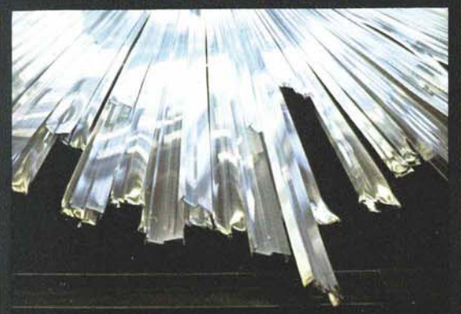

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Made in the Arab East: leather goods in Saudi Arabia (1); tractors in Iraq (2); phonograph records in Lebanon (3); canned vegetables in Syria (4); aluminum rods in Lebanon (5); Clorox in Saudi Arabia (6); dairy products in Saudi Arabia (7); automobile batteries in Jordan (8) and truck bodies in Lebanon (9). Front Cover: John Riddle took this dramatic photograph of a steel furnace at Helwan.

INTRODUCTION

This issue of Aramco World *is a survey of industry in the Arab East—industry, that is, other than oil.*

Oil, of course, is the paramount industry in the Arab East, as all the world now knows. But as we attempt to show here, it is by no means the only industry. Arabs today roll steel and extrude aluminum, assemble automobiles, build ships and overhaul jets. Off assembly lines manned by Arabs come refrigerators, antibiotics, television sets, detergents, plastics and telephones. In deserts that were unexplored barely 50 years ago stand ground stations linked to satellites in space. And in cities virtually unknown a decade ago, graduates of the world's finest universities feed data into purring computers and Telex pivotal balances to the financial centers in Zurich, London and New York.

To anyone who knew the Arab East ten years ago, such statements may sound at least exaggerated, if not preposterous—and their reservations are valid. No one who knew the area then could overlook the impact of recurrent military and political turmoil and radical economic upheaval. Nor could they minimize what to industrial development were even more difficult obstacles: strong individualism, widespread resistance to organizational methods and structures, and differing attitudes toward education and work.

Some reservations are still valid since, despite demonstrable progress, the sometimes brilliant achievements of engineers, administrators and planners often collapse at the lathe, the switchboard and the filing cabinet.

Nevertheless, the Arab East is *industrializing. There is simply no denying the realities of the factories, shipyards, air terminals, dry-docks, dams, schools and power plants visited, inspected, described and photographed in this survey. They're there, they're real and they're Arab.*

Furthermore, while parts of this survey lean heavily on impressions, observations, and estimates, serious efforts to verify all data were made and our conclusions, we believe, are sound. Despite staggering disadvantages, the Arab East in the last decade has struggled up from what in some cases were virtually primitive levels to the verge of an economic renaissance that is already transforming the Arab world and in the near future will have a measurable impact on the Western world as well.

— THE EDITORS

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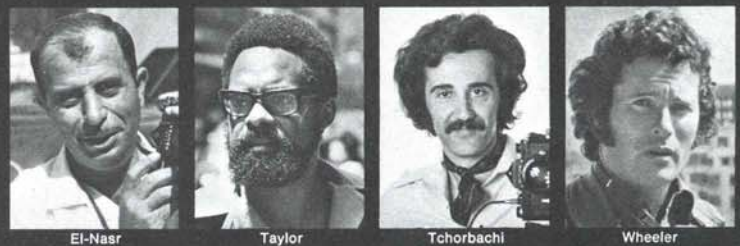
Fitchett | Poole | Tracy | Amin

Azzi | Eigeland | Keen | Moody

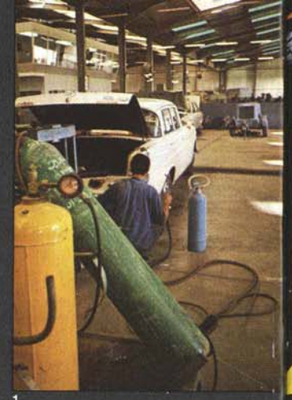


El-Nasr | Taylor | Tchorbachi | Wheeler

This special issue on Industry in the Arab East was written by Joseph Fitchett, Frederick King Poole and William Tracy and photographed by S. M. Amin, Robert Azzi, John Bassili, Tor Eigeland, Peter Keen, A. A. Al-Mentakh, Burnett H. Moody, Khalil Abou El-Nasr, John Riddle, Peter H. Smith, John Taylor, Waseem Tchorbachi, William Tracy and Nik Wheeler.

"One American businessman put it this way: 'Now is the time to be a Saudi; his time has come.'"

MADE IN... SAUDI ARABIA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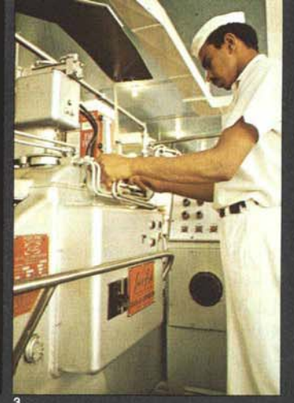
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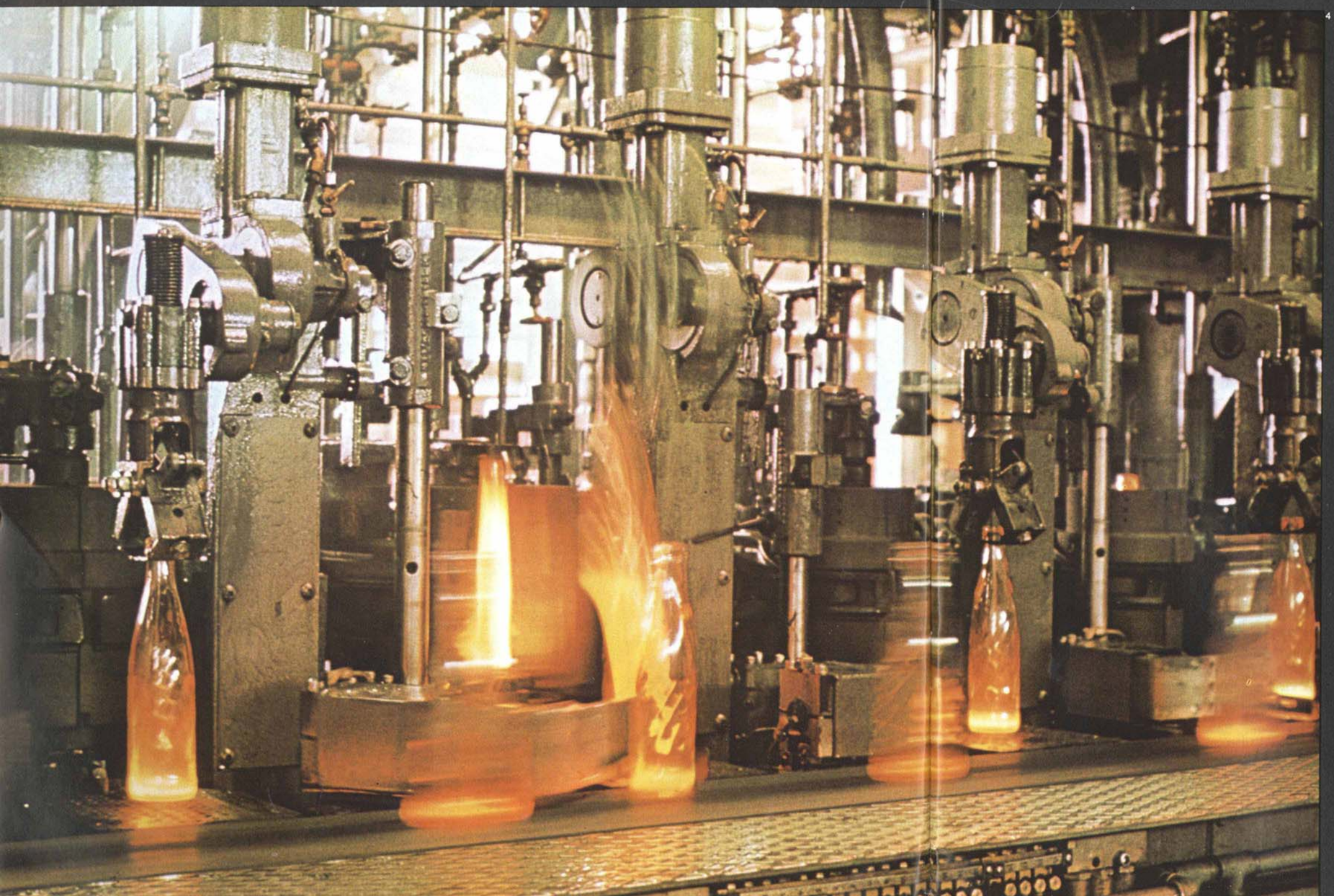
WRITTEN BY WILLIAM TRACY

PHOTOGRAPHED BY
BURNETT H. MOODY, WILLIAM TRACY,
AND ALSO S. M. AMIN AND
A. A. AL-MENTAKH.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Shops and factories in Saudi Arabia today completely rebuild automobiles (1), roll steel (2), reconstitute and bottle milk (3), turn out millions of glass bottles (4) and re-thread tough oil-field drilling pipe (5).

Tide detergents have been made in Saudi Arabia since the mid-1950's.

This February Saudi Arabia made two startling announcements. The first was that General Motors, the world's largest industrial corporation, was establishing a multi-million dollar assembly plant in the kingdom. The second was that Nissan Motor Co. of Japan would build a $20-million truck assembly plant.

To those who persist in seeing the Arab East, and especially Saudi Arabia, in the outdated context of deserts and Bedouins, the idea of cars, buses and trucks rolling off assembly lines in Riyadh or Jiddah must be astonishing. But to those who know, the GM announcement is simply additional evidence that the Arab East, as *Newsweek* wrote recently, is on the verge "of the most spectacular industrial revolution the world has seen in the last quarter century."

Oil aside, that would still be a considerable overstatement as regards Saudi Arabia today, where nothing comparable to the giant industrial complexes of the United States, Japan or Germany yet exists. But considering the enormous handicaps that the kingdom has had to overcome and the late start that it made, its progress is already impressive and its future exciting. For example: Internal consumption of refined oil products shot from a mere half-million barrels in 1950 to 20 million barrels, 40 times as much, in 1972; and 16 percent up from just the previous year. Electricity generation increased from 442 million kilowatts in 1967 to 977.6 million in 1972, 130 percent in just five years. Saudia, the national airline, last year posted its first million-passenger year and announced that it is now the biggest airline in the Middle East. And, economists say, the real takeoff is just beginning.

One American businessman put it this way: "Now is the time to be a Saudi; his time has come." Saudi businessmen agree. "Industry in any modern sense," says Wahid bin Zagir of the Jiddah Chamber of Commerce, "was not introduced in this country until the early 1950's, and haphazardly at that. But already the situation has changed. The government is spending enormous sums to build the necessary physical infrastructure and to create the modern administrative structure needed both to regulate and encourage manufacturing. We have a growing body of skilled workers, widespread consumer prosperity, increased contacts with the outside world and an entirely new breed of industrialists."

Wahid bin Zagir, though hardly typical, is himself one of the new breed. Plain-spoken, heavyset, Bin Zagir has a degree in economics from England's Durham University and at 39 has served on the boards of an airline, a bank, a government commission and a university. He was formerly mayor of Jiddah and is now vice-president of Jiddah's Chamber of Commerce. Growing up in an established merchant family with several generations of experience in importing and selling soaps and toiletries, Bin Zagir, a few years ago, sensed that the Saudi market was ready to support a local manufacturing effort. After studies of the market and negotiations abroad he went into partnership with Unilever International to manufacture in Saudi Arabia such well-known brands as Lux and Lifebuoy soaps and Sunsilk shampoo.

You meet them more and more often in Saudi Arabia these days, this new breed of young men, bright, articulate, many of them graduates of U.S. or British universities and all intensely proud of Saudi Arabia's present mushrooming development, confident of their own ability to grasp the opportunities suddenly opening to them in their ancient desert land and imbued with what Robert Graham, correspondent of Britain's prestigious *Financial Times*, describes as "suddenly, an air of purpose."

Skeptics might say the air of purpose was a long time in coming. Pastoral and poor as recently as 30 years ago, the kingdom's economic base, prior to the discovery of oil, rested almost entirely on skimpy agriculture, taxes, customs duties and a small income from pilgrims to Mecca. Oil, of course, changed that, but it was not until the early 1960's that concerned government officials began to move away from almost complete dependence on petroleum toward industrialization.

To do so Saudi Arabia, like other developing countries of Africa and Asia, had first to face up to some hard facts: widespread illiteracy, serious cultural obstacles and an almost total absence of the infrastructure vital to economic diversification: electricity, roads, harbors, railways, airports, telephones, mines, machinery, skilled labor and administrative and technological know-how.

For many countries these were, and still are, insurmountable obstacles. To simultaneously educate an entire populace, construct transportation facilities throughout the country, install modern communications, expand agriculture, bring in experts, provide plants and machinery, require massive expenditures which most emerging nations simply cannot afford.

Saudi Arabia can. As the largest oil exporting country in the world Saudi Arabia today has virtually unlimited capital which —especially since the mid 1960's—it has been pouring into a staggering variety of projects that are transforming the kingdom.

Just this year, for example, the kingdom will spend nearly $300 million for the new Jiddah International Airport and pilgrimage center; an estimated $340 million for the 400-mile Taif-Abha-Jizan highway in the mountainous southwest; and $55 million for the Red Sea to Arabian Gulf "backbone" telecommunications project linking Jiddah, Mecca, Taif, Riyadh, Hofuf and Dammam with microwave and coaxial cable.

Projects such as these are the end results of long and careful research conducted by Saudi planners with the help of experts from the Ford Foundation, various United Nations agencies and private consulting firms which the government, with laudable foresight, began to bring in some 10 years ago to give their counsel. From their studies and recommendations gradually developed a sweeping, three-phase program, calling for, first, massive government spending on the basics (education, social services, roads, docks, communications); second, industrial and agricultural development (mineral resource exploration, heavy industry plant construction, irrigation projects); and third, stimulation of private enterprise (tax concessions, legislation, loans).

This program was formalized in 1970 in the Five Year National Development Plan, a 227-page document prepared by the 90-man staff (80 percent Saudi) of the Central Planning Organization headed by University of California graduate Hisham Nazer, with an assist from a six-man consulting team of economists brought in from the prestigious Stanford Research Institute.

"Last year the firm manufactured 32.5 million four-ply paper cement bags—enough . . . to wrap around the equator 2½ times."

"The basic idea," Mr. Nazer explained at a luncheon meeting of the American-Arab Association at New York's St. Regis Hotel last September, "is to increase industry's share in our GDP from a current 6.7 percent to a level where it can be comfortably felt that oil's share is no longer the exclusive factor."

A glance at a recent national budget shows where the first plan puts its emphasis. According to a budget breakdown for the year 1972-73, more than 2,000 miles of new highways were under construction, 28,100 telephone lines were being installed, and planning had begun on submarine communication cables—in the Red Sea and the Arabian Gulf—and on two satellite ground stations. The Information Ministry had started work on a new television network in the south and installed new radio transmitters in the north. New airport terminal buildings were being built in three cities, new runways at three others. Four seaports were being expanded and large amounts of national funds were allocated to numerous municipalities needing road paving, street lighting, sewage systems and public housing. The budget also showed that 144 new boys' schools, 109 girls' schools, 80 anti-illiteracy schools for adults and 1,400 additional classrooms for existing schools were planned or underway, and that large sums had been earmarked for new buildings at universities and colleges in Jiddah, Mecca, Medina, Riyadh and Dhahran.

In the 1973-74 budget—up 72.8 percent to $6.4 billion—such development projects accounted for 62.5 percent of the total allocations. Transportation and communications, for example, received $640 million, a 60-percent increase, and education received $630 million, up 40 percent from 1972-73.

For the second phase of the program—industrial and agricultural development—the 1972-73 budget provided about $130 million for mineral exploration, electric power subsidies and direct industrial investments, and another $170 million for irrigation, drainage, dams, wells, Bedouin settlement, building or maintaining five sea-water desalination plants and constructing drinking-water distribution systems in 14 towns and cities.

Considerable funds were also channeled into the kingdom through the General Petroleum and Mineral Organization (Petromin), a sort of state-owned, semi-autonomous public corporation set up in 1962 and authorized to enter partnerships with private local and foreign capital. Initially Petromin concentrated on several oil-related projects, but later turned to mineral exploration too. Since then air and land teams have found rock salt, marble and promising traces of magnesium, lead, zinc, silver and gold. Substantial deposits of iron and copper now only await roads and water supplies to be exploited, with copper receiving priority attention. In February, for example, two Japanese firms agreed to explore a 4,000-square-mile concession area rich in copper, lead and zinc.

More recently, Petromin has moved directly into industrial development. On the Red Sea coast south of Jiddah Petromin built a steel rolling mill which was initially plagued by problems but in 1970 turned out 85,000 tons, principally long reinforcing rods for concrete, and is currently meeting about a third of the steel requirements in the Western Province. On the Arabian Gulf coast near Dammam and the natural gas sources which provide both its power and its principal source of raw material, Petromin built a nitrogenous fertilizer plant which produced 92,250 tons in 1971. SAFCO, as it's called, the Saudi Arabian Fertilizers Company, is owned 51 percent by Petromin and 49 percent by private Saudi investors. The company has a technical aid agreement with Occidental Petroleum and a marketing arrangement with Inter Ore. Starting with nothing but natural gas, air and steam, the plant produces ammonia (sold in Saudi Arabia, Qatar and Kuwait) and urea, exported to Sudan, Yemen, Afghanistan, Pakistan and India. A by-product is sulphuric acid, which is shipped to Bahrain and Qatar and within Saudi Arabia is sold to an oil company, a detergent factory and a sea-water desalination plant. SAFCO represents a $20-million capital investment and employs 523 workers, of whom 320 are Saudi Arabs, others Egyptian, Jordanian, British and American.

For Saudi Arabia this is big business. But it's only a sample of what government planners have in mind. For in Arabia abundant natural gas is produced along with oil as a joint product and Petromin now envisions two ways of exploiting its enormous potential.

The first is as cheap energy. Some gas is currently used for electric power production, desalination and in manufacturing fertilizer, cement and glass. Far larger quantities could be used to fuel power-hungry aluminum smelters such as those now operating on nearby Bahrain. A feasibility study is underway for an aluminum plant with a capacity of 140,000 tons per year. And already a preliminary agreement has been signed between Petromin, two Japanese companies, Nippon Steel and Nippon Kokan, and the U.S. firm, Marconi Corporation to build a $500-million steel mill near the port of Jubail, close to Eastern Province gas sources. It is planned to have an initial capacity of one million tons yearly, rising in increments to five million. Ore will be brought from Brazil in specially-constructed bulk ships capable of carrying oil on their homeward voyage.

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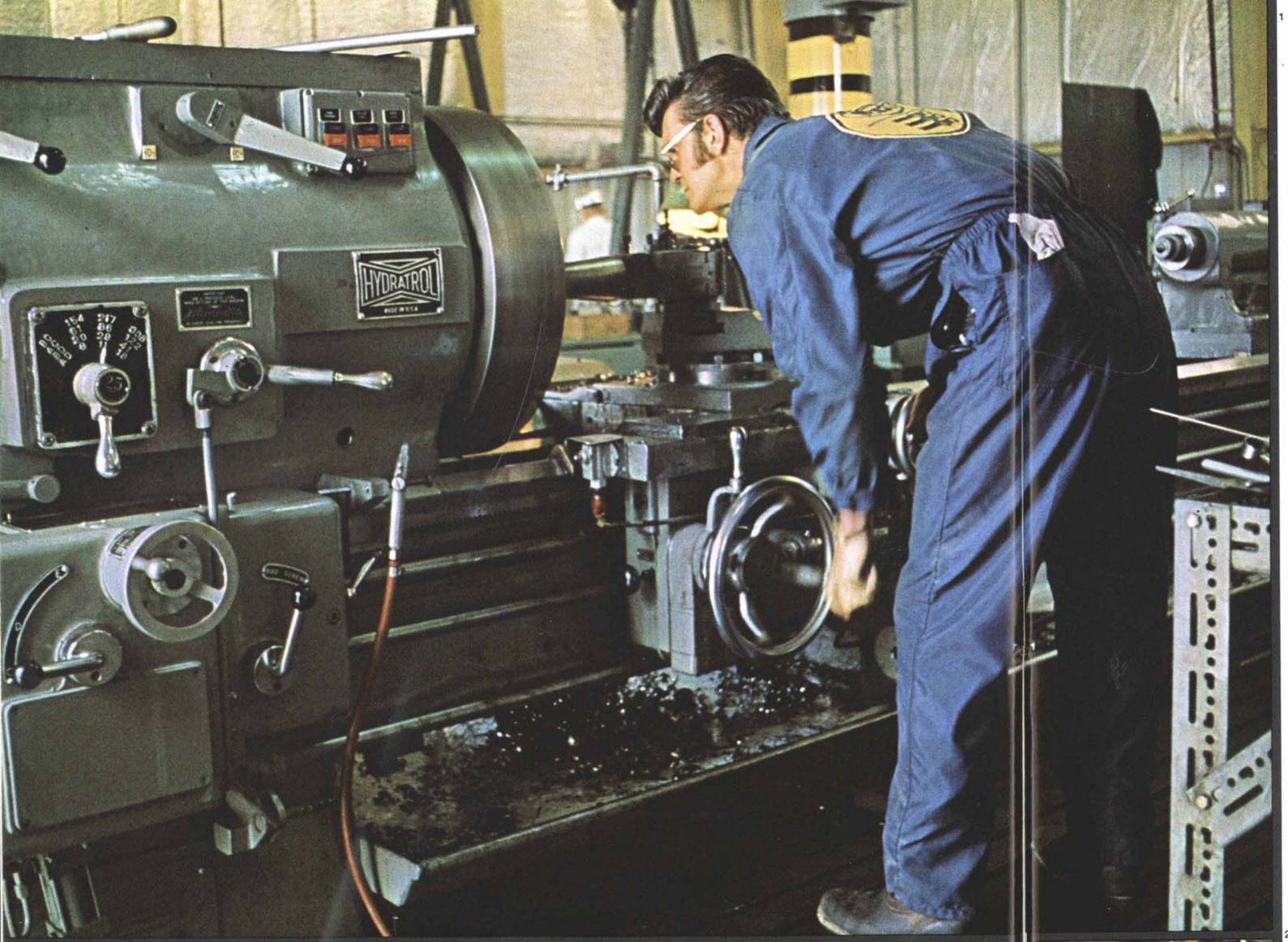

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Vetco Saudi Arabia, a joint venture of Saudi industrialist Sulaiman Olayan and America's Vetco International, repairs and maintains drilling equipment in its Eastern Province shops (1). Precision tool work is essential in re-threading drilling pipes and couplings (2-6). Dammam's National Paper Products Company manufactures more than 30 million heavy-duty cement bags yearly (7).

Jiddah's Badrah candy factory turns out 15 tons of sweets per shift.

The steel mill may be one of the large-scale projects referred to in a recent *Washington Post* article which reported that confidential discussions were going on in the kingdom on industrial proposals costing up to a total of $5 billion. But the other projects will be part of an envisioned petrochemical complex using gas not just as fuel, but as raw material. One such project, announced in December 1973 with a 1978 completion date, is an agreement with Mitsubishi Corporation and Mitsubishi Petrochemical Company to build an ethylene plant with a yearly capacity of 500,000 tons and derivative products such as polyethylene and propylene produced to scale. A preliminary agreement was also reached on a methanol plant with a yearly capacity of about 3.5 million tons.

The third phase—stimulation of the private sector—is also moving. After a cautious beginning two decades ago, private industry is taking increasingly ambitious and confident strides.

In 1961 Saudi Arabia published its first comprehensive regulations governing and encouraging the investment of local capital and in 1963 gathered foreign investments under the same umbrella. The two laws provided for such concrete support as customs exemptions on imported machinery, spare parts and raw material, elimination of export duties on products, five-year tax holidays and, in some cases, tariff protection.

According to Abdul Majid Kayyal of the Ministry of Commerce and Industry, the sometimes touchy tariff protection provision has been carefully considered. "If we determine that a manufacturer will be able to assure reasonable prices, sufficient quantity to supply the market and quality, we offer limited protection by temporarily raising customs duties on competitive imports." Bin Zagir at the Chamber of Commerce adds, "We don't want to encourage the growth of industry at the expense of the consumer. Then, too, if local manufacturers can't meet international standards we will never capture export markets."

Compared to the headlong rush into prestigious, and frequently wasteful, industrialization schemes in many developing countries this policy seems eminently sensible. Furthermore, as the dry language of a recent report to investors by New York's First National City Bank suggests, it works. "Tariff protection is likely to be available only to efficient industries which can remain roughly competitive with imported goods. A number of Saudi industrialists have demonstrated that this can be done."

Other factors encouraging to investors are Saudi Arabia's refusal to impose currency controls—many nations have heavy restrictions on the movement of capital—its firm commitment to free enterprise and its record of political stability. And if the local market is small, the prosperity of neighboring Arabian Gulf countries tends to expand it significantly.

One of the only roadblocks remaining, in fact, is the acute shortage of management and technical personnel and trained labor. The Citibank report singles out this problem for comment. "In spite of the tremendous achievements in developing the kingdom's educational system in the past 20 years, there is expected to be a severe shortage during the 70's of professional and managerial people." An American working with the Central Planning Organization explains, "The manpower problem is Saudi Arabia's most basic problem, and perhaps one of its most intractable. I'm optimistic that under the plan, financial resources are now being channeled into education as much as can be effectively used, but it will still be some years yet before the numbers of qualified men available will be large enough."

In the meantime the government is building and staffing vocational training institutes throughout the country, foreign companies involved in joint-venture projects are obliged contractually to provide for the training of local youths and, when enough skilled Saudi workmen are simply not available, work permits are granted to bring in sufficient expatriate technicians to do the job.

The government also provides industrial sites at nominal rents and has built industrial estates in Dammam, Jiddah and Riyadh which, says Abdulla Sulaim, a young Saudi who studied civil engineering at St. Martin's College in Washington, provide industries with what they need. "Aside from the surveyed plots available for factory sites,

"The budget also showed that 144 new boys' schools, 109 girls' schools, 80 . . . schools for adults and 1,400 additional classrooms . . . were planned or underway . . ."

each estate has a network of roads, fresh water, sewers, lights and power. There is also a landscaped central service area with administration building, post office, police station, cafeteria, a model factory building, fire department and central machine shops."

The three estates are managed by the government's Industrial Studies and Development Center in Riyadh, a semi-autonomous agency whose chairman is the Minister of Commerce and Industry and which maintains working ties with the Ministry of Finance, the Ministry of Technical Education, Petromin and the Central Planning Organization. The center was established in 1967, staffed then by less than a dozen enthusiastic researchers. In 1973 its work—feasibility, marketing and pre-investment studies—kept 127 busy. One hundred were Saudi Arabs, 20 were Arabs from neighboring countries, and seven UN experts on loan from Germany, Sweden and India. During the year the center conducted feasibility studies for factories to produce electric cables, table salt, sugar, and paper and paper products utilizing palm wood. For bicycles, a study showed that with an investment of $320,000 a plant could be built to manufacture about half of Saudi Arabia's annual imports of 24,000 machines.

The center also carried out pre-investment surveys for gas heaters, locks, hinges and nails, household electrical appliances and fruit preserves. Other possibilities investigated in recent years have included fired red bricks, ceramics, cotton cloth and tomato paste and juice. Such studies are beginning to bring results. In January this year a $2.5-million factory to produce 4,500 tons of tomato paste and 2,000 tons of juice yearly was opened in Riyadh. The plant will employ 72 on a seasonal basis, and utilize tomatoes grown in nearby villages to supply about 50 percent of the Saudi Arabian market.

Ibrahim bin Salamah, a researcher with a degree in mathematics and commerce from Steven F. Austin State College in Texas, lists some of the aspects the center takes into account. "First we look at how imports of this particular item from abroad have been running. We talk to dealers and agents, wholesalers, retailers. We examine shipping and customs records and make an estimated demand, almost always a conservative one. We might cross check by looking at new housing construction, for example. Then we estimate the skilled manpower required and find out what is actually available on the labor market. We determine that raw materials are available and measure their quality. To help out there we have just commissioned the design for a new industrial laboratory which we hope to have completed in about three years' time. It will house our Bureau of Standards and facilities to test for safety, weights and measurements, and quality control."

The Development Center also played an active role in preparing the manufacturing section of the five-year Development Plan by conducting a wide-ranging survey that unearthed some arresting data. It was found, for example, that although there were some 9,163 "manufacturing establishments" in the kingdom in 1968, only 29 companies worked on a scale big enough to maintain a staff of 50 or more, and in the entire country only four manufacturers employed 200 or more.

Even so, the center found, during that year the industrial sector turned out products worth an estimated $108 million and paid wages of more than $25 million. Divided into sub-groups the four major categories of manufacturing turned out to be food and beverages (which accounted for 26 percent of income), cement and non-metallic industries (24 percent), transportation equipment and repairs (13 percent) and wood products and furniture (9 percent).

With this information the center went on to draw up a 152-page report, making detailed five-year projections in 12 subsectors of industry. The subsectors were food and beverages; textiles and wearing apparel; wood and furniture; paper and printing; leather products and shoes; rubber products; chemical products; metal products; cement and non-metallic products; machinery and appliances with their maintenance; transportation equipment with its maintenance; and miscellaneous.

"... Saudi Arabia today has virtually unlimited capital which ... it has been pouring into a staggering variety of projects that are transforming the kingdom."

Overall the five-year projections anticipate that new private investment in the 12 subsectors of light or consumer industries will total $75 million by 1975. At the end of the period gross annual output should total $242 million, reflecting a hoped-for annual growth rate of 12.2 percent and jobs for an additional 13,000 workers, an annual employment growth rate of 6.3 percent.

The report also projected for each of the 12 subsectors the needs in terms of raw materials, land, machinery, wages and power consumption. Concrete proposals were made to actively encourage private investors to go ahead with a surprisingly varied list of projects determined to be feasible during the five years. These included factories for manufacturing or assembling canvas, surgical bandages, shoes, paints, pharmaceuticals, gas stoves, enamel ware, air conditioners, refrigerators, electric fans, dry-cell batteries, fiber-glass boats, bicycles, automobile batteries and light bulbs.

But official statistics and governmental projections, important as they are, do not tell the whole story. The scope and variety of private enterprises, some large, others quite small, actually turning out finished products throughout the kingdom every day is another measure of progress, and a brief summary gives witness to the initiative of Saudi industrialists.

Two factories produce oxygen, acetylene and carbon dioxide gas; a small animal feed factory produces 3,600 tons each year. A shoe factory has a capacity of 280,000 pairs yearly. A macaroni factory produces 600 tons annually. Three factories make ready-to-wear clothing, one produces cotton towels, five turn out plastic household implements, four manufacture fiber-glass water tanks and make aluminum kitchenware. Others produce chicken rotisseries, water heaters and desert coolers, a kind of ventilator. There are also 16 commercial printing plants.

From the Arabian Gulf a fishing company harvests and processes just under $2 million worth of shrimp each year. It employs 450 workers on 40 trawlers, two mother ships and at two plants on shore, and exports shrimp to Lebanon, Japan and the United States. The Nahda Radiator Factory in Dammam transforms sheets of brass, copper and tin imported from England and Australia into 50 automobile radiators each day and exports a large proportion of them to Bahrain.

Dates, which are exported to Arab countries and Spain, are packed in three plants; date syrup is being investigated as a sugar substitute in soft drink manufacturing. Three major bottling plants turn out 112 million bottles of soft drinks a year, employing about 90 men on two shifts during the hottest seven months. In the past nearly $2 million worth of empties were imported per year from Germany, the Netherlands and Kenya to slake these bottlers' near-unquenchable desert thirst. Now the National Glass Manufacturing Company has inaugurated a spanking-new $1.5 million plant near Dhahran which uses natural gas to fire its furnaces and transform high-

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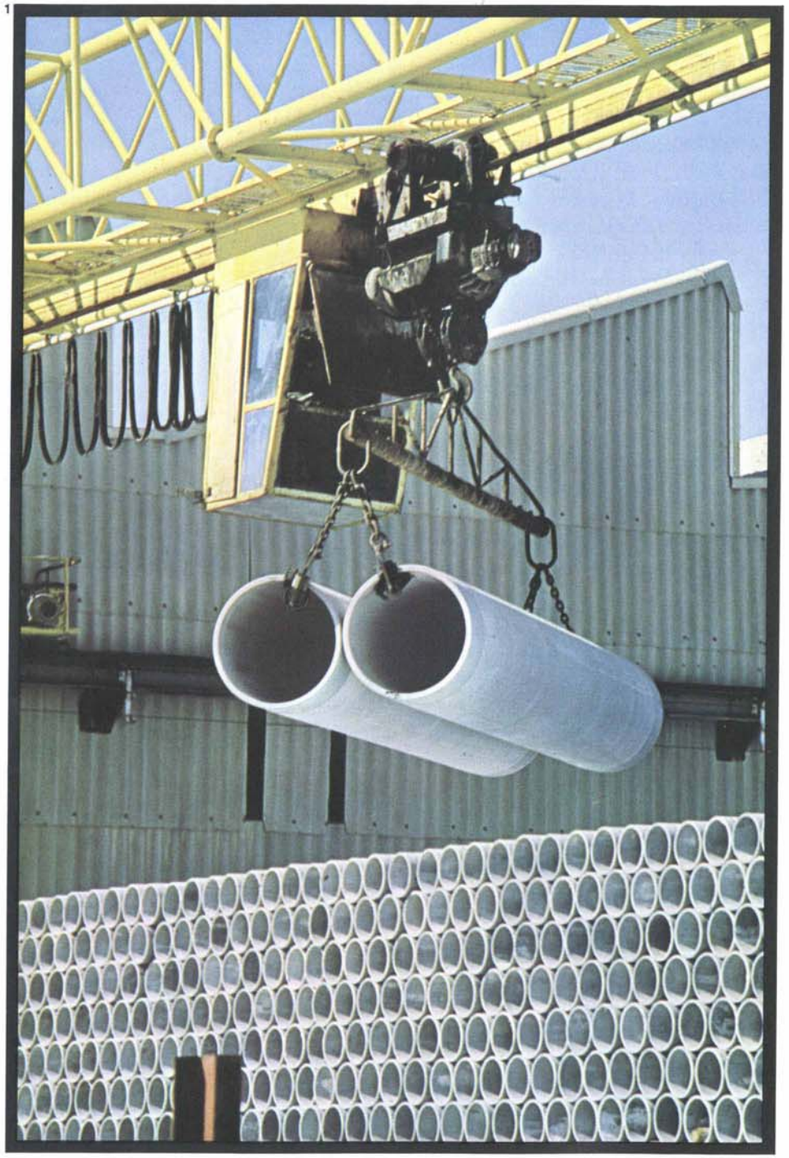

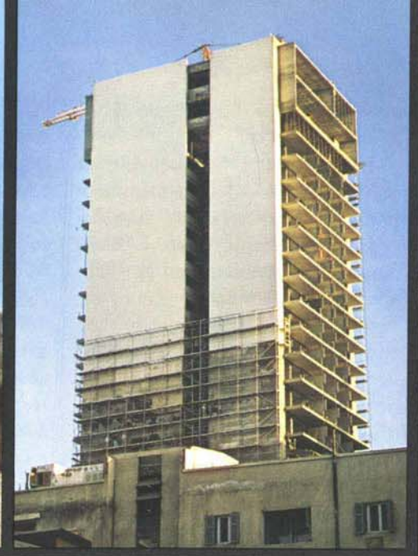

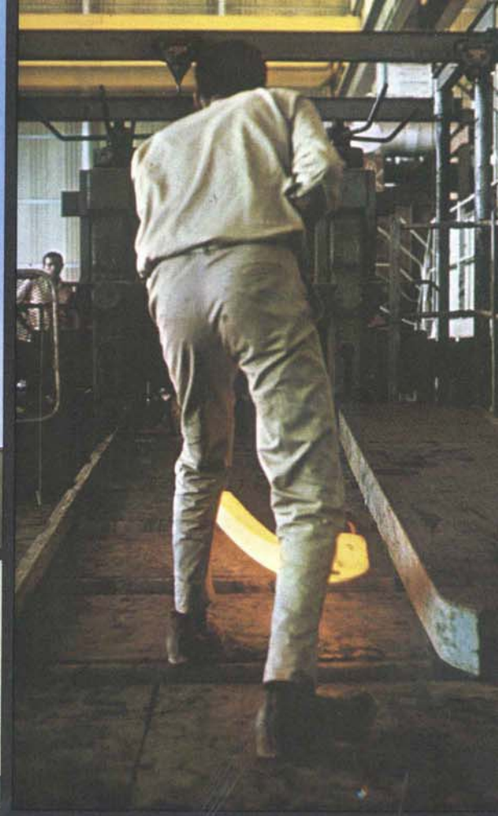

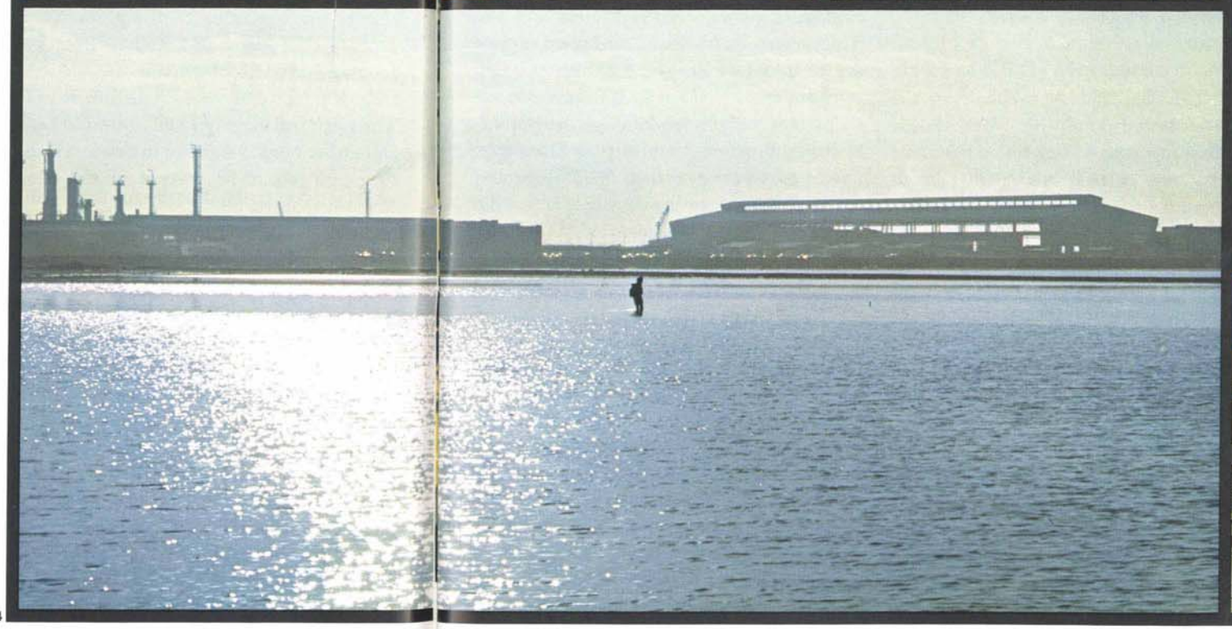

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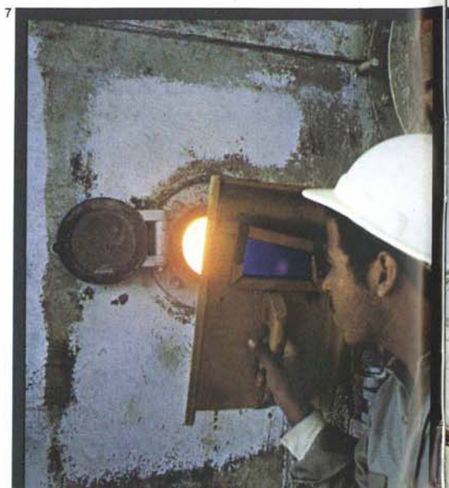

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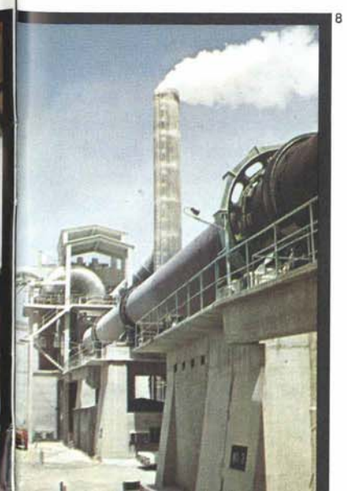

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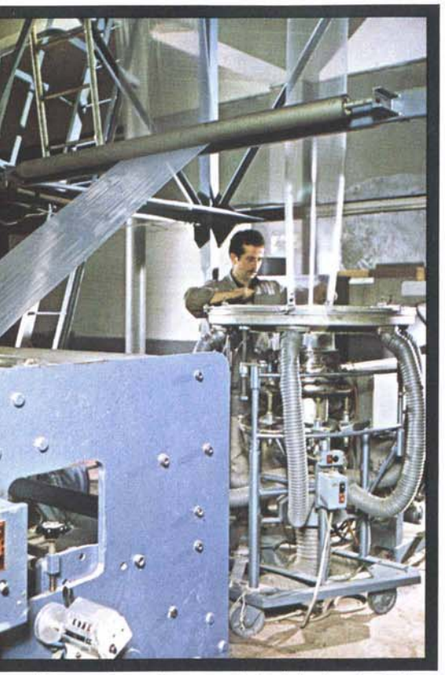
Amiantit produces $6 million worth of asbestos-cement pipes yearly in Dammam (1). SAFCO, the Saudi Arabian Fertilizers Company, uses natural gas both as fuel and raw material in its Eastern Province plant (2). A new building under construction in Jiddah (3). Petromin's west-coast industrial complex (4) includes a refinery (left) and steel rolling mill (4 and 5). Pepsi Cola (6) is bottled in a brand-new Jiddah plant. Saudi Arabia has three cement factories including these in Hofuf (7) and Jiddah (8). The Jiddah sea-water desalination plant (9) is one of five in the kingdom.



A Dammam plant makes waterproof polyethylene bags for fertilizers.

purity silica sandstone from a quarry near Riyadh into nearly 26 million bottles a year. The factory will employ 180 when operating at capacity.

There are numerous success stories. Jiddah's Saudi Arabian Carpet Factory, set up in 1971 to produce prayer rugs for sale to pilgrims and for the great mosques of Mecca and Medina, now turns out enough floor covering each day to almost carpet a football field and is capturing a large share of a market formerly dominated by French, Italian and Lebanese imports. Manager Mustapha bin Sumit says he has ordered five more Belgian machines to double his production.

Abdul Rashid Badrah started his west-coast candy factory in 1966, has since tripled production, exports to Yemen and the Arabian Gulf states. During his peak season, the month of Ramadan, with its numerous religious celebrations and festivities, his 200 employees, all Saudi Arabs, work three shifts, turning out 15 tons of hard candy, toffee, chocolates, nougats and wafers each shift. The firm also packs sugar and cornflour, and Badrah now plans to produce cookies and potato chips in a $2-million addition to his present $1.5-million plant.

Abdullah Matrood, a former Aramco employee (*Aramco World*, January-February 1972) started his unpretentious National Laundry in the growing commercial center of Al Khobar near Dhahran, and has built it in a few years into a smooth-running industrial operation with 18 branch pickup points and 145 workers processing 8,800 pounds of laundry a day. Matrood also owns the National Dairy and Ice Cream Plant (one of three in the kingdom). The factory produces up to 17,000 gallons of ice cream weekly during hot months, keeps a refrigerator truck constantly busy on the long road to Hofuf and Riyadh and ships to Jiddah by air four times a week.

Like the Bin Zagirs with Unilever, the Aboudawood family in Jiddah started off as importers of Procter and Gamble products, then entered into a 50 percent joint venture back in 1954 to manufacture Tide and Cheer locally. The normal plant capacity is 13,000 metric tons per year, but it has gone onto two shifts a day to meet the demand. The firm varies the formula of its detergents to match local water conditions or laundering customs. Thus the product sold in areas where women still boil clothing is slightly different from that marketed in cities where washing machines are more common or that exported to mountain villages in Yemen. The company also uses modern promotional techniques with special offers such as a nine-piece map of the Arabian Peninsula or coupons to save against a kitchen knife or even—for a lucky few—a TV set. It employs 125 men and is proud of its safety record and paternalistic labor relations, which include such extras as subsidized lunches, year-end bonuses, gift parcels for religious holidays or family events—and of course free soap.

Under license the same family operates the Clorox factory, which is 100 percent Saudi-owned. Hussein Aboudawood, an energetic young family scion with a BS in chemical engineering from the University of Texas and on-the-job training with Clorox in the United States, manages and speaks with evident pride of the spanking-new million-dollar factory. "The contractor said he could save us money if he used concrete blocks instead of the yellow bricks called for by the architect. I told him 'Forget it.' So then he said he could import the bricks from Kuwait and I told him 'Forget it.' In the end he made them here in Jiddah specially for us and you can see it was worth it."

The factory, with arches reminiscent of Dhahran's International Airport, is indeed handsome. It also happens to churn out about five million bottles of Clorox per year for sale in Saudi Arabia, the Gulf states, Yemen and Jordan. Bleach is a large seller in these desert lands where the cool white cotton *thobe* or *galabiyah* is still the most commonly worn man's garment. The factory employs 30 and also manufactures its own distinctive plastic bottles, though like the Tide factory, its labels and cardboard cartons are produced at Banawi, a Jiddah printing company.

Another container producer is the National Paper Products Company in Dammam, which grossed more than $4 million last

"On the Red Sea coast . . . Petromin built a steel rolling mill which . . . in 1970 turned out 85,000 tons . . ."

year after beginning on a shoestring in 1957, producing manila envelopes and paper tissues. Now it sells polyethylene bags to SAFCO and another fertilizer company in nearby Kuwait. Last year the firm manufactured 32.5 million four-ply paper cement bags—enough, at 10 feet of heavy-duty paper per bag, to wrap around the equator 2½ times. It sold the bags to companies in Abu Dhabi, Qatar and Kuwait as well as to the three Saudi Arabian cement plants, which are located in Hofuf, Riyadh and Jiddah.

Cement production, which has averaged about 50 percent of total consumption, is climbing rapidly as the construction industry, like light manufacturing and the service industry, continues to thrive. It doubled from 1966 to 1971, when it reached about one million tons, and it is expected to double again by next year. Jiddah's Arabian Cement Company has announced a $20-million addition (including a million dollars, worth of pollution control equipment) to nearly double production to 2,100 tons daily. The Yamamah Saudi Cement Company of Riyadh, which produces 1,100 tons a day, is planning a new unit with electric dust precipitators which will expand production to 3,100 tons. The Saudi Cement Company in Hofuf, capitalized at $17.5 million, fired its first kiln in 1961, added another two years later, a third two years after that. The plant has lately been running so consistently at five to ten percent over its rated 1,500-ton daily capacity that the company has decided to double the facilities. The plant is fueled by Saudi natural gas, gets its basic raw material (eight million cubic feet of limestone daily) from its own next-door quarry, buys clay and gypsum from privately-owned quarries nearby, and even obtains Saudi iron ore (one percent of cement's ingredients) from a small mine in Wadi Fatma in the Hijaz mountains. An interesting sidelight is that besides its standard Portland variety, Saudi Cement produces 50,000 tons per year of long-setting oil-well cement, which needs time to travel down a hole about 7,000 feet before it hardens. This special product is entirely consumed in Saudi oil fields.

The company also produces a special salt-resistant variety of cement for use near the sea, which was used in building the new desalination plant in Al Khobar. It also makes large bulk sales of its standard variety to Amiantit Company, the Saudi Arab-Swiss joint-venture company which produces about $6-million worth of asbestos-cement pipes each year in a $4-million plant located in Dammam. Two giant truck trailers shuttle endlessly between Hofuf and Dammam carrying about 1,500 tons of unbagged cement for Amiantit each month. Although the plant was designed with an anticipated export capacity only a few years ago, the company's entire production is now being used within Saudi Arabia, and although the plant works 210 men in three shifts, production is booked six months ahead. A second Amiantit factory opened in Jiddah last year. The sturdy pipes can be used for irrigation, sewage or municipal water supply. For the latter, the Dammam plant has turned out pipe for entire systems in Riyadh and Mecca, and for the 30-mile strip of Gulf coastal townships linked to the new Al Khobar desalination plant.

A competitor in the pipe field is another Saudi company, SAPPCO Ltd., which has a technical agreement with Chemidus-Waviu Ltd. and has finished construction on a $1-million pipe-extrusion plant in Riyadh. SAPPCO plans to turn out 2,000 tons of unplasticized polyvinylchloride pipe this year, increasing production to 8,000 tons after five years. One advantage of lightweight PVC pipe is that it is unaffected by rust, acidic soils and sewage, all of which are problems in semi-tropical countries. Eventually, too, it's expected that the raw material for these pipes might be produced in one of the factories which will be springing up in the planned east-coast petrochemical complex.

In the service industries a number of Eastern Province firms are a natural outgrowth of activity related to the oil industry. Many, in fact, got their start with one of several forms of support—direct loans, loan guarantees, purchase contracts or letters of intent—offered by Aramco as part of its

"Even so, the center found, . . . the industrial sector turned out products worth an estimated $108 million . . ."

historical efforts to develop local business. Finding itself involved over the years in everything from gardening and baking to auto repairs and warehousing, Aramco decided to encourage the local economy to provide those services not closely related to oil production. The young generation of Saudi entrepreneurs (many of them ex-Aramco employees) were quick to step into the breach. Several large garages, a motor-rewind shop, a valve repair shop and a pipe-coating and wrapping plant are all examples of this trend. Another is Vetco Saudi Arabia, a joint venture including Saudi industrialist Sulaiman Olayan and America's Vetco International. The company repairs and maintains drilling equipment and re-threads drilling pipes and couplings. Westinghouse is now going ahead with a $30-million joint-venture project with the Saudi firm Abar and Zaini to build maintenance shops and training facilities in the Eastern Province.

Aramco engineers also began, years ago, to contract out minor construction projects and to their astonishment saw a dynamic support industry spring up around them as the small contractors began buying up used jack hammers, compressors, and trucks and going into business. Today a list of some of the construction equipment privately owned by 31 independent Saudi Arab contractors frequently used by Aramco shows graphically how these firms have grown to meet the challenges of oil construction. The list includes such items as 99 concrete mixers, 438 welding machines, 48 cranes of different sizes, 94 compressors, 205 dump trucks, 83 bulldozers, 184 scaffold sets, 43 sand blasters and 52 sidebooms. And local legend holds that the late Mohammed bin Laden, a Saudi millionaire road-construction mogul who started out as an illiterate truck driver, was the world's largest single importer of Caterpillar earth movers.

The day may be coming when other Saudi names will surface in international circles as well—names such as Olayan, Pharaon, Kashoggi and Juffali.

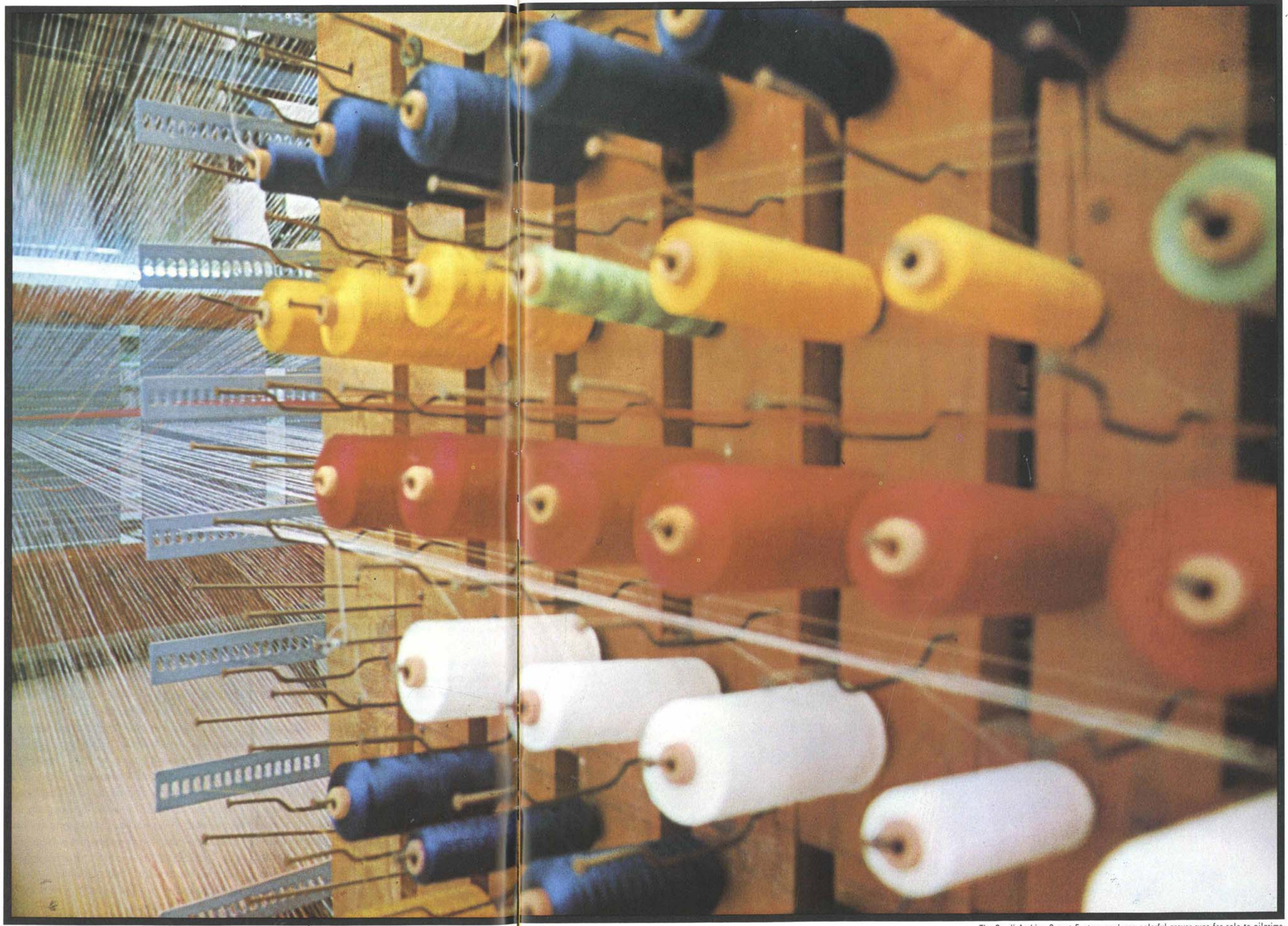
The Juffalis, for example, a Jiddah merchant family, have extended their business interests in a dozen directions and are reported to be looking into investment opportunities in the Middle East, Europe and the United States. They have built or bought electric power plants in Jiddah, Taif, Mecca, Medina and Hofuf, hold the major shares in a cement company, install telephone lines, serve as agents for the European electronics firms L.M. Ericsson and Siemen's, as well as U.S. companies such as York, Kelvinator, Massey-Ferguson, Clark-Michigan and IBM, and are constructing a $5.6 million housing development in Al Khobar. They maintain machine workshops (each with 20,000 sq. yards of floor space) in three major cities, function as agents for Daimler-Benz and in their Jiddah automotive spare parts warehouse stock 40,000 different items. Although Saudi Arabia now has an estimated 25 computers in service (in oil, electric utilities, government and education), the Juffalis operate the kingdom's first, and so far its only, computer in wholesale trade. Every day of the year the company sends a mail bag of sales results from its branch offices and warehouses to the center in Riyadh for instant inventory, analysis and re-order.

From such success stories has come an infectious mood of exuberance and confidence. In December last year, for example, the Ministry of Commerce and Industry announced that it had licensed seven new factories including a $220,000 poultry feed plant in Riyadh, a $146,000 plastic bag factory in Jiddah and a $270,000 rubber belt and gasket factory in Dammam. And banking and diplomatic circles are constantly buzzing with "highly confidential" rumors from "well-informed sources" about even grander projects. When the kingdom began importing more than $50 million worth of motor vehicles per year in 1971, for example, rumors about General Motors, Honda, Peugeot and Nissan soon followed—as did later the announcement that General Motors and Nissan would indeed build plants. The GM firm will be called The Saudi Arabian Motors Company (60 percent GM and 40 percent national capital) and has been licensed to assemble 7,800 vehicles yearly —GMC Chevrolet trucks, 60-passenger buses and small Australian-model Torana cars—in a $10-million plant. Some parts are also expected to be manufactured locally.

"Jiddah's. . . Carpet Factory, set up in 1971 . . . now turns out enough floor covering each day to almost carpet a football field . . ."

There are still plenty of skeptics. "The market in Saudi Arabia is too small," they say. "There's not enough skilled labor. Communications are poor. It's too soon. Too hot. Too remote." And in many instances they may be correct. But with steel smelters, petrochemical complexes and automobile assembly plants materializing and businessmen seriously investigating a host of other possibilities, even the skeptics are beginning to realize how far—and how fast—industry has come since the day, hardly 20 years ago, when the first product rolled off an assembly line stamped "Made in Saudi Arabia." They are also beginning to realize that it's only the beginning.

William Tracy is Assistant Editor of Aramco World Magazine.

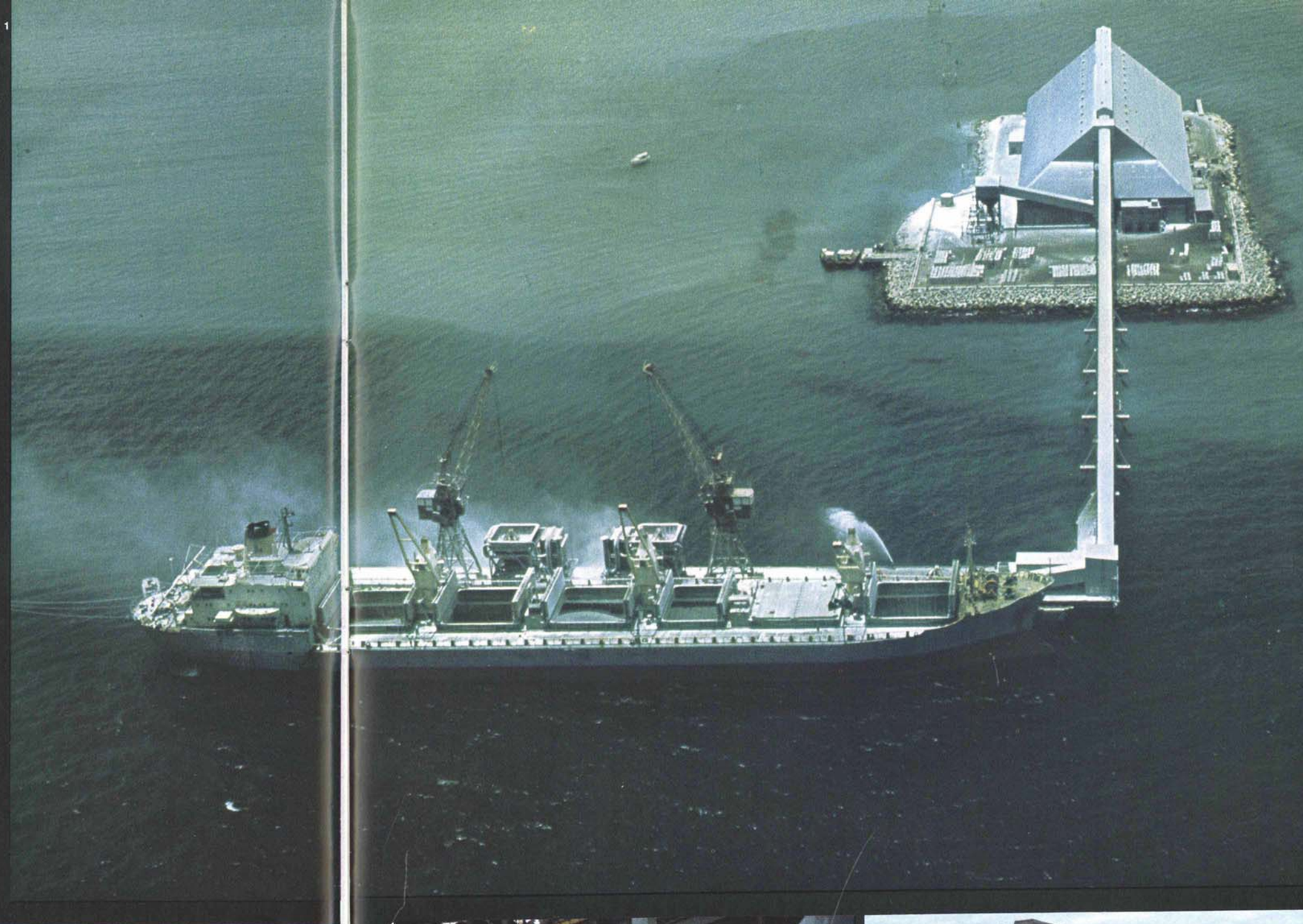


The Saudi Arabian Carpet Factory produces colorful prayer rugs for sale to pilgrims.

MADE IN... THE GULF

PHOTOGRAPHED BY JOHN TAYLOR, PETER H. SMITH AND JOHN BASSILI

1

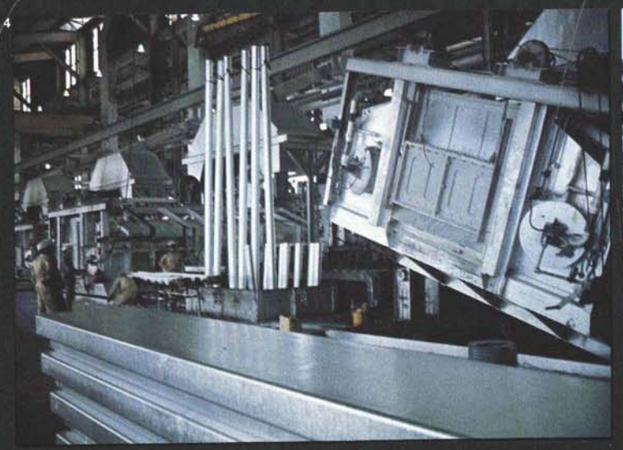


2

3

Largest non-oil industry in the five Gulf states is Aluminium Bahrain (3), a $120-million smelter which uses local natural gas and imported Australian bauxite (1) to produce 120,000 tons of aluminum ingots per year (2, 4 and 5).

4



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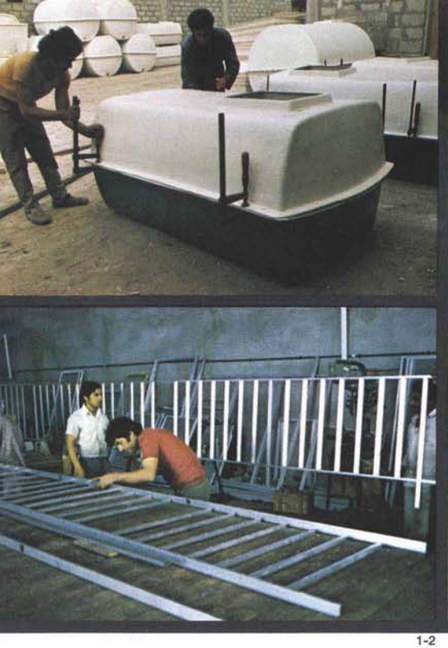

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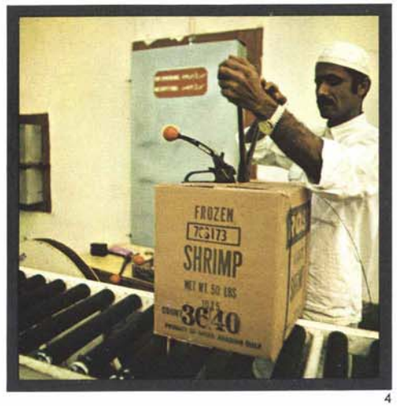
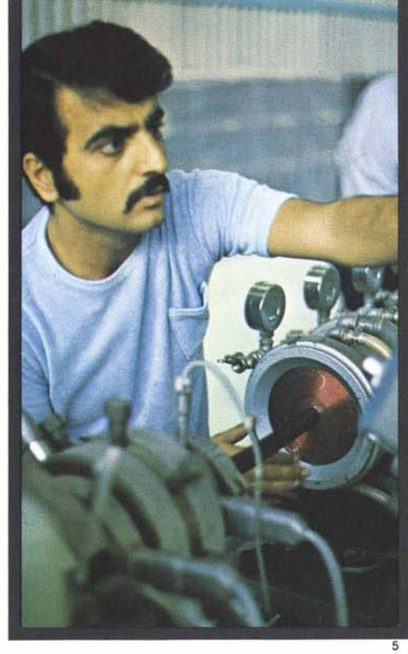


4

In Abu Dhabi several small firms turn out such light products as fiber-glass water tanks (1) and aluminum railings and frames (2). Kuwait produces ammonia, urea, sulphuric acid and ammonium sulphate for fertilizers (3). Qatar exports shrimp (4). In Dubai Eternit produces asbestos-cement pipes (5 and 6) and the U.S. firm McDermott assembles giant offshore drilling platforms (7).



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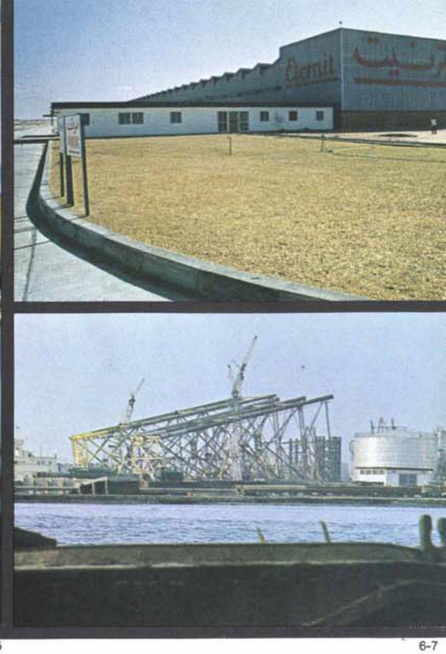

6-7

Overheard at Kennedy International Airport: "I'm flying to the Gulf for a quick look at that new petrochemical site." The Gulf of Mexico? No, the Persian Gulf, known throughout the Arab world as the Arabian Gulf and the latest entry in the Arab East's race toward industrialization.

All eight states bordering the Gulf are currently undergoing an oil-fueled economic boom, but most references to "the Gulf states" usually mean the five small states strung along the western and southern shores: Kuwait, Bahrain, Qatar, Oman and the United Arab Emirates—a federation of seven tiny shaikhdoms, the most important of which are Dubai and Abu Dhabi.

Of the five states, Kuwait is the richest and most well known, Oman the largest and least known. But even in Oman the industrial age is making an appearance. A $52-million port at Matrah, near Muscat, is scheduled for completion this year. A $12.5-million airport capable of handling 747's is already receiving international flights and a $27.3-million, 130-mile highway to link long-isolated Oman with its northern Gulf neighbors is under construction.

Such links with the outside world are new but not rare. In an astonishing explosion of activity, all the long-dormant Gulf states are currently building the communication infrastructure essential to future industrialization.

Two satellite earth stations are in operation, in Kuwait and Bahrain, and a third, which will serve the U.A.E., is under construction at Jebal Ali near Dubai. Bahrain now handles 800 international telephone calls each day, and has such dependable Telex and mail service that First National City Bank of New York moved its regional headquarters there from Beirut. A chain of new highways tying the Mediterranean to countries up and down the Gulf is also being completed and Abu Dhabi, Dubai and Bahrain have all opened major international airports within the past four years, with a major expansion underway in Kuwait. Dubai, a city of hardly 75,000 persons, handled more international passengers and freight in 1972 than either Damascus or Baghdad, both cities of a million-plus.

Shipping—especially oil transport—is one industry that, insiders predict, Gulf states will stress in the next few years. The Kuwait Oil Tanker Company recently placed orders for four ships which will increase its fleet to 10 with a capacity of 2 million tons. In February, Kuwait interests also ordered four liquid propane gas (LPG) tankers of 70,000 cubic meters each.

An even bigger fleet, however, will be that of the Arab Maritime Oil Transport Company, capitalized at $500 million and jointly owned by eight members of OAPEC, the Organization of Arab Petroleum Exporting Countries. These include the Gulf states of Kuwait, Bahrain, Qatar and Abu Dhabi.

OAPEC is also behind the new Arab Gulf Repair Yard in Bahrain, a $100-million dry dock designed to maintain and service OAPEC tankers of up to 350,000 tons, beginning in 1976. Another dry dock, underway in Dubai, is to be the world's largest when it goes into service in mid 1976. Located next to the $86-million Port Rashid, the Gulf's largest harbor, the $210-million dry dock will have three basins and employ up to 4,000 workers. Two basins will handle tankers of up to 500,000 tons and the third, a giant measuring 410 by 1,722 feet, is expected to handle the million-ton tankers of the future. Backers predict annual revenues of $70-80 million.

Aside from such major service projects—the port, dry dock, airport, ground station—Dubai also has some complementary facilities: 16 banks and a new 10-story Inter-Continental Hotel. But there is little industry proper as yet. One small firm produces aluminum kitchenware. A $2-million cement plant with an annual capacity of 500,000 tons is under construction; and Eternit, a company with Swiss and Lebanese links, opened a factory in 1973 which will employ 500 men and produce 30,000 tons of asbestos-cement pipe and 500 tons of polyethylene tubes annually.

Bahrain, where oil was discovered in the early 1930's, had a head start over its Gulf neighbors in education and industrialization. As a result, the small island state is probably the Gulf's most sophisticated business center today. Bahrain has established two vocational training schools and an industrial free zone where manufactured goods—if exported—are not taxed. Besides such light industries as bottling, plastic kitchenware, detergents and paint, one firm, the Awal Trading and Contracting Company, produces heavy-duty air-conditioning units, 80 percent of which are exported. There is also a major shrimp industry.

But the giant of Bahrain industry—and the Gulf—is Aluminium Bahrain (ALBA), a $150-million smelter which produces 120,000 tons of aluminum ingots each year from imported Australian bauxite. The plant opened in 1971, now runs at full capacity and employs 2,300 men. Using Bahrain's abundant and cheap natural gas, Aluminium Bahrain fuels a bank of 19 gas-turbine generators, including a $2-million giant which is the world's largest. A mile from the smelter is Bahrain Atomisers International, which produces nearly 4 percent of the world's aluminum powder. And both General Electric and Scotland's John Brown Engineering are considering million-dollar turbine maintenance plants on Bahrain to serve the Gulf region and perhaps areas of Asia and Africa.

Other than Bahrain, with its aluminum smelter, Kuwait has the only real non-oil related industry among the Gulf states as yet. Although manufacturing accounted for only 3 percent of the net national product in 1971, the increase in production the same year was 10.5 percent. Light industries include factories making ready-made clothing, detergents, dairy products, furniture, plastic consumer goods, ceramic tiles, bricks, lime, prefabricated buildings and car batteries. There is also a shrimp industry with exports of $16.2 million in 1973, and the Kuwait Flour Mills Company, which produced 100,000 tons of flour, bread, cookies and macaroni in 1972, is building a second mill. A new cement plant produces 300,000 tons yearly and the Kuwait Metal Pipe Industry recently won a $10-million contract to supply some of the pipe for Egypt's Sumed oil pipeline project. Also, according to *Newsweek*, the Kuwait Government has asked Japanese steel makers to help with a projected steel mill which would turn out 300,000 tons of bars annually beginning in 1978.

Two firms, the Kuwait Chemical Fertilizer Company, which went on steam in 1966 and now employs 400, and the Petrochemical Industries Company, which began operations in 1971, use Kuwait natural gas to produce ammonia, urea, ammonium sulphate and sulphuric acid. Under a recent agreement Kuwait will supply India with 250,000 tons of ammonia yearly from now through 1979.

Kuwait's further industrial development faces one major problem in common with other Gulf states—small populations and the need to import skilled and even semi-skilled labor. Some experts estimate that out of a total male work force of 250,000, as few as 25 percent are native-born Kuwaitis.

But the will to develop is there, and so—thanks to oil—are the funds. In fact Kuwait's small population relative to national income has made possible one of the most exciting ideas to come out of the tiny shaikhdom—the Arab Fund for Economic and Social Development.

Since 1962 when it was established, the fund has approved low-interest development loans totaling close to $300 million to 12 Arab nations in the Middle East and North Africa. It is, according to Harvard-trained Abdullatif Y. Al-Hamad, director general, a fund "run by Arabs, for Arabs."

By 1973, Mr. Al-Hamad says, the fund had participated in over 25 major loans and in February this year signed agreements for new loans totaling about $25 million for projects in South Yemen, Syria and Tunisia. The Kuwait Fund has also stimulated the formation of a similar fund: Abu Dhabi's Arab Development Fund, which this January loaned $6.6 million to Jordan and $4 million to Syria. These are portents of a new financial wallop that, many experts feel, will transform the Gulf in the years ahead.

1

The details may be missing, but the progress is undeniable.

MADE IN... EGYPT... IRAQ... SYRIA

WRITTEN BY JOSEPH FITCHETT

PHOTOGRAPHED BY JOHN RIDDLE AND PETER KEEN (EGYPT), NIK WHEELER (IRAQ) AND ROBERT AZZI (SYRIA).

2

Textile weaving from home-grown cotton is a major industry in all three countries. These looms are in Iraq (1). Egypt has a thriving perfume and cosmetics industry, much of it based on flower essences from the rich Nile Delta (2). From its clays and sands Syria produces ceramic chinaware (3) and drinking glasses (4).

3

4

Skilled hands assemble telephone instruments in a Damascus plant.

With respect to industry, Egypt, Iraq and Syria have a lot in common: planned economies, great potential, long histories of efforts to industrialize—and persistent problems with statistics.

This is not to suggest that there is any lack of information. Great gobs of statistics often surface at the highest levels. President Anwar Sadat, for example, in a speech celebrating the 20th anniversary of the Egyptian Revolution, reeled off some exciting statistics which are worth repeating. He said the value of Egypt's industrial production rose in two decades from $648.6 million to $5.5 billion, that fixed investment rose in 10 years from $2.3 billion to $7.5 billion and that industry's share of the gross national product is now 22 percent.

Those figures, and others cited in the same talk, drew a clear picture of one of the world's most ancient cultures doggedly striving to modernize one of the world's most ancient economies. Yet because of a lag in figures, efforts to compile complete assessments of Egyptian industrialization achieve only limited success.

Similar conditions prevail in Iraq and Syria. Press releases give random figures suggesting efforts to create, on a crash-program basis, the infrastructure on which industrial advancement hinges. In July 1972, for example, Syria borrowed $700 million from the U.S.S.R., reportedly to finance development. In 1973 Syria announced that it was allocating $129 million to its industrial sector and this February announced plans to purchase $75 million worth of railroad cars. It is also known that Syria, last year, completed its enormous *Al-Thawra* Dam across the Euphrates, a $600-million-or-more, 2.7 mile earthen dam—reputed to be the world's largest earth dam—which is expected to provide 1,100 megawatts of electricity, irrigate 1,580,246 acres of land and contribute to a six-fold increase in national income (*Aramco World*, Jan.-Feb. 1974). But such statistics fluctuate considerably and official compilations lag so far behind such announcements that they are often irrelevant.

Statistics published in Iraq also suggest progress. According to government brochures and semi-official figures in *Al-Thawra* and the *Baghdad Observer*, Iraq in 1973 was producing 17.5 million yards of cloth, 6 million tons of cotton and silk, 22.3 million yards of fabric, 2.5 million tons of cement, 35,000 tons of sugar, 120,000 tons of ammonium sulphate. Another source said it was also producing some 30 percent of its pharmaceutical needs. More recently, Iraq negotiated a $1-billion loan from Japan to construct an oil refinery, a liquefied gas plant and a petrochemical complex plus chemical fertilizer, cement and aluminum factories.

It is also known that Iraq is expecting completion of 120 industrial projects by next year. The country is also building a great dam at Kirkuk—and planning others—which, with a network of canals, may solve persistent agricultural problems, always a preliminary to industrialization. It is widely thought that Iraq's potential is big. But there are virtually no statistics to indicate how far Iraq has come in developing it.

Still, industrialization is undeniable—particularly in Egypt, the Arab East's most industrialized country.

Egypt, according to various but sometimes conflicting sources, now has 1.5 million people employed in industry. Most work in small establishments—10 men or less—but close to 3,000 larger factories are reported operating now. The Misr Spinning and Weaving Companies, for example, employ about 75,000 workers; the Egyptian Sugar and Distillation Company—sugar, molasses, paper, alcohol—employs 25,000; the Egyptian Iron and Steel Company, 21,000; Nasr Automotive Manufacturing Company, 10,000; Alexandria Shipyards—freighters and tankers—7,500.

Textiles—an estimated $943 million worth of production in 1973—is the most important industry. Highly developed and sophisticated—it is probably the only industry that is competitive by international standards—the textile industry accounts for one third of Egypt's manufacturing output. Cotton yarn production alone kept 1.8 million spindles turning and exports brought in $83 million in 1971. Cotton cloth made locally—on some 30,000 looms—brought in another $70 million. In addition, advanced production is being achieved in linen and silk, Egyptian-produced nylon and imported wool and polyesters.

In textiles, private industry still plays an important part, but the government-run textile organization unquestionably predominates. In just one air-conditioned plant in the Nile Delta—one of the world's largest—30,000 workers, 250,000 spindles and 5,000 automatic looms produced, in 1972, 33,000 tons of cotton yarn and export sales totalling $39 million.

In second place, because little is exported, is the $973-million food-processing industry, a natural in a country that is basically agricultural. Rice mills dot the Delta and sugar refining—done on an industrial scale since the 1860's—is probably the most highly integrated industrial operation in the public sector. Sugar mills are strewn along the upper Nile and every phase of the operation—from harvesting to delivery in paper bags—is carried out with Egyptian machinery and supplies. Sugar refineries also extract alcohol and perfume, leaving a pulpy residue called bagasse which can be used as an ingredient for granulated hardboard and paper.

In the medium range Egypt also makes radios, sewing machines, television receivers, air-conditioning units, bicycles—60,000 a year—cigarettes and beer. In 1973 a $9-million sand-brick factory and a $9.2 million glass bottle plant were opened and plans were announced for the production of compressors and small motors. Cement production—said to be 3.7 million tons a year—is well developed and so is the chemical industry—$263 million in 1971—particularly phosphatic fertilizers. With a billion-ton deposit of phosphates to draw on, Egypt stresses phosphatic fertilizers as an export—100,000 tons annually—and as a vital replacement for the Nile silt which used to irrigate Egyptian agriculture naturally, but is now filtered out by the High Dam at Aswan. There's also insecticides—vital to protect the cotton crop—and, in one of the country's most highly developed operations, pharmaceuticals. Egypt has seven companies—five government-owned and two private. They import raw materials in bulk and manufacture, under license, a full range of basic, broad-spectrum drugs plus tablets, creams, ointments and birth-control pills, increasingly important as Egypt struggles to slow its enormous population explosion.

In the famous, but troublesome, Helwan industrial complex, Egypt is striving to make its faltering heavy industry pay too. Helwan already makes iron and steel, copper tubing, steel pipe, heavy-duty cable—10,000 tons in 1972—and railway rolling stock. In Helwan, Egypt also assembles Fiat and NSU automobiles.

"Cotton yarn production alone kept 1.8 million spindles turning and exports brought in $83 million in 1971. Cotton cloth. . . brought in another $70 million."

Vast sums have been poured into Helwan for nearly 15 years and a Russian-financed $1-billion program to expand steel production is scheduled to raise the nation's steel making capacity to 1.5 million tons by 1975. Plans include a railway to bring newly discovered low-silicon, high-grade ore from Baharia oasis and to introduce the oxygen method for the production of high quality steel. When complete the program is supposed to quintuple Egypt's steel production.

Progress in Iraq and Syria is also obvious. Although in heavy industry, neither country's advances are comparable with Egypt's, there are encouraging signs. Production of tractors, for example, has been underway in Iraq since 1971 and France's Renault company has discussed construction of an $11.5-million automobile assembly plant. There is also talk of a steel mill.

And there is certainly growth in the medium range. At the end of 1970, for example, the Iraqi News Agency reported completion of a $25-million chemical fertilizer plant with a capacity of 590 tons a day and announced the signing of a contract with an Italian group to build a $1.6-million asbestos factory. Cement production is also scheduled to triple next year, to 7 million tons.

In Syria, production is up sharply in sugar—close to 100,000 tons a month—leather, vegetable oils, soap, matches, glass, beer, plastics, washing machines and refrigerators. And to promote tourism Syria, in 1972, negotiated a loan from France to build five hotels—with a total of more than 1,000 rooms—in Damascus, Aleppo, Tartus, Homs and Palmyra.

Seen against a backdrop of Western economies such development might not seem impressive. But no complete assessment can exclude the problems caused by some of those economies when the Arab East, and especially Egypt, was taking its first tentative steps toward industrialization.

That was in 1806, just after Mohammed Ali, Egypt's first great modern ruler (*Aramco World*, November-December 1970) came to power. Deducing from Napoleon's overwhelming victory over Egypt that industrial power was the source of political and military power, Mohammed Ali set up state factories to produce cannon, uniforms, machine tools, pumps, cloth, glass and paper. It was a good start, but most petered out fast. And when Ali's extravagant successors delivered Egypt into the hands of European creditors, Cairo's scores of small workshops, turning out everything from locks to bolts of cloth, gradually closed and were replaced by shops selling finished goods imported from Europe.

After World War I, which stimulated both business and nationalism in Egypt, there was a resurgence. Talaat Harb, a young entrepreneur, and men like him, saw that even Egypt's nominal political independence lacked substance without economic independence, and tried to achieve it. Harb himself created the Misr Bank, which in turn sponsored a string of purely Egyptian businesses: printing in 1922; cotton ginning in 1924; shipping and movies in 1925; sugar farming in 1926; silk weaving and fisheries in 1927; an airline in 1932 and fine cotton textiles in 1948. Misr companies were worth more than $10 million prior to World War II and other Egyptian magnates owned similar empires. By 1950, more than a third of big Egyptian businesses were owned by native-born Egyptian entrepreneurs.

Then came Gamal Abdul Nasser and the revolution which would shake Egypt's economy to its foundations.

Nasser made few changes at first, but after the 1956 Suez War, numerous industrialists—Greek, Lebanese, Italian, British and French—left Egypt and their businesses, some of them important manufacturing and exporting firms. With Egypt's foreign assets frozen, and the country forced to rely on local manufacturing, the Nasser government sequestered the firms and handed them over to an "economic organization," the first—and crucial—turn toward public ownership and a planned economy. The trend gained momentum, and by 1960 the government had assumed control over at least three-quarters of Egypt's capital investment. In 1961 the "second revolution" occurred: Egypt nationalized all heavy and basic industries, all utilities and all banks and insurance companies.

At first, all went well. According to a well-placed foreign expert, Egypt achieved a growth rate of nearly 6 percent during this period—amounting to a net gain of 3 percent after deducting population growth—a signal achievement for a developing country. Egypt opened its first automotive plant, a television plant and a steel pipe factory—all examples of deliberate diversification—ran the Suez Canal and made impressive statistical gains. Production, capital investment, labor force, wages all rose—suggesting that Egypt was more capable than many observers had expected.

Syria's experience with the West was similar. After the First World War, the Allies, in dividing the Ottoman Empire, gave a mandate over Syria to France which, when Syria objected, occupied Damascus and more or less ruled the country for the next 20 years. Undoubtedly, there was progress in this period, particularly with respect to roads and schools. But French

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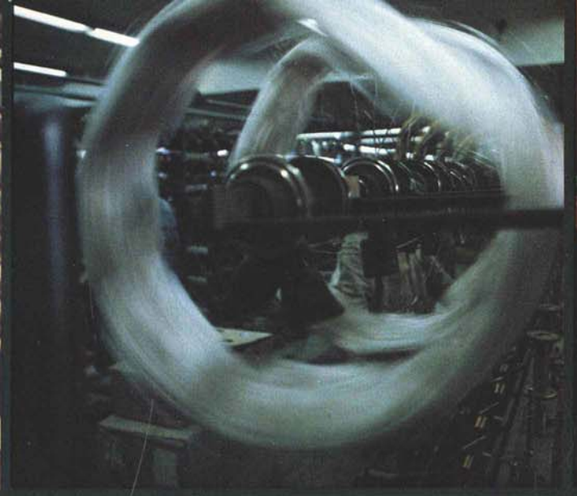

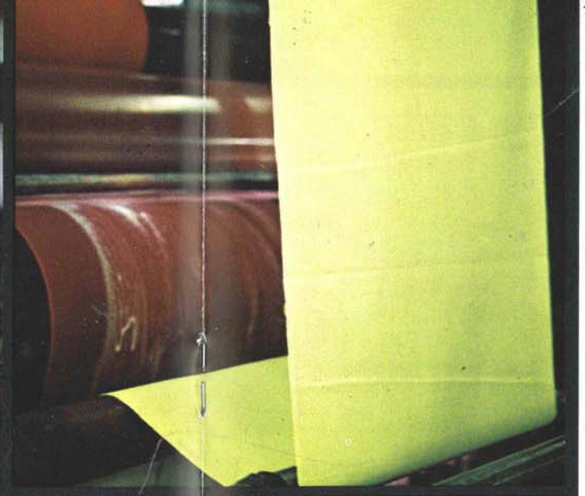

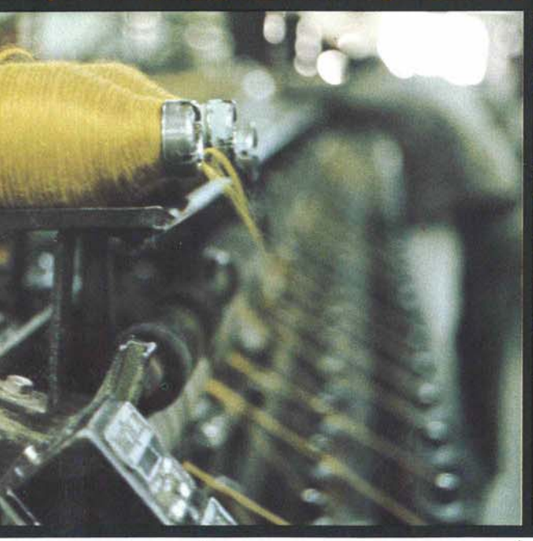

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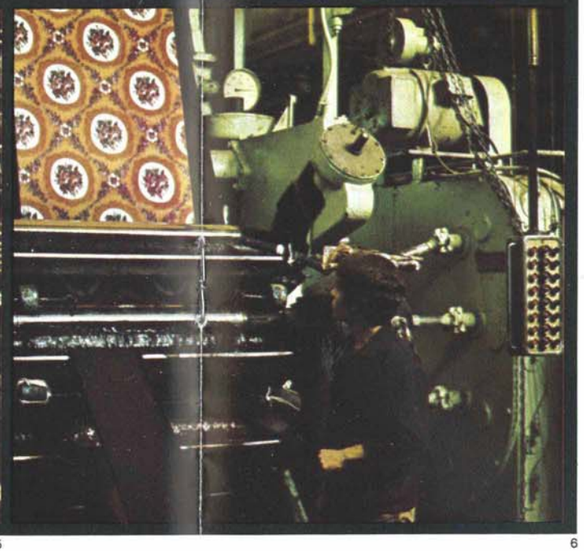

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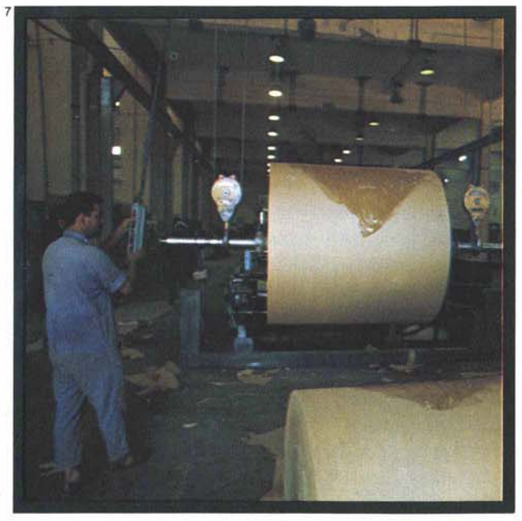

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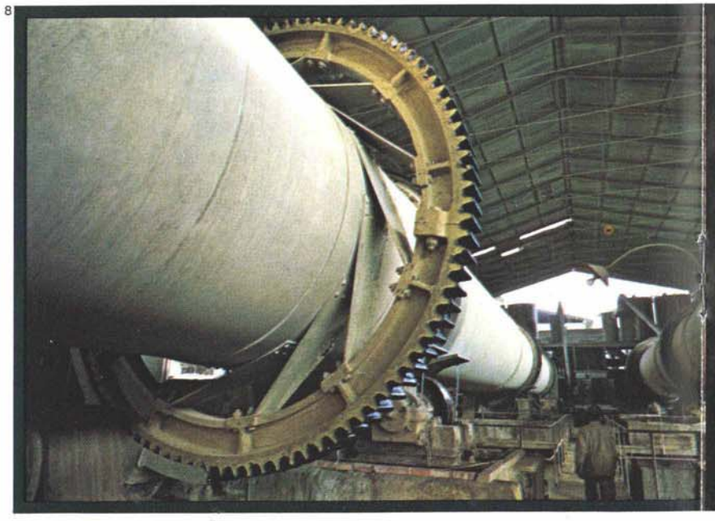

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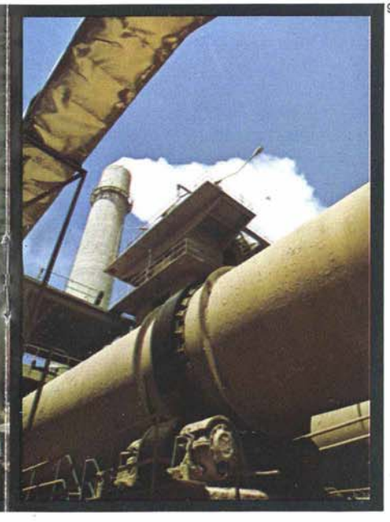

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Patterns of the textile industry: in Syria (1-3), Egypt (4 and 6) and Iraq (5). Iraq produces cement (8 and 9) and bags to ship it in (7). Views of Egypt's steel complex at Helwan (10 and 11). Sheet glass being poured in Syria (12).

Iraq's current five-year plan offers incentives to private industry.

colonial policy rarely encouraged industrial development.

Like Egypt, Syria in the 1950's decided that government intervention was essential to industrialization, and subsequent advancement seems undeniable. Cement production, for example, went up from 3,800 tons a year in 1951 to 680,000 tons in 1966 and is considerably higher now. Major efforts also went into two new harbors, four new railroad lines, an international airport and two land reclamation projects.

Iraq's first moves to industrialize were between 1890 and 1913, when production of wool, dates and grain were mechanized. But except for the construction of some railroads and the introduction of electricity in the 1920's progress was slow. By 1945, Iraq had less than 100 industrial plants, most in textiles, cotton ginning, cigarettes and cement. Later, as oil revenue increased, Iraq, through a new industrial bank and a development board, began to pay more attention to industry and by 1954 could count close to 23,000 small industrial establishments, most private, most owned by Iraqis.

In line with the trend in Egypt and Syria, Iraq began to turn increasingly toward state planning in the late 1950's. Like Egypt, Iraq had experienced British occupation—in the 1920's—and had grown increasingly disenchanted. With Egypt's example as a spur, Iraq began to enlarge the role of the state in the economy. This was an erratic course at first—largely because of the swift turnover in government and government policies—but its impact on the infrastructure continued. By 1969 Iraq had nearly 13,000 miles of roads, half of them paved or improved, more than 1,000 miles of railroad tracks, and two international airports. Between 1953 and 1968 the consumption of electricity went up seven times. By the 1970's, state planning was also having a measurable effect on actual production.

Such experiences explain a lot about the commitment to central planning that Egypt, Iraq and Syria have adopted as their road to industrialization. Disillusioned by their early experiences with the West, and angered by the West's support of Israel, they gradually turned to the Eastern bloc, achieved some success and concluded that ideology got better results than dividends.

Actually the results have been debatable. In Egypt ideology has unquestionably provided the momentum for broader and more intensive industrialization. And without central planning it is doubtful that the country would have decided on the same priorities. But some errors were made too. In the name of national pride, for example, Egypt decided early on to establish an automobile plant, and, in conjunction with India, to design and produce aircraft. Like steel plants, automobile and aircraft factories are the most prestigious of industries and, from a political point of view, the most attractive. But also like steel they devour capital and demand an exceptionally broad and highly developed technology, both of which were noticeably scarce at the time. Not surprisingly, therefore, both projects ran into trouble.

Central planning is certainly not responsible for the basic problems. The country's population growth continually wipes out gains. Fear of war spurs huge outlays for defense spending that siphons off amounts probably in the billions. Occupation of the Sinai Desert in 1967 cut Egypt off from oil that was then needed, and coal that could be used in place of costly imported coke.

War has had its effects too. Having failed to deliver military victories, Egypt began to produce durable consumer goods like sewing machines, television receivers and air-conditioning units which require long assembly lines and efficient production to be economical and which divert scarce investment capital from the basic industries.

But early planning did contribute to current problems. Had Egypt, for example, concentrated earlier on simpler mass-produced goods—bicycles and motorcycles, as post-war Italy did—it might have strengthened its industrial base and developed the efficiency of workers.

Similarly, had Egypt focused first on industrial training instead of high-level theoretical engineering it might have eased the lack of skilled supervisory help—foremen, section heads, chief mechanics—on the factory floor.

Excessive centralization also fostered a spirit of caution, encouraged featherbedding, and tended to overlook the failure of productivity to match investment. This, simplified, means that in many industries Egypt put more money in than it got out. Given Egypt's chronic lack of foreign exchange this could have meant, in the long run, complete dependence on outside capital.

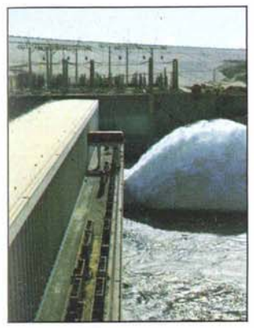
Iraq and Syria have had similar problems. Iraq's plunge into industrialization, for example, was initially at the expense of agriculture, an error according to most economists. At a time when domestic capital was scarce, Iraq's planners spent domestic capital instead of foreign capital and then had to divert long-term investment money into short-term projects. In addition, planners overlooked the need to develop the cadre of skilled labor—foremen and the like—which is essential to industrial efficiency and quality. Iraq was also unable to correlate targets and achievements largely because its early organizational and administrative structure simply couldn't cope. As one writer put it, "The gap between planning and execution was wide."

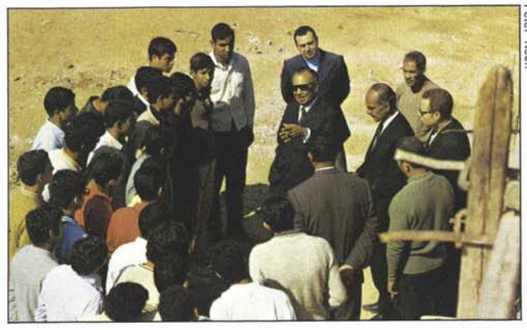
The same problems plagued Syria. It produced the usual five year plans, but could rarely implement them because of a shortage of funds and a lack of technicians.

"If I look after my people, they will look after the job."

CAIRO'S CAN-DO CONTRACTOR

WRITTEN BY NANCY B. TURCK





Peter Keen

It is now definite that Osman Ahmad Osman did not build the pyramids. Had he been around at the time, however, he probably would have.

Big construction jobs are Osman Ahmad Osman's specialty. As head of the Arab Contracting Company, the dynamic Osman built the High Dam at Aswan and in his new post as Minister of Reconstruction he will take charge of the $7-billion reopening, expansion and development of the Suez Canal and neighboring regions. And his firm has also built the Cairo and Dhahran international airports and a string of highways, factories, bridges, shipyards, dams, hospitals, harbors, schools, canals and hotels throughout the Arab East and Africa.

In an Egyptian version of Horatio Alger, Osman as a boy reportedly assembled a bicycle from spare parts so he could ride to school. As an ambitious young contractor his first job was a garage that netted him $15. By 1970 he was the head of an organization that grossed $70 million, employed 20,000 workers and reported net revenues of $4 million.

Osman's reputation as Egypt's can-do contractor persuaded President Nasser in 1961 to let him have a try at building what still stands as the Arab East's biggest construction project: the mighty High Dam at Aswan. It was, admittedly, as much a Russian project as Egyptian, but it was Osman's firm that built it.

When Arab Contractors took over the Aswan project, Osman says, there was nothing on the site. "Rocks, mountains, the Nile and nothing else."

It was also 14 months behind schedule. To catch up Osman boosted the work force to 30,000 workers, inaugurated a 24-hour work day and to keep his men happy upped wages, provided housing and built a mosque, a swimming pool and a sports center. He also sought and found scarce foreign exchange to pay for modern machinery and to replace broken Russian equipment with British and Swedish models. For a time it was touch and go, but in July 1970 the dam was finished and in January 1971, inaugurated as scheduled.

After Aswan, it was obvious that if and when the Suez Canal was ever reopened, Osman would at least have a voice in the project. As it has turned out his voice will be one of the loudest. As the new Minister of Reconstruction he will be almost wholly responsible for not only reopening the canal but also rebuilding the heavily shelled wreckage of Port Said and Ismailia, revitalizing their economies and "urbanizing" parts of the Sinai Desert, assuming Israeli troops withdraw.

In so doing Osman will bring to those projects an approach perfected during the nine years at Aswan and described during an interview last year in his 13-story Osman House headquarters. There, in a paneled office splashed with photographs of family, football players, Egyptian leaders and race horses, he pulled on a treasured Havana cigar and with the calm, benign manner that is his trademark summed up that approach with commendable brevity: "If I look after my people, they will look after the job."

Translated into action the Osman philosophy blends social responsibility with capitalistic incentives. In line with the goals of Arab socialism, he provides free family medical care, insurance, recreational facilities and housing. But he also provides bonuses, a form of profit-sharing and on-the-job raises for superior work. He also visits job sites personally and at least in the early days knew many of his people by name. "You can rent people," he says, "but you can't rent loyalty."

As added insurance, however, Osman also stresses know-how. Although he now maintains a permanent cadre of 700 engineers, mostly Egyptian, in his early days he immediately brought in foreign companies for jobs his people couldn't handle. But he also insisted that those companies give his men on-the-job training. On a bridge project, for example, Yugoslav engineers taught the Egyptians how to use a pressurized chamber for underwater casing construction. Shortly after, Osman's men used the technique themselves on the $27-million Ramses Bridge in Cairo.

In the company's own workyard in Cairo's Shubra district, Osman also runs a maintenance training school for teenagers which stresses preventive maintenance, a rare concept in the Arab East. As a result the central shops now can overhaul a five-ton truck in 36 hours, provide spare parts for emergencies and do most electrical repairs on equipment. And recently in that workshop three teams of engineers and mechanics were seen studying a cement mixer mounted on a platform like a sculptor's model.

As an effective executive accustomed to making his own decisions Osman seemed to face a dilemma when his firm was nationalized in the 1960's, but in fact, neither his efficiency nor his independence were greatly affected and are today still at the service of Egypt.

But again the signs of progress are unmistakable. Despite setbacks and seemingly intractable problems, Egypt is certainly much better off today than it was in 1952. Per capita income increased a whopping 67 percent between 1960 and 1970, according to the *Arab Economic Review*, and this probably does not include the social benefits —education, medical care, housing—built into many industrial programs. And although productivity stays low, foreign exchange is scarce and debts are soaring, investment capital is by no means lacking. This January, Japan, Libya and Kuwait agreed to provide $1.5 billion for development. In February the Chase Manhattan Bank began discussing terms for an $80-million loan to help finance the proposed Suez to the Mediterranean oil pipeline.

In the most recent developments, the British Leyland Motor Company is reported to be negotiating construction of a $66-million assembly plant to turn out Morris Mini's. More importantly, reopening the Suez Canal, worth an estimated $600 million a year in revenues, now seems a distinct possibility.

Such moves give needed substance to the newest plan, the Ten Year National Action Program, announced by President Sadat in 1971. A sweeping reform, the program stresses intermediate and heavy industry —120-percent increase in output in 10 years—upgrading of middle level managerial and administrative skills, technological research, and basic education of the Egyptian populace. As a supplement Egypt also announced a 10-year, $15.2-billion development plan that gives a high priority to industry.

When the programs will be realized may be uncertain, but there are straws in the wind. In the last two years, Egypt has definitely begun to implement a 1971 "liberalization" policy, by giving guarantees against nationalization to both foreign investors and Egypt's own private industries, which, though small in size, are often ingenious and energetic and which have quietly continued to contribute to production and handle a surprising proportion of sub-contracting for state-owned factories.

Perhaps more significantly, the Sadat government last year unveiled an "open economic" policy that reduced government control over day-to-day management and export/import policies in government-owned factories. It also introduced some heretofore heretical ideas. One is wage incentives for higher productivity. Another, announced by Sharif Lotfy, Under-Secretary of Finance and Economy, is to "allow market forces to play a larger role in the price system."

A similar trend is apparent in Iraq. In an interview last fall, Taher Shaikhly, director general of the private sector of Iraq's Minister of Industry, reported that under the existing five-year plan, private industry is handling 870 projects. He also said the Council of Revolution cut the interest rate on loans from 6.5 percent to 4 percent, eased duties on the import of equipment, donated tax-free land and spread tax payments out over a 10-year period. To support private industry the government, according to Adnan Kindi of the Ministry of Industry, is also looking at every project as the concern of the country, not just the concern of the contractor. "If we hear that a privately-run project has stopped because a crane is broken we ourselves send an expert, because it's a people's project, not a contractor's project."

In a move to solve the persistent lack of technicians, the government last June also signed an agreement with the United Nations Development Program to establish an industrial institute. In an even more surprising turn toward the West, Iraq, last August, began easing restrictions on European imports and reportedly agreed to buy five Boeings from the United States for Iraqi Airways.

Syria is talking in the same vein. Since President Assad assumed power in 1970, the government has been mentioning a "corrective movement" and is quietly stimulating private enterprise in several sectors.

What these trends mean is a still a matter of conjecture, but on the basis of the accomplishments already on record it is certain that for Egypt, Iraq and Syria the future has never been more promising.

Joseph Fitchett broadcasts from the Middle East for ABC Radio and writes for Time, *Britain's* Observer *and other publications.*

1-3

A dairy near Baghdad processes 170 tons of fresh milk daily, and produces cheese, butter and ice cream under sanitary conditions (1-3). Syria's huge **al-Thawra Dam** on the Euphrates River, said to be the world's largest earth dam, is expected to produce 1,100 megawatts of electricity and irrigate 1.5 million acres of land (4).

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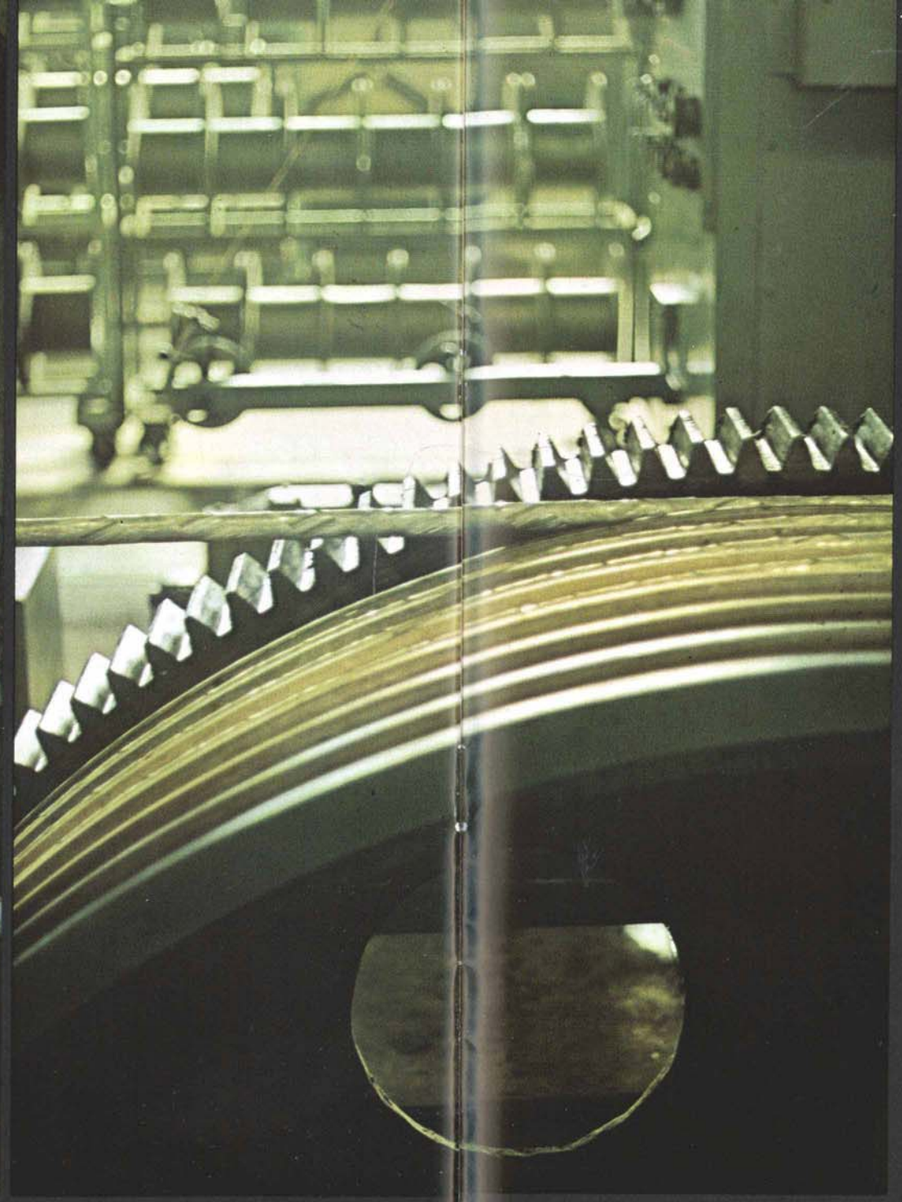
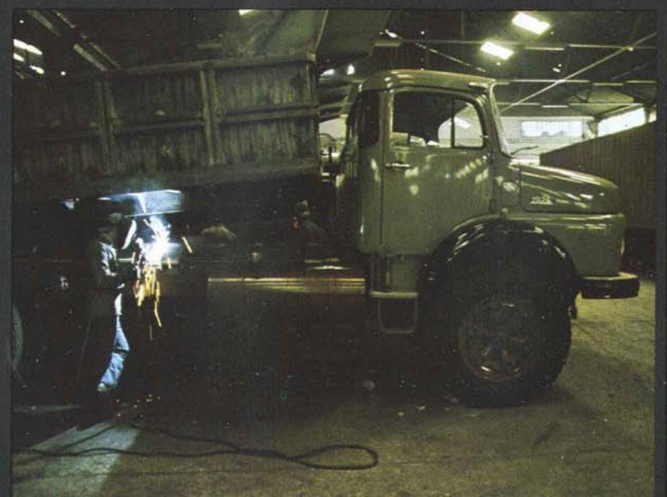


"We don't know what you're doing, but whatever it is, keep doing it."

MADE IN... LEBANON

WRITTEN BY FREDERICK KING POOLE
PHOTOGRAPHED BY TOR EIGELAND, ROBERT AZZI, NIK WHEELER, KHALIL ABOU EL-NASR AND ALSO WASEEM TCHORBACHI AND WILLIAM TRACY.

Lebanon's O.K. foundry produces 60 tons of cast iron plumbing fixtures and valves daily (1) and Liban Cables manufactures high-tension power lines and other copper cables (2). A construction boom in Beirut has stimulated production of cement and steel rods (3). Carrosserie Abillama makes bodies and cabs for a wide range of trucks and buses (4) and Middle East Export Press, Inc. (5) prints quality color.



Sipes' Lebanon factory produces 500,000 gallons of paint per year.

In an era of increasing state intervention in national economies, Lebanon remains a holdout. Probably nowhere else is free enterprise carried to such lengths as in this eastern Mediterranean nation of less than three million people. The story of Lebanese industry can be summed up, as one local manufacturer put it, as "the world's ultimate example of Adam Smith's doctrine of laissez-faire in action."

Admittedly, state intervention in the private sector is not unknown, and plans for governmental activity are sporadically announced. But the heartbeat of industry in Lebanon is what the Lebanese themselves talk about as their own particular "mentality," an elusive mix of ingrained individualism, commercial aptitude, instantaneous adaptability and an unquenchable willingness to take chances on any sort of potentially profit-making activity—in sum, the very qualities that have spurred industrial growth since the dawn of the industrial revolution.

Traditionally, however, the Lebanese preferred trade and commerce to manufacturing. Indeed, before World War II only a few individuals were engaged in industries that could not better be described as handicrafts. But now light and medium industry is a far more important factor in the economy than is agriculture. Lebanon, today, can build small ships, assemble trucks, elevators and air conditioners, roll steel, pack meat, and manufacture an impressive list of products that includes copper cable, plastic and teak furniture, detergents, refrigerators, paint and textiles. Lebanon, furthermore, is the financial, communications and transport hub of the Middle East and runs a tourist industry worth roughly $200 million yearly. And since 1971, in a vast complex at Beirut International Airport, hundreds of highly skilled technicians have been stripping down Boeing 707's and overhauling them from nacelle to rudder at low cost and at a speed not always exceeded by even the advanced technology of America's aircraft industry. (See p. 42)

Proud Lebanese, seeing such growth, tend to speak of their country as the "Switzerland of the Middle East"—and there are resemblances. But a new generation of young industrialists are more realistic. None who were interviewed expect much expansion into areas of intricate technology and most candidly admit that published statistical projections tend to be unreliable. On the other hand they see no hard and fast limits to industrialization and generally agree on some broad outlines that suggest the scope and future of industry in the area.

One crucial fact they agree on is that industry is growing faster than other sectors. Even today some two-thirds of Lebanon's GDP or gross domestic product (which is substantially equal to the gross national product and used in preference to the GNP by economists studying developing nations) is derived from services. But industry's proportion of the GDP is getting larger. In a confidential report on the investment of Arab oil money seeping into Lebanon's financial centers, a leading Lebanese banker maintained that industrial production accounted for less than 13 percent of Lebanon's GDP in 1964, but had risen to at least 17 percent of a 1972 GDP worth more than $2.3 billion. According to local economists, moreover, industrial production probably accounts for 75 percent of the money coming into Lebanon from exports.

Industrial exports during this period, according to the banker, rose from $40 million to $133 million, an increase of 225 percent, and in 1972, according to a report from the Central Bank, went up 24.9 percent over 1971.

Compared to the massive statistics of, say, Japan and Germany, these figures may seem less than staggering. But the report also said that the industrial labor force has nearly doubled—to more than 100,000, about 20 percent of the total labor force—that employment in industry in the '70's equaled employment in agriculture for the first time and that agriculture's contribution to the GDP does not exceed 10 percent.

These *are* impressive figures since, in economic terms, major shifts of income and employment from agriculture to industry signal a breakthrough. They mean Lebanon has crossed an important economic frontier.

To be sure, some of those figures have to be approached with caution. Yet it is undeniable that despite a lack of resources, and despite recurring turmoil inside the country and around it, Lebanon today is booming. Near Tripoli in the north production at Lebanon's two cement plants is reported to have reached about 1.5 million tons in 1973, but *exports* dropped from about 40 percent of total production to less than 25 percent because of local demand.

One reason for the local construction boom has been the influx of money from the richer Arab oil-producing states. By the end of 1973, deposits in Lebanese banks available for lending amounted to $3.1 billion, most of it oil money. As early as 1971, investment experts Kidder, Peabody & Co. were openly confident that the Middle East would soon be a net exporter of capital, a forecast already coming true. Kuwait has played a major role in this, but in late 1973, a U.S. auto parts firm was negotiating a $30-million loan in Beirut and a Beirut-based investment firm was arranging financing for the $60 million purchase by Egyptair, Egypt's national airline, of five Boeing 707's.

This is a particularly impressive performance because in 1967 the combination of the Arab-Israeli War and the sudden collapse of an international, Beirut-based banking empire called Intra Bank had shattered the economy, seriously damaged the country's reputation as a financial center and left scores of Arab airlines, plants and trading companies in serious trouble.

Even today Lebanon, as a financial center, has problems. Profits are off and, some bankers say, Beirut banks are still not attracting their share of oil money. On the other hand Lebanon has some decided advantages. The Intra organization has revived as an investment company and revised banking laws should head off similar crashes. The country's banking secrecy laws are tight. There are no currency exchange controls. It is an Arab country in which Arab investors quite simply feel more comfortable.

Another distinct advantage is the international scope of Lebanese banks. There are already 18 foreign banks in Lebanon, 18 joint Lebanese-foreign banks and more coming. Despite a hefty $2.5-million bank license fee, major banks are pushing hard to find partners among the 38 Lebanese-owned banks. Through such links Lebanon's banks now reach, and will reach further, into financial centers around the world, and, as a result, attract more of the oil money.

"According to local economists . . . industrial production probably accounts for 75 percent of the money coming into Lebanon from exports."

How much of Lebanon's boom is due to this influx of money is anybody's guess. But some obviously is. In Beirut literally hundreds of high rise apartment buildings, office buildings and hotels—including a Hilton and a Holiday Inn—have been sprouting like weeds and a comparable display of activity is evident in Tripoli, the country's second city. In 1973, admittedly, construction in Beirut dropped off 30 percent as a result of political turmoil and sharp hikes in the cost of labor and materials. Even so, government records show that 1,140 construction permits were issued in 1972, a jump of more than 36 percent over the previous year, and land prices were reaching record heights.

On fashionable Hamra Street, for example, land that went for nearly $400 per square foot in 1973 was reportedly up to $800 per square foot in early 1974, but according to Elie Sehnaoui, a contractor now building the new American Embassy, the government is considering the country's first capital gains tax on the re-sale of land, a measure that could force down what he considers to be "absurdly high" prices.

Other indicators show a similar trend. Consumption of fuel produced at the country's two oil refineries rose to about 14.5 million tons in 1972, an increase of more than 13 percent; vehicles imported from abroad, as registered by the customs, totaled more than 19,000, an increase of more than 35 percent, bringing the total number of vehicles operated in Lebanon to nearly 200,000—despite import duties of over 30 percent. This adds up to about one vehicle to every 10 persons, compared to about one vehicle to every two persons in the United States.

The extent to which industry has contributed to the boom, or been aided by it, cannot be determined with exactness. As most businessmen in Lebanon will candidly admit, any figures they give on profits, turnover, employment or productivity are rarely precise because of a typically Mediterranean wariness concerning competition and taxation.

Official figures for all 1972 pharmaceutical exports, for example, total $16 million. But one firm alone, according to a well informed consultant, exports pharmaceuticals worth $8.8 million. Indeed some industrial concerns reputedly operate with no public accounting whatever. There is another factory which ships 70 percent of its output to Europe, has vast storage facilities, employs hundreds of workers and is capitalized at $3.3 million. Yet its exports do not appear anywhere in government reports on national trade.

On the other hand, the proliferation of plants on the outskirts of the city is concrete evidence—in both senses of the word—that industrial expansion is real and important. The largest industries are those producing textiles and foodstuffs but there are also factories which, though small by Western terms, cover an extremely large range. Among Lebanon's exports are aluminum, copper, iron and steel products; asbestos cement products as well as cement; chemical fertilizers; plastic products; sanitary fittings and equipment; paper and paper board products, and printed materials. There are factories making everything from chocolate biscuits to lighting fixtures, dishes to fashionable clothes, from Kleenex to steel office furniture and gas heaters.

Most of these industries are new and all are growing rapidly. In Kfarchima, a suburb where new plants jostle olive groves for space, the Lebanon Refrigerator Company, housed in a new two-story plant, turns out thousands of Frijex, Kelvinator and Cold Spot refrigerators a year. Only a few miles away the Lebanese Air Conditioning Company, LAIRCO, which assembles York air-conditioning units to U.S. specifications, is building a brand new plant. LAIRCO did not go into production until early 1973, yet by early 1974 had logged $1 million worth of orders. As a result LAIRCO has already ordered new equipment which will enable the firm to make its own fins for coil production, a vital component in air-conditioning equipment.

Even the older industries are new. Lebanon's biggest textile firm, which claims more than half of the country's textile production, is the Asseily family's Filiature Nationale de Coton. But its origins go back no further than 1938, when two brothers started the company as a small family firm. It now employs about 1,500 workers, 500 more than two years ago, and many of the spinning and weaving sections are operating on a three-shift basis. Five years ago, according to Pierre Asseily, Filiature Nationale's chairman and son of one of the founders, 70 percent of the spun cotton, synthetic yarns and woven cloth that the firm produced were for the local market; now the bulk of production goes abroad, primarily to Africa and Europe.

Emile Cortas, chairman and general manager of the Cortas Canning & Refrigerating Co., the country's leading exporter of canned goods, says it is only in the past five years that there has been a general appreciation of the industrial potential of Lebanon. He attributes the present activity to a number of factors, especially the Lebanese grasp of what one American industrialist described as the key to industrial success: find a need and fill it.

In the 1920's, while studying economics and business administration at the American University of Beirut, Mr. Cortas found such a need while writing a thesis on the

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In light industry Lebanon turns out a wide range of products in plants such as those of the Lebanon Refrigerator Company (1); Red Shoe (2 and 3); Cesar Debbas, which assembles fluorescent lighting fixtures (4); Charles E. Frosst, which produces pharmaceutical products (5); LAIRCO, the Lebanese Air Conditioning Company (6); Sleep Comfort, which makes furniture (7) and the Lebanese Ceramics Industries Company (8), which produces porcelain tiles and bathroom fixtures.

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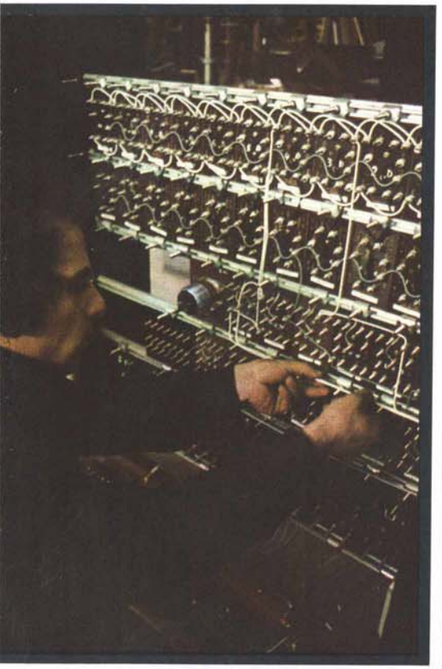

Otis Elevator builds cars, installs controls in its Lebanon plant.

possibility of food preservation as a local business. In 1927 he put his thesis to the test by producing and canning jams at his home. Two years later he opened a small factory near Beirut and went on to fruit concentrates, tomato paste and vinegar. During World War II he produced dehydrated and canned vegetables for the British Army and three years after the war opened cold storage facilities. He believes his was the first canning business anywhere in the Middle East and is still probably the largest, despite increasing competition from Syria, Egypt and such other Lebanese firms as Conserves Modernes and Interbrand, which packs fruit under license using the American brand name Libby's. From an initial production of about 50 tons a year, consisting mainly of jams in glass jars, the Cortas Co., with a work force that rises to 350 in season, has boosted production to 3,000 tons a year.

Ohannes H. Kassardjian, a former plumber, noted back in the 1930's that all the pipe fittings and valves and all the sanitary plumbing fixtures which he installed and repaired came from abroad. Why, he wondered, couldn't these essential products be made by Lebanese? He decided they could and in 1939 started a small iron foundry with 35 employees, which first produced simple castings—manhole covers and pipe fittings—and expanded steadily. Today his foundry produces 60 tons of cast iron a day, half of it in the form of sophisticated high-pressure fittings and valves, made from scrap metal bought locally, and stamped with his initials and trademark, "OK." In addition to making iron products, the plant houses a brass foundry that turns out valves, fittings and chromium-plated plumbing fixtures. The company has won contracts for water and sewage systems not only in the Arab world, but as far away as Hong Kong, which uses OK high-pressure fittings on its continually expanding municipal water projects.

More recently, Roy and Robert Hamady, sons of Lebanese immigrants to America, also found a need and filled it. Returning to Lebanon from the United States, the Hamadys investigated the possibilities of numerous industrial ventures and set up a small company called AMPAK in the picturesque mountain region of Sofar to make high quality packaged meat products such as bologna, hot dogs and bacon. All are manufactured, the Hamady brothers say, to the standards laid down by the U.S. Food and Drug Administration.

Market research like the Hamadys' investigations is rare in Lebanon. More often individuals just take a plunge and wind up with surprising success. An example is the country's largest furniture manufacturer, quaintly named Sleep Comfort, which began a few years after World War II as a four-man shop making mattresses. According to Nicholas Rebeiz, then Sleep Comfort's salesman, cashier and deliveryman, and now the firm's sales manager, Sleep Comfort got into the furniture business almost by accident. "A customer for a mattress would want a headboard, and we would make it for him ... then he would want a night stand ... then a chair ..." Today, Sleep Comfort's approximately 1,000-man labor force turns out more than 600 different items, many in teak and patterned after successful Scandinavian designs. But they have gotten into stainless steel too and they do all their own work, from upholstery to chrome plating. Sales, Mr. Rebeiz says, are increasing at the rate of 35 percent a year. In the first two months of 1973, 10,000 units were sold, 70 percent of them in Lebanon, but some to customers in Europe.

In discussing Sleep Comfort's operations Mr. Rebeiz talks like a modern, socially conscious western executive. He speaks of profit-sharing plans, the company's resident social worker, how the firm pays for the education of gifted students whose parents work for Sleep Comfort, of company recreational facilities, and how "we let the worker feel he is a human being."

Georges N. Frem, president of UNIPAK, the Union Packaging Corp., talks in a similar vein. "People are our main element," he says, pointing out that profits from their corrugated cardboard boxes are shared among UNIPAK's 200 employees, and that 15-year, interest-free loans are granted so that they can own their own homes.

Unlike most Lebanese firms, UNIPAK is a true shareholding company rather than a family-dominated firm. "This was an experiment to see if a real shareholding company could grow up in Lebanon," Mr. Frem says. "We have proven that it is possible to be more successful operating as a group than as an individual or family."

UNIPAK's other objective, Mr. Frem says, was "to prove we could make a profit with an industrial project and at the same time reach a social goal." The goal was to assist in the sales of Lebanese apples, which had often wound up as a glut on the market, largely because they had not been properly merchandised. Since one key to merchandising was better packing, the firm believed, UNIPAK, with a technological assist from the Mead Corp., a giant American packing concern, began production in 1967 with a capacity of 20,000 tons of corrugated boxes a year. The company also re-pulps waste paper to make molded pulp trays and this year will start producing ventilated plastic cartons for the storage of apples which, Mr. Frem says, will increase the life of Lebanese fruit from three to six months.

UNIPAK has also formed another company called First Baby Food of Lebanon which is exactly that: the first local baby food company. Capitalized at $2 million, it will make strained baby food, powdered formulas and vitamin supplements.

According to Mr. Frem, working with foreign firms is, for a country like Lebanon, often the key to success for companies with enthusiasm and capital, but lacking technology. Recently, for example, the American Olin Corp., owners of the "Winchester" trademark, concluded an agreement with three local businessmen to manufacture shotgun shells in Lebanon for distribution in several countries of the Middle East where hunting is one of the most popular sports. Earlier, the Sursock family, one of the country's leading business families, joined forces with the Otis Elevator Company to manufacture elevators and install the intricate controls. Prior to that, Otis imports, despite what the company thought was superior technology, often ran second to European firms. Now Otis, which started with 150 men, boasts a work force of 450 skilled craftsmen, and has seen production leap from 100 cars a year to 450 and claims 55 percent of the booming local elevator market.

The country's other elevator factory, founded 25 years ago by Gaby Rayes, claims about 15 percent of the local market and also makes metal office furniture. It is more typical of Lebanese industrial concerns. "I was given some money from an uncle to import domestic appliances," Mr. Rayes says. "We set up a workshop to service the appliances, and then found the workshop was our main business."

"... Lebanon has two small steel rolling mills and two aluminum extrusion plants ..."

Another growing firm is Cesar Debbas and Sons, an electrical contracting business that installed Lebanon's first telephone line, supplied Beirut with gas lighting, then went into manufacturing in 1961, producing interior fluorescent lighting fittings. The work force at the plant has risen from 10 to about 200 and 80,000 lighting fixtures are being turned out this year, according to the company's director, Robert C. Debbas. Some of its products are now produced under license with the American firm Daybrite. Mr. Debbas predicts his volume will double within the next two years.

Also related to construction, Lebanon has two small steel rolling mills and two aluminum extrusion plants, which are complemented by dozens of aluminum fabricating plants. These are typically Lebanese businesses, in that no local raw materials are used. Billets and ingots are imported and transformed into finished products. And if some bankers quietly question their viability, they also say they appear profitable. Sciale Aluminum is headed by a former contractor, Selim Hassib Najjar, who says he spotted a need for locally produced aluminum materials while working in construction. Since he began operations, production has increased from less than 60 tons a year to more than 2,500 tons. He faces competition from SIDEM, the Société Pour l'Industrie des Métaux, which operates under license with a French firm.

The two steel companies, Consolidated Steel Lebanon, located near Byblos, the ancient Phoenician coastal city north of Beirut, and the Lebanon Steel Mill Co., near Tripoli, both started in the early 1960's, importing billets and producing steel bars for reinforced concrete. Amin Adib, director of Lebanon Steel's Beirut branch, says his firm's production has risen from 20,000 tons to about 85,000 tons, and the work force now numbers about 500. The two companies, according to Mr. Adib, meet about 90 percent of Lebanon's construction needs.

Among other construction related industries, there are two glass factories, Soliver and Malibar, which produce sheet glass for windows and doors in addition to making the bottles used locally for soft drinks, beer and wine. Recently, Soliver entered into an arrangement with St. Gobain, the French high quality glass firm, to build a new plant south of Beirut and produce St. Gobain products under license.

There is also the Société Nationale des Tubes, which makes steel pipes in a factory in Dakwani near Beirut. Capitalized at just under $2 million, the company was founded in 1957 by Khalil Sahnaoui, one of a family of seven brothers with financial interests in agriculture, shipping, banking and the manufacture of pipes, chemicals and wood products. According to director Marwan Sahnaoui, a son of the founder, the plant turns out up to 5,000 miles of welded steel pipe per year, principally for the Lebanese market. It produces 21 types of light and medium weight galvanized steel pipe for heating, plumbing and scaffolding in a largely automated operation employing about 120 men.

Another firm, Liban Cables, manufactures some 200 products out of imported copper rods, including household wiring, elevator, telephone and television cables and high-tension power lines. "We started production in 1969 with what you might call half a shift," explains Bechara Tacla, the company's candid general director. "We turned out about 25 tons of cable a month and finished the year in the red. But last year we were working three shifts and producing 400 tons monthly; that's 4,500 miles of drawn copper wire each day! We sold $8 million worth of cable and made over $600,000 profit, more than our entire net sales five years ago. For 1974 we've projected sales of $12 million—and so far we're right on schedule."

Liban Cables is 55 percent Lebanese owned (its staff of 275 is totally Lebanese) with the remaining 45 percent shared equally by the U.S. firm, Phelps Dodge, and France's Cables de Lyons. Aside from its own production, the company contributed further to Lebanon's economy last year by purchasing $500,000 worth of locally manufactured wooden drums and $1 million worth of Lebanese produced PVC plastic coating.

Also in this category is Eternit, an asbestos-cement plant at Chekka, on the coast near Tripoli. A Lebanese-controlled company producing patented products of its parent Swiss firm, Eternit has a work force of more than 500. Its production has increased 10 times since it started operations in 1951, according to a company spokesman, and 70 percent of its products, which include high-pressure pipes, the major product, corrugated sheets, roofing and such minor items as park benches and flower pots, are exported.

Eternit has marketing agreements with a small but innovative young company called Polyfab, which designs, manufactures and sells standardized panels for prefabricated buildings under the trade name Rapidhome. To make the panels, Polyfab takes two Eternit asbestos cement sheets, sandwiches slabs of polyurethane foam between them and wraps an aluminum frame around the edges. Light and sturdy, they are trucked from factory to building site where a six-man factory team can erect a house in about two weeks once the foundation is in place. Company engineers are now working on a

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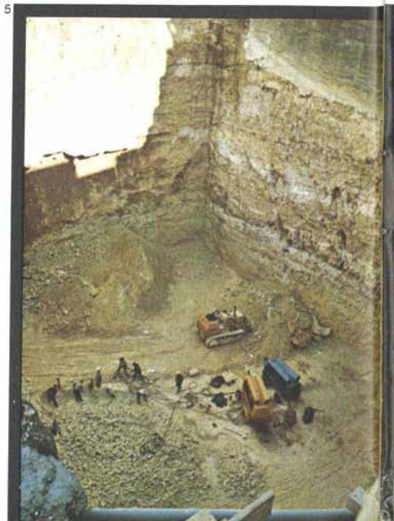

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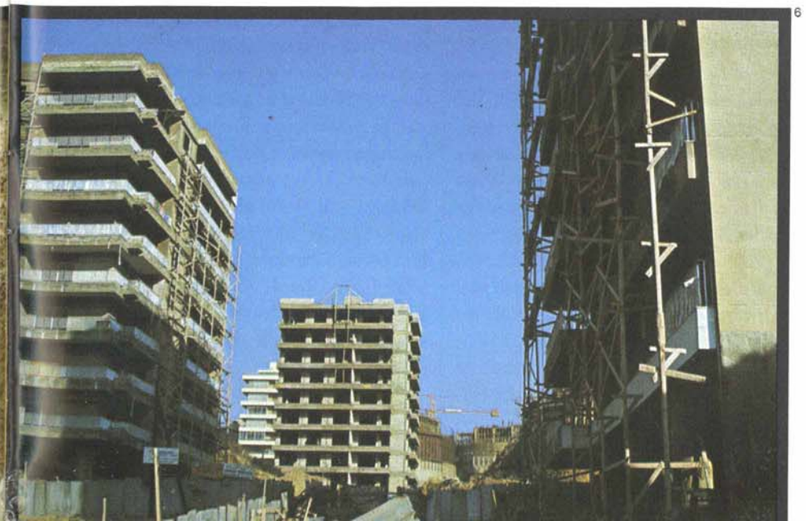
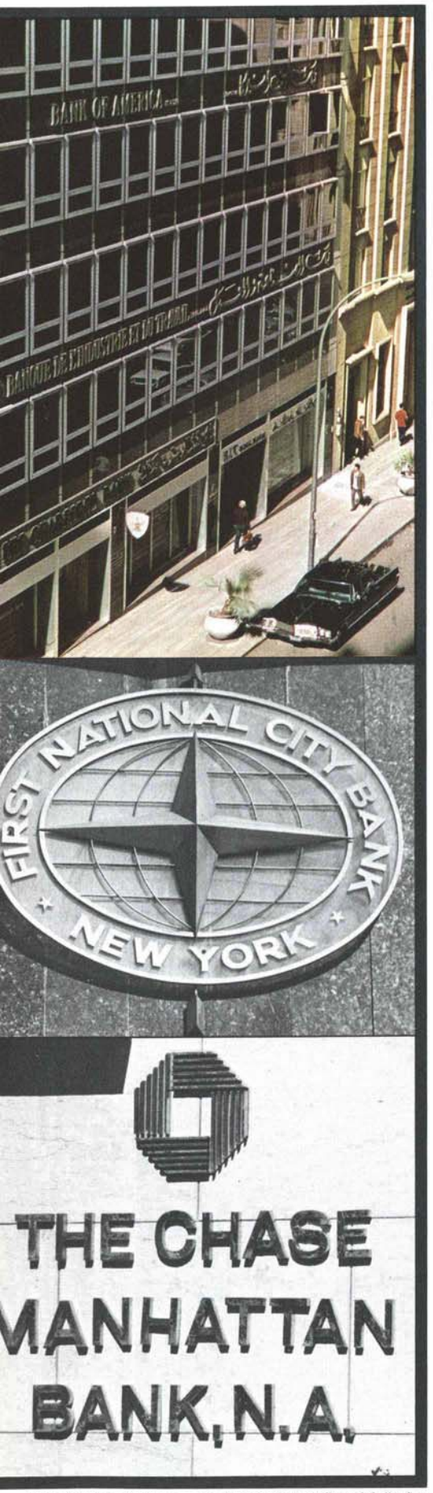


Frosst pharmaceuticals and Otis Elevator (1 and 2) have built modern plants outside Beirut. Lebanon's Trans Mediterranean Airways, TMA, operates a world ranging cargo jet fleet (3), and Tripoli's Diesel Workshop and Marine Builders shipyard (4) constructs tugs and small freighters. Land prices in Beirut have soared so high that builders must go deep (5) and high (6).



Many American banks are active in Beirut's busy financial district.

modular steel and wood foundation which will enable contractors to truck completely assembled five-ton buildings to the site. The insulating properties of the rigid foam lining permit use in cold or heat. The company, for example, has built six model ski chalets in Lebanon and Aramco has erected about 80 bachelor apartments in Saudi Arabia. Polyfab exports about 80 percent of its production and reported sales worth $600,000 in 1973.

One of the major success stories in Lebanese industry is that of LECICO, the Lebanese Ceramic Industries Co., which makes heavy use of Lebanon's meager natural resources—clay, sandstone, limestone and dolomite—to produce glazed porcelain wall tiles, toilets, washstands and other bathroom fixtures. From a 1962 low of 800 square meters of tiles a day LECICO's production has shot up to 3,600, according to technical director As'ad A. Najjar, and production of bathroom fixtures, which started with 400 pieces a day, has risen to 1,800 pieces a day, or 600 tons a month. Altogether LECICO now has 425 workers at its plants south of Beirut and employs about 100 more at its mines in the Bekaa Valley.

Beirut's location has had a great deal to do with its industrial development. Since the closure of the Suez Canal, for example, the port of Beirut has become the most important Arab Mediterranean port in the Middle East, and a trans-shipment point besides. From Beirut, goods are transferred to trucks and transported across the mountains and the desert directly to Saudi Arabia and the small, rich Gulf countries. Many garment factories are located in the free zone of the port so that their cloth can be imported duty free, and the garments trucked to the Gulf in sealed vehicles without having to pay local customs fees.

Because of its location, Lebanon has spawned an important air-transport industry. Part of that industry is handled by the burgeoning and profitable fleet of 19 Boeing 707's and 720B's owned by Middle East Airlines and flown by an international team of nearly 80 captains, 90 first officers and 70 flight engineers. In 1972, MEA, which at one stage seriously tried to swap Lebanese apples for British VC-10's, reported a net profit of $10 million. MEA is also, with 5,000 employees, Lebanon's largest employer after the government.

Equally impressive is Trans-Mediterranean Airways, an around-the-world, Beirut-based freight airline which in terms of scheduled route mileage is the world's largest cargo carrier and which, in 1973, earned profits close to $7.5 million.

TMA was founded by ex-Aramco employee, Munir Abu-Haidar, who leased two converted World War II bombers in 1953 and began transporting vegetables and supplies to oil camps in Saudi Arabia. Branching out, he began to build an organization of seasoned pilots and a world-wide network of skilled freight salesmen. Today TMA has close to 1,800 employees, including business representatives stationed in 58 offices around the world, and a small but rugged team of captains, co-pilots and flight engineers. This team flies seven Boeing 707-320C's on a grinding, constantly shifting schedule that includes three eastbound and two-westbound round-the-world routes a week.

Both these airlines have stimulated catering, another service industry with international overtones. The country's leading caterer, Albert Abela, not only operates the airport restaurant but also handles inflight catering for international airlines—virtually all of them—which fly into Beirut. In addition, according to the owner, the company operates hotels, restaurants and supermarkets, does catering for schools and hospitals and builds and manages oil company field camps as far afield as Southeast Asia and the North Sea. Altogether, Abela says, he employs 11,000 people in 30 countries.

But industry, in the sense of manufacturing goods that can be sold at home and abroad, rather than providing services, is coming more and more to dominate the thinking of Lebanese entrepreneurs —especially the young representatives of leading entrepreneurial families whose interlocking interests usually cover such diverse fields as real estate and foreign investment.

Michel Doumet, for example, is involved in a phosphatic fertilizer plant, the Lebanon Chemicals Company, which, he says, has boosted its production to 400,000 tons a year since it opened in 1958, and exports 90 percent of it.

Another example is George E. Asseily, whose family fortune is based on the gigantic cotton spinning and weaving enterprise mentioned earlier. Asseily has recently expanded into retailing with a line of household and fashion textile products that are sold, among other places, in Harrod's, London's most famous department store. In a bold move "to rid the Lebanese of their terrible complex against local goods," (in the past, labels on Lebanon's finished export products have often disguised their point of origin), Mr. Asseily defiantly created a brand name, DOMTEX, a contraction of the words "domestic" and "textiles," and demands that all his products carry a "Made in Lebanon" label.

Still another example is Fouad F. Shoucair, whose family long dominated the wholesale cloth business in the region. The Shoucair enterprises are now challenging the supremacy of two large Armenian family firms in the field of garment manufacturing. In 1972, with the aid of Swedish technicians, Mr. Shoucair opened the Shoucair Société

"Lebanon has more than 140 publishing houses which turn out close to 1,100 book titles, 40 newspapers and 100 periodicals a year."

Nationale de l'Habillement, a factory making stylish trousers—1,500 a day. Mr. Shoucair, instead of basing growth on cheap labor, aims to compete with European standards of quality and productivity.

There is also Carrosserie Abillama, the largest Lebanese builder of bodies for trucks and buses. Started 40 years ago by Amir Joseph Abillama, a member of an old ruling family from the Mount Lebanon area, Carrosserie Abillama was originally a small shop in Beirut producing occasional motor vehicle bodies and wooden horse-drawn carriages. Abillama now has two new plants, one of them especially for buses, in Dbaya south of Beirut, where, according to a company engineer, Nehme Fayad, more than 300 workers are employed. In 1971, Mr. Fayad said, Abillama produced bodies and cabs for 450 dump trucks, 75 fixed body trucks, 105 buses, 120 ambulances, 52 pickup trucks, and 25 tank trucks. They also produced 102 refrigerated trailers and 55 airport vehicles.

One of the old-school entrepreneurial families—possibly, many believe, the country's richest—is the Gandour family, which operates M.O. Gandour & Sons who, in a plant big enough to assemble aircraft, produce a range of food products that includes, besides chocolates, candy and chewing gum, spaghetti, cooking oils, cookies and crackers.

Few of Lebanon's enterprises boast plants as large as Gandour's and many enterprises listed as "industries"—like the printing industry—are really no more than obscure one-man shops. But even in printing the totals are impressive. Lebanon has more than 140 publishing houses which turn out close to 1,100 book titles, 40 newspapers and 100 periodicals a year. In Lebanon too are some 700 printing establishments, ranging from one-man shops with ancient foot-operated presses to about 20 establishments comparable to European printers. Although these firms, one printer said, are not huge, the quality often surpasses Europe's. One major company is the Middle East Export Press, Inc., which prints this magazine. Another is the Catholic Press, founded years ago by French Jesuits as an adjunct of St. Joseph's University. The Catholic Press, as a publishing house, publishes yearly 100,000 Arabic dictionaries, 150 book titles and numerous scholarly works including a 60-volume series on Islamic scholarship.

Jewelry is another "industry" that is scattered among obscure shops but whose exports are significant. Even official sources give $16 million as the 1972 total in exports, and Marwan Iskandar of Middle East Economic Consultants estimates that another $16 million is probably exported by couriers.

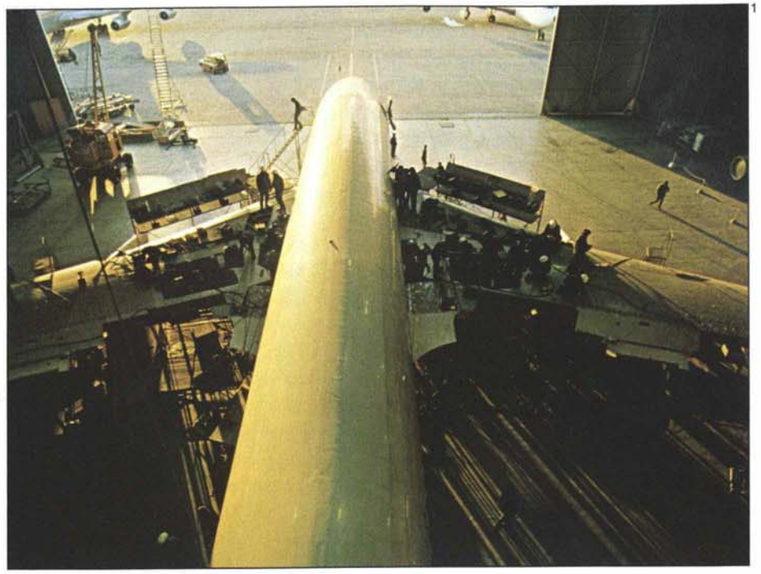
Obviously, industry in Lebanon is surging ahead. And if, to be quite realistic, the country's largest enterprises are still very small in Western terms, their potential is exciting. Industrial exports lead all other economic indicators, new industries are springing up overnight and whispers concerning new industries abound. The press has carried reports of negotiations for a tire plant and there is talk of building a third cement factory, a third oil refinery and a third mill to refine sugar from Lebanese grown sugar beets. Most recently there was even a report that British Leyland plans a $48-million plant to assemble Morris Mini's.

Whether or not such plans materialize, there is no denying that a push toward industrialization is on. About five years ago a group of young men banded together in an organization they call "Young Industry" to exchange ideas, establish better relations with workers, and lobby for more government support of industry.

Encouragingly, the government is beginning to respond. In 1972, it announced the formation, for the first time, of a full-scale Ministry of Industry. (There has been a Ministry of Commerce for years.) The following year, Dr. Selim A. Hoss, who had been president of the Banking Control Commission of the Bank of Lebanon, the country's central bank, was named chairman and general director of the new National Development Bank for Industry and Tourism, a joint venture between the government and 46 of Lebanon's 74 licensed private banks. With a capital of $23 million, it constitutes the nation's most ambitious program for supplying much needed medium and long-range financing for industrial development.

Obstacles, no doubt, are legion. Commercial enterprises still enjoy a higher prestige than industrial ones among some young people and imported goods still have a snobbish appeal in many quarters. The same individualism that emboldened early entrepreneurs also delays the development of a sound managerial structure since numerous Lebanese managers, chafing under the restraints of a company structure, break loose to found their own businesses.

On the other hand, Lebanon has always seemed to have a secret formula for financial success—as one of the country's favorite stories suggests. This story, which surfaces time and again over the years, has to do with a new, reform-minded administration which goes to the United Nations and says the nation's prosperity is a mystery. Lebanon, the government says, has few natural resources, and not enough roads, water or electricity. Its harbor is overcrowded. Its markets are small. Nobody pays taxes. There are too many holidays. Inefficiency is rampant. In short, Lebanon, in economic terms, shouldn't survive. So what should it do? After months of exhaustive study the report comes in with this conclusion: "We don't know what you're doing, but whatever it is, keep doing it."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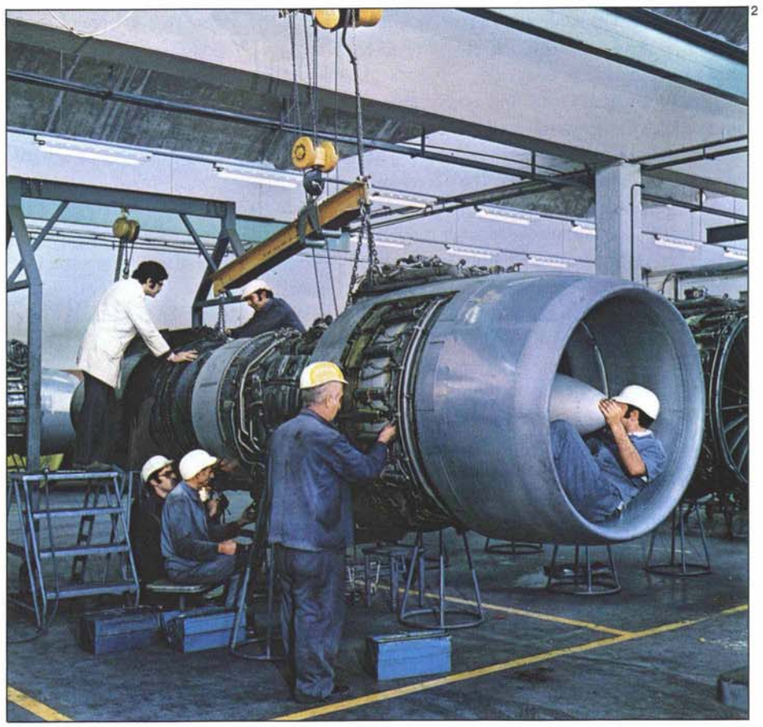
MEA MAINTENANCE:
FROM BIPLANES TO BOEINGS

PHOTOGRAPHED BY TOR EIGELAND AND WASEEM TCHORBACHI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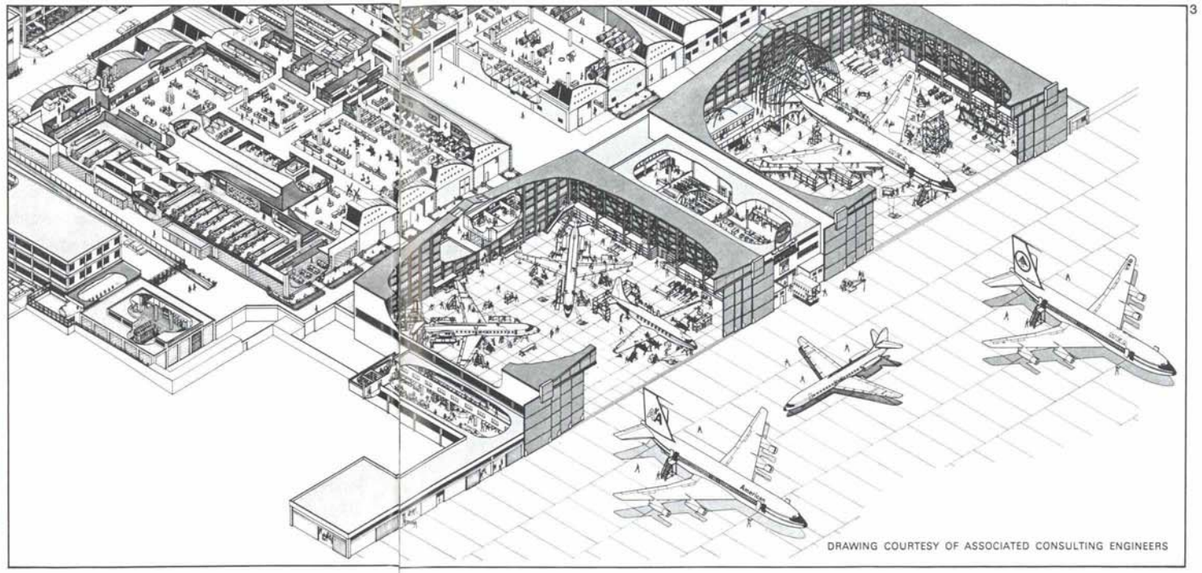
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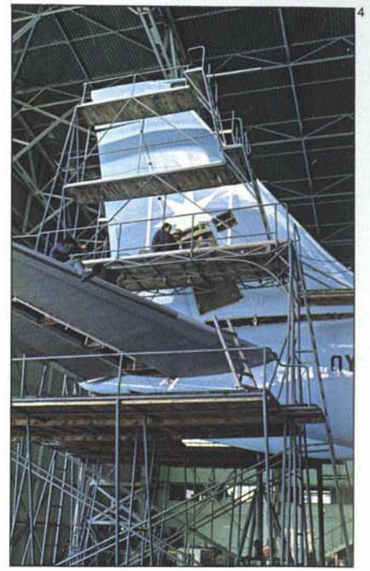
DRAWING COURTESY OF ASSOCIATED CONSULTING ENGINEERS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In its Maintenance Base at Beirut International Airport (drawing, above), Middle East Airlines' engineers and technicians roll an American Airlines 707 into one of the hangars (1), surround it with scaffolding and swarm over the body and wings. Engines (2), electronic components (5) and even seats (6) are stripped off and trundled into specialized shop areas. Many other international airlines, such as Maersk Air of Denmark (4), send their jets to MEA for major overhaul.

Back in 1945 one engineer and six mechanics took over a small hangar at Lebanon's tiny, if international, air terminal and began to provide maintenance for Middle East Airlines' fleet of three vintage De Havilland biplanes.

Considering the size and importance of MEA at that time—a main route was the Baghdad-Haifa run—that lone engineer and his half dozen mechanics were probably not overworked. Today that small hangar has ballooned into a $5.5-million, 290,635-square-foot complex that encompasses Seattle-scale hangars and a warren of crisply lit shops crammed with delicate electronic instruments and precision tools. The seven-man maintenance team has blossomed too: into a three-shift work force of 1,450 engineers, mechanics and craftsmen. And what was a small operation, even by Lebanese measurements, has grown into an international operation that is probably the most technologically advanced industry in the entire Arab East—the virtual reconstruction of the world's most modern jet aircraft.

Blooming and blossoming of that magnitude do not, of course, occur overnight. But as early as the 1960's there were portents: the U.S. Air Force began to fly in transports all the way from Germany, and when BOAC began to phase out its Comets it was the MEA base that overhauled them prior to re-sale.

MEA is certainly not the only company in the Middle East that can service Boeings. Booming Saudia of Saudi Arabia has a similar capability and so does Kuwait Airways. But both limit major overhauls to their own aircraft, whereas at MEA 40 percent of the base's productive capacity is devoted to outside work, the rental of components, the provision of service teams who fly anywhere and overhauls on private and military aircraft.

Because of MEA's international character—70 airlines use its facilities—its standards have naturally been checked out thoroughly. So far its record is impressive. The Federal Aviation Agency in the United States, the Air Registration Board in Great Britain and the Bureau Veritas in France, as well as civil aviation authorities in Holland, Denmark and nine Arab countries have certified its reliability.

But speed is also vital and MEA provides that too. As soon as an aircraft lands and is trundled into the hangar, a squadron of cranes, jacks, trolleys, access ladders and mobile scaffolding converges on it and workers swarm onto wings, fuselage and tail assembly to begin dismantling it. They strip off flaps, remove the wheel assemblies, hoist out the engines and burrow into the fuselage. In some cases, depending on the condition of the aircraft and the specifications of the job, they virtually gut the plane. Like surgeons removing organs, they disconnect and remove the hundreds of valves, indicators, actuators, generators, gauges, switches, cables, panels, couplings, circuit breakers, solenoids, tanks, lights and wiring on which the safe and efficient performance of a modern aircraft leans so heavily.

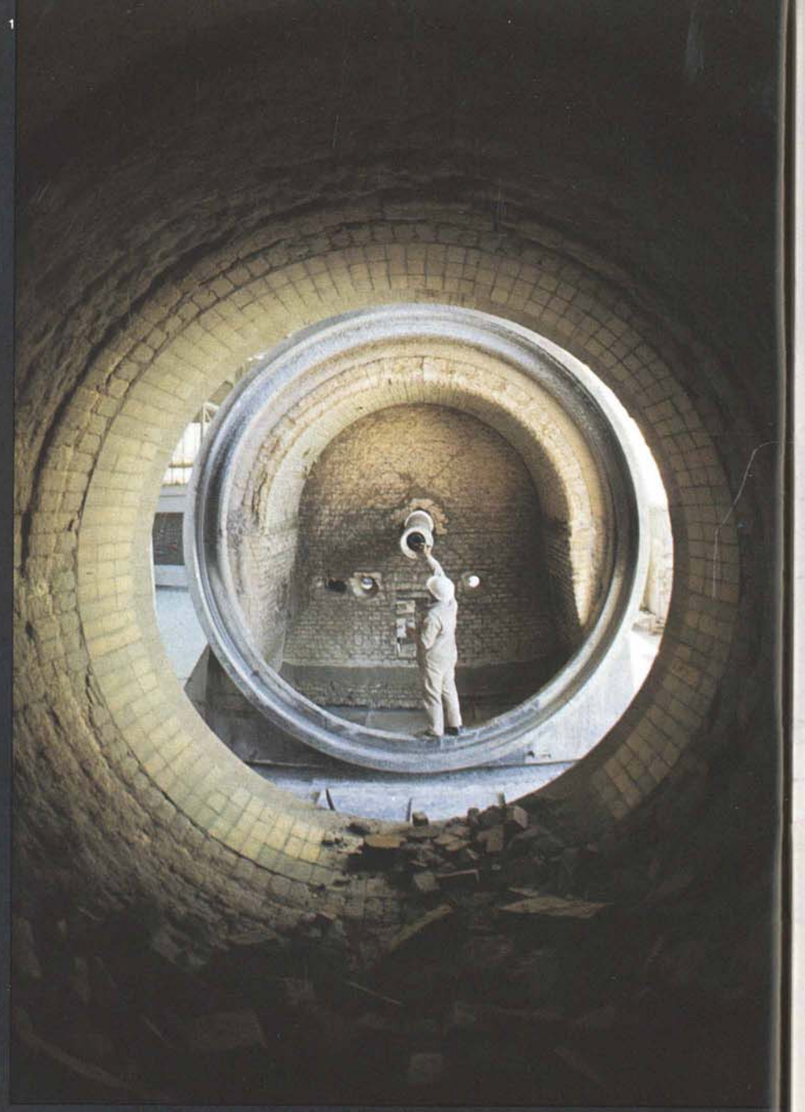
As they are removed, other workers pile them on trolleys and trundle them into the labyrinth of shops where specialists in flight systems, instruments, radar, radio, and hydro-pneumatics rebuild, rewire and refurbish each component.

Major renovations — such as structural modifications and a complete facial right down to new paint and upholstery—take MEA six to ten weeks, demand up to 70,000 manhours and cost the earth. Indeed, such maintenance is the largest single direct cost of an airline's seat-mile.

But overhauling also adds 10,000 hours to the life of the plane and the MEA charges, however high, are usually lower than Europe's. More surprisingly, as MEA's latest contract suggests, they are also competitive with the United States, even including the cost of flying empty to and from Lebanon. That contract is to overhaul 25 American Airlines 720B's, many of which will be flown to Beirut from American's base in Tulsa, Oklahoma, and back, a trip of 12,000 air miles.

In the Kingdom of Jordan, they say, they're turning sand into flowers...

WRITTEN BY FREDERICK KING POOLE
PHOTOGRAPHED BY KHALIL ABOU EL-NASR



MADE IN... JORDAN

Jordanian workmen reline a kiln at a cement plant (1), and produce cigarettes (2); The Arab Bank uses a computer in Amman to service its Jordan branches (3); Drums at the Jordan Tanning Company hold two tons of skins (4).

The worst thing that could happen to us would be to discover oil."

The remark was slipped in casually by Sharif Zeid Hussein, first cousin of H.M. King Hussein of Jordan, in the course of a tour of the new laboratories, conference rooms and libraries of the Royal Scientific Society (RSS), the country's computerized nerve center for development planning. Sharif Zeid, an executive official of the RSS, was smiling as he spoke, but he was making a serious point.

The Hashemite Kingdom of Jordan is currently in the process of attempting to transform a land that is four-fifths barren desert and poor in discovered natural resources into a fully viable modern entity. To do so, a coordinated attempt is being made to utilize every human, as well as natural, resource that can be found. Sudden wealth from a single source does not enter the thinking of the planners. In a national effort that is rare in either the developed or the underdeveloped world, the emphasis in today's Jordan is on self-discipline, sacrifice, and, most of all, methodically careful, as well as imaginative, planning.

A scientific, rather than political or ideological, approach to development is behind current Jordanian thinking. The country is in the course of its 1973-1975 Three Year Development Plan. Industry as yet accounts for only a small part of Jordan's gross domestic product, although it did rise from 8 percent of a GDP of $600 million in 1972 to an estimated 11 percent in 1973. The country's some 40,000 industrial workers constituted only about 10 percent of its work force in 1972, and manufactured goods account for probably about the same percentage of the country's exports. The new plan calls for a total investment of $500 million, the creation of 70,000 new jobs in all sectors and an annual growth rate of 8 percent in gross domestic product.

Meanwhile Jordan's communications, transportation and power infrastructures are being revolutionized. All the new industrial projects involve private enterprise, but most also involve government participation, and often outside economic and technological assistance is being utilized. In all, the government owns shares in some 27 industrial or service companies with an average government participation in each of less than 30 percent. As King Hussein put it at the Jordan Development Conference, held in late 1972 to launch the Three Year Plan, "We have no pet ideas about economic doctrine."

That Jordan should be forging ahead has confounded many outside observers. Until 1967 the country was well on its way to becoming an economically viable entity. But in the Six-Day War Jordan lost the "West Bank," its territory west of the Bible's Jordan River which comprises just slightly more than 2,000 square miles of the country's 38,000 square miles of national territory, but contains perhaps half of the country's economic resources, including much of its best farm land, and all of its once thriving Holy Land tourist industry.

Fortunately, as far as industry is concerned, most of Jordan's industrial establishments were on the East Bank. And Amman,

"By 1965 ICA was producing . . . Lux, Lifebuoy . . . and turning out Sunsilk shampoo . . . and Pepsodent toothpaste . . ."

on the East Bank, was and is the country's communications center, linked directly by rail to Syria and Lebanon in the north and by the modern, well maintained Desert Highway running south to the country's only port, located on the Gulf of Aqaba, an inlet of the Red Sea which opens into the Indian Ocean.

It was on the East Bank for example, as early as the 1950's, that the Ministry of National Economy was set up, that the Jordan Petroleum Refinery was built at Zarqa, about 17 miles northeast of Amman; that the Jordan Electric Power Co. built the country's first modern power plant; that the Jordan Phosphate Mine Co., the country's biggest foreign exchange earner, was reorganized and recapitalized, and that a modern cement plant northeast of Amman went into operation.

Today Jordan has two phosphate mines, at Ruseifa in the north and Hasa in the south with a work force of 1,200. They produced 1.2 million tons in 1973 and are shooting for a target of 3 million in 1976. The refinery has a capacity of 600,000 tons a year and 1,000 workers; the cement factory 500,000 tons and 700 workers.

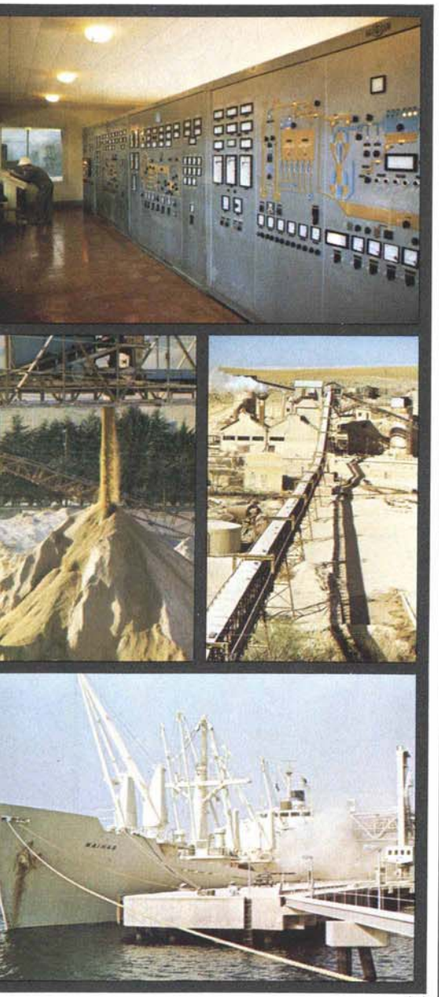
All of the country's larger existing manufacturing industries are located on the highway between Amman and Zarqa. When the Ottoman Empire came to an end in World War I, Amman, which became the capital of Transjordan—a semi-autonomous state operating under British mandate—counted only 6,000 people. At the end of World War II, Transjordan became merely the East Bank of the whole Kingdom of Jordan, and the capital's population has now increased to 600,000. Zarqa, which was a small village, now has 250,000 inhabitants.

The range of industry in this area has become fairly wide, taking in leather, paper, foodstuffs, matches, pharmaceuticals, plastics and a pilot half-million dollar steel pipe factory. About 90 percent of Jordan's "industrial" production units are incredibly tiny, but some are impressive.

The Jordan Tobacco & Cigarette Co., for example, is probably the country's largest industrial undertaking after the phosphate mines, oil refinery and cement plant. Production in the past decade for the domestic market has increased from 715 million cigarettes a year to more than a billion, and for export to much of the Middle East, from 25 million to more than 218 million, making it the largest cigarette plant in the Middle East outside Egypt, and topping Egypt in exports. With $635,000 worth of modern machinery, the company is currently producing $13.4 million worth of cigarettes a year, $7.6 million of which is tax money that goes straight to the government.

Next in size after the cigarette company is the Industrial Commercial & Agricultural Co. (ICA), the complex that is also known as Hussein Industrial City. ICA was set up in 1961 with a paid-up capital of more than $1.3 million, since re-evaluated at about $2.5 million, of which the government owns $70,000 worth of shares. Starting with less than 60 employees, ICA now has 300, a third of whom are women, at work in the 14 buildings within its 270,000-square-foot compound. Most of the firm's products are manufactured under license.

Its first venture, launched in 1962, was a detergent plant under license from the Dutch-British Unilever Export Company. The next year ICA began producing biscuits, entirely on its own. In 1964 it



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opened a paint factory in cooperation with two British firms, and also a tin can factory for packaging its products. By 1965 ICA was producing soap under the Lux, Lifebuoy and Vinolia brand names. That same year it started an ice cream plant with the British Mica Ice Cream firm, and a plant turning out Sunsilk shampoo, Pear's baby powder, Erasmic shaving cream and Pepsodent and Signal toothpaste. In its first decade of operations ICA's turnover increased five times to $3.2 million a year.

In addition to all its other ventures, ICA owns 51 percent of the Confectionery & Chocolates Co. near Amman's international airport, a firm capitalized at $500,000, of which $135,000 is in government-owned shares. Back at Hussein Industrial City in Ruseifa work has begun on new plants to produce cardboard boxes and oriental carpets.

Another major firm is United Industries, which makes wet batteries used in vehicles and army radios. Beginning operations in 1960, its founders soon discovered how difficult it was to maintain a competitive position while relying on imports. Today its battery containers are made primarily from old, worn-out tires, which are processed on the premises. The lead that goes into the batteries themselves is now made locally from scrap.

With a capital of $750,000, United Industries employs 308 workers and produces about 400 batteries a day. The firm's manager, Fakhri Hijazi, says that even now his plant is meeting domestic needs, and about two-thirds of its business is in exports to other Arab countries, either of containers or entire batteries.

But Jordan's more immediate, and surely more exciting, projects involve the use of its limited natural resources.

This is the business of the National Planning Council, formed in 1973 and assigned as its primary mission the implementation of the Three Year Plan. Headed by Dr. Khalil Salem, former governor of the Central Bank, the NPC plans specific projects, carries out feasibility studies, often with foreign assistance, and searches for financing.

Rajih Amin, a young chemical engineer who serves as director of the Industrial Sector for the NPC, spoke recently of the three top priority industrial enterprises being carried out under the plan—the fertilizer, ceramics and glass projects, all of which make use of resources found within the country.

The fertilizer project seems to be on everyone's mind in Jordan, possibly because for so long phosphates have been the country's only exploited mineral resource —apart from sand and lime for concrete— and have been mined exclusively for export. Now Jordan has signed an agreement with the French firm Rhon Progil and Anglo-American International Systems and Controls to build a $40-million chemical fertilizers plant with an initial capacity of 400,000 tons per year. Press reports say it should be finished within about two years, with 90 percent of production being exported. It should provide about 400 new jobs.

The Jordan Ceramics Co., already formed

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as a private firm capitalized at $1.9 million, of which the government's share is $60,000, will probably be constructed near the cement plant, where there is a good supply of clay that a new mining company will exploit, Mr. Amin says. He predicts that before the Three Year Plan has run its course, the plant will be completed, at a cost of $5.8 million, operating with a work force of 200, producing 6,000 tons annually of wall tiles and sanitary fixtures.

The sheet glass plant will be located south of Ma'an, a desert station on the north-south railway line in an area where new underground water supplies are being exploited and, equally important, an area where there are huge quantities of the sort of sand suited to glass making. Except for a few small workshop operations, glass making is another entirely new industry for Jordan. The plant, Mr. Amin says, will cost $2.5 million, will employ 100 workers, and will be designed for a capacity of 10,000 tons of high quality sheet glass a year.

In order to supply the raw materials for the ceramics and glass projects, a new mining company, whose name has not yet been chosen, is being set up. It is to be owned 51 percent by the government, the rest of the shares being available to the private sector. The new company will be responsible for exploiting the country's clay, sand and lime, which will be sold to manufacturers in different qualities according to specification for use in ceramics, glass and building materials. As for other natural resources —shale oil and copper—studies have not been encouraging. Only potash, extracted from the Dead Sea, promises profits but since 1967, when Israel occupied half of the Dead Sea shoreline, the Arab Potash Co., a potentially large earner of foreign exchange, has not been operating.

Still, using Jordan's own resources to further its industrialization is but one facet of the economy. And under the Three Year Plan all aspects are being considered, as King Hussein made clear in his speech opening the conference that inaugurated the plan.

"We do not think that any abstract model of an economic system, whether it is capitalism or socialism or communism or otherwise, could solve all our problems. Hence, we intend to be selective rather than move in a groove. We will be free to choose the most effective principle or practice which would apply to the Jordanian scene."

The King's young brother and heir, H.R.H. Crown Prince Hassan, to whom the Royal Scientific Society is directly responsible and to whom credit for the Three Year Plan was given, spoke of it as "a turning point along the path of development and progress."

"It aims," he told the representatives of 26 governments and 18 international organizations, plus numerous foreign private investors who attended the conference, "at reactivating economic conditions and resuming the developmental momentum Jordan experienced prior to the events of June 1967."

The RSS, which formulated the plan, was set up in the spring of 1969 by the King, who brought together a handful of economists and people prominent in politics in a small office in downtown Amman. Six months later he turned its direction over to Prince Hassan who, as Sharif Zeid tells it, "was fed up with Arabs depending on fate rather than action." The RSS, which now has a full-time staff of 220 persons, 80 percent of whom are highly qualified academic and technical experts, occupies a complex of modern buildings, some still under construction, on a hill in Amman's Jubeila suburb. Not only does it set the nation's goals, it keeps track of all significant development projects in the country, making use of its three computers—an IBM 11-30, an IBM 360-20 and an IBM 370-145—one of the most sophisticated computer centers in the Arab world.

The RSS works on specific projects as well as long-range, grandiose plans. As an example, Sharif Zeid points to a recent study made on the feasibility of producing walkie-talkie radio sets in Jordan. The RSS, he says, has found a way to produce a set, which costs $1,500 when imported, for only $700, and he predicts it will be in production soon.

"We don't have the money you find in some Arab countries," the Sharif says. "If we want something we cannot turn to oil to get the financing. We must work harder."

The RSS makes certain that Prince Hassan and the King know exactly how much work is being done. One of its major current programs is the computerizing of its POSIC (Project Operation Status Information Center) data bank which already keeps track of some 400 projects, ranging from highway improvement to the construction of schools and clinics to new manufacturing plants. Daily reports are fed into POSIC, and it is possible to see at a glance whether any given project is on time, how much money has been spent, how many workers are on the job and how many are sick, where and how each engineer is spending that particular day, where each piece of equipment, such as a tractor, is located and how it is functioning.

Other current RSS programs include the establishment of testing laboratories, the formulation of quality controls, the development of tax systems and research on solar energy devices.

Another key to the plan is Jordan's Industrial Development Bank, established in 1965 with a capital of $7.6 million to provide medium and long-term financing to industrial and touristic enterprises. In 1972 Jordan had nine banking houses with 64 offices and branches but, as in much of the Arab world, most suffer from an excess of liquidity because of a lack of guarantees for

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Control room at Jordan Cement Factories monitors annual production of 500,000 tons (1). Phosphates mined at Ruseifa are moved by conveyor belt to crushers and kilns (2 and 3) then trucked to Aqaba and loaded on ships (4). Chocolate candy (5) and automobile batteries (6) are among Jordan's light industries. A new railway spur will serve the port of Aqaba (7).

medium and long-term investment. The Industrial Development Bank, with the backing of the Central Bank, can make such guarantees. It provides a channel for private funds. Six of the nine members of its board of directors are from the private sector, including commercial banks.

The Development Bank's general manager, Ziyad Annab, says that before the loss of the West Bank Holy Land sites to Israeli occupation in 1967, close to half of its financing was for touristic enterprises; recently it has concentrated almost exclusively on industrial undertakings. It frequently works in conjunction with the World Bank and the Kuwait Fund.

Among industries which have received loans from the Development Bank recently, Mr. Annab says, are those making nails, pins and clips, cement products, dry batteries, aluminum kitchen utensils and textiles. All are relatively small in scale, but might not be able to exist without the bank.

Of equal concern now to Mr. Annab is that tourism is once more on the move in Jordan, up 17 percent in 1973. Ali Ghandour, chairman of the Royal Jordanian Airline, Alia, has announced a drive to entice Holy Land tourists to fly first to Amman and then drive to Jerusalem, Bethlehem and other sites. Meanwhile, for the first time since 1967, the Development Bank is as heavily involved with touristic projects as with industrial ones. Ground has been broken for two American-franchised Holiday Inns, one in Amman, with 200 rooms, and another on the beach at Aqaba, with 110 rooms. (*Aramco World*, Nov.-Dec., 1973). Amman's Hotel Jordan Inter-Continental, which is also Jordanian owned and opened in 1964, is completing a 100-room addition to its 130-room main section. The Development Bank was involved in financing all three of these American-style hotels.

Another part of the plan calls for the creation of a hotel school, probably in Aqaba, and new training facilities for workers in various skilled and semi-skilled industrial positions. The Chamber of Industry's Ali Dajani, who was at one time assistant commissioner of commerce and industry in Palestine, and later minister of transport in Jordan, talks of these schools as part of a new infrastructure creating a favorable climate for new industry.

According to Mr. Dajani, it is definite that at some point in 1975 the entire country will be linked by a national electricity grid. To Mr. Dajani, this means increasing industrial development, both small-scale and large-scale, outside the Amman-Zarqa area. A major facility for harnessing power, as well as providing water to irrigate some 12,000 acres in the Jordan Valley, will be the King Talal Dam on the blue-gray Zarqa River, currently under construction with Yugoslav engineers assisting at the scene. The Kuwait Fund has put $15 million into the dam and the Abu Dhabi Fund, $5 million. When completed this year the reservoir will store some 1.8 billion cubic feet of water which previously flowed unused into the Dead Sea.

Among other major projects are the $42-million, 72-mile railway spur in the south which is being built under the supervision of West German engineers to connect the Hijaz Railway, built at the turn of the century to take Muslim pilgrims from Damascus to the holy city of Medina in what is now Saudi Arabia, with the port at Aqaba. The volume of trade passing through Aqaba rose by 83 percent in 1972 and the new rail link should not only facilitate the export of phosphates to Asia and Africa (about 700,000 tons in 1972) but also, according to Mohammad Raja Qaseini, deputy director of the railroad, make possible air-conditioned tourist trains from Amman or even Damascus. Aqaba has had a modern international airport since 1972.

Another infrastructure project is the $6-million U.S.-assisted internal telephone improvement scheme. Already, Jordan has superior international telephone service: calls from the capital are relayed to Europe and America via a Japanese-built satellite tracking station north of Amman. Back in 1969, Jordanian television viewers enjoyed live coverage of the first manned moon landing.

The World Bank recently increased its project loans to $30 million, including formal agreements for an $8.7-million water and sewage system for Amman, and a steam-electric power plant at Zarqa, to which the World Bank and the Kuwait Fund are each lending more than $10 million. West Germany is financing design work for a planned new international airport for Amman.

For fiscal 1974, U.S. AID includes $65 million as direct support to the government's budget, plus another $10 million in development loans, including the improvement of highways, and another $1.1 million for technical assistance, including a number of feasibility studies. England is contributing about $25 million to the Three Year Plan, and the United Nations Development Program (UNDP) about $15 million.

Since the 1972 conference that presented the Three Year Plan to the world almost all of Jordan's foreign aid donors have increased their grants and loans. In its recent commercial reports on Jordan, the U.S. Embassy has been speaking of the ever more favorable climate for foreign investment in the kingdom. Numerous incentives and guarantees are given to foreigners, and also to expatriate Jordanians, under the recently amended 1971 Encouragement of Investment Law. A number of American firms, including the Singer Sewing Machine Co. and the National Cash Register Co., maintain offices in Amman. Probably more significant is the fact that permanent offices have been set up by American consulting engineers such as Miller-Warden Western Inc. of Cambridge, Mass., which is studying the improvement of the road from Zarqa to Jerusalem, and the De Leuw Cather Corp. of Chicago which is supervising construction of a road from Zarqa to Amman now 70 percent finished. The Federal Electricity Corp., a subsidiary of the multi-national ITT, is at work on the telephone system, setting up direct dialing between Amman, Zarqa and Irbid at the country's northern tip, and a new radio link with Aqaba in the extreme south.

Ismail Dajani, economic and commercial adviser at the U.S. Embassy, sees Amman as a natural industrial and commercial center, and says he is certain "the maximum of the Three Year Plan will go through, and if there is a peace settlement in the region Jordan is a country that will boom." Mr. Dajani, a man who obviously enjoys turning a phrase, points to the sudden influx of money from abroad and says "if peace comes, the world will see Jordanians as the people who turn sand into flowers."

Frederick King Poole, an ex-UPI correspondent turned novelist, free-lances from Beirut and struggles to finish his second novel.

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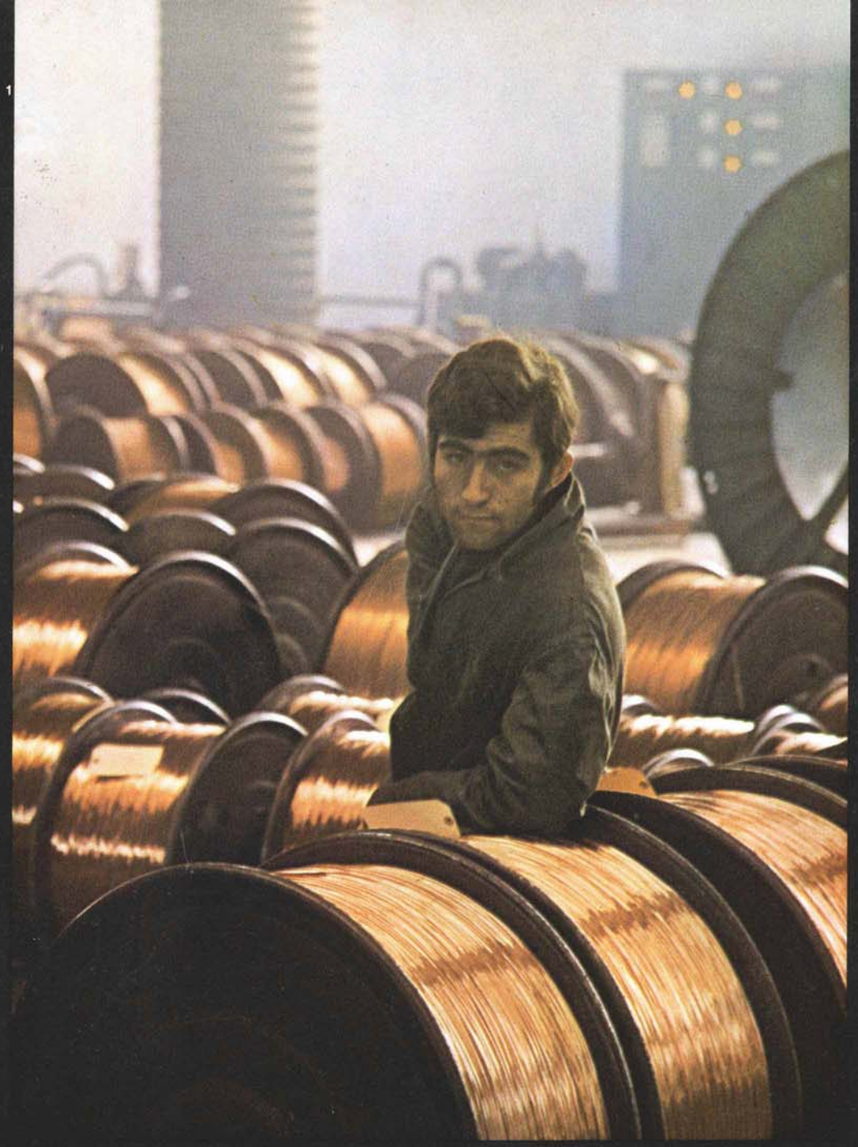

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Made in the Arab East: copper cable in Lebanon (1); modern plastic products in Saudi Arabia (2); furniture in Lebanon (3); refrigerators in Lebanon (4); paint in Saudi Arabia (5); packaged meats in Saudi Arabia (6) and glass in Syria (7). Rear Cover: Burnett Moody photographed the firey sinews of Saudi Arabian industry at Jiddah's modern steel rolling mill.

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