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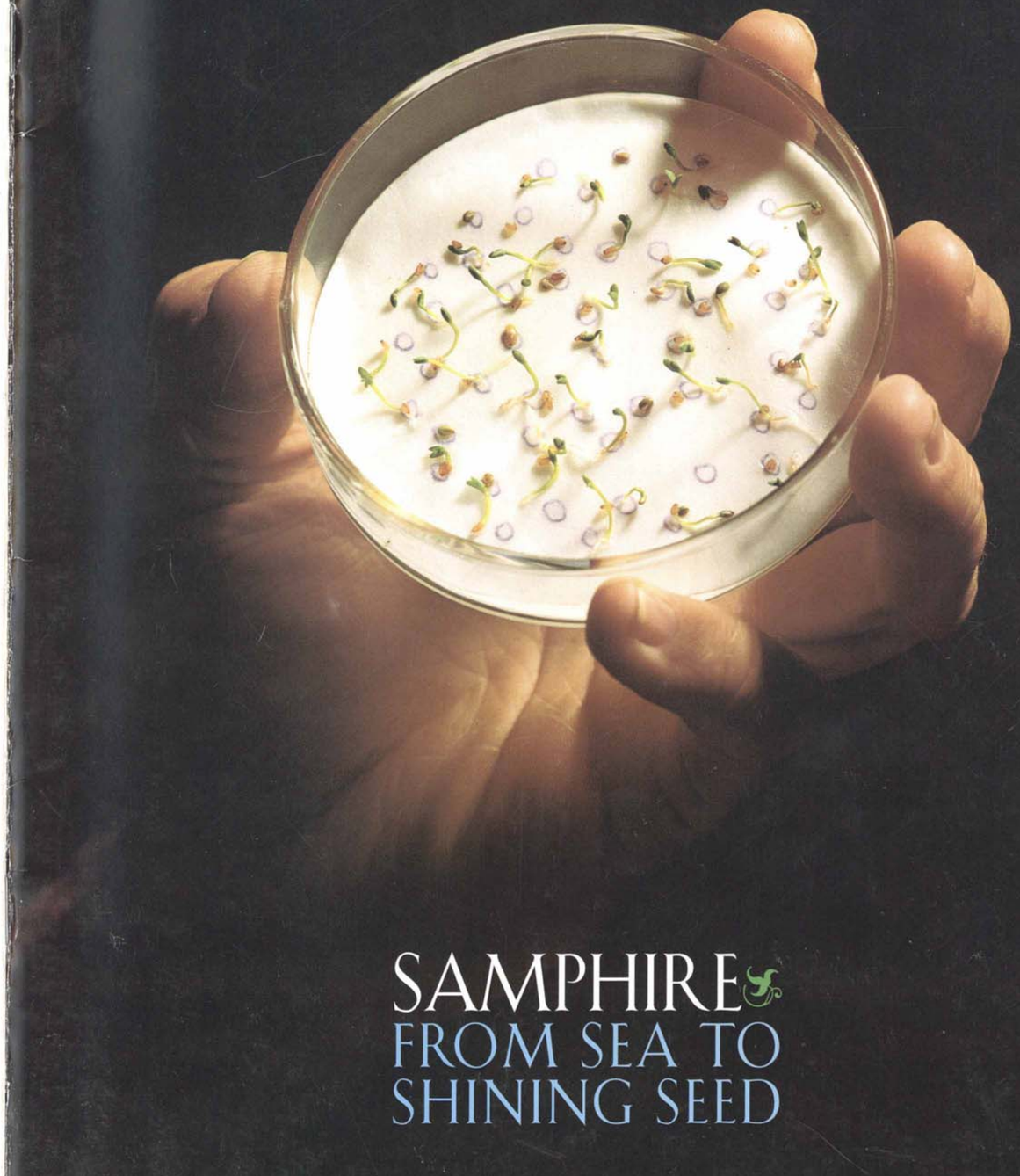
NOVEMBER-DECEMBER 1994



SAMPHIRE
FROM SEA TO SHINING SEED

Published by
Aramco Services Company
9009 West Loop South
Houston, Texas 77096, USA

ISSN 1044-1891

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DESIGN AND PRODUCTION
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PRINTED IN THE USA
Gulf Printing

Saudi Aramco, the oil company born as a bold international enterprise more than half a century ago, distributes *Aramco World* to increase cross-cultural understanding. The magazine's goal is to broaden knowledge of the culture of the Arab and Muslim worlds and the history, geography and economy of Saudi Arabia. *Aramco World* is distributed without charge, upon request, to a limited number of interested readers.

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Box 469008
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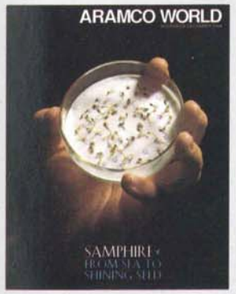

Cover: Samphire seed samples sprout in a petri dish at Ras al-Zawr. The germination percentage in the laboratory will determine the seeding density used in planting the crop, the first on a commercial scale to be irrigated entirely with seawater. Photo: Adrian Waine. Back cover: Khalili Collection ceramics include a Persian flask decorated with birds and Chinese-style clouds, a ewer from Kashan and a molded bowl from Afghanistan. Photo: Christopher Phillips.

◀ The great *flamenco* Sabicas combined artistry with technical brilliance. Photo: Elke Stolzenberg

ARAMCO WORLD

VOL. 45 NO. 6 PUBLISHED BIMONTHLY NOVEMBER-DECEMBER 1994


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SAMPHIRE FROM SEA TO SHINING SEED

Success with the samphire plant could add a new dimension to agriculture, helping to meet the needs of people and livestock in some of the driest, saltiest regions of the globe

Written by Arthur Clark
Photographs by Adrian Waine

A green-minded Saudi prince, a visionary Chicago stockyard magnate and a 20-year-old Nebraska lad are among a group of pioneers whose recent success in the Saudi desert may have enormous implications for the Earth's supplies of food and feed.

The three have been involved in a bold experiment at Ras al-Zawr, on Saudi Arabia's northeastern desert coast, to grow the first commercial-sized crop of samphire—the first extensive crop of any kind ever irrigated entirely with seawater.

Outside gourmet circles, where it is treasured as a salad green and a tasty vegetable, few people have heard of samphire. And it is not for its salty crunch that *Salicornia bigelovii* Torr.—the scientific name of the variety at Ras al-Zawr—is being cultivated. Rather, it is because the salt-loving plant contains more and better edible oil than soybeans, produces valuable animal feed as a by-product, and grows where little else will.

The Ras al-Zawr project belongs to the Arabian Saline Water Technology Company, known as Behar and owned by 20 Saudi investors. *Behar* means "seas" in Arabic, appropriate enough at a farm where giant pivot-irrigation arms sprayed seawater pumped straight from the Arabian Gulf to produce the initial *Salicornia* crop in five 50-hectare (123-acre) circles.

Success with samphire could add a new dimension to agriculture, helping to meet the needs of people and livestock in some of the driest, saltiest regions of the globe, say scientists who have studied the plant. Big *Salicornia* crops might even underpin the construction of "Venice-like" cities for millions of people in some of the poorest parts of the planet. And the crops, fed by canals running through those cities, could help counter the global greenhouse effect by absorbing large amounts of carbon dioxide from the air.

Fulfilling that "field of dreams" scenario probably lies far in the future, however. Today, a team of Saudi and US agricultural experts works to turn this year's technical success with samphire into a viable commercial project.

Salicornia is important to Saudi Arabia because it offers "a strategic source of vegetable oil and agricultural support products like fodder and meal," says Dr. Adil Bushnak, Behar's chairman. Saudi Arabia now imports more than $1 billion worth of vegetable oil annually for cooking purposes, and neighboring countries' imports are even greater, so large domestic harvests could provide considerable economic benefits.

What makes this variety of samphire so special is the quantity, and the high quality, of the oil it yields. The oil content of the plant's seeds is about 30 percent of its total weight—compared with 17 to 20 percent for the soybean, according to tests by the University of Arizona's Environmental Research Laboratory (ERL) in Tucson, which has spearheaded *Salicornia* development. *Salicornia* oil also contains 72 percent linoleic acid—a healthy polyunsaturated fat. That's close to the level found in safflower oil, and more than twice that of oil from soybeans.

Saudi Arabia and other countries in the region also have important poultry and livestock operations which could benefit from a price-competitive, homegrown supply of food. *Salicornia* produces a hefty amount of green matter, say researchers, suitable for exactly that.

Judging by test plantings, *Salicornia* has the potential to break into the market on the basis of oilseed production alone. Yield from portions of a two-hectare (five-acre) field at Jubail Industrial City, 60 kilometers (37 miles) south of the current project, reached as high as 3.5 tons per hectare, or 70 bushels per acre. That's roughly equal to the top yield for soybeans in Cedar County, Iowa, which has some of the richest farmland in the world.

Average output from the 250-hectare (615-acre) farm at Ras al-Zawr hasn't been so high. Although parts of the farm surpassed the goal of 10 tons of forage and one metric ton of seed per hectare—equal to 50 bushels of seed per acre—overall seed yield was lower than originally planned. The crop was planted in October and November 1993 and harvested last September.

The overall message from the 1994 harvest is a good one, though, and the lessons learned in the first year can provide the keys to better production next season; interest in the crop is picking up in other countries the region, too.

The most important result of the first Ras az-Zawr planting was proof that *Salicornia* can be cultivated successfully on a commercial scale in Saudi Arabia, says Bushnak. "Now we want to do it competitively."

"We've achieved several targets so far: crop data, experience and other information," he adds. "We feel we learned a lot to push the thing forward." Next year, Bushnak says, the focus on research and development will be intensified and the acreage reduced; thereafter, based on yields, the acreage planted will multiply.

Behar's shareholders obviously have high hopes: They have plowed the equivalent of $6.7 million into the first crop of samphire, and Bushnak expects costs to run about half that for the next two seasons. The major shareholder in the company is the Jiddah-based food-processing giant Savola, which helped fund the ERL's *Salicornia* development effort in the mid-1980's.

Salicornia is a member of the halophyte (literally "salt plant") family, and Halophyte Enterprises Inc. (HEI), based in Phoenix, Arizona, is managing the project for Behar. The Phoenix firm, of which Behar owns 27 percent,

Above: *Salicornia bigelovii*, producer of oilseed, animal feed and succulent salads. Inset, opposite: Soil scientist Dr. Abdullah al-Saeedi and plant disease and pest specialist Dr. 'Ali Magboul of King Faysal University gather plant material and soil from a sprouted *Salicornia* field at Ras al-Zawr for study.

was established to commercialize the *Salicornia* production technology developed by the ERL in work that received key backing from William Wood Prince, who once headed the Chicago Union Stock Yards.

Included among HEI's squad of agricultural experts from the US Midwest, Southwest and West was Jamie Meyer, 20, from a farm near tiny Randolph, Nebraska. The ERL was represented by one of its senior staff members associated with the *Salicornia* development effort, Dr. James Riley.

Behar's optimal cultivation target for Ras al-Zawr is 4,500 hectares (11,120 acres), consisting of 90 pivot-irrigation circles, each 800 meters (half a mile) across. If the plant takes firm root, however, circles of *Salicornia* could one day cover up to 200,000 hectares (494,200 acres) along both coasts of Saudi Arabia, providing up to 120 million kilograms (34 million US gallons) of vegetable oil a year, according to a project feasibility study.

Bushnak notes that, to achieve that goal, other farmers around the country would have to take up cultivation of the new crop. "No single company can do that on its own," he says.

"We're really learning how to produce *Salicornia* on a large scale and then selling the knowledge to other farmers. What I'd like to see," Bushnak adds, "is a developing local industry where Behar is the catalyst."

That may happen beyond Saudi Arabia's borders as well, as the lessons being learned on the Gulf coast start paying off elsewhere. HEI is starting projects this year in the states of Gujarat and Rajasthan, in northwestern India, that are ultimately targeted to cover 100,000 hectares (247,100 acres). The initial test-research work will cover 250 hectares.

"We're looking for cross-pollination between the [Saudi and Indian] projects in terms of sharing technology and expertise," explains HEI's Ras al-Zawr project manager, Daniel Murphy, who will also ramrod the Indian effort.

"The fact that we have a Saudi project that has shown that *Salicornia* can be successfully grown in large areas had an impact" in arranging the Indian project, he says. "Additional inquiries have been received from Egypt, Syria and Iran."

A high-profile role in agriculture would be a switch for a plant that—until recently—was not even a wallflower in the farming world. The ERL plucked samphire from obscurity in work begun in the mid-1970's to collect and study halophytes as potential food sources. In a worldwide dragnet, researchers collected some 800 halophytes from seasides as well as from inland areas with brackish water and salty soil. But *Salicornia bigelovii*, culled from the coasts of the Americas, took the prize in terms of its native oilseed and green-matter productivity.

The researchers then set out to breed the plant into a potential challenger to world oilseed heavyweights such as the soybean, safflower and sunflower, in an 18-year, $20-million development effort.

Salicornia has been "selectively developed" since the early 1980's at a test farm associated with the ERL in Mexico's Sonora state, on the edge of the Gulf of California. There, seeds from only the best specimens are chosen for sowing year after year, progressively building sturdier, better-producing plants. The seed used at Ras al-Zawr was SOS-10, standing for "*Salicornia* oilseed—10th year of development."

Previously, *Salicornia* crops had been grown successfully in trial plots in the United Arab Emirates, Egypt and Kuwait, as well as at Jubail.

The plot at Jubail came courtesy of Prince 'Abd Allah ibn Faysal ibn Turki Al Sa'ud, head of the Royal Commission for Jubail and Yanbu', whose responsibility for developing those two industrial cities on the Kingdom's east and west coasts has given him a special interest in the work.

Prince 'Abd Allah's interest is motivated partly by his environmental concerns, explains Bushnak. "He sees [*Salicornia* cultivation] as a good tool to improve the environment by reducing desertification around the Jubail industrial area...and by turning the desert green."

What makes the Ras al-Zawr project unique is its use of large-scale seawater irrigation to do that job. Giant computer-controlled pivot-irrigation arms—one for each 50-hectare circle—sprayed seawater pulled in from the Gulf by three diesel pumps at a rate above 28 cubic meters (7,500 gallons) a minute. It took six and a half hours for the arms to complete one circuit, and they often kept turning around the clock.

The salt content of the water they delivered would have choked almost any other plant, for Arabian Gulf water is even saltier than most ocean water worldwide. But the *Salicornia* loved it. Indeed, at 40,000 parts per million, the Gulf water was well below the 50,000-ppm limit that *Salicornia* can tolerate without blighting.

Even so, too much salt in the root zone can kill any crop. At the farm, *Salicornia* was protected from salt buildup in the soil by overwatering to flush the salt below root level and back into the sea.

"We figured out how much to water the plants and then added 25 percent more," explains the ERL's Riley. Fifteen years of seawater irrigation at the *Salicornia* test farm in Mexico has not affected the crop, he notes.

Not only did the Arabian Gulf provide the water for the crop at Ras al-Zawr, but it also fulfilled most of its nutrient needs. All that was added was nitrogen, provided in the form of urea. Tests of the value of adding phosphorus

Above: Salicornia drinks up three times the water of crops, such as corn, irrigated with fresh water, and requires nearly a year to mature from planted seed to harvest. With seawater irrigation, however, there is never a problem of water supply, and where conditions are suitable the crop could be planted throughout the year, providing harvests at short intervals. Inset, opposite: Gordon Eberlain of US-based Halophyte Enterprises, Inc., discusses planting at Ras al-Zawr with Jamie Meyer of Nebraska.

INSET AND RIGHT: ARTHUR CLARK

as well showed some remarkable growth results.

Riley says lessons learned about irrigation and cultivation practices in 1993-94 should help produce a crop with a higher seed yield next fall.

New tactics planned for that 1994-95 season include lowering seeding density to produce fewer but bigger plants; applying phosphorus before planting to promote general crop growth; using "socks," or tubes, to carry water from the irrigation sprinkler heads directly to the ground when plants begin to pollinate; and cutting off irrigation when the largest plants reach full size, instead of waiting for the entire crop to mature.

"We know it will grow," says Riley, echoing Bushnak's words. "Now the question is: 'How can we grow it better?'"

Although 100 tons of this year's *Salicornia* crop were baled as forage for dairy herds, and Behar is exploring the possibility of air-shipping the crunchy green tips of *Salicornia* to wholesalers in France as samphire salad-makings next year, the "real value" of the project lies in oilseeds, says Bushnak. "All the focus of next season is to increase oilseed productivity."

And when might the first bottle of *Salicornia* cooking oil appear on the supermarket shelf? That's still up in the air. Behar shareholder Savola plans to have a $115-million oilseed crushing plant up and running in Jiddah by 1996. Initially, however, it will process imported soybeans.

Only when *Salicornia* cultivation reaches 10,000 hectares (about 25,000 acres) will there be enough seed to make commercial production feasible, says Dr. Muhammad Kashgari, general manager of Savola's Agro Industries Division. That's a little more than double Ras al-Zawr's maximum projected size.

In the meantime, experts inside and outside the kingdom are investigating the plant's qualities. Tests are continuing to check the quality of *Salicornia* oil for human consumption, with results to date similar to the thumbs-up it received from the University of Arizona and the Archer Daniels Midland Company in the United States, notes Kashgari.

Salicornia oil might also be used to produce pharmaceuticals and cosmetics. "It has some unique characteristics," says the Savola executive.

The plant has already proved itself as a livestock feed. *Salicornia* meal—the parts of the seed that are left after oil extraction—contains around 40 percent protein, about the same as soybean meal. Although the meal contains a natural "anti-feedant" chemical called saponin—"like a dill pickle on a hot-fudge sundae," Riley says with a grin—he notes that alfalfa also contains saponin, and that the chemical can be neutralized, without nutritional side effects, by adding cholesterol or phytosterol. The *Salicornia* meal has been used with success as a poultry-feed additive.

Salicornia straw, left after the seeds are removed, has also proved an acceptable feed source, though it is relatively high in salt and low in protein.

Feeding trials of both meal and straw are under way on lambs, goats, camels and chickens at several sites in the kingdom. Dr. Mohammed al-Dossari of the Animal Production Department at King Faysal University in Hofuf says initial results show that meal from the plant "could easily replace soybean meal" in the diets of ruminants, while *Salicornia* straw could be used in place of commonly used wheat straw.

Dr. Abdullah al-Saeedi, a soil scientist from King Faysal University who does independent research at Ras al-Zawr, says *Salicornia* offers a chance to use resources in Saudi Arabia that are otherwise wasted. "It would be a tragedy to miss this opportunity," he says, suggesting that industries use the brine produced at their facilities to grow *Salicornia*.

Nonpotable well water could also serve as an irrigation supply source for *Salicornia*, says Riley, although care would have to be taken to avoid polluting freshwater aquifers. Since much of Saudi Arabia's underground water supplies are heavily mineralized, using them this way could add substantially to the extent of potential *Salicornia* cropland.

Oasis runoff water, already used to irrigate two crops in succession, might also be used in *Salicornia* fields, Riley says. He adds that water from the giant al-Hasa Oasis on the east side of the kingdom "could be a good possibility" as an irrigation source.

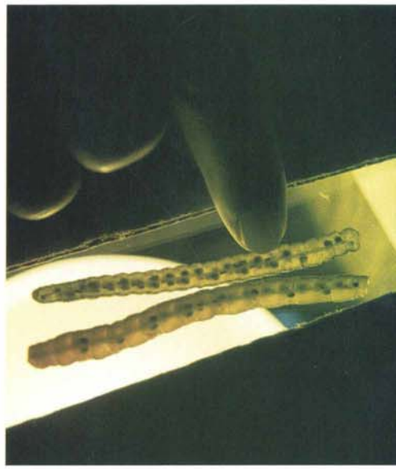
All these possibilities dovetail with official Saudi government policy. A paper on the kingdom's Sixth Development Plan (1995-2000) by the Ministry of Planning puts "the use of saline water in agriculture" high up among the technologies that would benefit the national economy.

Project backing has come from Saudi Arabia's Minister of Agriculture and Water, 'Abdul Rahman AlShaikh, as well as the Minister of Municipal and Rural Affairs, Dr. Mohamed AlShaikh, says Bushnak.

Mohamed AlShaikh is interested in Ras al-Zawr as a prototype for "seawater communities," says the Behar chief. Writing in the Swedish scientific journal *Ambio*, ERL researchers said that such communities could become homes for growing numbers of people living on or near the kingdom's coasts.

Indeed, such cities could be built all along the world's arid, subtropical coasts, wherever salty water and soil could be combined to produce *Salicornia* crops. They might provide homes for the additional 2.5 billion people worldwide—the equivalent of "200 new Cairos"—who will be living near the world's coasts by the mid-21st century, said the ERL experts.

Just since 1945, land equivalent to the combined areas of China and India has been eroded into the oceans; using seawater for agriculture could reclaim the land's lost nutrients.



Above: *Salicornia* seeds, borne in pockets in the plant's edible twiglike tips, contain half again as much oil, weight for weight, as soybeans. Opposite: seed for planting arrives at Ras al-Zawr from the Environmental Research Laboratory at Kino Bay, Mexico, where a decade of breeding, selection and study has improved the plant for commercial growers. Inset, opposite: Baled *Salicornia* straw will make its way to a local dairy for use as experimental fodder.

ADVICE TO HERBIVORES

Looking for an exciting culinary change of pace? You may have to visit London, Paris or Berkeley—or Saudi Arabia—to try it, but how about some "Shrimp on a Bed of Salicornia"?

According to HEI, the Phoenix-based company that is supplying the technical expertise for the *Salicornia* cultivation project at Ras al-Zawr, the plant was the "favorite herb" of George Washington, the first president of the United States, but has practically disappeared from American diets.

The plant is "a crunchy, slightly salty, twig-like green which grows in salt marshes," and is available for sale today only in Europe, says HEI president H. Gene Koch. Various types of *Salicornia* grow along the coasts of Saudi Arabia, notes James P. Mandaville, botanist and Saudi Aramco employee, whose book *Flora of Eastern Saudi Arabia* lists one. However, it's only eaten by camels, he says, and not often at that.

According to Koch, *Salicornia* is well known in southern France and the United Kingdom, especially East Anglia. "The French call it 'sea asparagus' and eat the little green shoots in salads," he says, while the English use it as a garnish with seafood, and call it "glasswort" or "saltwort," as well as samphire.

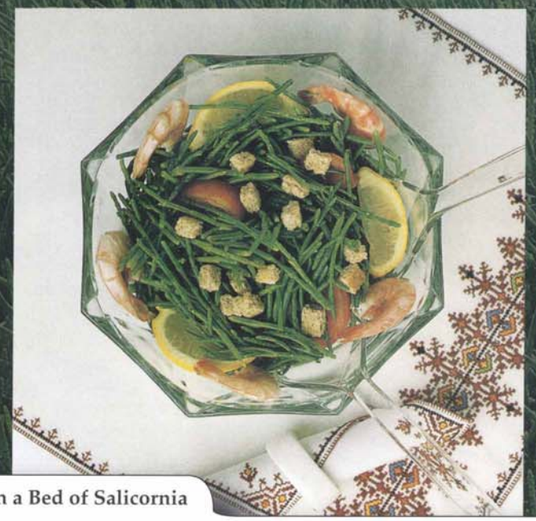
In a 1991 story about the plant, *The Economist* noted that, though it's a gourmet food today, samphire's older name in the British Isles—somewhat ironically—is "poor man's asparagus." Indeed, Sir Thomas More wrote almost 500 years ago that samphire improved "many a poor knave's pottage," affording him a relish to accompany "his mouthful of salt meat."

Today, *Salicornia*-seed vegetable oil is credited by the University of Arizona's Nutrition and Food Science Department as being a good substitute for safflower oil or butter in "sauces, salad dressings, breads and pie crusts."

Salicornia bears its seeds in pockets in its leafless bright green limbs, which look like the branches of a miniature saguaro cactus, or, as Gerard's 1597 *Herball* has it, like "a branch of corall." In *Gourmet Ingredients*, food writer Sophie Grigson describes samphire as "jointed like green coral polished smooth and shiny by the sea." When mature, the samphire variety being cultivated in Saudi Arabia stands an unimposing 50 centimeters (20 inches) tall; the British seaside variety is smaller.

But samphire's true beauty is on the palate of the beholder: Many who have sampled it say it's delicious. "It is very crunchy and salty, like brined baby string beans," writes Elizabeth Schneider in *Uncommon Fruits and Vegetables: A Commonsense Guide*. "When young, it is crisp, pleasantly deep-sea tasting, an unusual summer pleasure."

"Look for it, beg your merchant for it, then try it raw, or steam it for two minutes and add a dash of olive oil and chopped fresh basil," pants *The Silver Palate Good Times Cookbook*. "We love to use it as a bed for fish or chicken." The authors then offer the following recipe for shrimp *en papillote* on a bed of samphire.



Shrimp on a Bed of Salicornia

4 appetizer portions or 2 main-course portions

A foil packet, which when opened, reveals an entire meal artfully arranged on a bed of brightly colored salicornia. The fragrance of the vegetables, herbs, lemon juice, and butter fills the room.

- 12 large shrimp
- 2 cups salicornia, ends trimmed
- 4 ripe plum tomatoes, thinly sliced
- 6 tablespoons fresh lemon juice
- 2 large shallots, finely chopped
- 1½ tablespoons chopped fresh dill
- 1½ teaspoons dried tarragon
- Freshly ground black pepper, to taste
- 1 unwaxed large cucumber
- 2 tablespoons unsalted butter
- 1 lemon, quartered

1. Preheat oven to 400°F [200°C].
2. Remove half the shell from each shrimp, leaving the shells attached at the tail end. Devein the shrimp.
3. Center a piece of aluminum foil that is about 2½ times longer than a cookie sheet on the cookie sheet. Arrange the salicornia in a bed on the foil. Arrange the tomato slices in a round pattern in the center of the salicornia.
4. Combine the lemon juice, shallots, dill, tarragon, and pepper to taste in a medium-size bowl. Add the shrimp and toss to coat.
5. Using a melon baller, cut balls from the unpeeled cucumber so that the dark peel is on one side. Try to avoid the seeds.
6. Arrange the shrimp on top of the tomatoes, pouring any extra juice from the bowl over the shrimp. Dot evenly with the butter. Gather the ends of the foil, folding the edges together to seal the package securely.
7. Bake for 15 minutes. Serve immediately with lemon quarters.

The communities would feature canals that supported aquaculture—fish and shrimp farming—and carried seawater enriched with natural nitrogenous fertilizer—fish and shrimp wastes—to the *Salicornia* fields.

By extension, the global environment would also stand to benefit by large plantings of *Salicornia*. Just since 1945, land equivalent to the combined area of China and India has been eroded into the oceans, wrote the ERL experts; using seawater for agriculture could "reverse the flow," reclaiming the land's lost nutrients in the process.

Worldwide, the ERL researchers said, there are 130 million hectares of land (500,000 square miles), about half of it along the coasts, that would lend itself to *Salicornia* cultivation. That's about equal to the amount of land under conventional irrigation today, and includes large tracts of the desert deltas of the Nile, Colorado, Tigris and Euphrates and Indus rivers that are now too salty for crops.

This isn't just ivory-tower theorizing, says William Wood Prince, who has helped fund the ERL's research along with organizations as diverse as the Electrical Power Research Institute in California, the Rockefeller Foundation and Savola. Wood Prince estimates his own backing of the effort, through F.H. Prince & Co., "in the millions of dollars," and says it is money well spent.

Now in his 80's and long retired, Wood Prince is no stranger to enterprises of global dimensions. In the early 1950's, for example, he lined up the corporate coalition that developed the first liquefied-natural-gas tanker. He has just as vigorously promoted the *Salicornia* project, but this time because it has the potential to help some of the world's neediest people, he says.

"There is less land for crops [these days], not more; we can't increase [traditional] cropland. That suggests to us that we've got to use seawater to support a growing world population," he says.

Although top-of-the-line commercial pivot-irrigation systems and farm machinery are being used at Ras al-Zawr, *Salicornia* has also been grown successfully using labor-intensive techniques like flood irrigation, which means that it could also benefit farmers and consumers in lower-income countries.

"On the coast of Africa, in Somalia in particular, there's a lot of land suitable for production," says Wood Prince, adding that *Salicornia* could help nomads whose cattle herds have been particularly hard hit by recent droughts.

He, too, highlights the potential that *Salicornia* has for bettering the environment.

"We hope to make a great contribution [in remedying] the carbon dioxide problems of the world," he says. "We hope that over the years several hundred thousand acres of *Salicornia* could have a very important effect throughout the world. *Salicornia* is more than just commercial. We think it will have tremendous benefits for civilization."

Those are lofty goals. But right now success in the samphire fields lies in the hands of the pioneers at Ras al-Zawr, where the team handling day-to-day chores has faced a number of new, sometimes novel, problems in raising the first crop—as do pioneers anywhere.

Tiny crabs and squid sucked into the sophisticated irrigation system from the sea have gummed up spray nozzles, while the difficulties caused by pumping large volumes of seawater through a system originally engineered for fresh have also been vexing.

The weather has caused headaches, too. In November 1993, winds blew 60 to 70 kilometers per hour (40-50 mph) for 24 hours, kicking up a sandstorm that mowed down newly emerged plants. The solution? Bigger and better-placed sand berms to deflect the winds, and improved management practices to ensure that the crop is well established before autumn storms hit.

The mood is upbeat at Ras al-Zawr, in spite of the difficulties.

"We think it's been a real success," says the ERL's Riley. "We're on a learning curve...and some things you learn by doing."

"I'm optimistic," adds HEI Project Manager Murphy. "This first year has given us the opportunity to study what we need to do to become a commercial enterprise."

For at least one member of the Ras al-Zawr team, however, the project to cultivate samphire has already paid off. Jamie Meyer, the Nebraska college student who worked on the farm for several months and returned to school before the harvest, says that wrestling with new problems and—most important—taking big steps toward producing a crop that might benefit the world made his work worthwhile.

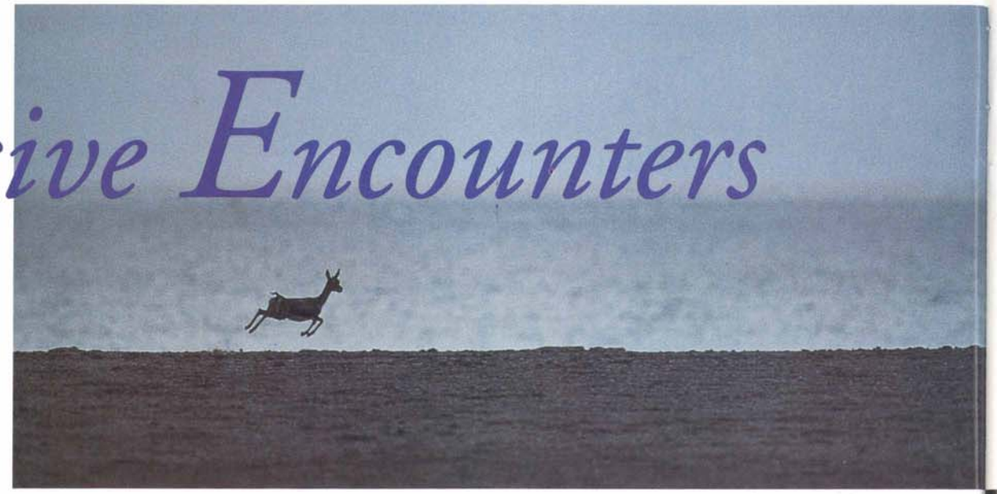
"It's not every day that a boy from a town of 900 gets to make history," he says.

Arthur Clark, a staff writer for Saudi Aramco in Dhahran, is an occasional consumer of samphire salads, and has followed the Ras al-Zawr project for the last two years.

JAMES RILEY

Above: Placing the 50-hectare (123-acre) pivot-irrigation circles at Ras al-Zawr near the coastline allows the seawater to percolate efficiently down through the sand after irrigation, and from there to seep back into the Gulf. Inset, opposite: *Becs fins* in France may soon be tasting air-shipped Saudi samphire, "crisp and pleasantly deep-sea tasting."

Elusive Encounters



Gazelles of the Farasan Islands

Written by Khushal Habibi
Photographed by Bruno Pambour/NCWCD

It was just before dawn on the salt flat, but already the damp heat was oppressive. Small shrubs broke the horizon. Here, in the center of the habitat of the largest known population of wild mountain gazelles in Saudi Arabia, on the southern Red Sea island of Farasan, I looked out at an expanse of unmoving grass, bushes and rocks.

I had known the Farasan gazelle would be elusive at best. The latest estimate puts their numbers on this island at only 1000 individuals. No one is sure how they got here in the first place, 50 kilometers (30 miles) off Saudi Arabia's southwestern coast in the Red Sea. Residents claim fishermen from the mainland brought them several hundred years ago and confined them in corrals of rocks; some escaped and established the wild population. Another hypothesis is that the gazelles have lived here ever since the last Ice Age, when the island was probably linked to the mainland. This latter theory is preferable, in my opinion, because the physiological changes that distinguish the Farasan gazelle from the mainland mountain gazelle could not have come about in just a few hundred years.

There were plenty of signs of gazelles that dawn, but it took an hour of stalking among the rough, sharp coral rocks and low ravines before a bush seemed to rustle. A male gazelle—the males' horns are larger than the females'—stotted gracefully out from his bedding site. I held still in fear that too much of a fright might cause him to break one of his fragile-looking legs as he hopped among the knee-high rocks, but these animals have lived here long enough to have adapted well: He ran with stunning agility. I saw no more until dusk, as the gazelles wisely kept out of the day's heat in the slightly cooler and sparsely verdant protection of the low ravines.

Millions of years ago, geological upheavals in what is now the Red Sea caused salt domes to push up existing coral reefs until they became the Farasan archipelago. Until recently, local fishermen were the only permanent human inhabitants of the largest island, Farasan. Since most of the island's surface is composed of limestone rock, and rainfall averages less than 10 centimeters (4") a year, the land is ill-suited for agriculture. Nevertheless, soil accumulates in the ravines, and some residents nurse crops in rare, irregular patches.

The pattern of rainfall is far better suited to the gazelle population. Although heavy rain may cause flash floods in one part of the island, areas only a few hundred meters away can remain dry. A sudden, local outburst of annual flowers and grasses will follow the rain, but within days or weeks the green carpet dries and dies under the blistering sun. Water not absorbed into the ground runs into the ravines and supports the island's sparse permanent flora. It is this vegetation that supports the gazelles.

Recent studies of skull measurements of the Farasan gazelle, formerly thought to be a unique species, indicate that although they are smaller—a typical trait of an isolated population—they are actually a subspecies of the *idmi*, the mountain gazelle (*Gazella gazella*) that lives among the western mountains of the Arabian Peninsula and eastward into the mountains and plains of Oman. Several other subspecies have been identified, from the grey-brown Palestinian mountain gazelle of the northern Arabian Peninsula to the reddish cora gazelle of the south.

The Farasan gazelle has a red-grey coat, and its facial markings and flank stripes closely resemble those of the mainland mountain gazelles. A prominent dark nose spot marks the gazelles of Farasan Island, but those of nearby, uninhabited Zufaf Island have a white nose spot.

The Farasan gazelle is a territorial species, not a gregarious one. By marking their borders with dung and urine, dominant males establish individual territories in a site with sufficient vegetation, and strive to drive other males away. Males probably stay in their respective areas throughout the year, unless they are forcibly dislodged.

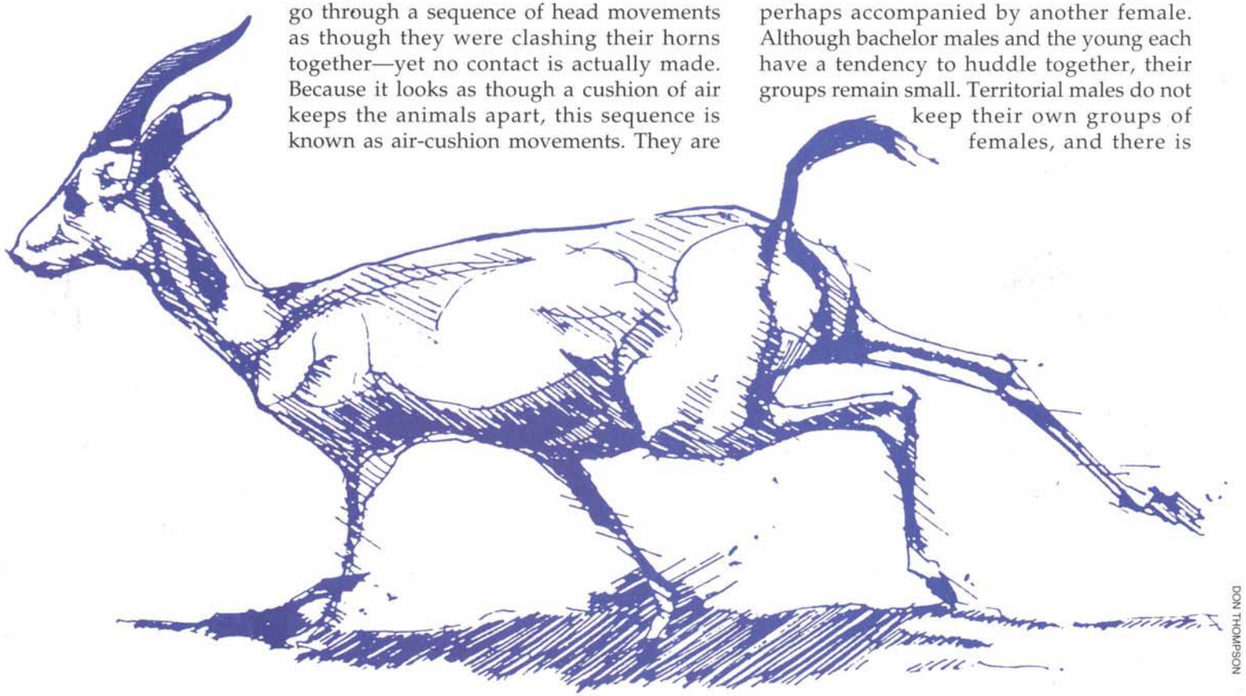
When an intruding, competitor male

Zufaf Island gazelles, like this female, show a white nose spot.

A male Farasan gazelle, interrupted while grazing. At left, an osprey (Pandion haliaetus) *shares the island.*

appears, the territorial gazelle will first walk toward his rival with neck muscles bulging and head held stiffly in the air. Sometimes he will break into a threat-charge. Usually such behavior effectively scares off the intruder, but if the adversary is persistent, a mock battle may ensue. The rivals face each other and go through a sequence of head movements as though they were clashing their horns together—yet no contact is actually made. Because it looks as though a cushion of air keeps the animals apart, this sequence is known as air-cushion movements. They are followed—if necessary—by actual horn clashes, pushing and shoving until one animal or the other gives up, and the territory is either maintained or changes owners.

The mountain gazelle is also a solitary species; the few small groups of gazelles usually consist of a mother and her offspring, perhaps accompanied by another female. Although bachelor males and the young each have a tendency to huddle together, their groups remain small. Territorial males do not keep their own groups of females, and there is

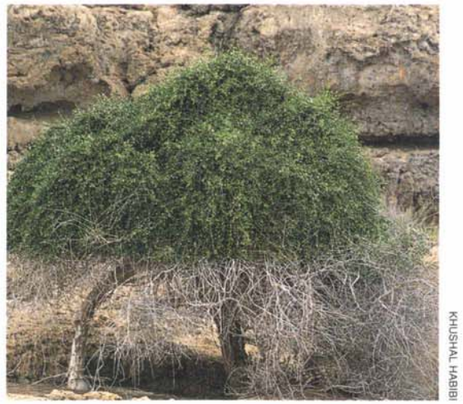


DON THOMPSON

no fixed mating season; rather, courtship takes place throughout the year, whenever a female enters the territory of a male. If the female is receptive, mating takes place; if she is not, there is a chase in which the lighter, more agile female has the advantage.

After six months of gestation, the lambs are born in secluded spots, usually in thickets among rocks in ravines. The mother leaves the newborn alone when it is only a few hours old, and visits it several times a day to nurse it. When in danger, the lamb holds its head low to the ground and flattens its huge ears against its neck to make its outline as inconspicuous as possible, although its coloring makes it nearly invisible anyway. The mother always exercises great caution approaching the lamb's hiding place, to avoid revealing the spot to watching predators.

Young gazelles stay close to their mothers until they are about eight weeks old. Somewhat older males start to gather in small



KHUSHAL HABIBI

Trees on the islands often show distinct browse lines at the maximum height the gazelles can reach.

A male and a female gazelle on Farasan Island. At right, the ranges of sooty gulls and white-eyed gulls (Larus hemprichii *and* L. leucophthalmus) *overlap on the archipelago.*

groups preoccupied with feeding and ritualized patterns of fighting, including head-butting, chasing and leaping in the air. This is the prelude to the establishment of a hierarchy in which the dominant males will be recognized by their cohorts later in life—a pattern of behavior that minimizes the damage done in the sometimes bloody competition for females.

Just what the gazelles eat, and when, is still not entirely clear. Patterns of tracks near clumps of vegetation suggest they browse on some plants while neglecting others; this selectivity is vital to survival, for their water requirements are met entirely by the vegetation. The islands have no sources of permanent surface water. Earlier, it was believed that the gazelles drank seawater, but lately it has been found that salty water upsets their digestive systems.

The island of Zufaf is smaller than Farasan, mostly hilly, with a number of dry *wadis*, or stream beds, and a large plain in its southern part. It supports a population of perhaps 200 gazelles, although the large number of carcasses found by biologists indicates that even this small population may have experienced a crash in recent years. Fishermen who regularly visit Zufaf from Farasan told me that the animals most likely died, in their opinion, during the drought and exceptional heat of the summer of 1986. Some plant species also show browse lines at the limits of the gazelles' reach, indicating that past populations may have been larger. The gazelles on Zufaf are somewhat easier to

observe than on Farasan, because in feeding, all but the territorial males use the open plain daily.

At first the coral-rock plain of Zufaf looks barren, but on a closer look I found the prickly herb *Blepharis ciliaris* and several grass species abundant in the runnels. Here, gazelles arrive in the early morning and feed on the herb intermittently until noon. In the afternoon heat, most of them retreat to the security of the low hills, where they find shady bedding sites under shrubs and bushes. Near evening, they repeat the long journey to the plain. Though the gazelles also eat more than a dozen other varieties of shrubs and grasses, *Blepharis* seem to be their favorite food. They eat the prickly leaves without difficulty, a skill likely developed in response to the plant's high water and protein content.

Although humans may not have first

KHUSHAL HABIBI

Cryptic coloration, motionlessness and a hiding place in a thicket among rocks keep a big-eared gazelle lamb secure. Above, females are very cautious when approaching their lambs' hiding places. At left, a pink-backed pelican (Pelicanus rufescens) *flies overhead.*

introduced the mountain gazelles to the Farasan archipelago, it is now the human presence that threatens their well-being, and indeed their very survival. On Farasan Island and the adjacent Sajid Island, the gazelles now compete increasingly with domestic livestock. Because the goats and camels are allowed to range free, they congregate where the most food is available, increasing competition and damaging the fragile plant life in the ravines. The gazelles on Farasan have

A mature male gazelle in the territory he maintains against intruders. At right, a brown booby (Sula leucogaster) *is among the islands' diving birds.*

thus retreated to the roughest terrain on the island: uplifted limestone ledges that rise, in some places, as high as 20 meters (60 feet)—terrain too harsh for domestic stock. It is here that the largest portion of the gazelle population is found, with concentrations of females and young and some territorial males.

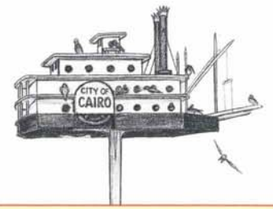
Throughout mainland Saudi Arabia, human development and overhunting have caused a loss of habitat and the depression of gazelle populations. Once-abundant herds that migrated over the desert plains until a few decades ago have now all but vanished. Of the three known species of gazelle native to the kingdom, the *'afri*, or Saudi gazelle (*Gazella saudiya*), is now extinct in the wild, the *rheem*, or sand gazelle (*Gazella subgutturosa marica*) has survived only in two reserves in the north of the country, and the mountain gazelle holds out in small pockets in the highlands of the western shield. Both surviving species are now endangered and, without strict protection, risk extinction.

Among the mountain gazelles, the Farasan gazelle (*Gazella gazella farasani*) is the largest grouping of a unique subspecies gene pool. Its isolation from the mainland has insulated the Farasan population from the decline among mainland gazelle populations. Still, in past years, trapped or hunted Farasan gazelles have been known to fetch up to 5000 riyals each on the mainland ($1300). The introduction of motorized transport, and the arrival of tourists on the archipelago in numbers now reaching 5000 to 6000 each year, has lead to harassment of the gazelles—frequently unintentional—and disruption of their feeding patterns.

In 1988, the Farasan Islands were declared a reserve by Saudi Arabia's active National Commission for Wildlife Conservation and Development (See *Aramco World*, November-December 1990). Hunting is banned, as is any approach to the animals that comes close enough to disturb them, though grazing competition continues. With the Commission's increasing emphasis on public education about the significance of wildlife as a natural resource, future generations, too, will be able to see and enjoy the gazelles of the Farasan Islands.

Dr. Khushal Habibi, a specialist consultant to the National Commission for Wildlife Conservation and Development in Riyadh, has studied Arabian gazelles for several years.

Medina, Washington



FROM LEBANON, NEW HAMPSHIRE TO BAGDAD, CALIFORNIA...

MAPPING THE MIDDLE EAST IN AMERICA

WRITTEN BY WILLIAM TRACY PAINTINGS AND DRAWINGS BY SPENCE GUERIN

In January 1981, I returned to my hometown in southern Illinois after 35 years in the Middle East. I had gone out to Saudi Arabia with my parents as a boy of 11.

Even then, I think, I understood that the names of the towns and villages in the prairie farmlands and wooded hills of my native Wabash River Valley meant something: They told us of the history and hopes of the people who had settled the region. Indians had lived there: thus Shawneetown. Then came French trappers—Vincennes, Terre Haute—followed by English and German merchants and farmers: Allendale, Darmstadt. They had dreamed of prosperity—Eldorado—and studied their Old Testaments: Palestine, New Hebron, Mount Carmel. They had planted crops—Wheatland—mined coal—Carbondale—and drilled for oil— Petrolia—that last occupation explaining how my family, much later, got to Saudi Arabia.

Now, as an adult who had lived so long overseas, I was surprised by the number of American towns I began to notice whose names struck a familiar Middle Eastern chord. On weekend trips I often found myself driving down Main Street in Lebanon, Cairo or Mecca, USA. During the next 10 years, I kept that connection in mind as I set out to explore the United States as thoroughly as I had the Middle East. In that decade I drove from coast to coast four times, each time tracing my routes on a wall map at home.

When I discovered a town with a Middle Eastern name, I marked it on my map. Often I would spot another just a finger-width away. Related names seemed to cluster along rivers or highways, or within a day's horse-and-buggy drive of a larger town. Winding through eastern Pennsylvania along Interstate 78 between Bethlehem and Lebanon, for example, I passed not too far from Nazareth, Egypt, Jordan, New Jerusalem, Bethel and Hebron. As time went by I found more and more towns and villages bearing the names of classical, biblical or Islamic sites in the Middle East, until I had marked them in all but four of the contiguous United States. The largest concentrations were in the South, but they were also well-represented in the Northeast and Midwest.

The majority, of course, seemed to have been named by religious settlers quick to turn to their Old and New Testaments for inspiration. Others may have been named by well-read frontier romantics, or idealists with classical dreams. Few or none, I suspect, were founded or even populated by Middle Eastern immigrants.

Some of the Middle Eastern names on the US map today are little more than that: names on the map. Abandoned foundations or state historical markers are sometimes the only traces of towns that were once home to the dreams of their early settlers. There's a Bagdad on the old asphalt south of Interstate 40 in California's Mojave Desert, but drifts of cream-colored sand pile against its few remaining stones. The pine woods of East Texas all but envelop an old cemetery east of US highway 59. But someone in the neighborhood—a descendent? a thoughtful farmer?—still keeps the silver paint fresh on the wrought-iron gate of the Damascus Cemetery. An old church, "Established 1811," and its graveyard are all that remain of Nineveh, Virginia, now one with the Nineveh of antiquity, the

capital of Assyria, located in present-day Iraq. In a stand of pecan trees, a Georgia Historical Commission plaque identifies the "ghost town" of Palmyra, Georgia, incorporated in 1840. "Intermittent fever [malaria] and the coming of the railroad to Albany caused its decline," the plaque reads. The original Palmyra, in Syria, was a prosperous caravan city during the Roman era.

For this article, I wrote to public libraries in 25 American towns with Middle Eastern names to ask about their origins. The replies show that, in some instances, the founders' inspiration has been clearly traced; in other cases, the connections remain obscure, or appear coincidental. Still, all in all, the local histories are miniatures of the nation's larger history.

One class of American Middle Eastern names was suggested by geography or climate. What river but the ancient Nile could rival the mighty Mississippi? So, on America's Mississippi, you have Memphis, Tennessee, named for the one-time capital of ancient Egypt. Not far upstream, at the confluence of the Mississippi and the Ohio, in a triangle of southern Illinois known locally as "Little Egypt," you find Cairo, where a careful citizen made sure I understood the name was pronounced *Care*-oh, "just like the syrup." Nearby stand the villages of Thebes and Karnak. By the same measure, in America's desert West, it was only logical for pioneers to think of names such as Bagdad, Arizona, and Mecca, California.

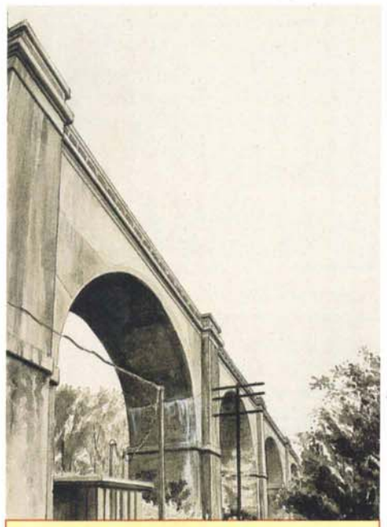
Around the United States, when early settlers built their towns on even the slightest elevation, they turned to

Memphis, Tennessee

Damascus, Georgia

the Holy Land for geographical inspiration. The names of Middle Eastern mountains, especially, abound. The Mount of Olives, which overlooks Jerusalem from the east, has namesakes in at least seven states; Mount Carmel, a ridge on the Mediterranean coast south of Haifa, has 17. Other American town names recall Mount Sinai in Egypt and Mount Hermon—Jabal al-Shaykh in Arabic—the snow-crowned, 2800-meter (9200-foot) peak astride the border of Lebanon and Syria.

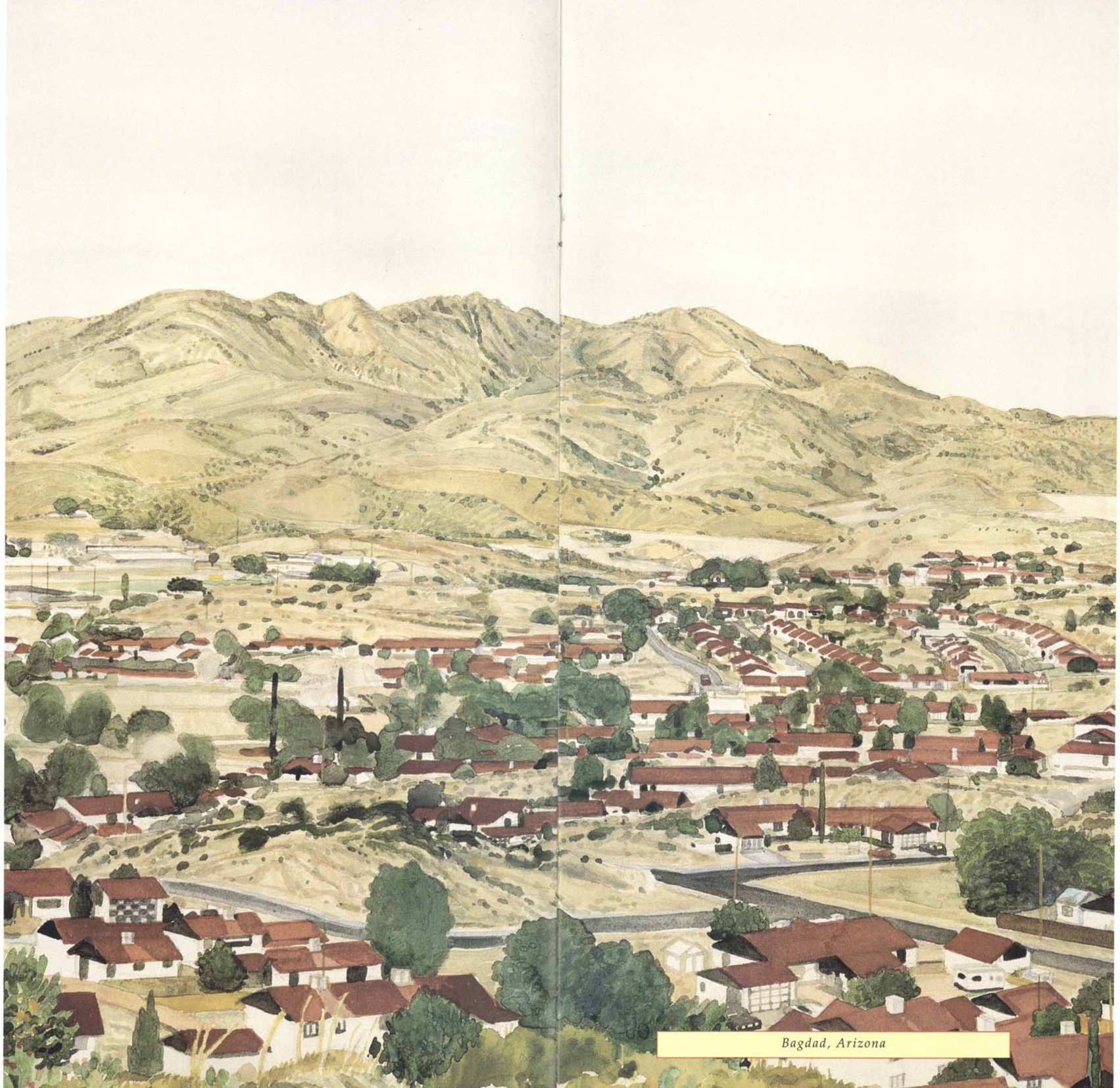
At the edge of Pisgah National Forest, in the Appalachian mountains, is the village of Nebo, North Carolina. Mount Pisgah and Mount Nebo are two biblical names for the same high ridge in present-day Jordan. From this spot, tradition says, Moses first glimpsed the Holy Land. The Old Testament patriarch—his name is Musa in Arabic—is honored as a prophet by Jews, Christians and Muslims alike. At least three US peaks are named Mount Pisgah: one in Connecticut, another in New York and



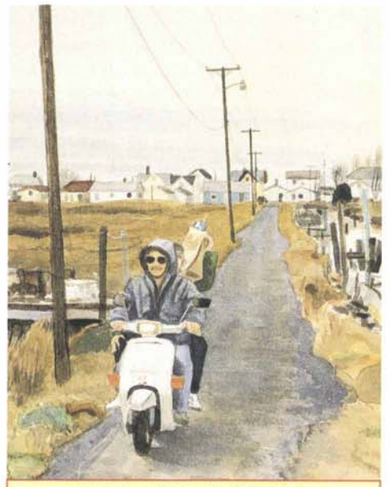
Thebes, Illinois

the highest, at 1100 meters (3605 feet), in Vermont.

The founders of other American towns must have hoped the legendary wealth and power of their eponyms from classical antiquity would, in time, touch them, too. Hence the number of towns with names like



Bagdad, Arizona



Tangier Island, Virginia

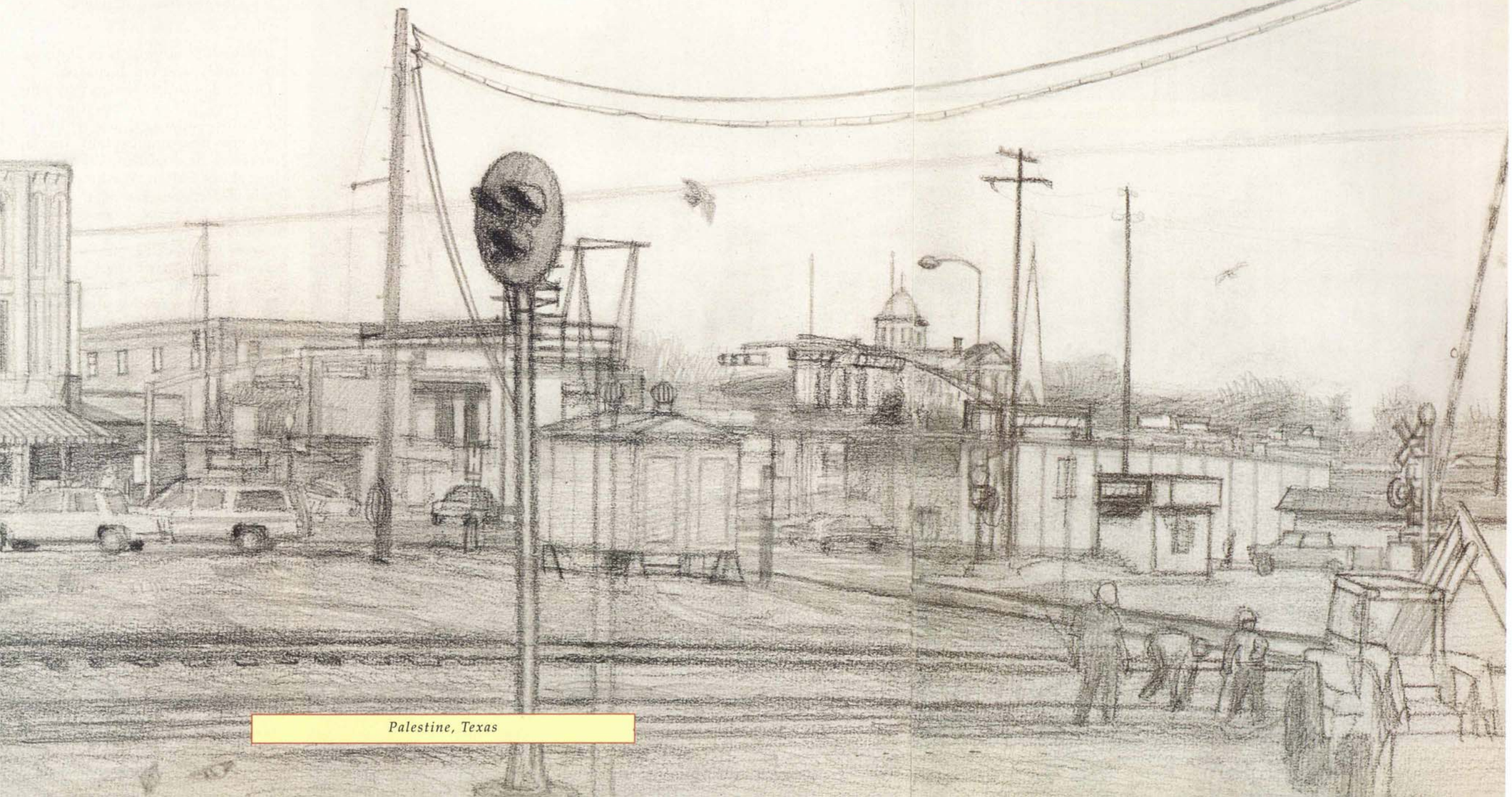
Carthage (the original is in Tunisia), Troy (Turkey) and Tyre (Lebanon).

Finally, some early settlers may simply have had a fascination for the exotic—or was it just whimsy? How else does one explain Arabia, Nebraska or Aladdin, Wyoming? How about Sultan, Washington, or Pyramid Corners, Oklahoma?

Because of biblical references to the cedars of Lebanon and the widespread varieties of cedar trees in the United States, Lebanon may be the single most common Middle Eastern name in use in this country. Ohio has a Lebanon, a South Lebanon and a New Lebanon in the Dayton area alone and—in the *eastern* part of the state—West Lebanon. Lebanon, Kansas, is honored on maps as the "geographic center of the coterminous United States."

"Looking through a good encyclopedia for the name 'Lebanon,' one becomes geographically perplexed," begins a historical pamphlet published by the Lebanon [Oregon] Chamber of Commerce. "For in addition to the Biblical Lebanon...there are 35 towns, post villages and counties of the same name [in the United States]." The pamphlet continues in the best tradition of American small-town boosterism: "This is the story of Lebanon, Oregon, most westerly and progressive of all the Lebanons..." In 1847, settler Jeremiah Ralston arrived in the fertile valley, then known as Peterson's Gap, with three wagons drawn by 12 yoke of oxen. He opened

Jericho, Arkansas



Palestine, Texas

a general store, platted a new town, and chose a name born of dual inspiration. The many cedar trees by the river indeed made Ralston think of the cedars of Lebanon. They also reminded him of his birthplace: Lebanon, Tennessee.

That Tennessee town, east of Nashville, was truly named for the land of cedars. It was founded as a county seat in 1802 on 16 hectares (40 acres) of land with a running spring, according to a directory published by the Lebanon–Wilson County Chamber of Commerce. Surrounded by forests of red cedar, one of the most aromatic of evergreens, the early settlers harvested the wood to produce pencils, perfumed cedar chests, fence posts, wooden buckets—and coffins. The 4000-hectare (10,000-acre) Cedars of Lebanon State Park and Forest, 11 kilometers (seven miles) south of the town, is now the largest uncut red-cedar forest in the United States. And coincidentally, within a 40-kilometer (25-mile) radius of the forest are the villages of Alexandria (after the eponym in Egypt), Carthage (in what is now Tunisia), Shiloh and Bethlehem (Palestine), and Smyrna (named after present-day Izmir, Turkey).

Another town on the Mediterranean coast of Turkey is Antioch, today's Antakya. The Antioch Township Library in Illinois sent me an excerpt from *The Past and Present of Lake County Illinois,* published about 1877, according to which a village slowly grew up around a sawmill built on Sequoit Creek about 1839. Some of the first settlers, wrote the author, "were...very zealous in church matters. Whereupon the wags of the neighborhood..., rather in a spirit of ridicule, suggested various Scripture names for the place. Among them Jericho and Joppa [Jaffa]. Finally, during a general assembly of the church...it was agreed to take the suggestion of their mischievous neighbors and adopt a Scripture name, and that it should be Antioch...."

Bethlehem, so prominent in the New Testament, is today inhabited by Christian and Muslim Palestinians and, like the city of Jerusalem a few miles north along the spine of hilltops, it is a center of world pilgrimage. Bethlehem, Pennsylvania, was founded on the banks of the Lehigh River by Moravian settlers in 1741. According

to the *Northampton County Guide*, two houses, one a log cabin 12 meters long and six meters wide (40 by 20 feet), had been built by the first 15 members of the community. The story goes that Count Nicholas Lewis von Zinzendorf, a Moravian leader, arrived in town on December 21, 1741. "...[H]e led the settlers into the stable room of the first house, and they joined in the singing of an old German hymn in which occur the words: *Nicht Jerusalem, sondern Bethlehem, aus dir kommet was mir frommet*": Not from Jerusalem, but rather from Bethlehem, comes that which is good for us. "From this verse the colonists chose Bethlehem as the name for their settlement."

The story of New Canaan, Connecticut, is less certain. It was established in 1730, under the laws of the Colony of Connecticut. But as Mary Louise King writes in *Portrait of New Canaan*, published by the New Canaan Historical Society, "neither then nor in later years did anyone record when, how, and why 'Canaan' was chosen as the parish's name.... Congregationalists were not obliged to give parishes religious names.... Canaan was the uppermost ridge in northwestern Norwalk, and I sometimes think 'Canaan' was picked over other possible parish names because the peak of Canaan Ridge is the highest elevation above sea level—the closest to Heaven."

According to *Long Island: A History of Two Great Counties, Nassau and Suffolk* (1942), Babylon, New York, got its name from a less lofty analogy. A local tradition traces the name to the year 1803, when a certain Nathaniel Conklin built a himself a new home. "His mother regretted its proximity to a public house in which liquor was sold. She suggested that the community would be another...Babylon [a city of sin], but her son replied that this was to be a 'New Babylon'. The name was carved into a stone placed over the Conklin family fireplace, and the community took 'Babylon' for its own." The fireplace stone now rests above the mantel in the Babylon Public Library.

Palestine, Texas, was founded in 1846 as the county seat of Anderson County. According to the *1987 City Directory*, it was named at the suggestion of John Parker, one of three

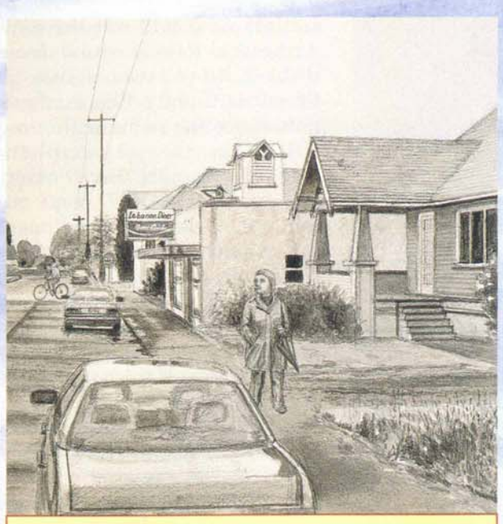
Above, Sudan, Texas *Below, Alexandria, Virginia*

settlers who laid out the new city. Although Parker came from the Wabash River town of Palestine, in Crawford County, Illinois, the Texans pronounce the name with a regional twist: It is, they say emphatically, Pales*teen*. Another *City Directory*, this one published in 1877, says magnificently that it was a second member of the committee, Micham Main, also from Palestine, Illinois, who named the town "to place his influence and his life upon the side of right and justice in the great struggle for the independence of the peerless, the lone star State."

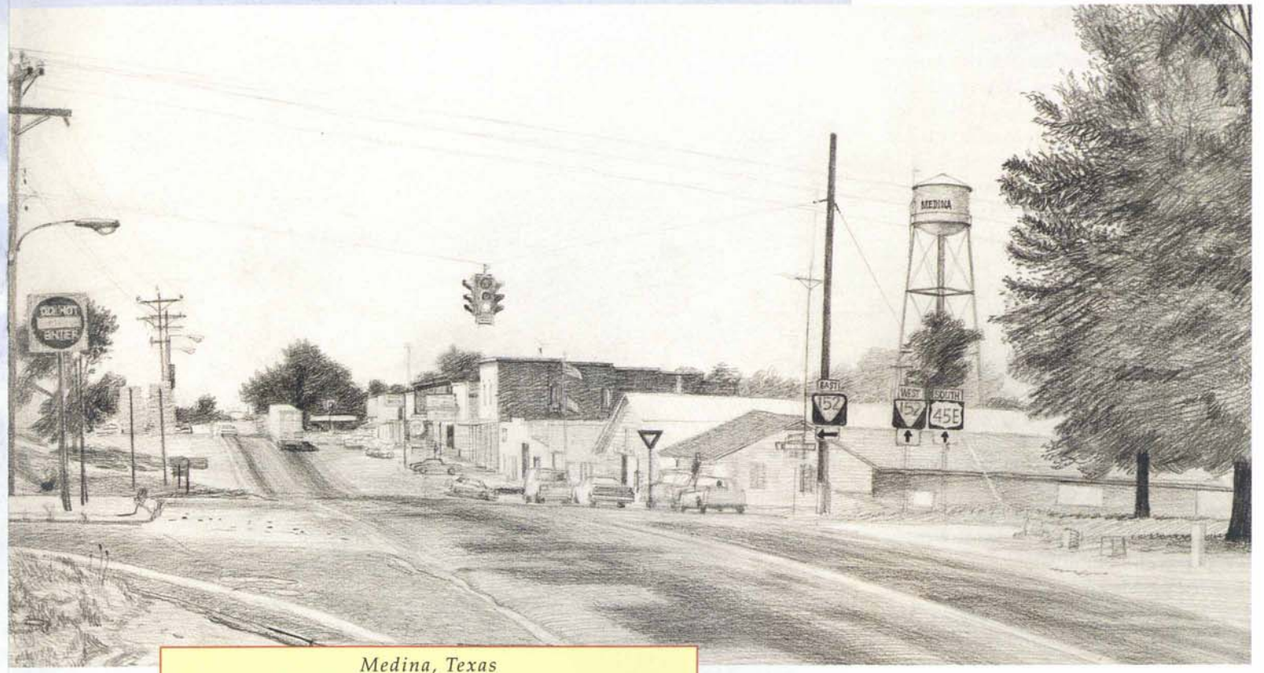
Although Madinah, the second city of Islam, located in present-day Saudi Arabia, is not among the places mentioned in the Bible, its reputation as the home of a righteous people and a visiting place for pilgrims was known to a Connecticut Yankee named Elijah Boardman, who laid out a town in the great Western Reserve wilderness in 1818. That's how Medina, Ohio, got its name, but it's not the whole story. In fact, according to the *History of Medina County*, Boardman first called the new town Mecca. Seven years later he had to change it. "The city of Mecca in Arabia was known the world over, because of thousands of pilgrims who made an annual pilgrimage there, until it became a byword for travelers overland to refer to the end of their journey as their Mecca."

The next part of this speculative history is not exactly accurate, but it's the way the early settlers saw it: "After Mohamet [the Prophet Muhammad] was driven from his birthplace, Mecca, he fled to Medina, Arabia, the capital. Here the pilgrims traveled as they had before to Mecca, and still do. Now, when the name of Mecca, Ohio, needed changing because of a town in Trumbull County [previously] having that name, the next most common end of voyage was Medina, after Medina in Arabia."

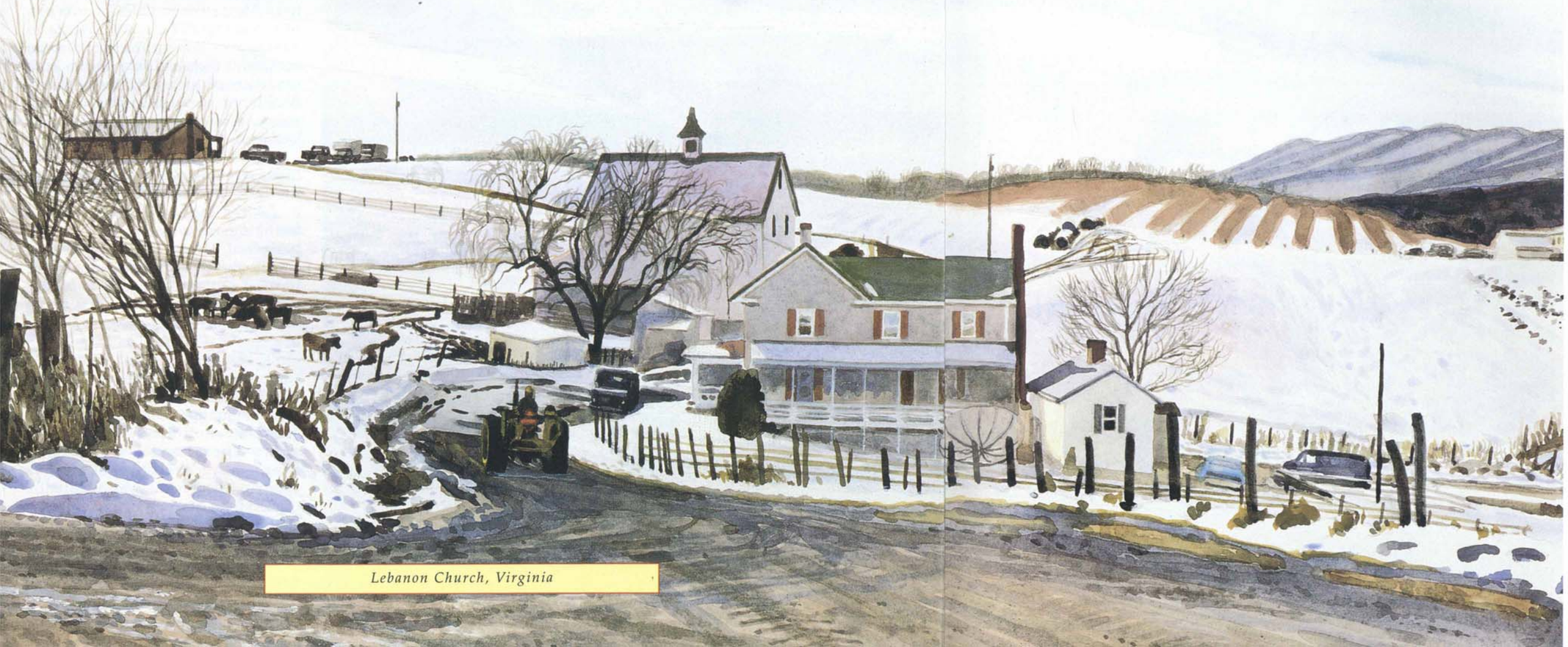
In Medina (pronounced Med*ye*na), Tennessee, northeast of Memphis, a police officer handed artist Spence Guerin a flyer describing that town's eponym. "The name was apparently chosen by a student of geography," the pamphlet read, "for the city of Medina in Arabia is situated in a rich farming area about 100 miles northeast of Memphis, Egypt." Now,



Lebanon, Oregon



Medina, Texas



Lebanon Church, Virginia

Medina, Tennessee's physical proximity to *its* Memphis is real enough, but the "student of geography" evidently hadn't looked too closely at the map of the Middle East: Madinah in Saudi Arabia lies southeast, not northeast, of Memphis, Egypt, and by more than 1000 kilometers—about 650 miles!

Learning that a name was already taken didn't seem to bother some settlers. Three villages named Bethel, after a town just north of Jerusalem, dot the state of Tennessee. Mississippi has two Hebrons—another Palestinian name—located barely 50 kilometers (30 miles) apart. Iowa has a Lebanon in the southeast part of the state, and a second Lebanon in the far northwest.

Another Iowa small town, on the other hand, got its Middle Eastern name when its settlers learned that the name its founder had originally chosen was already taken in the state. The village of Martinsburg was platted in 1856 by Asa T. Martin, owner of the land, who had erected a steam sawmill on the site. A store was opened, then a wagonmaker's and blacksmith shop, but in 1860, when the settlers established the first post office, they learned to their dismay that the name Martinsburg was already in use else-

where. They requested a list of possible names from Washington, and when it arrived, they settled on the name Tripola. They later changed the spelling to Tripoli, but kept the original pronunciation. Two Mediterranean cities are called Tripoli: One is in Lebanon, the other in Libya.

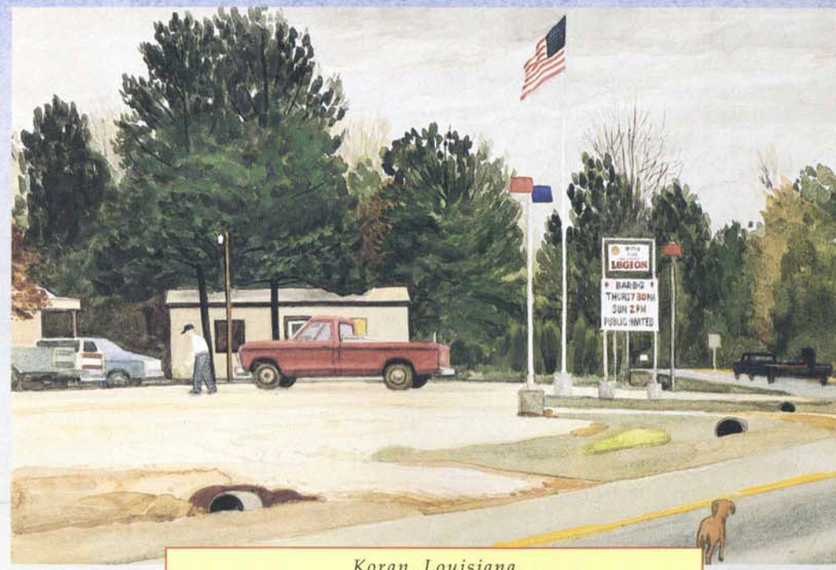
A few of these American towns acknowledge their Middle Eastern antecedents or establish ties to the cities, countries or geographical landmarks that gave them their names. The results, however, are often peculiarly American.

When the citizens of Karnak, Illinois, turn out to support the local basketball team at Egyptian High School, they're cheering for the Pharaohs. In Bagdad, Arizona, bumper stickers down at the open-pit copper mines proclaim the town the "Home of the Sultans."

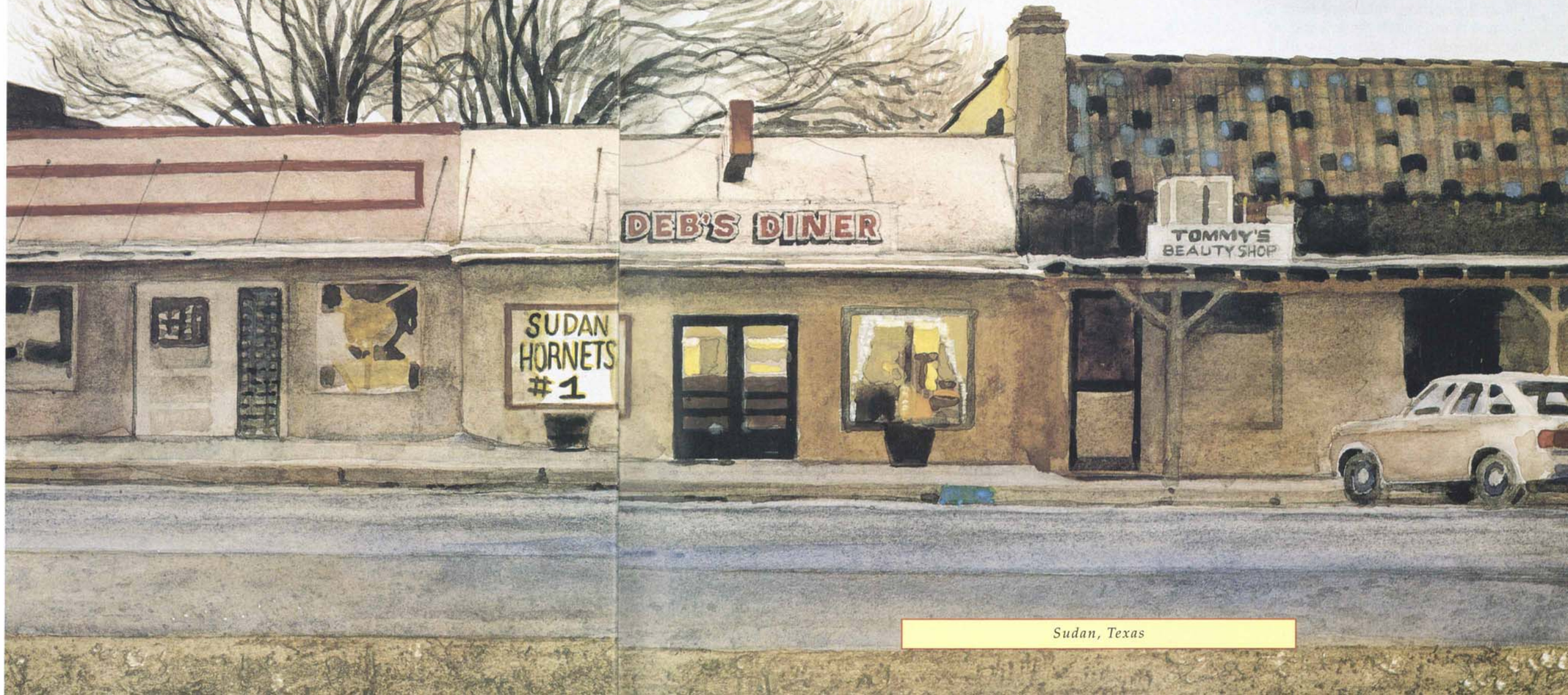
Perhaps Memphis, Tennessee, has made the boldest bid to capitalize on the origins of its name, building a 180-meter-high (600-foot) pyramid on pilings driven deep into the Mississippi River mud. While reminiscent of the ancient stone tombs near Memphis, Egypt, the Tennessee structure has interior space for 20th-century urban living: a stadium, restaurants, shops, and offices.

In 1955 the government of Lebanon invited the mayors of all the US cities named Lebanon to visit Beirut as part of a celebration of "international homecoming" for Lebanese emigrants around the world. The uniquely personal way in which Tennessee's Lebanon responded tells something of that city's history.

In 1885 a pack peddler named Charley Baddour settled in Lebanon, Tennessee, followed shortly by two of his cousins. The family, which had immigrated to America from the original Lebanon, soon established itself in the local business community. Seventy years later, when Mayor William Baird received his official invitation to visit Beirut, he proposed an amendment to the Lebanon city charter so his friend, Dr. Frank Baddour, a respected citizen, could be named Lebanon,Tennessee's first and only vice-mayor, and thus represent his city in the homeland of his fathers. When "Doc" Baddour returned from Beirut, he brought with him a



Koran, Louisiana

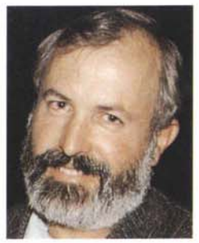


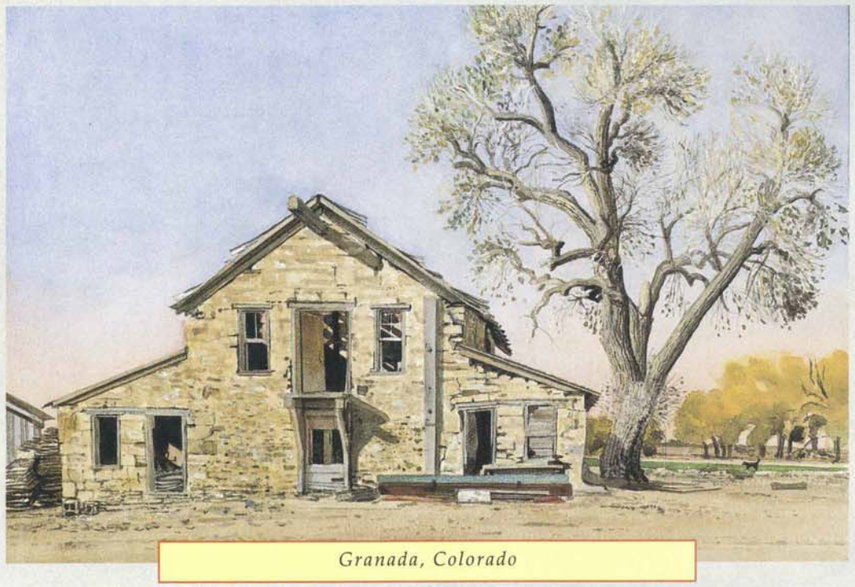
Sudan, Texas

cedar tree from the old country that he planted in Lebanon's Baird Park.

Like the stories of other US towns, the stories of American towns with Middle Eastern names speak of the daring, industry, faith and fortitude of the nation's early settlers. Like their Middle Eastern counterparts, some of the American towns and villages first flourished, then faded. Though the United States is only 200 years old, some villages have already been reclaimed by the land. Others barely survive today, going on their quiet ways. But other towns and cities, also like their Middle Eastern namesakes, push ahead, growing with new vision and new energy. If we can speak of America as a cosmopolitan banquet of immigrants and settlers, its Middle Eastern town names, and the rich heritage they represent, are just another part of the feast today—as American as apple pie. ⊕

William Tracy, a long-time contributor to Aramco World *and its former assistant editor, now edits* Al-Ayyam Al-Jamilah, *a magazine for retired members of the Saudi Aramco family, at Aramco Services Company in Houston. Spence Guerin (below) is an artist with "a knack for getting to know people and places from the inside." He divides his time between Florida and Alaska, painting "landscapes, places and the people around us." His work is represented by Hal Katzen Gallery (New York), Capricorn Galleries (Bethesda, Maryland), Stonington Gallery (Anchorage), and Site 250 Gallery (Fairbanks).*





Granada, Colorado

Cairo, Illinois

ELKE STOLZENBERG

Exploring Flamenco's Arab Roots

Written by Greg Noakes

ORONOZ (2)

Siguirija, performed opposite by Christina Hoyos, one of Spain's top *flamencas*, is one of flamenco's oldest dances. It is said to have originated in what is now Sri Lanka, and to have come to Muslim Spain—al-Andalus—with the migration of the gypsies from India in the late Middle Ages. At left, cultural cross-pollination: In the 13th-century *Book of Chants* of the Escorial Monastery of Madrid, a Muslim and a Christian play the *'ud* together. Above, the guitarist at the Cason Retiro, a Madrid inn, painted by Casimiro Sainz in the 18th century.

Flamenco music was born, and still lives, among the scenic green hills of Andalusia in southern Spain.

In recent years, however, some performers have moved beyond both the geographical and the stylistic boundaries of traditional flamenco to incorporate a variety of new styles into their work. Paco de Lucia and Madrid's Ketama have garnered critical praise—and the wrath of purists—with their jazz-influenced recordings, while the Gipsy Kings have wedded pop to flamenco to win fans worldwide.

Other performers have turned inward, searching for the obscure origins of flamenco, in hope of inspiration. What they have found are pervasive Arab influences, touching everything from the style of performance to the very rhythms and scales of the songs themselves. And what they have produced as a result is a fusion of Spanish and Arab traditions that is both interesting and inspirational.

The Arab roots of flamenco run deep. Though some scholars believe the word *flamenco* means "Flemish," others think it is a corruption of the colloquial Arabic *felag mangu*, meaning "fugitive peasant" and derived from a root meaning "to

flee." The term came into use in the 14th century, and was first applied to the Andalusian Gypsies themselves, who were called either *gitanos* or *flamencos*.

Flamenco music dates back to the Middle Ages, a time of turmoil in the Iberian peninsula. The once-mighty Muslim kingdoms of al-Andalus were in a state of slow but steady decline, while the Catholic powers of central and northern Spain steadily pushed south (See *Aramco World*, January-February 1993). The borderlands between the Muslim and Christian realms were the scene of vibrant cultural exchange and artistic cross-pollination. Flamenco was born in these marches where Arabs, Jews, Christians and *gitanos* mixed freely.

ORONOZ

In a 13th-century Andalusian manuscript by Taifas al-Wasit, now in the Bibliothèque Nationale in Paris, an *'ud* player entertains a lady and her servants at home.

The *cante flamenco*, or "flamenco song," is characterized by lyric vocals, improvised dance and strongly rhythmic accompaniment. Although lighter forms later developed, classic *cantes jondos* ("profound songs") explore themes of sadness, pain and death. The *cantes* originally featured purely rhythmic instruments or were sung a cappella, but the guitar came to be the principal flamenco instrument during the 19th century, when *gitanos* began to sing and dance professionally in cafés and *bodegas*.

It was during this period that the term *flamenco* came to be applied to the *gitanos*' music, and the rules and forms of the classical flamenco tradition were established. Some 60 standard *cantes* from this period survive today, encompassing a variety of moods and themes.

Over time, however, a split developed between "classical" flamenco and the folk *gitano* style. Master musicians like Sabicas and Carlos Montoya raised classical flamenco to a true art form with their expressive virtuosity, but less gifted singers and guitarists often sacrificed emotion for technical precision. Carefully choreographed flamenco "spectacles" also narrowed the opportunity for improvised musical solos and dancing, leading some aficionados to charge that flamenco, as an art form, was stagnant.

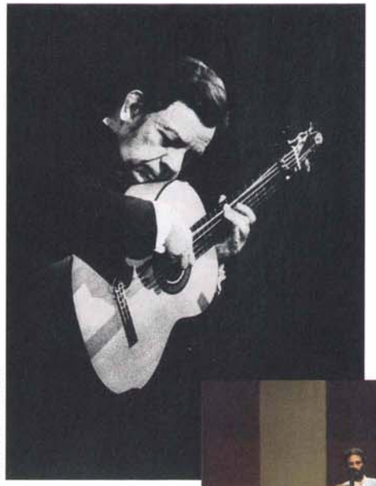
In reaction, many turned to the *gitano* tradition. Looser, less polished and more open to change than their classical flamenco counterparts, *gitano* artists expressed the passion that is central to flamenco. Their style included fiery guitar improvisation, *jaleo*—complex rhythmic hand-clapping, guitar-slapping, finger-snapping and vocal outbursts—and the tradition of *duende*, the deep emotional participation of the performer.

As flamenco artists and critics began to explore the elements of *gitano* performance, they rediscovered the rich Arab influence in flamenco. The art form's basic building blocks—sung poetry and music—were borrowed from the Arabs and Berbers who ruled al-Andalus from 711 to 1492, when the Moors were expelled from Spain. T.B. Irving notes in his book *The World of Islam*, "Gypsy music and *cante jondo* go back to the *zajal* [sung Arabic lyric poetry] and the five-tone scale." The percussive elements of *jaleo* are still found in the folk music of North Africa and its reliance on drums, tambourines and hand-clapping. The vocal conventions of flamenco can also be traced back to Arab precursors. For example, the vocalizations "Ay-ay-ay!" and "Ay-li-li!" are found throughout *gitano* performance, usually in introductory or transitional passages, and come from the traditional refrains of blind Arab mendicants, *"Ya 'ain!"* ("O eye!") and *"Ya lail!"* ("O night!") respectively.

Indeed, cultural historian Lois Lamya' al-Faruqi found few elements of flamenco untouched by Arab music. "The ornamental melodic style, the improvisatory rhythmic freedom, the sometimes 'strange' (to Western ears) intervals, the segmental structure, and the repeated excursions from and returns to a tonal center are some of the features that indicate Arab influence on *cante flamenco*," according to al-Faruqi.

Exploration of flamenco's Arab ancestry was reinforced by the rise over the last six decades of *andalucismo*, or Andalusian cultural nationalism. The 1930's saw the beginning of a re-evaluation of al-Andalus and the place of Arabs and Muslims in Spanish history and culture, as well as of Spanish ties to the Maghrib. "Previously, southern Spain had turned its back on North Africa," according to Khalid Duran of the Free University of Berlin. "Those few [Spaniards] who had an idea of the greatness of Islamic Spain liked to believe that it was due to some very special kind of noble Arab from somewhere in the East, perhaps Damascus. Moroccans [they believed] were nothing but uncouth tribals revolting against Spanish civilization." *Andalucismo* grew steadily during the long dictatorship of Francisco Franco and truly blossomed after his death in 1975. Since that time, Spaniards have come to a new appreciation of al-Andalus and of Arab and Islamic culture (See *Aramco World*, September-October 1992).

The search for the sources of flamenco, and the rise of *andalucismo*, bore fruit in the 1980's and 1990's with a series of stunning musical collaborations between Spanish and Moroccan artists. Most of the Spanish participants are individual performers, including some of the most prominent singers and guitarists working in the *gitano* style.



ELKE STOLZENBERG

The Moroccans are mostly musical groups, principally the *orquestas andalusi* of northern Morocco. Like flamenco, Andalusi music has both classical and folk traditions. Classical Andalusi music, whose forms were set down in 11th-century Cordoba, came to North Africa with the exiles of al-Andalus (See *Aramco World*, July-August 1991), and is characterized by the *nawba*, a suite of music in a single melodic mode which grows progressively faster and includes sung poems. While Andalusi orchestras are grounded in the classical *nawbat*, they also have been influenced heavily by Arab and Berber folk music, and often move easily between these "great" and "little" musical traditions.

Musicians from both sides of the Straits of Gibraltar find in these joint performances a way to discover their musical roots, remember their cultures' past triumphs and tragedies and explore their common heritage. The resulting Hispano-Arab music is extraordinary. Sinewy flamenco guitar lines weave between the plaintive tones of the *kamanjeh*, a kind of Moroccan violin, underpinned by the frenetic clatter of castanets and a bedrock of *darabukkahs*, or Arab hand drums. Lyrics are sung in both Spanish and Arabic, occasionally overlaid in a melding of languages and styles. For their selections, the artists have drawn on both the flamenco and Andalusi repertoires, and play *cantes flamencos* and traditional Maghribi folk songs with equal dexterity. Attempts at musical "fusion" often result in mere cacophony, but the roots common to flamenco and Andalusi music—and the abilities of the musicians involved—have allowed these Hispano-Arab crossover efforts to attain majestic heights.

While much of this cross-cultural exploration has been done in informal sessions or live performances, several flamenco-Andalusi recordings have been produced. Among the best are the collaborations of José Heredia Maya and Enrique Morente with the Orquesta Andalusi de Tetouan and Juan Peña El Lebrijano's powerful work with the Orquesta Andalusi de Tanger. All three recordings exhibit the beauty and passion that can flower when top artists meet to exchange musical ideas and inspiration.

While much ground remains to be covered within the Arabo-flamenco tradition, some folk musicians are striking out on a different tack. The Valencian folk group Al Tall has teamed up with the ensemble Muluk El-Hwa from Marrakech to explore the music of al-Andalus itself. The two groups have set Arabic and Catalonian poetry from the 11th to 13th centuries to the rhythms, melodies and instruments of the western Mediterranean to produce appealing and inventive music.

Hispano-Arab musical collaborations are both an attempt to revivify existing art forms and a reassertion of Andalusian-Arab-Mediterranean traditions.

ERDE RECORDS

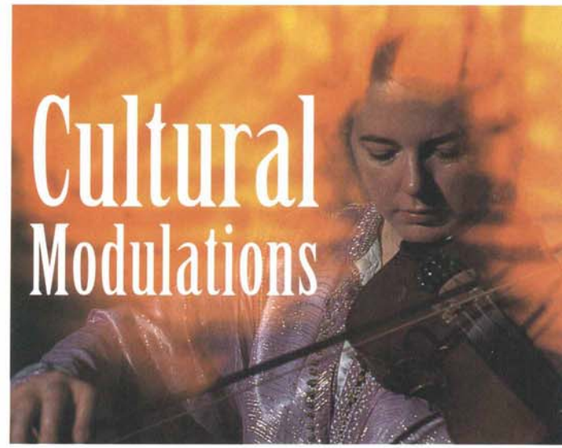
Sabicas, one of Spain's best-loved modern flamencos (far left), enchanted audiences from the 1930's until his death in 1992. At left, the Valencian folk group Al Tall performs in Cologne, Germany, with Muluk El Hwa of Marrakech in June 1993.

Vincent Torrent of Al Tall declares, "There is a special kind of Mediterranean sensibility and aesthetics. We believe...that a place must be found for this mode of expression, particularly since we're subjected to a veritable invasion by other aesthetics and sensibilities."

Though flamenco performers and Andalusi musicians began their collaboration as a way to explore their own artistic pasts, they also have charted a path to an exciting musical future. Along the way they have produced some outstanding music, broken down long-standing cultural and historical barriers and demonstrated—in an era where some see only a "clash of civilizations" between Islam and the West—that there is room for cooperation and creativity.

Greg Noakes is the news editor of the Washington Report on Middle East Affairs.

Cultural Modulations



Written by Brian Clark
Photographed by Marcos Villaseñor

It's no small task to mix past and present, East and West, and produce sweet music from the combination. But making music that bridges cultures is what Tarik and Julia Banzi, of the Portland-based musical group Al-Andalus, do.

The two, whose performances have received adulatory reviews throughout the western United States, took their name from the region of southern Spain that the Arabs controlled for 800 years. From the early eighth to the late 15th century, dance, art and music—and many other cultural forms—flourished in al-Andalus in a unique melting-pot of Muslim, Christian, Jewish and even African traditions.

"We are fusing the music of different cultures to create something new," says Tarik, who grew up in Tetuan, Morocco. He performs primarily on the bottle-shaped *'ud*, the Arab instrument from which the lute and guitar developed. He is also an accomplished painter who has exhibited at more than 30 shows in Spain, where he completed doctoral work in fine arts at Madrid's Complutense University.

Tarik and Julia met in 1985 during one of Tarik's performances of flamenco jazz. At the time, he was a sought-after composer and performer for major Madrid theater companies and Spanish cinema and television. He had recorded with Paco de Lucia and Enrique Monte, two of the most popular flamenco musicians of all time. Julia was making her mark as one of few world-recognized female flamenco guitarists. A native of Denver who had spent several years studying guitar in San Francisco, she had moved to Spain to follow her attraction to the passion and emotion of flamenco, studying under Spanish teachers.

They married in 1986 and performed together throughout Europe. Now, their joint repertoire of fully two dozen instruments highlights the *kamanjah*, or Arab violin, the *nay*, or reed flute and the *darabukkah*, a ceramic drum.

Leaving Spain, they chose to live in Portland "to reach a broader market and to do more than film scoring," says Julia.

The response has been overwhelmingly positive. Robert McBride, music director for Oregon Public Broadcasting, was a member of the committee that selected Al-Andalus's "Taktokah" for the 1994 Portland Metropolitan Arts Commission compact disc "The Bridge." He calls their music "something timeless, wonderful and very stimulating." Their original score for a Portland production of *Romeo and Juliet*, he adds, was "particularly outstanding and evocative."

There is still more to the diversity of Al-Andalus performances. "Breaking down cultural barriers with our 'young audience' performances is a delight," says Julia, adding that in October they performed in schools for more than 2,500 children, who danced as well as listened and were also invited to handle the instruments. Over the summer, the Banzis played in New Mexico for AWAIR, an Arab-American educational group, under a grant from the National Endowment for the Humanities.

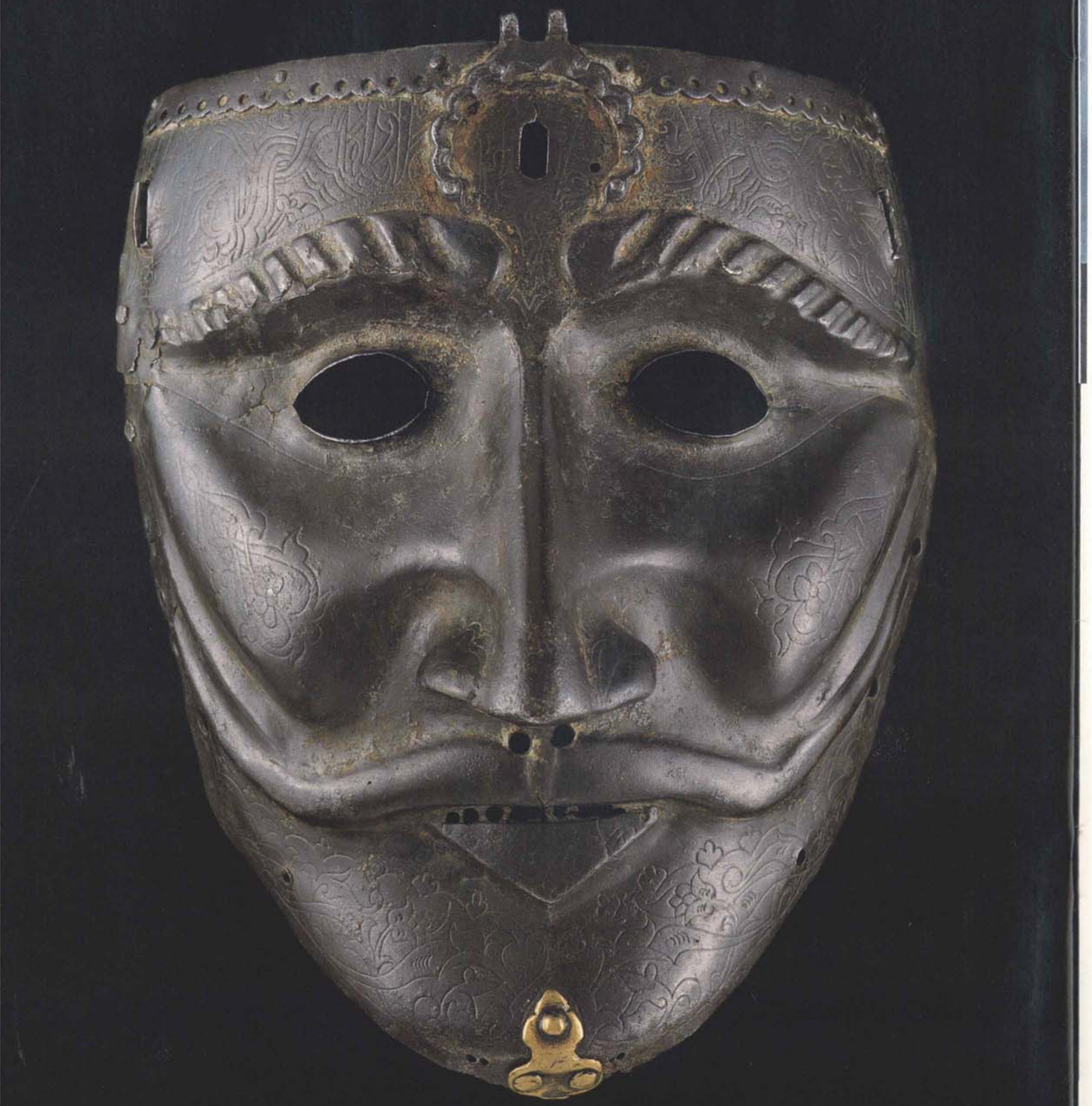
Tarik composes most of Al-Andalus's new works, but both husband and wife frequently collaborate in mixing flamenco, classical music and jazz, says Julia. "It's obvious where our music's roots are, but we are not limiting ourselves on where we go."

Although the pair have performed with as many as 20 other musicians, they are returning to a duo format. "We're tracing a new path for Arabic music," says Tarik. "Defining that route is clearer with two performers."

Intertwining the rhythms of guitar and *'ud*, Julia and Tarik Banzi (left) perform against a backdrop of calligraphy adapted from an Andalusian bas-relief. Above, an image from the series "Precious Stones" by Tarik Banzi.

Brian Clark contributes frequently to Aramco World *from his base in Washington state.*

The Khalili Collection of Islamic Art



Written by Tahir Shah *Photography by Christopher Phillips, courtesy of the Khalili Collection*

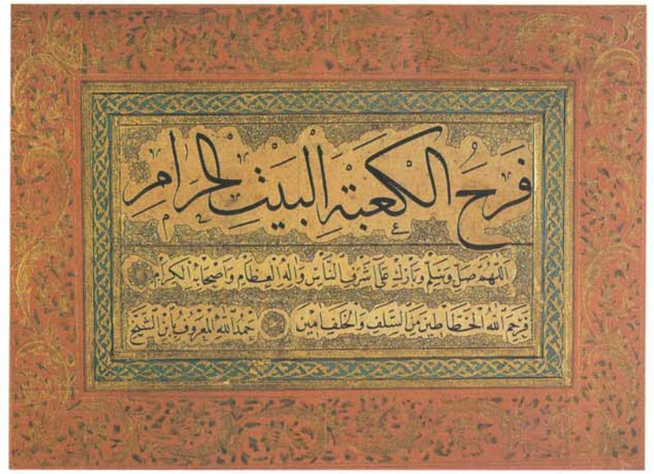
Nasser D. Khalili was born to collect. As the son and grandson of dealers in carpets, lacquerware and other art in Isfahan, one of the greatest cities of ancient Persia and now Iran's second city, Khalili himself maintains that from roughly age 14 he dreamed of amassing one of the greatest art collections in the world. Now, as a 48-year-old art-world prodigy, he has done it.

The Khalili Collection is unique. Its embrace of virtually every known area of craftsmanship ever pursued in Islamic lands is unprecedented: illuminated copies of the Qur'an, rare manuscripts and miniatures, papyri, calligraphy, ceramics, metalwork, talismans and seals, carpets and textiles, jewelry, coins, glass, gem-encrusted daggers and medieval armor, astrolabes, maps, padlocks, stirrups and even more now pack vaults and warehouses around the world, awaiting a permanent home. In most areas, the Khalili Collection is now regarded as not only the most extensive but also simply the finest in the world. The illuminated copies of the Qur'an number more than 500, compared to the British Library's modest 50, and they comprise the largest group of fine Qur'anic manuscripts in private hands anywhere in the world. The collection that has grown daily since the early 1970's now lists more than 20,000 items valued at an estimated $1.6 billion.

But all this is more than just a private indulgence. Nasser Khalili's is already becoming one of the best-cataloged collections in the world, and Khalili's ultimate vision is that it will further spur the world's appreciation of the artistic contributions of Islamic cultures. To this end, Khalili insists that in his collecting he has not been "mesmerized by objects made for kings and queens," and has attended also to "the products of craftsmen made for everyday life."

Professor Michael Rogers, honorary curator of the Khalili Collection, says Khalili's achievement has been "to buy in areas in which there's been little interest to buy.... He's not merely interested in the beautiful or the exquisite. He's also interested in the curious."

As a result, Rogers says, the collection "has shed a completely new light on practically every aspect of Islamic art." For the first time, "it'll be possible to see the whole history of the cultures of Islam from the beginnings right up to the 19th century." The Khalili Collection, he adds, is "far more systematic and historical" in approach than the collections of either the Victoria and Albert Museum or the British Museum.



Shaykh Hamdullah al-Amasi, one of the most influential Ottoman calligraphers, copied this page of a calligraphy album in thulth *and* naskh *scripts in about 1500. The engraved steel war mask at left was attached to a helmet when it was made in the 15th century in what today is Iran.*

Nasser Khalili himself is soft-spoken and confident, in the manner of one whose seemingly impossible success has come as no grand surprise to himself. At his north London research center, sitting straight-backed, he tells a little of the story of his passion—critics would say obsession—while next to him, an expert works meticulously on the restoration of a 10th-century rose-colored cameo-glass bowl.

"I grew up in Iran," he begins gently, "a country of Islamic culture which played a major role in the development of Islamic art. My father loved Islamic art, so I was brought up to appreciate it. Dealing in art and collecting is our family tradition; it was only natural that I should follow in my father's and grandfather's footsteps. I was drawn at first to Islamic lacquer. I was amazed by the quality of the painting and the absolute mastery that the craft required."

In 1967, Khalili left Tehran bound for New York. Although he earned a bachelor's degree in computer sciences, by the early 1970's he was ready to begin building on the foundations of his father's and grandfather's trade.

For any serious collector of Islamic art, the world's best marketplace is *not* in the Middle East: It is in London. During the approximately four-century life of the British Empire, a great many Islamic antiques made their way—legitimately and illegitimately—to England.

The thriving Islamic art market of the 1970's captivated Khalili. On trips from Iran, he began to frequent Sotheby's, Christie's and Phillips, the three leading auction houses. His initial purchases were narrowly focused: From the first, he bought Persian lacquerware, his first love in Islamic art, which, until the 1980's, was also regarded as undervalued. In 1978, when prices in much of the Islamic art market fell and set off a minor panic, Khalili kept on buying. This raised a few eyebrows, and earned the neophyte a measure of respect from London's established old-timers.

It was also in 1978 that Khalili, seeking to buy a gift, walked into a jeweler's shop on Bond Street. The woman across the counter was Marion Easton; the two married later that year.

In 1980, the Khalilis moved to London for good, and it was then that Khalili began to buy on an unprecedented scale. Throughout the early 1980's, he bought

Three phoenixes form the center roundel of the base of this small silver-inlaid bowl made in Egypt between 1299 and 1340—an example of the best of Mamluk metalwork.

"God is the Light of the heavens and the earth," begins the Qur'anic inscription on the neck of this enameled glass mosque lamp. It was made in Egypt or Syria late in the 14th century.

At left, a 13th-century incense burner from northern Syria, inlaid with silver, copper and—on the bird finial—with gold. Openwork roundels release the scent. Below, 1024 stars and the constellations they form are engraved on a celestial globe made in 1285 or 1286, shown here almost life-size.

and sold out of a gallery in London's fashionable Mayfair.

Many art dealers maintain that Khalili achieved the status and credibility of a serious collector upon his purchase of the fabled manuscript of *Jami' al-Tawarikh*, the "universal history" of Rashid al-Din, produced in Tabriz in 1314. Full of illustrations from the life of the Prophet Muhammad, it is widely considered the finest medieval manuscript ever produced in East or West. It is also apparently the most expensive ever sold: How much Khalili paid for it has remained undisclosed, but recent appraisals peg its value at a stratospheric $18 million.

It was Khalili's low-profile, unassuming manner that enabled him to purchase such an enormous number of objects without attracting commensurate public attention. But by the mid-1980's, however, he was buying such sensational quantities, at such sensational prices, that the art world began to seethe with rumors. Khalili missed no opportunity, and scooped up many of the finest pieces in every gallery and every auction house. He no longer focused entirely on Islamic art, either: He was well on his way to creating his most important secondary collection, that of Meiji-period Japanese art. The most discussed—and least answerable—question of all was, where did Khalili get his money?

On this point he has always remained silent, maintaining that it is his private affair. Khalili continued buying—and buying—and replied to the press in only the most general of terms: His wealth, he said, was the result of successful business dealings in sugar and coffee, on the options market, in real estate in the British Isles and abroad, and, of course, in works of art.

The announcement that Khalili was in fact purchasing for the Nour Foundation (the name means "light"), owned by the Khalili family trust, came as a surprise to many in the trade who had assumed all along that Khalili was actually buying for another collector. Khalili had, after all, written a catalog of the Islamic art collection belonging to the Sultan of Brunei. But the Nour Foundation, Khalili says, "was formed many years ago by my father... to promote an understanding and appreciation of the great heritage of Islamic art."

In the mid-1980's, Khalili began work on a doctoral dissertation at London's School of Oriental and African Studies (SOAS). In 1988, he presented his research on 18th- and 19th-century Persian lacquerware, his enduring love in Islamic art. Like almost no other student before him, Khalili was able to study largely within his own collection.

Not long afterward, Khalili underwrote a $1 million chair of Islamic art at SOAS and a research fellowship in Islamic art at the University of Oxford. The University of London named him an honorary fellow and appointed him to its governing body. Khalili found a donor to give $16 million for a new Islamic Center at the University of London which, when completed, will complement Khalili's endowed professorship by mounting exhibitions of Islamic art and providing a center for research.

Today, Khalili is buying less and preparing more for the research and display dimensions of his collection. On this, he is straightforward: "The plan has always been first to conserve and document the collection in its entirety, publish it, and then to house it in a museum."

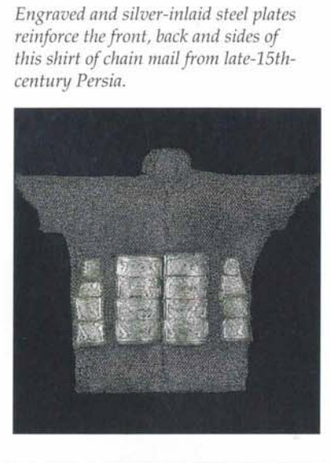
Almost every item in the vast collection is to be cataloged on a scale befitting the collection's value. A single, overall catalog of the greatest masterpieces is to be authored by Rogers, currently the Nasser D. Khalili Professor of Islamic Art at SOAS. But this volume is only a prelude, as it were, to the main fugue.

A full series of 30 catalogs is in production, huge tomes that will be presented each as a self-contained, comprehensive study. Directed not only to the academic and the collector but also to lay people, the catalogs will include essays on particular themes in Islamic art. To assist him in organizing, drafting, and producing the catalogs, Khalili hired the world's leading authorities in each field of study. More than 30 specialists were contracted along with a substantial editorial team, an in-house illustrator, a photographer and one of the world's most distinguished book designers, Misha Anikst.

In selecting scholars, Khalili comments, "I am also keen on introducing new blood into the system. Some of the young scholars, many of whose names have not been familiar to most, have actually made valuable contributions to the catalogs."

The catalogs, he says, will combine "scholarship with visual splendor." Each will be produced in a large format on acid-free paper. All objects will be reproduced in color, with technical drawings included to reveal delicate details so characteristic of Islamic art. "We are not cutting any corners," says Khalili. "We are aiming at the highest standards." He adds that the books, to be published by the Nour Foundation in association with

The hilt of this 52-centimeter (20") dagger, from India or Afghanistan, forms the first three of the four Arabic letters of the word Nasir*—Helper—one of the Names of God. The final* r *is formed by the cutting edge of the forged steel blade.*



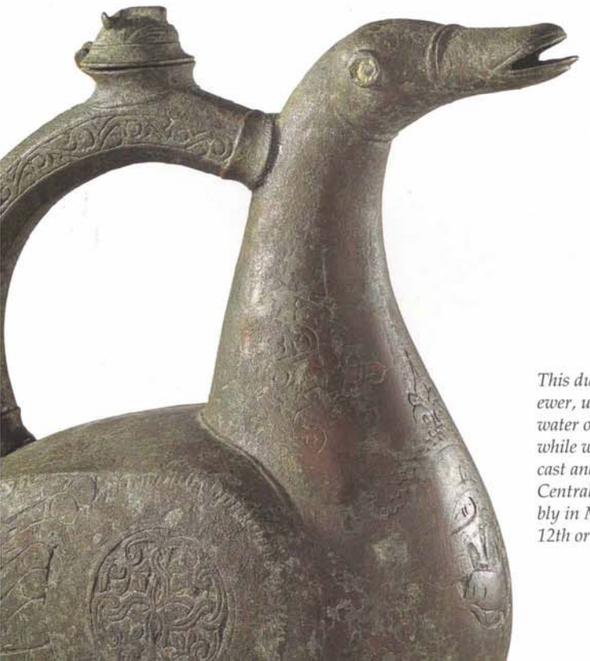
Engraved and silver-inlaid steel plates reinforce the front, back and sides of this shirt of chain mail from late-15th-century Persia.

Ninety-three emeralds carved with cypress trees cover the entire visible surface of this gold box five centimeters (2") across. The box was made about 1720, possibly for the Moghul emperor Muhammad Shah.

Two small jugs with dragon-shaped handles were cast in the late 15th century in what is now northeastern Iran, and inlaid with gold and silver arabesques. Both were probably made with lids, now lost.

Moghul India produced very fine enamel work on objects ranging from jewelry to armor. This gold box and tray set—the tray is 29 centimeters (11½") across—is decorated with cypress trees, flowers and foliage and dates from the early 18th century.

This miniature painting, also from India, shows the Central Asian conqueror Timur, ancestor of the Moghul dynasty, surrounded by his descendants and successors. The legitimacy of the current sovereign—Aurangzeb is the last one depicted—was thus affirmed and celebrated.



This duck-shaped ewer, used to pour water over the hands while washing, was cast and decorated in Central Asia, probably in Marv, in the 12th or 13th century.

Azimuth Editions, will cost far more to produce than he expects to recover through sales. Such subsidization, he adds, will give them the wider readership they deserve.

Six volumes have been published to date, of which two have won top printing awards.

Dr. Julian Raby, general editor of the catalogs and lecturer in Islamic art at the Oriental Institute at Oxford, was taken by surprise by the scale of the publishing task. "When I began," he says, "I didn't realize what I was taking on. I knew it was big, but didn't really have a sense of just how big. Indeed, I think there are only a handful of people working on the collection who do."

Working closely with Khalili and designer Anikst, Raby has encouraged authors to highlight and emphasize what they, as individual art historians, are excited about in the collection. This spotlight approach, focusing on an object, a group of objects, or a particular issue, has resulted in a series of essays intended as a contribution to the scholarship of the subject. Since some of the catalogs consider overlapping areas of the collection, certain items will be studied from one or more viewpoints.

"Where the Khalili Collection differs," Raby says, "is that it's so large that it can be reconfigured in different ways. It's not telling a simple story. It has not got one simple vision. Two traditions determine the make-up of most private collections today. One is that of the connoisseur, with a few select items chosen for their aesthetic merit. The other is the philatelic approach, where the emphasis of the collector is on assembling complete series of objects. The Khalili Collection is remarkable in that it belongs, as it were, to the heroic age of collecting, for it combines both these traditions within an overall scheme of providing a synoptic vision of the arts of the entire Islamic world.

"What I particularly enjoy about the collection," he says, "are some of the more quirky, whimsical sequences. I said to one of the authors who is writing the *Science, Tools and Magic* volume, 'We have some padlocks you might like to put into this part of the collection.' He said, 'How many?' I said, '347!' Since then, it's grown by another 600!"

In addition to the catalog series, the Nour Foundation is to publish a series of books focusing on specific areas of Islamic art. Entitled *Studies in the Khalili Collection*, this second series will be aimed at students and academics. The first volume in the series, a supplemental study of 36 papyri titled *Arabic Papyri*, was published in 1992. Along with its main volume, *Letters, Bills and Records: Arabic Papyri From Egypt*, the book offers an unprecedented look at writing in the first three centuries of Islam.

Science, Tools and Magic will cover astrology, astronomy, medicine and magic. Included will be the collection's large number of astrolabes, globes, quadrants, scientific manuscripts and geomantic devices. In addition, it will include practical items like padlocks, scissors, tweezers, spoons and weights and balances.

Since the written word is a central feature of Islam, calligraphy is of particular importance. Author Dr. Nabil Safwat says the volume on calligraphy "has been written from the calligrapher's point of view." It focuses on the collection's vast cache of exceptional calligraphic pieces. And, in a selection of accompanying essays, Dr. Safwat highlights central themes in Islamic calligraphy that until now have been almost unknown to readers of the English language—such as *muraqqa'*. Muraqqa', from the Arabic root *ruq'ah*, translates as "patch," or a patchwork of pieces of exemplary calligraphy. Whether a complete volume or a single page, such manuscripts acted as a calligrapher's source books. The collection houses various examples of the finest *muraqqa'at* ever made; pride of place goes to the so-called "Royal Muraqqa" that combines the work of several grand masters of Islamic calligraphy—Shaykh Hamdullah, Hafiz Osman and Mehmet Rasim—on a single sheet.

In a third series of publications, the Nour Foundation is also producing a selection of unabridged facsimile manuscripts. The first, says general editor Raby, will be a reproduction of the work of the 16th-century Ottoman cartographer Piri Reis, whose 1513 world map included information derived from a map by Christopher Columbus that has never been found (See *Aramco World*, May-June 1992). Another will provide a facsimile edition of the illustrated *Jami' al-Tawarikh* manuscript, the universal history, which will include detailed studies of the miniatures as well as a translation and critical analysis of the text.

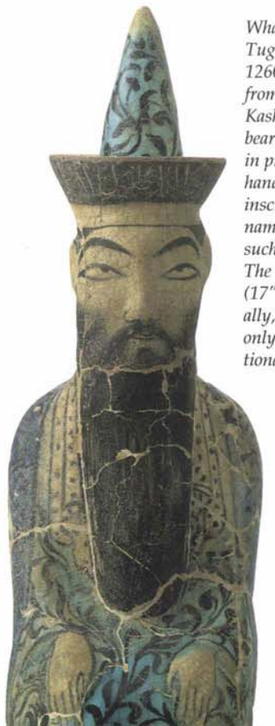
The next step is to find a permanent home for the Khalili Collection itself.

"Collecting," Khalili says, "is a fairly private activity. And it is my belief that, even if someone owns the greatest collection of art in the world, that collection is of no consequence so long as it is hidden from public view.... There is a Persian

The 13th-century inventor al-Jazari cast dragon-shaped door handles of brass for the palace of Nasir al-Din, ruler of Diyarbakr. Few survived; this one is 40 centimeters (16") across.

Carved decoration and colorful in-glaze painting characterize so-called laqabi *ceramics. This 30-centimeter (12") plate, typically, is decorated with a bird.*

A gold-edged lapis lazuli octagon less than five centimeters (2") across is engraved with the text of Surah 112 of the Qur'an, which affirms the unity of God.



What "Sultan Tughril" ruled in 1260? This figurine from Mongol-era Kashan, showing a bearded man kneeling in prayer with his hands on his knees, is inscribed with that name and date, but no such ruler is known. The 43-centimeter (17") figurine, unusually, is decorative only, with no functional use.

Sprays of blue hyacinths alternate with small composite flowers painted in so-called Armenian red on this thin-walled Iznik water bottle made about 1560.

A star-interlace design (left), intertwined dragons (center) and interlaced arabesques (right) decorate the bowls of three spoons made of silver-inlaid bronze and (right) gilded silver. They were made in today's Iran or southeastern Turkey in the 12th or 13th century.

Poetry outlines the field of this 16th-century medallion carpet, knotted with a very fine wool pile on silk foundation threads. Detailed comparison with the famous Ardabil carpet in the Victoria and Albert Museum shows close similarities, and experts conclude that this carpet, measuring 248 by 199 centimeters (97x78"), was also made in Kashan.

Signed and labeled by the artist, this enameled portrait of Fath 'Ali Shah of Persia is just over six centimeters high (under 2½").

proverb that is often used to decorate works of art: 'Ultimately, all possessions are God's alone; we are but custodians.'"

As chairman of the Nour Foundation, Lord Young of Graffham negotiated with the British government in the hope of establishing a London museum to house the Khalili Collection. The foundation's offer to lend the 20,000-piece collection for an initial period of 15 years was met, however, with the skepticism that can sometimes greet such largesse. In Britain there was no precedent for such a loan, and the cost of constructing a new museum was deemed too considerable. The offer was rejected.

All that is certain now, Khalili says, is that a museum will be built. "Where" is still a question.

"You will have a museum with more than 20,000 items which have been fully restored, conserved, cataloged, photographed and published even before it has opened its doors. We will be giving Islamic art the credit it deserves, perhaps for the first time on this scale."

And what a scale it will be. The collection's Qur'anic manuscripts stretch from the first century of Islam until the late 1800's. Almost every type and subtype of Umayyad and Abbasid script categories is represented, often in rare complete manuscripts. Among them is the giant *Baysunghur* copy of the Qur'an, written for Timur Leng (Tamerlane) by the calligrapher 'Umar Aqta. The story goes that, in trying to impress the great Timur, 'Umar produced a copy of the Qur'an so small that it could slip beneath the signet ring of the great ruler. When Timur remained unimpressed, 'Umar went away and produced another copy, this one so huge it had to be wheeled into court on a cart.

The collection also houses the only copy of the Qur'an from 12th-century Valencia known to be in private hands. Other copies of the Qur'an, originating from as far afield as Sicily and India, include one measuring a mere 47 by 37 millimeters (1.85" by 1.45"), thought to have been written in 14th-century Iraq.

As well as numerous astrolabes, the Khalili Collection houses the finest celestial globes in existence. One was crafted by Muhammad ibn Mahmud al-Tabari in 1285 and 1286, and inlaid with 1024 silver dots indicating the major stars of various constellations. It is the original of an almost identical globe in the Louvre in Paris.

Khalili's Islamic coins number over 8000, forming one of the most voluminous numismatic collections in private hands. Nearly 10 percent of them are either unique or unpublished, and more than 1200 are gold. Coins appear from across the Islamic world, from Africa to Asia; of particular interest are the earliest Arab gold coins from North Africa, which bear Latin inscriptions. Others include a rare Abbasid dinar struck in the year 750, two more Abbasid dinars issued by Harun al-Rashid in 787 and 788, and a variety of exquisite gold Qajar *tomans*.

No less diverse is a wide range of figures and figurines. Fashioned to function as door knockers, incense burners, jugs, and other useful objects, they demonstrate that the prohibition of portraying figures in Islam has, historically, often been ignored. Dr. Sabiha Khemir, the author of the volume titled *Figures and Figurines: Sculptures of the Islamic Lands*, points out that the Qur'an warns explicitly against the worship of idols. One of the most intriguing figures in the collection is that of a kneeling, bearded man thought to portray the Seljuk ruler Tughril Beg at prayer. It was produced in Kashan, Iran, under the Mongols in the 13th century.

The ceramics collection illuminates a thousand years of Islamic pottery. The 2000 items include an unparalleled collection of 12th- and 13th-century Afghan pottery, rare Iznik pieces, early lustre-painted bowls and an extremely rare polychrome painted Persian bowl from the 10th century, incorporating a representation of the Prophet's steed, Buraq.

The more than 1000 pieces of metalwork range from an early Islamic silver ewer in the Sasanian style to a rare 13th-century *jazirah* casket that once had an unusual combination lock, and an Ottoman silver fountain ladle dated 1577 or 1578. Nahla Nassar, deputy curator of the Khalili Collection and co-author of the volume on Islamic metalwork, says the metalwork collection "emphasizes similarities." So numerous are the examples, she says, that "one can judge how a style has changed and developed" over time and distance.

Islamic weaponry in the collections ranges from the most elegant of daggers to an important group of early stirrups. "The arms and armor in the collection," says Dr. David Alexander, author of the collection's volume *The Arts of War*, "include items as varied and widely separated as a Crusader sword from the Mamluk arsenal at Alexandria and an 18th-century cannon from the palace of Tipoo Sultan at Mysore." Of historical importance is the sword of the Sudanese warlord 'Ali Dinar, taken after his defeat and death in 1916. Alexander's volume includes discussions of the belt in Islamic

Copied in Baghdad in 1282 or 1283, these pages are part of a copy of the Qur'an written by the calligrapher Yaqut al-Musta'simi in muhaqqaq *script, and thus a rarity. Other parts of this volume are in the Topkapı Palace Library in Istanbul and the Chester Beatty Library in Dublin.*

The Book of Alexander *was the last of five poems that made up Nizami's* Khamsa. *In this illustration from a 16th-century copy, Alexander the Great is shown kneeling on a mat beside the Ka'bah, his crown laid aside.*

Only faint traces remain of the gilding that once enriched this silver ewer and its detailed decoration of griffons and a double-headed eagle. It was made in the seventh or early eighth century in Central Asia or Persia.

Cataloging The Khalili Collection

Nasser D. Khalili discusses layout pages from the catalogue on Islamic lacquerware with Dr. Sabiha Khemir and deputy curator Nahla Nassar.

Every one of the 20,000 items in the Khalili Collection has been subjected to the most minute and detailed examination. For years after the rap of the auctioneer's gavel, and before Khalili permits any photography, drawing or research, each object is handed over to conservators. Textiles are washed and remounted. Metalwork, ceramics, glass, paper and lacquer all benefit from meticulous labors to slow and even reverse the effects of time on the object. This often allows the original beauty of, for instance, a piece of metalwork to become visible again, by removal of patina and corrosion. All restoration work performed is carefully recorded and noted in the catalog entry for the object.

Now and then this painstaking process leads to historical discoveries. For example, when the single line and two complete pages of the enormous *Baysunghur* copy of the Qur'an—originally thought to have been the size of a door—were put to the scrutiny of a paper expert and a conservator, they found that the single line alone was from the original 15th-century manuscript; the full pages were 18th- or 19th-century replicas.

Another, early 13th-century copy of the Qur'an copy was of uncertain geographical origin. An extraneous piece of paper and a layer of red paint had covered the original dedication of the book. Removal of these revealed its provenance: It was copied between 1198 and 1219 for Qutb al-Din Muhammmad ibn Zangi ibn Mawdud, who ruled the towns of Sinjar and Nisibin in the Jazirah during those years. According to Rogers, it is the only Qur'an copy known to have been made for a Jaziran Zangid prince.

For Russian book designer Anikst, too, the catalog project is unique in both scope and organization. Most publishers, Anikst says, contract a photographer to take the pictures and then lay the book out around the results. Anikst, however, meets with authors and editors to decide what the finished book will look like first.

"When the concept is decided upon," says Anikst, "I start to make the dummy, the mock-up, of the volume. When that's approved I make actual-size sketches for the photographer. With 30 different volumes we have 30 entirely different types of book. The key is how to unite the books to combine scholarship and aesthetics. We have tried to create a visual and scientific marriage."

In his studio, Anikst draws each and every object on a grid with painstaking precision. He gives the illustrations to photographer Christopher Phillips, who matches the position of the object on the grid of the ground glass of his camera. This ensures that each picture is aligned to perfection.

Phillips shoots 9-by-12 centimeter and 18-by-24 centimeter transparencies (4x5" and 8x10"), taking care to use only one numbered film batch for all the shooting for a single volume. This, he says, keeps color precisely consistent. Shots are taken only after meticulous composition and exposure checks. Capturing all sides of a three-dimensional helmet at once, or pulling out the subtle sparkle in the illumination on a Qur'anic manuscript, tax all of Phillips' ingenuity. One armored shield took two days to photograph. "Eventually," he recalls, "I decided not to light it at all. Instead, I built a polystyrene 'house' around it, put the shield in the middle, and illuminated the house. I do some very complicated things to make it look as simple as possible!"

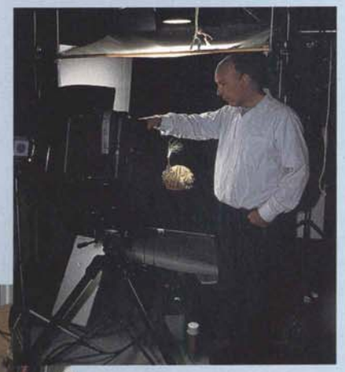
Finally, black-and-white drawings that show the complete decoration around the circumference of an object have been made to supplement the photographs in many cases. Illustrator Diane Dixson O'Carroll traces a tiny, tearshaped pre-13th century onyx talisman on which Sura 112 of the Qur'an is engraved.

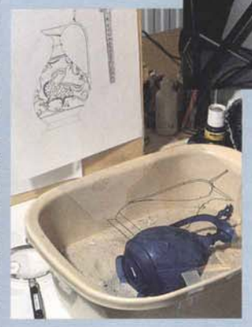
"A photograph can't always pick up as much detail as a drawing," she says. "With a drawing you can actually unwrap the design." She affixes an acetate sheet over the surface of the object and begins tracing. This becomes a working rough that is then redrawn in pencil onto specially coated paper. This drawing is in turn refined by taking measurements from the object with a pair of dividers. The drawing is completed in pencil, and finally inked. With this laborious but spectacularly accurate process, the drawings can take from a few hours up to two weeks each.

Each catalog, printed on acid-free paper, will measure 356 by 255 millimeters (10x14"). The 30-volume set will comprise more than 7000 pages, and each volume will be sheathed in a clothbound slipcase. The anticipated printing deadline for the entire set: late 1995.

For those conserving and cataloging the Khalili Collection of Islamic art, it is unlikely another publishing project as lavish as this will appear in their lifetimes.

Unless, of course, Nasser Khalili decides to collect some more.





Above, photographing a turban-crown, Christopher Phillips faces a problem: The air currents generated by his lights make the delicate plume move. At left, a ewer rests in a sand tray so a perspective projection drawing can be made on the clear plastic sheet atop the tray.

culture, the use of talismanic shirts, the ceremonial drum, and the advent of gunpowder.

In complete contrast to the weaponry is the enchanting assembly of Islamic glassware. Through the 300 pre-Islamic and Islamic pieces, one can trace the entire story of glass-making. The collection's cut glass and cameo vessels dating to the 10th and 11th centuries are unequalled. With walls as thin as a tenth of a millimeter (0.004"), it seems miraculous that such pieces have survived the centuries at all.

Inspired as he was in childhood by Persian lacquerware, Khalili now holds the largest collection of lacquer objects in the world: more than 500 penboxes, bookbindings, mirror cases and caskets.

It will take a substantial museum to do justice to the collection. Khalili wants that museum—regardless of the city in which it is built—to be a dynamic place, not just an exhibition hall of echoing footsteps.

"Creating a fossilized museum is the last thing on my mind," says Khalili. "There are millions of Muslims in Europe. A center for Islamic art will work on different levels. It will show non-Muslim Europeans that their Muslim fellow-citizens are heirs to a great tradition that deserves their respect. It will stop them thinking of Muslims only in terms of fundamentalists, terrorists and hostage-takers. It will also give European Muslims access to their own culture, and make them even more proud of it.

"People from 46 Muslim countries have different traditions, and speak different languages. What unites them is their religion and the artistic heritage which was shaped by that religion," he continues. "It is true that until recently most scholars in the field were non-Muslims, but that's changing dramatically as Islamic countries wake up to the importance of their artistic heritage.

"The moment has come for the 'people of the book'—Jews, Christians and Muslims—to speak openly to one another and to see clearly the close cultural, social, spiritual and intellectual ties that have existed among them for centuries."

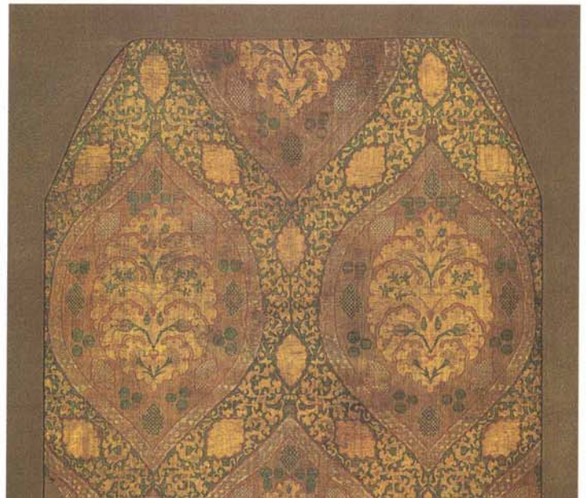
Tahir Shah, lecturer and author of The Middle East Bedside Book *and four other volumes, is the son of the prolific author Idries Shah.*

Inside back cover: Shah Jahan, flanked by two of his sons, watches from a window as elephants battle in a courtyard of the Red Fort at Delhi. The miniature dates from about 1650.

Carved of translucent, dark-green nephrite jade and eight centimeters (3") in diameter, this cup with a dragon's-head handle is inlaid with gold.

In Valencia, in 1199 or 1200, a copyist named Yusuf ibn 'Abdallah ibn 'Abd al-Wahid ibn Yusuf ibn Khaldun used a fine andalusi *script on parchment to produce a single-volume copy of the Qur'an.*

Tulips and carnations (in the pointed-oval palmettes) are among the typically Ottoman motifs in this gold-and-silk brocade woven in Istanbul or Bursa in the 16th century.



EVENTS & EXHIBITIONS

Silk Kashan Rugs. The art of carpet weaving reached a zenith in Persia under the Safavid dynasty (1501-1739) in the central city of Kashan, but today, only 20 examples of the masterpieces woven there are known to have survived. Now, for the first time, four are hung together. "This mini-exhibition of only four brilliant objects represents the [Metropolitan] Museum at its best," said Daniel Walker, Curator of Islamic Art. Made of silk pile and metal brocade and with red tones dominant, these rare carpets incorporate unusually sophisticated weaving techniques. Three feature medallion designs that refer to Chinese art, a common practice in 16th-century Persia, and the fourth incorporates animal motifs. Kevorkian Gallery, Metropolitan Museum of Art, **New York,** through January 8.

Greek Gold: *Jewelry of the Classical World.* Magnificent pieces from the Hermitage, Metropolitan and British Museums are featured in this tribute to the skills of Greek goldsmiths throughout the Mediterranean and Asia Minor from the fifth to third centuries before Christ. Metropolitan Museum of Art, **New York,** December 2, 1994 through March 26, 1995; Hermitage Museum, **St. Petersburg,** May through August 1995.

Chinese Textiles. The exhibition of more than 60 textiles includes early costume fragments dating back to the 13th century using tapestry weave, or *kesi,* a technique introduced to China by the Uighur Turks. Spink & Son Ltd, **London,** December 5 through 23.

Byzantium: *Byzantine Treasures From British Collections.* Brought together from public and private sources, the exhibition highlights the Byzantine Empire's accomplishments in arts, letters and science, through painted icons, illuminated manuscripts, textiles, mosaics and other artifacts. British Museum, **London,** December 9, 1994 through April 23, 1995.

Modern Art From North Africa. Paintings, sculptures and graphics illustrate the variations in the artistic climates of Egypt, Morocco, Algeria and Tunisia. Museum voor Volkenkunde **Rotterdam,** December 10, 1994 through May 31, 1995.

Linear Graces...(and Disgraces): *Drawings from the Courts of Persia, Turkey, and India.* Not all the work of the master artists who found court patronage was intended for the ruler's eyes. This two-part exhibition provides insight into the artists' minds with drawings from the highly finished to the whimsical. Harvard University's Sackler Museum, **Cambridge, Massachusetts,** through December 11 (Part One); December 31 through March 5, 1995 (Part Two).

Thirty Years in Egypt. Retrospective exhibition by photographer and filmmaker John Feeney includes many images shot on assignment for *Aramco World* and three films. Ewart Gallery and Theater, The American University in **Cairo,** December 11 through January 31, 1995.

Current Archeology of the Ancient World. A series of talks on current research and discoveries. Among upcoming Middle Eastern or Islamic topics: "Plans for the National Museum of Lebanon in Beirut," A. Caubet and E. Gubel, December 14, (12:30 p.m.); "The Egyptian Collections in the Hermitage," A.O. Bloshakov, January 9, 1995; "Recent Work at Tell Ashara-Terqa: A Syrian City," O. Roualt, January 13; "Rescue Archeology in the Northern Sinai," D. Valbelle, February 6; "Excavations at Tell Barri in Northwestern Syria," P.E. Pecorella, February 17. The Auditorium, Musée du Louvre, **Paris,** 12 noon except as noted.

Paintings From Shiraz. Twenty paintings and eight bound manuscripts are on display, highlighting the arts of the Persian book created in the southern Iranian city of Shiraz, home to some of Iran's most famous poets, from the 14th through the 16th centuries. Sackler Gallery of the Smithsonian Institution, **Washington, D.C.,** December 24 through September 24, 1995.

The Barnes Exhibit: *From Cezanne to Matisse.* 83 paintings, most neither displayed nor published ever before, including several works by Matisse from Morocco. The exhibit is drawn from the eclectic collection of Dr. Albert Barnes. Art Gallery of Ontario, **Toronto,** through December 31 (advance tickets only).

Paintings From the Muslim Courts of India. The similarities and regional differences in paintings and manuscript illuminations produced in the 16th through 19th centuries are highlighted. **Virginia** Museum of Fine Arts, **Richmond,** through December 31, 1994.

Resist-Dyed Textiles From India, Indonesia and Cambodia. These richly patterned textiles were created between the 15th and 19th centuries using selective dying techniques for threads or woven cloth. **Cleveland [Ohio]** Museum of Art, through December 31, 1994.

Art of the Persian Courts. 125 manuscripts, paintings, calligraphies, ceramics and more spanning the 16th to the 20th centuries. Royal Ontario Museum, **Toronto,** through January 2, 1995.

Turkish Traditional Art Today. The exhibition, along with related programs involving visiting Turkish artists, introduces the history, art and culture of modern Turkey, through 500 traditional artworks and 200 mounted photographs. **Indiana** University's Art Museum, **Bloomington,** through January 8, 1995.

Contemporary Indian Miniatures: *A Princely Gift.* The eighth year of this exhibition features works based on the album given by Prince Dara Shikoh to his wife. Commonwealth Institute, **London,** through January 22, 1995.

Knotted Splendor: *European and Near Eastern Carpets from the Permanent Collection.* More than 30 carpets dating from the 16th to 19th centuries. The Art Institute of **Chicago,** through January 22, 1995.

Egyptomania: *Egypt in Western Art From 1730 to 1930.* Some 300 works from the Louvre and other French museums illustrate the fascination of Western artists with ancient Egyptian themes from the 18th to early 20th centuries. Künstlerhaus, **Vienna,** through January 29, 1995.

The Wreck: *The Ancient Art Ship of Mahdia.* About 80 BC, a Greek ship laden with marble columns, capitals, busts, bronze statuettes and luxurious household furnishings sank near the city of Mahdia off the Tunisian coast. The restored cargo, on loan from the Bardo Museum of Tunis, can be viewed for the first time in Europe along with a historical display discussing the ship's fateful voyage and the recovery and restoration process. Rheinisches Landesmuseum **Bonn,** through January 29, 1995.

Across the Seas: *Textiles and the Meeting of Cultures.* A global collection of textile objects explores how intercultural contact from conquest and colonization to philosophical exchange and tourism have influenced textile motifs since the Silk Route first linked Rome with Beijing in the second century before Christ. The **Los Angeles** County Museum of Art, through February 5, 1995.

Ayla: *Art and Industry in an Early Islamic Port.* Ayla—modern Aqaba, Jordan—has been the site of Oriental Institute excavation for several recent years. The exhibit emphasizes the objects of daily life. The Oriental Institute Museum of the University of **Chicago,** through February 12, 1995.

Mohammed Omer Khalil, Printmaker, and Amir I. M. Nour, Sculptor. Work by two Sudanese artists. National Museum of African Art, **Washington, D.C.,** through February 26, 1995.

Contemporary Artists Inspired by Ancient Egypt. This unusual display in the Egyptian Sculpture Gallery includes paintings, sculptures and interactive installations using CD-ROM computer technology. British Museum, **London,** through February 1995.

Nefertari, Light of Egypt. Exhibit devoted to Queen Nefertari and her era includes artifacts from major museums and a reconstruction of her tomb. Fondazione Memmo, Palazzo Ruspoli, **Rome,** through April 1, 1995.

Permanent Collection of Contemporary Art. A display of some 100 artworks by painters from the Arab world. Institut du Monde Arabe, **Paris,** indefinitely.

The Saudi Aramco Exhibit. Centered on the Arab-Islamic technical heritage, this permanent interactive, "learn-by-doing" scientific exhibit relates historical background to today's petroleum exploration, production and transportation. **Dhahran, Saudi Arabia.**

Information is correct at press time, but please reconfirm dates and times before traveling. Readers are welcome to submit information for possible inclusion in this listing.

Statement of Ownership, Management, and Circulation

1. Publication Title: *Aramco World.* 2. Publication No.: 1044-1891. 3. Filing Date: 9/30/94. 4. Issue Frequency: Bimonthly. 5. No. of Issues Published Annually: 6. 6. Annual Subscription Price: Free. 7. Complete Mailing Address of Known Office of Publication: Aramco Services Co., 9009 West Loop South, Houston (Harris County), Texas 77096-1799. 8. Complete Mailing Address of Headquarters or General Business Office of Publisher: Same as Item 7. 9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor: Publisher: Aramco Services Co., 9009 West Loop South, Houston, Texas 77096-1799; Editor: Robert Arndt, Aramco Services Co., 9009 West Loop South, Houston, Texas 77096-1799; Managing Editor: None. 10. Owner: Aramco Services Co., 9009 West Loop South, Houston, Texas 77096-1799. 100 percent of the stock of Aramco Services Company is owned by Saudi Arabian Oil Company, Box 5000, Dhahran 31311, Saudi Arabia. 11. Known Bondholders, Mortgagees, and other Security Holders: None. 12. Not applicable. 13. Publication name: *Aramco World.* 14. Issue Date for Circulation Data Below: July/August 1994. 15. Extent and Nature of Circulation:

	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total No. Copies	169,241	171,206
B. Paid and/or Requested Circulation: 1. Sales Through Dealers and Carriers, Street Vendors and Counter Sales	0.	0
2. Paid or Requested Mail Subscriptions	163,955	161,868
C. Total Paid and/or Requested Circulation	163,955	161,868
D. Free Distribution by Mail	0	0
E. Free Distribution Outside the Mail	0	0
F. Total Free Distribution	0	0
G. Total Distribution	163,955	161,868
H. Copies Not Distributed: 1. Office Use, Leftovers, Spoiled	5,286	9,338
2. Return From News Agents	0	0
I. Total	169,241	171,206
Percent Paid and/or Requested Circulation	100%	100%

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Aramco World (ISSN 1044-1891) is published bimonthly by Aramco Services Company, 9009 West Loop South, Houston, Texas 77096-1799.

Volume 45, Number 6. Second-class postage paid at Houston, Texas and at additional offices.

POSTMASTER: send address changes to *Aramco World*, Box 469008, Escondido, CA 92046