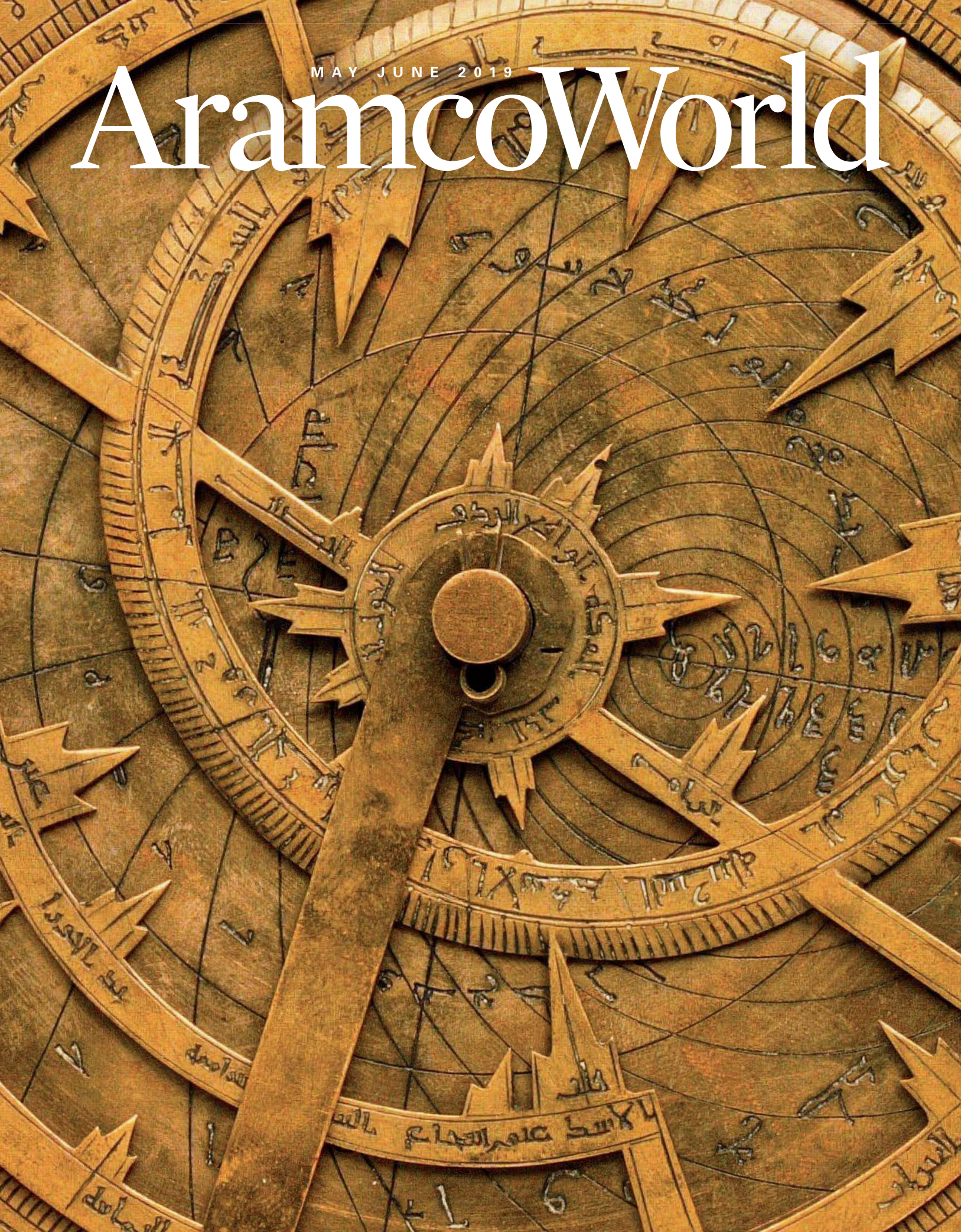
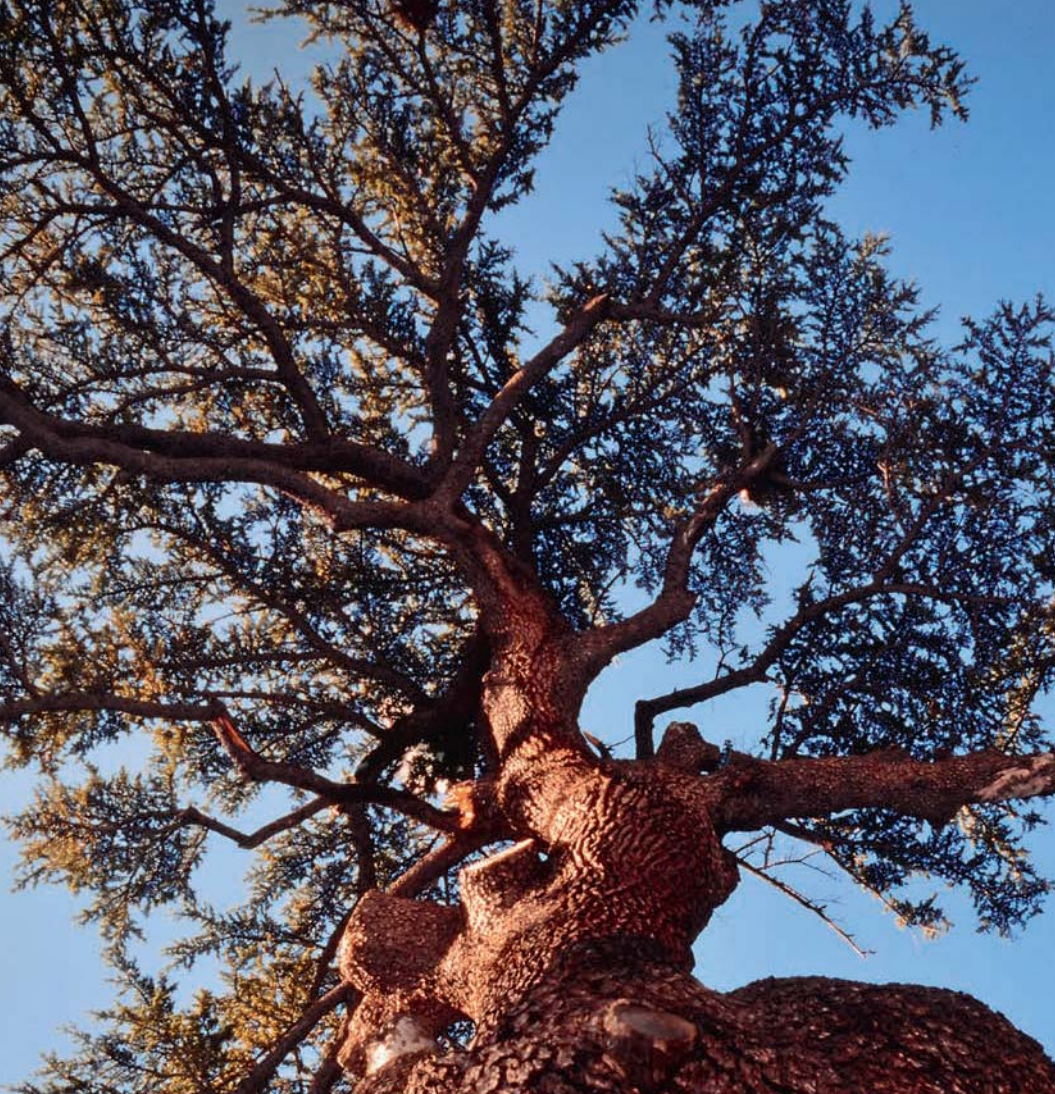


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AramcoWorld





6 *Cedrus libani* Forever?

Written and photographed by Sheldon Chad

The cedars of Lebanon are symbols of the country itself, a living metaphor of both majestic beauty and endurance that has been tested by empire after axe-wielding empire. But few cedars remain, and their survival is challenged by warming temperatures and the insects that follow. Reforestation is bringing new trees to higher, colder altitudes as activists work to extend preserves and biologists look to genetics for adaptations. Even our author pitches in and volunteers a handful of 24-year-old cedar seed cones for analysis—all to keep *Cedrus libani* growing in the hills as well as in the hearts of Lebanon.

14 Astrolabe Tech Made ... Not So Easy

Written by Lee Lawrence
Photographs and video by David H. Wells
Illustrations by Ivy Johnson

About the size of a tablet computer, astrolabes were tools of astronomers, surveyors and navigators, to name a few. But using them took a lot more than typing, tapping and swiping.

Online CLASSROOM GUIDE 2 FIRSTLOOK 4 FLAVORS

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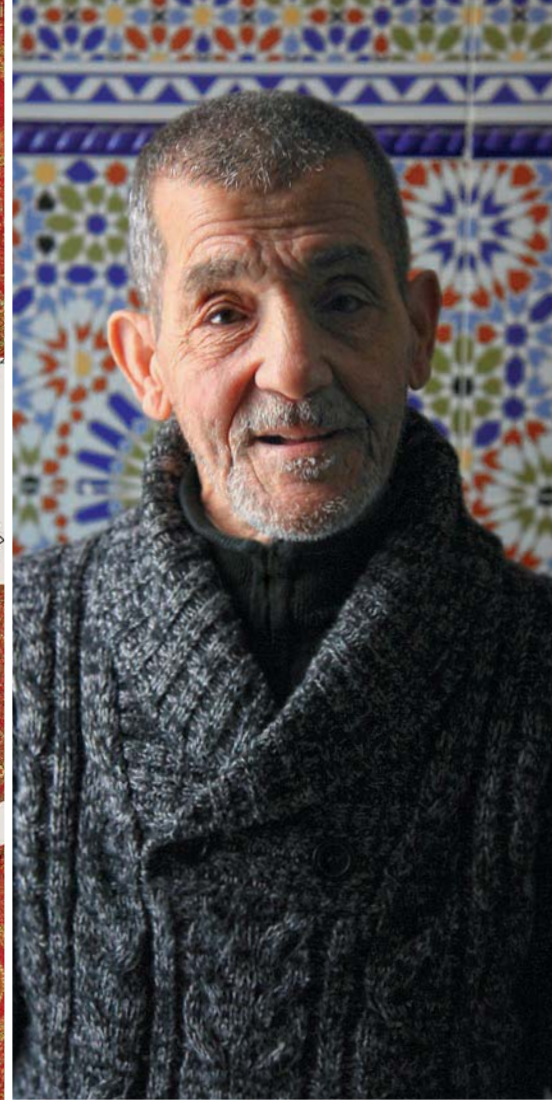
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We distribute *AramcoWorld* in print and online to increase cross-cultural understanding by broadening knowledge of the histories, cultures and geography of the Arab and Muslim worlds and their global connections.

Front Cover: Each astrolabe's front plate is etched with lines that help calculate sunrise, sunset and celestial coordinates by rotating the calibrated rete over them. Photo: Alamy / Naval Museum of Madrid.

Back Cover: In the mountains of Lebanon, cedars depend on the cold of winter to break open their seeds. Photo by George Azar.



22 The Extraordinary Ordinary #everyday

Written by Mae Ghalwash

Founded by journalists to look beyond headlines to the kaleidoscope of daily life, The Everyday Projects comprises more than 50 Instagram feeds from Africa and Asia to the Middle East and the Americas. Their photos capture a mosaic of life from just about everywhere, every day.

 38 REVIEWS  40 EXHIBITIONS

26 The Mystery of Cairo's Magnificent Mamluk Carpets

Written by Rosamond E. Mack

Few survive, and some of those are in fragments: In the late 15th century, the Mamluk sultan in Cairo built up the city's carpet workshops, and the expansive masterpieces they produced soon graced palaces—notably in Italy and al-Andalus, Muslim Spain.

32 The Storyteller of Tangier

Written and photographed by Jeff Koehler

As a child, Mohammed Mrabet ran away from school and never learned to read or write. But he could tell spellbinding stories. A friendship with writers Jane and Paul Bowles got him published in more than a dozen languages. Today he is known also for his painting and drawing.

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FIRST LOOK

Mobile Library, Java

Photograph by
Putu Sayoga



In 2015 Ridwan Sururi of Serang Village, central Java, Indonesia, started the *Kudapustaka* (Horse library), and since then, three days a week, he has visited villages and schools like Miftahul Huda Islamic Elementary School. On this day he was joined by his two-year-old son, Tria Ramadhan. Together they handed out donated books to the students. As a photographer I did this story because I was also born in a village with difficult access to books. I believe in the power of books, and I know what Mr. Sururi is doing is important.

—Putu Sayoga

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FLAVORS

Afro Steak Dinner

Recipe by
Moussa Doulaeh

Photograph courtesy
Ricky Rodriguez/
Ricarius Photography

This dish truly represents Somali and East African culture, using ingredients that can be easily found.

I learned the power of food from my father, who used herbs and spices as medicine to help others. He first taught me the importance of using fresh ingredients and treating them with respect. In Somalia, goat meat is fairly common, while beef is somewhat of a delicacy because of the high value of cattle. This dish includes tasty portions of spiced beef with grilled vegetables. Aromatic Somali rice, bursting with sweet and savory flavors, is a natural match. There will be enough rice for leftovers or large appetites, but you can easily halve the recipe, if preferred.

(Serves 4 to 6)

Rice

- 2 T vegetable oil
- 2 garlic cloves, minced
- 1 cinnamon stick
- 1 jalapeño pepper, whole
- ½ medium onion, finely chopped
- ½ small or ¼ large green bell pepper, finely sliced
- ½ small or ¼ large red bell pepper, finely sliced
- ½ t curry powder

- 1 t cumin
- 5 c (1.2 liters) chicken stock or water, or a combination
- 1½ t salt, or to taste
- 3 c (1¼ lb / 560 g) long-grain white rice
- ¼ c (½ oz / 15 g) chopped cilantro
- 1–2 T golden raisins (optional)

Steak Sauté

- 1–2 T vegetable oil
- 2 garlic cloves, finely chopped

- 2 lb (1 kg) sirloin steak, thickly sliced
- 2 t berbere spice mix
- ½ t adobo seasoning
- 1 t chicken-stock powder
- 1 medium onion, sliced
- ½ medium green bell pepper, sliced
- ½ medium red bell pepper, sliced
- ½ c (120 ml) puréed tomatoes
- 1 t chopped cilantro, plus more to garnish

First, make the rice: Heat the oil in a medium saucepan over medium heat. Add the garlic, cinnamon stick and jalapeño and sauté for a few seconds, until fragrant. Add the onion and peppers and sauté until the onions are translucent, 3 to 5 minutes. Stir in the curry powder and cumin.

Add the stock or water, salt and bring to a boil. Add the rice and cilantro, and bring back to a boil. Then reduce the heat to very low and cook, covered, until the rice has absorbed the water, about 20 minutes. Turn off the heat and let stand for 5 minutes with the lid on. Then fluff with a fork, remove the jalapeño and mix in the golden raisins, if using.

To make the steak sauté: Heat the vegetable oil in a large sauté pan. Add the garlic followed by the steak and sear the meat for about 30 seconds on each side. Season the meat in the pan with the berbere spice, adobo and chicken-stock powder.

Reduce the heat to medium, add the onions and mixed peppers and cook until the vegetables have softened and the liquid in the pan has evaporated, about 3 minutes. Add the tomato purée and cilantro and cook until the steak is prepared to your liking and the liquid has reduced to a sauce consistency, 5 to 7 minutes.

Serve the meat atop the rice, garnished with chopped cilantro.

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**The Immigrant
Cookbook**

Leyla Moushabeck, ed.
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Moussa Doulaeh is executive chef and co-owner of Afro Deli, a fusion restaurant with locations in Saint Paul and Minneapolis, Minnesota. At Afro Deli, he combines the cuisine of his native East Africa with the many flavors learned from his formal culinary training in top Canadian and American kitchens, or gathered from cooking with friends from around the world. In April 2017 Afro Deli initiated the Dine Out for Somalia campaign, a fundraiser with 50 participating restaurants, to support famine-relief efforts.

EVAN FROST



Cedrus libani F O R E V E R ?

WRITTEN AND

PHOTOGRAPHED BY

SHELDON

CHAD



Here I wait in line at passport control at Beirut-Rafic Hariri International Airport. Under my arm is a cardboard box I have carried halfway across the planet. Inside it: six cedar cones, souvenirs of a visit to Bsharri, site of Lebanon's most famous cedar forest, a quarter-century ago. Over the years, as news stories began to make clear the stress the trees are facing from climate change, I got to wondering whether my old cones could somehow be useful. Could they "speak" to scientists or conservationists today? When a Lebanese plant geneticist agreed that analysis of their dormant seeds might shed light on future environmental threats to the cedar, it was enough for me. While my cones get their investigation I'm going to learn what is being done to ensure that the trees survive.

In 1833 French writer Alphonse de Lamartine hyperbolized, "The Cedars of Lebanon are the most famous natural monuments in the universe."

Something like that could have been written in hieroglyphs or cuneiform 5,000 years ago and in languages near and far ever since. But in a contradictory and all-too-human way, from the Phoenicians onward, the same civilizations that have rhapsodized about the cedars have largely done their mercantile best to fell them in vast numbers.

Cedrus libani grows exclusively in the mountains of the northeastern Mediterranean: in Lebanon, eastern Syria and southwestern Turkey. In Lebanon the trees once covered an estimated half of the modern country. Now they cover a mere one percent, just 2,000 hectares, if you add up all the scattered parcels. This qualifies

Cedrus libani for the International Union for the Conservation of Nature's Red List of Threatened Species—a lamentation for our time written in the clinical prose of science.

No more cedars in Lebanon?

It's happened before, or so says the oldest story in human history, the *Epic of Gilgamesh*. In it, cutting down the cedars, a virgin forest where only gods could dwell, marked humankind's first environmental plunder.

Has the arc of time brought us again to such a point?

For Lebanon, the decline of its cedars, and its struggle to preserve them, is not just about the virtues of biodiversity. *Cedrus libani* identifies the country. Lebanon is the only nation in the world with a tree on its flag.

Return to Bsharri

There is something one never forgets about a *Cedrus libani* woodland. I can still trace my footsteps 24 years ago on an overcast, cold December day in the Arz el-Rab (Forest of the Cedars of God). The expansive, tabular trees, their branches like elephant ears, their younger cousins massive in height, made a royal court of giants with conical crowns. A quiet in that snowy arcadia seized me. Cedar cones, unlike those of other conifers that dangle, dance upright atop their branches like congregations facing the heavens. And with every wintry breath, I took in a woody, sweet scent of cedar oil. It was then I picked up cones as mementos of these living witnesses to so much history, carriers of genes that span the ages.

In Bsharri again, I meet up with Youssef Tawk, the town's medical doctor and one of Lebanon's foremost environmental activists. Upon his return in 1990 from studies in Belgium, he joined a resolute group of residents who, even in the midst of the Lebanese Civil War, founded The Committee of Cedar Forests Friends to save their iconic stand of trees from "shepherds, warlords, developers and real estate speculators."

With a lined face, penetrating eyes and a white beard, Tawk looks like he is ready to sit for a Rembrandt portrait. The old trees now number just 375, and the forest is circumscribed by a stone wall, paid for by Queen Victoria to protect the trees from grazing goats. It is arguably more of a park than a true forest, Tawk explains. These remaining cedars have long struggled to regenerate.

It was around the time of my first visit that the condition of the trees began to decline noticeably. The cause, or causes, were unknown.

"The old trees will die, but young trees planted outside the walls will replace them," was Tawk's frantic thought at the time. Cedar planting became his obsession, and soon his life's calling.

"The terrain that I chose was awful. I planted for five

years, and they all died." With persistence, however, he got the hang of it. In the years since, the survival rate of the seedlings and young trees is now 80 percent. The newly forested area has multiplied the old trees 30 times over the original 10 hectares with some 125,000 young trees. He and the committee have hardly done this alone: townsfolk, volunteers, artists, poets and NGOs have all pitched in; celebrities, too, including Lebanese Mexican billionaire Alfredo Harp Helú and *Elle Oriental* Editor-in-Chief Désirée Sadek—all have lent a hand. In this, they together mirror conservation and reforestation efforts all over the country—even across Lebanon's sectarian divides, Tawk points out.

Nonetheless, he adds, a changing climate "looms large over all of the good works."



Opposite: The crown canopy of a cedar of Lebanon, *Cedrus libani*, spreads outward in Karm Chbat Nature Reserve in northern Lebanon's Akkar district. Throughout the country the cedar is widely regarded as a symbol of endurance, like the tree *above*, which continues to produce new foliage as it struggles to survive in a changing environment.

Sleeping Beauties

"Species will not disappear from one day to the next. But in 200 years they will have no forest."

That's Magda Bou Dagher-Kharrat, a plant geneticist in the Department of Plant and Earth Science at Saint Joseph University. She is speaking about "functional extinction," even if individual trees remain. "To find the bioclimatic envelope with the same wind, water and temperature,

we have to go every year a little bit higher to get colder temperatures in order to get the cones to open. If a cone opens up properly, seeds fall down, and they germinate in the soil. If the cones do not have low enough temperatures to break open, seeds will germinate inside the cones. This is fatal for them. That is what climate change's real effect is."

Saint Joseph University's biological science campus at Mansourieh perches atop a ravine in the mountains above Beirut. But I'm down in the basement parking lot. The sign on the door says *Jouzour Loubnan* (Roots of Lebanon). Dagher-Kharrat is also the director of this 10-year-old laboratory for seed germination and conservation. It looks to be a modest enterprise—basically a refrigerator full of seeds and a small lab—with ambition to collect the seeds of Lebanese species, including *Cedrus libani*, and to use them for ecosystem restoration. Jouzour Loubnan has been instrumental in the planting of some 300,000 trees. It was Dagher-Kharrat's curiosity about my 24-year-old souvenirs that brought me here.

She points to a map of Lebanon on the wall. "This is



Dagher-Kharrat summons my cardboard box of 24-year-old cones, the ones she has nicknamed “the sleeping beauties.”

preservation. Still, it just so happened that 1994 was also when biologists first began to notice the effects of climate change in the Bsharri forest. I wondered if the genetic data in these cones could help biologists better understand the recent past, and thus help the cedars better withstand future environmental shifts? Dagher-Kharrat was interested specifically in the prospect of comparing how a tree grown from my old seed might fare alongside a current seedling. But could we wake a sleeping beauty?

“They are very small. They look like fossils,” says Dagher-Kharrat. “This one definitely will not find seeds inside. It is not fertilized.

“You said you didn’t collect them on the trees?” She points at the broken stems on the cones, suspicious.

Dagher-Kharrat plops me in front of a computer screen. Her cones, she says, were undeveloped, from the wrong year of that cedar’s three-year life cycle for maturity. Their color originally must have been green, she surmises. “It’s not fertile. It’s a baby in the second trimester,” she concludes.

“I am very optimistic,” I say with bluster and ignorance. Dagher-Kharrat laughs.

She tells me it is not realistic to use the usual protocol of weeks of hot and cold to try to open my underwhelming cones. She can, however, try a new protocol: soak them for two days and, maybe, crank them open.

“I wrote, ‘Sheldon’s seeds,’” says Dagher-Kharrat as she labels a beaker of water. “I should have written ‘cones,’ so maybe it is a good sign. Maybe I will get seeds.”

Sawfly Man

You’re in a conversation with Nabil Nemer, and then you’re not. He darts off into the woods to examine one of his insect traps. His is a world of offense and defense, insects and trees, aggregation pheromones and a combination of toxic and polymer chemistry. Nemer, Lebanon’s only tree entomologist and a professor at three universities, snatches a bug too small for me to see off a flower and drops it in a bag. “My vision is only excited when I see insects,” he says.

“The truth is climate change is not affecting the cedar tree. But it *is* causing other elements that are causing the dieback

where we are making assisted migration. We are taking from here and putting it up there.” Her finger traces the roughly 2,000-meter range of Mount Lebanon above Bsharri, altitudes that push the limits of cedars to where, historically, only the cedar’s hardier close cousin, *lazzab*, or juniper, thrives. (The junipers, too, are threatened but mainly by illegal cutting and overgrazing.)

“The genetic diversity that our cedars are harboring and the potential they have to stay alive while a lot of other cedars during the Ice Ages did not,” says Dagher-Kharrat, make this “kind of the end of a dynasty, you can say—the last representatives of these great genes.”

She summons my cardboard box of 24-year-old cones, which she calls, “the sleeping beauties.” Previous studies have found that most cedar seeds remain viable for three to six years when dried and stored a few degrees above freezing. Mine had been introduced to scorching summers in southern California and subzero winters in Canada—not exactly the recommended protocol for oily seed

Above: In her lab, plant geneticist Magda Bou Dagher-Kharrat prepares one of the author’s six cones for soaking in hopes of reviving its 24-year-old seeds. Could it grow a tree? From another cone she separates individual seeds, *right*, and cuts into one to assess its potential, revealing a white embryo. “They are very small. They look like fossils,” she says.





Conservationist Youssef Tawk was one of the founding members of The Committee of Cedar Forests Friends, which started in the late 1980s to build awareness and protect the remaining old trees in Bsharri that numbered just hundreds. Today, his life's calling is cedar planting. Tawk and others have planted more than 70,000 seedlings. Lower: Cedar seedlings grow at the committee's nursery in Bsharri, one of the foremost nurseries in Lebanon for growing cedars.

of cedars," Nemer emphasizes.

We are walking in Arz Tannourine, the largest and densest cedar forest in Lebanon, which is still only about 600 hectares. It's June, and nearly a third of the trees look almost burnt, with browning needles and overall partial defoliation. This contrasts with the healthy trees, the green cedar forest of centuries-old voluminous, chandelier-type trees, spread out under the azure sky.

Nemer fondles some red-brown needles and finds a green larva. With three pairs of legs on the thorax and a single pair of anal prolegs, it's very small, and almost cute. *Cephalcia tannourinensis*, what was later found to have attacked Bsharri, is named after its discovery in this forest, he says. The common English name is cedar webbing sawfly.

"You have to look how other factors are being interpreted by the insects and [also] how factors are interpreted by the trees. This is why the trees will be 'calling' for the insects to come to it," says Nemer.

It's at this minute level that climate change plays out.

The lifecycle of this sawfly is such that each spring adult female flying from tree to tree lay as many as 50 eggs on the needles of new buds. As the larvae open, they feed on the needles. After a month the mature larvae drop to the ground. There they enter into one of two types of diapause, or dormancy: either annual

or for up to seven years, depending on soil moisture and temperature. Rising temperatures and diminished snowfall are changing the soil conditions, Nemer explains, triggering more larvae to go into one-year diapause. The result is more sawflies. The cedars can manage against a minor onslaught from the *Cephalcia tannourinensis*, but the numbers now overwhelm the trees' defenses.

If the attack is for three years, the branch is dead. So in the second year, one has to carefully weigh leaving it to the forest's natural cycle or bringing in the Lebanese Army to spray the forest with a pesticide called diflubenzuron.

"We need to know how to manage our forests," he says, "and not to have new forests that will not survive."

Reforestation is all fine and well, he adds, but "what to do if something happens to these trees?"

Awakening Beauties

"Baby is coming!" Dagher-Kharrat jokes as she skillfully cracks open my cone after it's sat in water for a few days.

"They have seeds! We got the miracle." She half-seriously asks, "Did you pray these two days?"

I am feeling validated, but I am uncomprehending: How *did* they stay alive?

"A very slow metabolism," says Dagher-Kharrat. "This is what characterizes plant seeds and spores. This is a



miracle of life that humans and animals cannot do.”

Dagher-Kharrat picks the scales of the cone apart like an artichoke. “Touch it. Don’t be afraid.”

They resemble the “Winged Victory of Samothrace,” or at least the part of the wings. Each gossamer, translucent brown “wing” holds a two-millimeter seed that looks like a tiny beak. They are slippery and firm.

Dagher-Kharrat cuts into a seed to reveal the whitest white inside the endosperm, the nutritive tissue. She cuts it again to put the embryo under the microscope.

“This wasn’t fertilized.”

Now I *should* pray, I think.

“I am still optimistic,” she says. She cuts into a second seed. Beside the white endosperm is the embryo, and there are the tiny but visible beginnings of what look like ... a tree.

“Voilà! This is a baby cedar. Here is the root. And here are

the leaves. Slept for 24 years.”

After conducting a “flotation test,” she pulls 34 seeds from the cone that just might grow into cedars. To get there, she says, what is needed next is to “kiss the sleeping beauties awake.” Scientifically, this means a standard protocol of 30 days of stratification: cycles of light and temperature that approximate the natural cycles of day and night in the mountains.

“Sometimes working in the environmental domain can be depressing,” says Dagher-Kharrat. “The cone opening in my hands gives me a power for 10 years,” she says referring to her own inner strength.

How Green is My Valley

Rising above Bsharri is Jabal al-Makmel with its 3,088-meter Qurnat as Sawda’ (Black Peak), the highest peak in the Le-

vant. One legend says Noah planted a sacred tree here after the great flood: Was it symbolic atonement to replace the forest of cedar trees that built his ark? At the crest the stunning views of the Qadisha Valley below disappear, only to be replaced by a still more scenic splendor on the other side—the Bekaa Valley. I am riding with Charbel Tawk (no relation to Youssef), an agronomist and the former president of The Committee of

“My vision is only excited when I see insects,” says tree entomologist Nabil Nemer as he looks for signs of infestation and damage from the cedar webbing sawfly in Arz Tan-nourine. *Lower*, feeding tracks left by beetles after an infestation. The warmer climate is increasing the sawfly’s numbers, stressing and killing more trees.





Field botanist and herbalist Nasser Shreif, left, and Charbel Tawk, former president of The Committee of Cedar Forests Friends, survey planted cedar trees along the Anti-Lebanon Mountain Range in the Yamounneh Nature Reserve. The reserve, established in 1988, became the first recognized preserve in Lebanon. Shreif and Tawk oversee reforestation efforts in the area.

Cedar Forests Friends. We plan to meet up with Nasser Shreif, field botanist and herbalist, at the Yamounneh Nature Reserve.

“Allah a’ ma’ak,” Tawk greets Shreif colloquially. Shreif, rugged in an army fatigue jacket and fishing hat, has a growly voice and talks in chapters more than sentences. Tawk is sturdy and wordy himself. We’re surveying Shreif’s planting of cedars and other tree species at the top of a foothill of the Anti-Lebanon range amid wind gusts and intermittent, late-season rain. I look out below on the greenest of green agriculture carpeting most of the 10-square-kilometer Qadisha Valley. A dammed lake shimmers at one end.

“The first reserve in the world was here in Yamounneh,” says Shreif with a sweep of his hand. “There is a plaque not far away from here where [Roman Emperor] Hadrian obliged the people to conserve four local species: cedar, juniper, oak and pine. If Hadrian in the second century said that it should be a reserve, why not me, the son of the land here? Why don’t I do that? I worked hard with the government to name it as a reserve in 1998.”

Despite the Anti-Lebanon range not getting the Mediterranean sea breezes thought to be essential for a cedar forest, Shreif is determined to prove that the trees can adapt to warming temperatures and lower altitudes in this semiarid region. “It used to have a lot of cedars here, even near the desert,” says Shreif.

The two sons of the summit, from different sides of the mountain, talk robustly. “We are on the same wavelength, me and him,” says Tawk.

It’s soon apparent why Shreif is so excited to talk shop.





Nearly 3,500 trees—mostly cedars—are planted in the Horsh Ehdén Nature Reserve, a program led by the Lebanese Reforestation Initiative with assistance from USAID and the US Forest Service. The process is costly, says local environmentalist Abdo Nassar: A single tree costs about \$23 to plant and raise; once in the ground, the survival rate ranges from 50 to 90 percent. Lower: Sayyid Markos, another conservationist, examines cedar remains in the area.

He doesn't have much help. He says he's planting for his sons to find trees after 20 or 30 years, and he has to contend with goats "passing by eating seedlings." Indeed, it's hard to make out the future forest here.

Shreif calls us over to show a cedar seedling. "Two years ago I hid it here in the rocks. It will be a beautiful tree."

The English Road

One look at the Arz Najib section of the planned Lazzab DanniyeH Nature Reserve, north of Bsharri, where cedars and junipers perch on Jurassic karst outcrops like park wardens, and you can't help but start to silently count what else marks these hills: stumps.

Queen Victoria may have given the wall in Bsharri, but the British took their plunder too. During World War II, they axed and sawed into forests so dense no one could walk inside them, say locals. The logs went to make "sleepers," or ties, for the railroad along the coast. In their logging, indeed,

they only matched the Ottomans, who a world war earlier razed trees along the way for the Hijaz Railway. The British left only a few trees with any age to them, usually in remote places where their network of rugged roads, called "the English Road," could not reach.

But there is a story of triumph here as well. After the British left in 1942, nearby Quammoua villagers in Lebanon's northern Akhar district started collecting money to pay people to guard the area so their forest could grow back. It was the first modern environmental action in Lebanon. They have ever since been stewards over the trees, and despite their own economic hardships, they have bought wood from another region, legally.

A goat's bell tinkles, and a herder, Ahmad Hamza, introduces himself to the trio that drove me here: Shawki Khalad, one of the two park rangers for the 23-square-kilometer protected area, policeman Ahmad Yahya, and a representative from the



Dunniyeh Union of Municipalities, Manor Obeid. Hamza walks up on one of the rough roads the British made for their pushcarts laden with tree trunks. The trio asks him his opinion of the plan to raise the protected status of the area. Hamza says his father is against it.

“Where would he go with his goats?” he asks. Add his herd to the 350,000 or so goats in Lebanon,

many of which graze in forests—and feed omnivorously on seedlings of all types of trees. Yahya, Khalad and Obeid trade off on the young man for a full five minutes, assuring him that there would be grassland for his goats and that he has to respect the rules. “He cannot imagine the idea,” says Obeid.

Farther along our road, a more upscale economic intrusion threatens the cedars in an old-growth forest called Jered Njass, on the north face of Jabal al-Makmel. Today it hosts a subdivision in which large villas wrap themselves around centuries-old trees. Climbing up toward the peak, a road has plunged into the forest, which ends near the top, where the land has been cut clear to make way for a hotel-and-ski complex.

“The problem over there is just the goats. But here it is the human being,” says a downcast Khalad.

Shouf Biosphere Reserve

On the other end of the country, in the south, the sign in the Barouk Cedar Forest says I’m only a gaze away from immortality. It’s here that grows what is claimed to be the oldest cedar in Lebanon, aged more than 3,000 years; not far from it, clocking in at a reputed 2,000 years old, the very cedar that so inspired Alphonse de Lamartine’s panegyric.

Science, it turns out, tells a different story. The trees, says native son Ramzi Touchan of the Laboratory of Tree Ring Research at the University of Arizona, are nowhere near that old. The oldest is “precisely” from 1374 CE, he says, and it’s not in Barouk, but in the Bsharri forest. “Never saw any older than that, anywhere,” he continues. Some olive trees are much older. But he admits that the myths have played an important cultural role in helping save many from the axe.

Ecologist for the Shouf Biosphere Reserve, Khalid Sleem is,



Shawki Khalad is one of the two park rangers managing the 23-square-kilometer protected area in the prospective Lazzab Danniyeh Nature Reserve. He points to a young juniper tree. Like the cedars, junipers and other species have felt impacts of climate change.

similarly, all pragmatism. “More important than finding old trees is the resilience of the forest as a whole. If the forest generates more trees, and if offspring have the ability to survive, then this is a positive story. Finding thousand-

year-old trees is not as important as a resilient forest that can withstand the climate change we’re facing today.”

“We don’t only want to conserve just the cedars,” Sleem explains. “Many trees, plants, fungi, microorganisms benefit from the existence of the others. The whole system is connected.... Remove one element of it, the whole chain breaks.”

He takes me into another forest, Masseur el Shouf, that is like a dreamscape growing out of the rough, calcareous rocks that were once an ocean floor. The lower parts of the trees show lichen colonization. It looks unhealthy, but this is a natural thing, says Sleem. Only a few seasons back, the cedar cones didn’t open up

at all, he says. “We feared this could have become a habit and the natural regeneration of the seeds would not go on with climate change.”

The Shouf Biosphere Reserve is the largest such area in Lebanon. It comprises some five percent of the entire nation and is the most developed of the country’s protected areas. It includes three cedar forests as well as villages, and people receive assistance in finding and developing green jobs.

Draw Sleem out on climate changes, though, and he goes bleak.

“[The] adaptation of species with trees take time. Offspring adapt. It takes hundreds of years. Climate change will outpace the lifespan of the trees.”

But try he will.

To help jump-start adaptation, he says, “we plant species at the same altitude we get the seeds because they should be adapted to this level of conditions.”

And like a shadow of Sleem’s warning, the nearby slopes of the high mountain of Masseur el Shouf rise, denuded of trees, legend says, ever since Solomon had built his temple.

If Hadrian in the second century said that it should be a reserve, why not me, the son of the land here. Why don't I do that?

—Nasser Shreif

The Hard Work of Planting

I complete my circuit around Jabal al-Makmel below Qurnat as Sawda', at the 2000-meter limit of the cedars, in the buffer zone just outside Horsh Ehden Nature Reserve. Spanish bloom, poppies and *rosa canina* dot the hillsides. It's in this zone the reserve hopes to expand its forest, the most biodiverse in the Middle East, with one of the region's most ambitious planting programs.

The Lebanese Reforestation Initiative (LRI) is just one of the players here, with a yearly planting of 3,500 trees, almost all of them cedars. Founded in 2010, the LRI's expertise comes with help from abroad, mostly USAID and the US Forest Service. It is Lebanon's largest player in long-term sustainable reforestation efforts. Abdo Nassar, 24, is as old as the cones I brought home and part of a new generation of tech-savvy, passionate and optimistic environmental workers who make the greening of Lebanon a life calling.

"We sculpt and weed a half meter to a meter around the trees to reduce water competition," says Nassar as he inspects the work of a team of Syrian laborers doing follow-up maintenance for trees put in the ground in the last three years.

Cedars are planted in a scooped hole with a raised lip on the lower end. He explains that this creates a microclimate around the tree that retains moisture. "Instead of runoff on the lower side, water gathers here and filtrates into soil for the seedlings," he says. This manner of planting also helps shade the seedlings as best as possible so they are not overly exposed to the sun.

Reforestation is both water and labor intensive. It is also expensive. The cost of the seedling, the transportation, the planting, the irrigation tanks and pipes, the multiple sculptings and waterings over the usual period of three years, come to about US\$23 or more per tree—alive or dead, grown to maturity or eaten young by a goat. Because trees can be planted on depleted soil, survival rates can vary from as much as 90 percent to as low as 50 percent. With LRI planting 100,000 a year, it's a financial commitment. And risky. If international funding ceases, will the trees even survive without follow up care from NGOs? The plantings at Horsh Ehden by both LRI and others cover 10 square kilometers. For it to be called a forest, scientifically, it should take about 15 years.

"Different partners. Individual actions," says Nassar, "collectively you see the results."

Cedars are planted in a scooped hole with a lip on the lower end that helps retain moisture. Each one costs about \$23, whether it lives or not.

Conservationist Georges Karam walks through dense fog in the Karm Chbat Nature Reserve, where he runs an ecolodge that brings visitors into the forest.



From a squatting position, Nassar takes my hand to feel the earth around a year-old seedling. It's still even smaller than one of my cones. "This is the upper soil. Very dry. Touch it." Sure enough, it's dry. He moves my hand again, around to the lower side. Moisture. "There's water," I say.

Home

I leave Lebanon with the scientific buzz that the seeds of my cones being alive after so long prove the *Cedrus libani* is indeed "the immortal tree," as Lebanese are fond of calling it.

But a couple months after my return come sobering Whatsapp messages from Dagher-Kharrat's lab assistant, Anthony Roucas. Germination is taking longer, he says.

I contact the USDA-Agricultural Research Service National Laboratory for Genetic Resources Preservation Seed Bank in Fort Collins, Colorado, for more advice. Christina Walters, research leader of Plant Germplasm Preservation Research, suggests changes in the protocols, but Dagher-Kharrat wants to stick with her own.

Later, Roucas tells me the bad news: The 24-year-old seeds did not germinate, he says, because of the long-time exposure to moisture. But they want to try again, with a slightly different protocol.

Walters advises caution. "With seeds of this value, I would probably not try germination assays without further insights," she writes. She agrees to do tests to characterize the seeds, to check the RNA integrity that is essential to germination. I mail one of two cones I retained to Fort Collins.

Three months later Walters reports news no better than Roucas's with her cone. Though structurally intact, "(the seeds) are not viable," she says.

The homecoming journey of my cones seems to have ended. But she adds that DNA is "much more stable than RNA, and so there is a high likelihood that it would be suitable for genetic studies even though the seeds are not viable." It is still possible to compare populations from the past with current ones "to determine if there has been some shift."

And there it is: this sleeping beauty may not wake, but she *can speak*.

Dagher-Kharrat agrees. "It is like discovering a very old handwritten parchment written in a language we ignore," she says, adding that *in vitro* culture could yet be a solution to growing cedars out of them in the future, with more advanced technology.



In one of the three cedar forests of the Shouf Biosphere Reserve, the largest protected natural area in Lebanon, people gather under the much-romanticized Lamartine (or Sawma'a) tree, which is believed to have inspired French poet Alphonse de Lamartine to set his 1838 poem, "The Fall of an Angel," in Lebanon. *Lower:* The cones of *Cedrus libani* grow upward from the tree's branches and carry the seeds of what may become the next generation of cedars.

For now, five cones remain at Jouzour Loubnan. "They were maltreated for 24 years. I will not give them any special treatment," says Dagher-Kharrat. Scientists like to keep samples for potential, she says, adding that every 10 to 15 years techniques and technologies advance, so opening the cones can be stretched out for years to come.

Charbel Tawk, Khalid Sleem and Nasser Shreif all say they would like to try the challenge of planting a few seeds just to prove nurseryman mettle.

And the sixth cone, at home alone in its silver bowl, seems to be calling out to Nabil Nemer. He would like to have a look at it sometime to check for small exit holes from insects that may have flitted and burrowed in Bsharri when I made my first visit.

In the *Epic of Gilgamesh*, the aspiring king climbs the mountain of Lebanon to fell its hallowed cedars and thus "stamp [his] fame on men's minds forever." But first he must slay the forest's supernatural watchman, which he does by summoning a scorching wind. Then he sets his axe to the lofty trees while his companion, Enkidu, rips out their roots. When the gods confront the pair, Enkidu is remorseful, but Gilgamesh boasts. In judgment, the gods literally turn the heat on them: "From henceforth may the fire be on your faces, may it eat the bread that you eat, may it drink where you drink."

Nobody wants the first story of the cedars to become their epitaph. 🌍




Canadian writer and photographer **Sheldon Chad** (shelchad@gmail.com) extends his thanks to the many people he met while covering this story who contributed not only expertise but deep care about the forests and their country. "Breathing in the cedar forests for days, one can only be awed by our cultural and biological relationship to trees," Chad says. He currently lives in Brussels.



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Astrolabe Tech Made... Not So Easy

Written by **LEE LAWRENCE** | Photographs and video by **DAVID H. WELLS** | Illustrations by **IVY JOHNSON**

Let me start with a confession: I am no engineering whiz, but I like to know how things work. I studied religion, and I often write about art, which is how I first became entranced by astrolabes. Their beauty is mesmerizing, but their efficacy as an instrument leaves me perplexed. Imagine a medieval lass trying to ferret out the secrets of a smartphone, or even a dumb phone. Well, that's how I feel, and I don't like it.

So I'll set myself a task: I, a Brooklynite, am going to find my way around an unfamiliar city—Boston—using an astrolabe. To get started, I ask Sara Schechner about this. She is a historian of science with a special interest in the history of astronomy, and she curates the Collection of Historical Scientific Instruments at Harvard University. “It can’t do that,” she says. “Astrolabes,” she explains to this liberal arts major, “aren’t navigation devices. They’re early computers.”

If they don’t spell out routes from oases to caravanserais or chart courses across the Mediterranean, what do they do? They compute, as Schechner puts it, “the where and when.” Knowing this, any good navigator or mariner can then figure out routes—and much, much more.

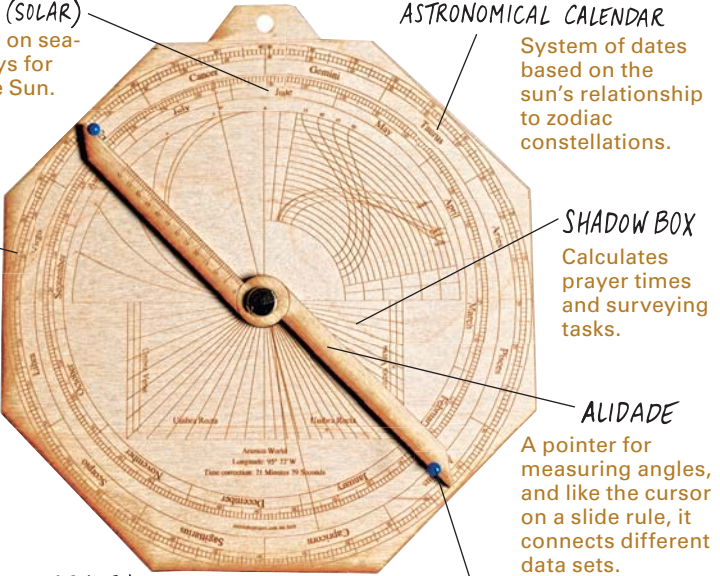
Instead of dampening my enthusiasm, Schechner stokes it. No wonder astronomers, astrologers (until recent centuries, often one and the same) and religious leaders from Samarkand to Seville have prized astrolabes. They could compute the next eclipse at any location on any date; know where the planets were or had been; and tell when the sun would rise and set, any day, anywhere.

I leave Schechner’s office determined to master this early—possibly the earliest—portable computer.

After two months of reading and studying pictures and diagrams, I am not much better off. Nothing I read seems to stick. Clearly, the only way I am going to pick up even the basics of astrolabe tech is not by head but by hand. So I drive to the science building of Central Connecticut State University, about two hours southwest of Boston. There, in an office crammed with books, papers and *The Lord of the Rings* fan merchandise, I meet astronomer Kristine Larsen. She hands me a toolkit: a workbook and a few articles with links to PowerPoint presentations. Just more *reading*? “With these,” she says, smiling, “you can actually make your own astrolabe.” Out of paper.

That sounds dubiously flimsy, but it turns out that paper astrolabes have a long, proud history. Astronomers sometimes included simplified ones in manuscripts. By the early 1500s, as printing presses became widely available, the likes of 16th-century instrument-maker Georg Hartmann in Nuremberg and 15th-century professor Andreas Stiborius in Vienna realized they could fine-tune one perfect proof and then print a whole series of astrolabes cheaply and accurately. Today anyone can simply download software, which is exactly what I do when I get home.

The first thing Astrolabe Generator (www.astrolabe-project.com) asks of me are my coordinates—latitude and



COMMON CALENDAR (SOLAR)
Dating system based on seasonal year of 365 days for the Earth to circle the Sun.

ASTRONOMICAL CALENDAR
System of dates based on the sun's relationship to zodiac constellations.

DEGREES OF ELEVATION

SHADOW BOX
Calculates prayer times and surveying tasks.

ALIDADE
A pointer for measuring angles, and like the cursor on a slide rule, it connects different data sets.

ZENITH
Point in the sky directly above the user's location.

SIGHTS
Added at each end of the alidade, these help measure elevations of the Sun, stars, buildings, etc.

HORIZON LINE
Based on latitude, where the user sees sunrise and sunset.

CENTER
Marks the north celestial pole (North Star).

RETE
Pointers on both outer and inner rings indicate positions of prominent stars. The inner ring marks the Sun's path (ecliptic).

The author holds her astrolabe, laser fabricated from wood with a zenith calibrated to the latitude of Houston, Texas, above; its back side appears above right. In 694 AH (1294–95 CE), Mahmud ibn Shawka al-Baghdadi produced this astrolabe, opposite.

longitude. It next has me choose settings—pretty much like picking apps for my phone. I select “shadow square,” an Islamic app to compute heights of structures using trigonometry. Next is how to figure out the direction of Makkah, a task early astrolabe makers never imagined would be done from across an ocean. Then I also opt for the intriguingly anachronistic “unequal hours,” which divides day and night into 12-hour intervals, regardless of season. This means the length of each hour changes daily. Who wouldn't need an app to track that? It basically allows you to translate solar time into local time, even compensating for seasons. And it does this with a graceful set of arcs. So beautiful, so clever!

In seconds the software generates diagrams for the parts of my first astrolabe: the circular plate, the back, the rotating rete and the two pointers, the rule and the alidade. The process is so easy I make a few more using the coordinates of friends and relatives. All the backs look exactly the same. And the fronts—or plates—bear the same markings except for one important difference. On all the plates, the center

point marks the north celestial pole. If you've seen time-lapse photographs of the night sky with revolving stars around a point, that's it, and the closest star to that point is Polaris, the North Star.

Where the plates differ is in the position of the second important point, the zenith. This represents the point directly over your head at your specific latitude.

So in a plate calibrated to Houston, Texas, for example, the distance between the zenith and the North Star is greater than in one calibrated to Providence, Rhode Island, which is at a much more northern latitude. (Thinking of it this way helps: The farther north you go, the higher the North Star climbs in the sky until, at the pole, it matches the zenith; Go south, and the North Star falls toward the horizon until, past the equator, it is no longer visible.)

On the plate, both the North Star (at the center) and the zenith are inside a network of lines that map a dome whose apex is the zenith. The arced lines are the equivalent of latitudes and longitudes, but on sky maps they're called *azimuth* and *almucantar*, both reminders of the legacies of Arabic-speaking scientists in both astronomy and astrolabes.

Then there is this mindblower: Opposite of a compass, the astrolabe's south is at the top of this sky map, and north at its bottom; this makes east left and west right. It takes a while, but I finally get why: As with all historical astrolabes, mine are made for the northern hemisphere, where the point over your head—the zenith—is south of the north celestial pole.

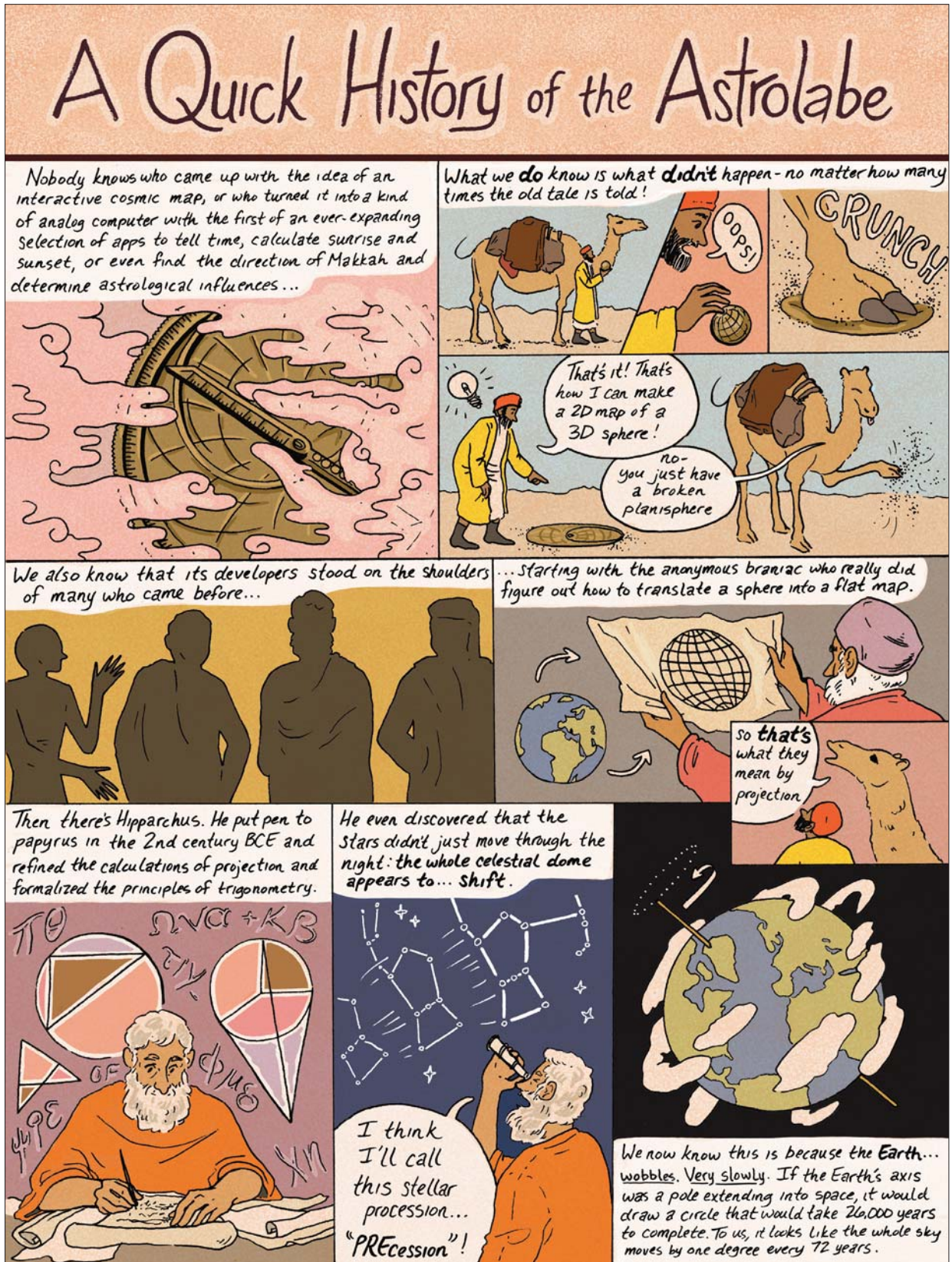
OPPOSITE: NATIONAL MARITIME MUSEUM, GREENWICH (DETAIL)

So why not just draw the sky map in the lower portion of the instrument and keep north at the top? The answer is because it wouldn't be as efficient: When measuring the height of a star above the horizon—its altitude—you have to hold the astrolabe vertically, like a pendulum. In this way you can look through the sights on the alidade and line them up with the star to determine the star's angle from the horizon. Having the sky map on the top makes this a lot smoother, more elegant. (An astrolabe calibrated in the southern hemisphere would use as its center point the south celestial pole, and then north would be at the top.)

Then we have the rete. This is what looks like an openwork sculpture. It has two circles: a large one, centered on the north celestial pole, with little pointers coming off it to mark individual stars, and a smaller one, centered on the zenith. This one is all about the Sun, which from our vantage point indeed appears to be circling the Earth. When early Greek

astronomers plotted its trajectory across our sky, they used the constellations of the Zodiac as milestones. That is why the rete's inside circle is divided into 12 zodiac signs, each in turn divided into 30 days. (Because the Sun's path occasionally passes behind our Moon, Greek astronomers dubbed that path the *ecliptic*.)

This same succession of Zodiac signs appears also on the



By 150 CE another Greek astronomer and scientist, Ptolemy, figured out how to **predict** the movement of the stars.

... and you're telling us this because...?

Because, without **projection**,

$$3 \sin x = 1$$

$$\cos$$

$$2 \tan x = 0$$

$$1 + \sin x = 2$$

without **trigonometry**,

there would be no **astrolabe!**

got it!!

yeesh

(And because of **precession**, every astrolabe reflects a distinct time period.)

By 390 CE, Theon of Alexandria was waxing lyrical about a 'ligo astrolavos'. Smitten with its computational abilities, he wrote a thesis - the first on the astrolabe but hardly the last.

astrolavos = "star catcher" or "star holder"

late 700s

So I, Ibrahim al-Fazari, philosopher, mathematician, and astronomer, have made my own,

the first Muslim to do so. Now we can easily set the calendar for prayers, for Ramadan, for Eid...

Meanwhile, Muslim scientists translated Greek and Syriac texts into Arabic and began writing their own. The first was Abu al-Abbas Muhammad ibn Kathir al-Farghani (whose Nilometer measured the flow of the Nile river until 1971!).

c. 856

I am proud to be the first Muslim to make it easy for people to draw precise arcs, scales, and markings so they can make their own accurate astrolabes. One day, they'll call this DIY!

In the Muslim world, mathematicians' contributions to trigonometry and its applications in astronomy led to increasingly sophisticated astrolabes with **specialized apps**, like how to determine the direction of Makkah or how to quickly compute sines and cosines...

hmm... taller than I thought

Whoa, it's already midnight! Time to sleep, eh buddy?

After careful study of the constellations and the planets, we declare that the fourth day of Jumada 1 of the year 145* is when the caliph al-Mansur should build the Madinat as-Salam City of Peace.**

*AKA July 31, 762

**This round palace became the core of Baghdad

Yes, this was also a time when astronomers and astrologers were one and the same.

By the time you take over the workshop, my son, you will have the respect of the mightiest... and **lots** of competition...

SYRIA 900s

Father, the amir wants me to work for him!

That's because Sayf al-Dawlah is as wise as he is valiant! You know more than Baghdad astronomers. You've made timekeeping and navigation more accurate! He would be a fool not to have Miryam al-Astrolabiya at his court!

Growing demand stoked an explosion of start-ups that developed into lasting and respected cadres of astrolabe-makers. Scribes, too, saw a business boom.

Ketāb fil-amāl be'l-astrolāb al-korawī (On the Use of Spherical Astrolabe) by Abul-Abbas Faiz b. Hatem Nayziri's

1,100-plus chapters describing the uses of astrolabes by Abd-al-Rahmān Sufi (900s)

Moktasar-i dar mārefat-e astrolāb-e mosartān (On the Crab-Shaped Astrolabe) by 'Alī b. Ahmad Antāki (900s)

Esti'āb al-wojuh al-momkena fi san'at al-astrolāb (on all the ways to construct an astrolabe) by Al-Biruni (973-1048)

wishing I could hold onto something heftier than paper. That's right: I want a solid astrolabe. But it has to be calibrated to a US location, and not expensive. So no to replicas on Amazon that won't really work anyway. No to commissioning a master craftsman. Yes to locating a fabricator. One call leads to another until I find Brandt Graves in Brooklyn. He has never heard of astrolabes, he says, but is game to try to make one. After he loads and formats my files into his computerized laser cutter, we watch it slice and etch a panel of birch plywood. As it zips back and forth, I

rim of the back of the astrolabe with, beneath it, the calendar we use every day. On Western astrolabes it is usually the Gregorian calendar; on Islamic astrolabes it is usually the hijri calendar. Figuring out the "where and when" begins here, on the back of the astrolabe, where a date can be translated into its astronomical/astrological equivalent. As I try to absorb all this information, I find myself really

marvel at the astrolabe makers of old achieving this kind of precision by hand. Then comes time to pin the components together through the celestial pole. "Gorgeous," I think to myself. "And, look, the rete swivels." But I can't fully absorb that I have just made an interactive sky map until I get it home and start to tackle my first question: What time does the sun rise and set? I

test my new Houston-calibrated astrolabe and try for May 6, 2019, the projected first full day of Ramadan.

I'm sparing you my litany of false starts—let's just say that the only way to form good habits is by repetition. Starting at the back of the astrolabe, I find May 6. Once lined up with the date, the alidade points to about

Taurus $16\frac{1}{4}$ – $17\frac{1}{4}$ (this means the 24 hours of May 6 begin on the 16th day of Taurus and ends on the 17th day, plus $\frac{1}{4}$ for each).

Turning the astrolabe over, I look on the rete for Taurus 16. I find it, and then I rotate it until Taurus 16 touches the eastern horizon line. (I remember, in the

left quadrant). Then nudge it a smidge to account for the $\frac{1}{4}$. Holding the rete in place, I line up the rule. On the rim is the time. The numbers denote hours, each divided into four-minute gradations: It reads 5:20 a.m. Now this is solar time, of course, and by May, us Daylight Savings Time will be in effect, so I add one hour. Then there is the time zone issue:

Whether made of brass, copper, or wood, the astrolabe spread like a medieval meme.

major production site

By the Late 1400s, mariners use a stripped-down astrolabe as a navigational aid

10th cent.

11th cent. Christian Europe

Ottoman Turkey by 1500s

Mughal India embraces the astrolabe in the 16th cent.

by 14th cent., via scholars traveling to Delhi Sultanate in India

by the 10th cent., the Maghrib

Makkah

In Europe, the astrolabe became a symbol of education and erudition...

My dear Heloise, are you sure? "Astrolabe" is a strange name.

But think of the name recognition!

c. 1118

Lowys, my son, I have perceived well by certeyne evidences thine abilitie to lerne sciencez touchinge noumbres and proporcions...

ok....

1574, Istanbul
Taqi al-Din Observatory

They were also made as luxury items, to be displayed and gifted.

... and until the 19th century, an indispensable tool for hardcore scientists and religious leaders across the Muslim world.

Compact. Portable. Versatile. The astrolabe was an all-in-one computing marvel. It didn't so much as give way to more specialized technologies. Some of its apps developed into standalone precision instruments. Other functions were supplanted entirely by new inventions.

A single-purpose instrument to measure the altitude of stars can achieve amazing precision—in the 1730s, the **SEXTANT** supplants the mariner's astrolabe as the navigational instrument of choice.

When the astrolabe's measuring function is extracted and further enhanced, it produces the **THEODOLITE**. Add in a telescope (invented in 1608), and it's a surveyor's dream come true.

In the 17th century, British mathematician and astrologer Edmund Gunter develops a scale that outperforms the sine and cosine app on astrolabes.

His contemporary William Oughtred then uses this to create the **SLIDE RULE**. It proves so handy, astronauts on Apollo lunar missions still used it.

With astrolabes, people can compute (sometimes fast) what time it is. But once Dutch scientist Christian Huygens invents the **PENDULUM CLOCK** in 1656, they tell time at a glance.

The astrolabe thus takes its place today as an analog ancestor of scientific beauty, precision, craftsmanship and inventiveness born of our gaze into the stars.

I have to compensate for the difference between Houston's longitude, 95 degrees west, and that of the longitude to which its time zone is pegged, 90 degrees west. For every degree I need to add four minutes: a total of 20. Finally, I have to find the "equation of time chart" that compensates for arcane astronomical eccentricities, and it says that I have to add three

more minutes for May 6.

My prediction is ... my mental drumroll is deafening ... 5:20 a.m. plus one hour, plus 20 minutes, plus three minutes: 6:44 a.m. Without daring to breathe—yes, this is how tense I have gotten—I check online. The sunrise prediction for May 6 in Houston: 6:35 a.m. Nine minutes off. Not terrible, but it won't get me an apprenticeship in Alexandria.

So I try sunset. Because the day is well on its way by sundown, I line up Taurus 17 with the western horizon, and I read 6:36 p.m. Now—I'm starting to get the hang of it—I add one hour, 20 minutes and three minutes, which brings me to 7:59 p.m. Online? 8:01! I let out a cheer!

So do I try to get it even closer? You bet. This time I squeeze the rete so tightly to the plate my fingertips start to turn white. I don't want a micron of wiggle. I even use a magnifying glass to make sure Taurus 17 crosses the horizon exactly. The rule points this time to 6:38. Siri and Alexa, meet your living ancestor Astrolabe. Spot on!

Feeling empowered, I take on geolocation: *Where* on the horizon will the Sun be? Remember the sky map's network of almucantar and azimuth? Well, they're all separated by a number of degrees—here five. Noting where Taurus 16-ish meets the horizon, I count 14 azimuth, making it 70 degrees east of north. This takes some doing because the wood rete blocks my view in places. And then two things occur to me: First, to get *really* good at this, I don't just have to learn how the apps work, I have to get to know the physical peculiarities of my own astrolabe. Second, astrolabe makers would be agog at the possibility of making a rete out of a transparent material like acetate or clear plastic. With paper astrolabes we can do this, and it makes counting the degrees incredibly easier.

But some astrolabe apps require something entirely solid—such as an alidade with raised sights like those on a rifle. Good thing I happen to have one! With these applications I can figure out the height of a building or, say, a mountain. Another app tells time: Here, the trick is to measure the altitude of the Sun without staring into it. On my wood astrolabe, I use pushpins as makeshift sights so that when I turn the astrolabe sideways to the Sun, its shadow looks like a stick with two bumps on it. I then rotate the alidade until the sights align to cast a single shadow, and I look to see where it points along the scale at the outermost ring. It marks degrees from 90 (at the top) to zero. The alidade points to 32. So, the first of February translates into Pisces 1. Now turn the astrolabe over. Find the rete's Pisces Decan 1 marker. Move it up from the horizon to 30 degrees (sixth almucantar) and a titch beyond. Place the rule there and see where it points ... uh, but in which quadrant? Left makes it 9:04 a.m. solar time; right, 3:04 p.m. That's correct: the astrolabe relies on my knowing a few things, like whether it's afternoon or morning.



The author guides her stepdaughter, Isa, as she sights along the astrolabe's alidade to calculate the height of a balcony in an auditorium at Central Connecticut State University.

But what if I was to do this at night? Caravaneers of yore knew the night sky like oases along their routes. As long as it was clear enough to spot one or two of the stars noted on their rete, they were good. They'd sight them with the alidade and figure out "when" it was. Mariners who had planetary charts and tables could also figure out "where" they were, at least in terms of latitude. Me? I'll blame it partly on living in New York that I haven't the slightest which twinkles are Altair or Sirius or Deneb. So, yes, I can use 21st-century technology to *make* an astrolabe, but if I ever hope to truly master one, my own mental databases will need an upgrade. 🌐



Starstruck by astrolabes, freelance writer **Lee Lawrence** (lee@leeadairlawrence.com) is considering adding science history to her repertoire of subjects. **David H. Wells** (www.thewellspoint.com) is a multimedia photojournalist and photo educator based in Rhode Island. **Ivy Johnson** (www.ivy-johnson.com; @ivyjohnson_art) is an illustrator based in Brooklyn and a 2018 graduate of the School of Visual Arts, New York.



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THE EXTRAORDINARY ORDINARY

#everyday

WRITTEN BY MAE GHALWASH

#Celebration #Beauty #Love #Celebration
 #Community #People #Fashion #Family
 #Survivor #Fashion #People #Family #Community
 #Survivor #Everywhere #Bless #Food
 #People #Food #Bless #Everywhere #Survivor
 #Celebration #Love #Beauty #Food #Family



When picturing the Middle Eastern and Muslim worlds, it can be difficult to see beyond news images covering politics and crises. And yet, every day—literally—dedicated photojournalists, eager to tell the whole story of those lands, are doing just that on Instagram.

Through accounts like @everydaymiddleeast, @everydayafg (Everyday Afghanistan) and @everydayamericanmuslim, and scores of photographers are posting pictures and videos that capture moments that news stories simply don't have room for—the day-to-day situations of life, be they joyous, harsh, traditional, provocative or just plain mundane. The images are extraordinary in that they capture the ordinary—like the photo of female university students in Iraq crowding a vendor to purchase schoolbooks; the shot of children flying through the air on the swings of a handmade carousel in Afghanistan; and the image of a family in Saudi Arabia sitting down to a holiday meal in their backyard.

The founders and curators

of the feeds present day-to-day situations they envision will help break down stereotypes through images of relatable human situations. This, they hope, will diminish fear among cultures and promote mutual understanding.

“The problem with stereotypes is not that they are entirely false or inaccurate, but that they are incomplete,” says Austin Merrill, cofounder of The Everyday Projects, a non-profit that houses the Everyday feeds, adding that the problem with traditional news coverage is that “it doesn't have room for everyday life.”

Merrill, who was based in Cote d'Ivoire first as a journalist for The Associated Press and later as a volunteer with the Peace Corps, started the first Everyday account on Instagram, @everydayafrica, in 2012 with Peter DiCampo, then a freelance photojournalist based in Ghana, who had also served in the Peace

@everydayafrica
 Powerful words,
 beautiful photos. 🙌🙌🙌



PHOTO ILLUSTRATIONS: ARAMCOWORLD

@everydaypakistan
What an amazing photo full of love.

Corps. Their aim, Merrill says, was to counterbalance the typical news stories from Africa—which they were also reporting—on war, famine and disease. “Those stories were important,” he says, “but we still felt like we were just piling on” to a crisis-oriented image of the continent.

Using iPhones, the pair began to document daily scenes around them and post their pictures through @everydayafrica. The account grew in popularity—it currently has 395,000 followers—and soon Everyday feeds began appearing from other places around the world.

“We weren’t sure how to react” to the copycat accounts, says Merrill, “but then we realized that it was exactly what we wanted. We wanted people to take the concept and apply it to the part of the world they lived in. It’s more exciting to see where it will go rather than be overprotective of the idea.”

So exciting that the pair began helping some of the other founders. In 2014 they worked with Instagram to bring the heads of several Everyday feeds to New York’s annual Photoville photography festival, where they exhibited images and, two days later, agreed to join forces.

“We started The Everyday Projects as a nonprofit because in bringing all of these like-minded communities together, we saw the potential to use photography to combat stereotypes and disrupt media-driven media clichés worldwide,” Merrill says.

The Everyday Projects is now an umbrella for 51 feeds from “Latin America

to Asia, Australia to the Middle East, Mumbai to the Bronx,” according to its website, as well as topic-based accounts that include @everydayclimatechange, @everydaymigration and @everydayextinction. The Everyday Projects has its own Instagram account, @everydayeverywhere, and it hosts a blog called Re-Picture. Merrill and DiCampo have started a curriculum for US secondary schools that teaches about visual literacy and how to debunk stereotypes internationally. No one is paid. Each of the feeds and accompanying activities is a project of passion.

Each account is independent, with its own curators and photojournalists, and

@everydayafg
I hope we get to see more things like this in Afghanistan ❤️🙏👐

they at times overlap. To become contributors, photojournalists must apply through the separate accounts. Amateur photographers may have their photos considered for reposting by adding the hashtag of a particular Everyday account.

At least 11 of the accounts focus on Middle Eastern lands or Muslim-majority societies, and each has anywhere between 2,000 to 160,000 followers. True to the Everyday aim, the accounts feature barrages of universally relatable images, proving both commonalities and differences between cultures.

@everydayegypt
Such marvelous images of strong, beautiful women. ❤️



@everydayasia
Not sure I'll ever get to see this in person, so thanks for sharing 😊

loving couples and mothers in sundresses cooing their babies. Her women are active: athletes stretching before a marathon; a group biking through Jiddah; a young woman riding a horse on a carousel, her young face framed by perfect brown curls.

"I wanted to show the world what I grew up with, as opposed to what's in the media," Al-Dabbagh says.

Zoshia Minto, a wedding photographer based in Maryland, launched @everydayamericamuslim in late 2016, after being inspired by @everydayrefugees (which is independent of The Everyday Projects) and the storytelling power of its photographs. Her hope is to similarly serve her American Muslim community. "I wanted to show everyday life of Muslims in America, just to balance what we see in the media, to offer a different perspective," she says.

Minto also uses the feed to create dialog within the Muslim community itself. She explains that African American Muslims are often viewed as outsiders by American Muslims of immigrant backgrounds. By including a plethora of images of African American Muslims, she hopes the feed will show the community's diversity and thus increase communication. "I want to foster a dialog among Muslims," she says.

Mae Ghalwash is a Houston-based freelance journalist with more than 15 years of experience covering the Middle East and the us for news organizations that include The Associated Press and *The Houston Chronicle*.

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The account @everydayamericamuslim shows families on camping trips, at potluck parties, trick-or-treating and praying in mosques as their children play alongside. It also shows portraits of women as fashionistas, athletes, professors, rappers and entrepreneurs. One woman is a kickboxer: she sports a soft, pink headscarf and matching pink boxing gloves.

Minto says her hope "is that anyone looking at the images can find

@everydayafg
Gorgeous! Wish it brings more people to the region

something in common in them."

Finding similarities between cultures is exactly what Merrill and DiCampo were aiming for. Through so many day-to-day images, "we can celebrate the commonalities," says Merrill. "It should make us understand each other." 🌐

Jefferson Middle School Academy students pose with Everyday Projects cofounder Austin Merrill, at the opening of the exhibition "Everyday DC" at Peppo Edison Place Gallery in Washington, D.C. The students were among 150 who documented daily life in the District of Columbia in what is now a three-year-old annual educational and photographic event.



The Mystery of Cairo's Magnificent Mamluk Carpets

WRITTEN BY ROSAMOND E. MACK

In the late 15th century, the Catholic pope and the Muslim rulers in Cairo, Granada and Jerusalem did not agree on much. But this much they shared: a taste for new carpets—big ones. According to both Italian and Arab observers, these carpets were unique and more spectacular than any others of their time.

This chapter of artisanal history was a mystery until recently. In the late 19th century, a distinctive group of old oriental carpets with exquisite geometric designs, exceptionally lustrous wool pile and unique craftsmanship appeared. The origins of these carpets were unknown until scholars proposed a connection with evidence of carpet production in Cairo during the late 15th and 16th centuries. Several very large examples from Italian collections appeared showing insignia, called blazons, developed by the emirs of Mamluk Sultan Qaitbay and his successors until the Ottoman conquest of Cairo in 1517. Questions for the carpets began to arise: Were these carpets in fact from Cairo? When and why did they begin to arrive in Italy?

Amazingly, the answers have lain hidden, as it were, in plain sight. Documents in the Vatican Archives on textiles owned by late-15th-century Pope Innocent VIII show his



enormous payment on June 11, 1489, of 1,224½ gold ducats—about \$182,225 today—for seven carpets “of large dimension” and their shipment from Cairo, “where they are made.” Furthermore, a 1518 inventory of his carpets still in the Vatican Palace prove that five are very similar to a fragmented carpet with Mamluk blazons held partly in the Stefano Bardini Museum in Florence, Italy, and partly in The Textile Museum in Washington, D.C. Although these

documents had been published in 1898, the references to the carpets went largely unnoticed until a few years ago.

The 1518 inventory describes five “huge Damascene floor carpets divided where they juxtapose, with medallions in the center and with Innocent’s arms in the corners, altogether ten pieces.” This corresponds with the Bardini-Textile Museum carpet. (At the time, the Italian term *damaschina* [pl. *damaschini*] usually referred generically to carpets that did not look Anatolian.) The precise description of the pope’s two-piece *damaschini* verifies observations by the contemporary textile historian Alberto Boralevi, who restored the 17 fragments he had found in the Florentine palace of the antiquarian Stefano Bardini, who passed away in 1922. Boralevi proposes that the carpet, which would have measured 920 by 450 centimeters, was made in two mirror-image halves in the warp direction. One of the inner selvages is still completely finished, which indicates that the halves might have never been sewn together.

Similarly, the pope’s two-piece *damaschini* had multiple “medallions” in the field, probably also with three large geometrical figures anchoring the center and numerous smaller ones organized radially around them. The coat of arms of the pope found in the corners, however, would have been added in Italy.

There is little doubt that these carpets were made in halves because they were to be wider than the wooden looms then available in Egypt, where heavy timber had to be imported and was always in short supply. The remarkable achievement of the Bardini-Textile Museum carpet is the nearly perfect match of its mirror-image halves, an achievement that required sophisticated, exacting weaving techniques.

Esin Atil, a scholar of Mamluk arts, asserts that these consistent geometric patterns appear at the end of the 15th century, suddenly and “immaculately woven.” To account for this, she proposes that beginning in the late 1460s Qaitbay may have recruited Turkmen craftsmen emigrating from Tabriz, just west of the Caspian Sea, now in modern Iran. Walter Denny, a leading carpet scholar, believes the émigré weavers may have had skills developed in Tabriz to meet the elite standards of quality and taste evident in the “court carpets” that Venetian Ambassador Giosafat Barbaro lavished praise

upon during his visit to the Aq Qoyunlu (White Sheep) court in Tabriz in the 1470s. In Egypt, however, the weavers would have adapted their skills to differently bred and spun wool, a new and unique palette of colors, and a newly creative design repertory to produce a wholly new “brand” of carpets. Denny emphasizes that the “Mamluk brand” was deliberately designed to “look quite different from any other kind of carpet” and “sell at a high profit.”

The description of the carpets of Pope Innocent VIII also supports the identification of the earliest-known Italian

The Bardini-Textile Museum carpet, all but one fragment found in a palace in Florence, shows a central octagon motif and two larger, more complex octagonal designs on each end. The blazons were woven into squares in the corners. *Opposite:* A closer look at the lower-left fragment shows details with exceptional clarity.

BLAZONS

Ruling in Egypt and Syria from 1250 to 1517 CE, the Mamluks developed emblems called blazons that they used as markers to identify individual sultans and emirs. Blazons of emirs featured stylized symbols of office. Sultan Qaitbay and his favored emirs used the blazon on the Bardini-Textile Museum carpet, shown *right*, and many later emirs adopted it as a state emblem. The stylized napkin of the master of the robes appears at the top, and the stemmed cup of the cup bearer at the bottom. The distinctive middle band shows another cup charged with a pen box, a symbol of the secretary, and horn-shaped motifs whose meaning is unclear.





depiction of a Mamluk floor carpet: a 1534 painting by Paris Bordone, “The Fishermen Presenting the Ring to Doge Gradenigo,” now in the Accademia Gallery in Venice. Spread over the steps in front of the row of officials in the painting’s foreground, it has a single medallion—visible only in part, immediately behind the balustrade—on a red ground, while the rest of the sketchily rendered pattern is unclear. In the center of the painting, at the feet of the doge, the smaller (and more famous) Ottoman-style Ushak carpet overlaps the left edge of Mamluk’s, and much of its right side is either cut off or folded under at the balustrade. The field stops abruptly at the bottom of the step in the center of the medallion. This is evidence that it may very well be a once-finished half carpet, laid out in the warp direction. A comparable carpet, with a late-15th-century foundation but reknotted pile, in the Metropolitan Museum of Art, New York, has a single medallion framed by the red ground and Mamluk blazons in the corners. Measuring 422 by 345 centimeters, it may have been woven in two pieces because it, like the Bardini carpet, was found split into halves in the warp direction.

The purchase by Pope Innocent is significant not only for the high price paid but also for the pope’s ability to obtain seven such carpets commercially. The 1518 inventory includes two huge, one-piece damaschini with a pattern of one large and two smaller “wheels,” otherwise so similar to the five in two pieces that they probably came from the same 1489 shipment. Their cost—175 gold ducats, or about \$26,045 on average—was nearly three times the assessed value given to the best carpets of Lorenzo de’ Medici three years later and far greater in cost than any of the

Famous for the intricacy of its five medallions, the so-called “Simonetti” Mamluk carpet, left, measures 897 by 239 centimeters.

Unfortunately, there are no original records of where or when Pope Innocent used his stunningly large carpets, but evidence permits reasoned supposition.

Anatolian carpets then dominating international trade.

The surviving early Mamluk carpets have thus been considered to represent a limited, courtly production. The papal purchase suggests, however, that an ambitious, profitable commercial production was envisioned in Cairo early on, and that by 1489 it had reached a substantial volume—enough for a colossal shipment to the Vatican. Furthermore, the 1518 inventory includes two small damaschini “long and narrow like bench-covers,” which suggests that by the time of Pope Innocent’s death in 1492, the industry in Cairo was already adjusting to European tastes and budgets—an evolution long associated with the 16th century.

Unfortunately, there are no original records of where or when Pope Innocent used his stunningly large carpets, but evidence permits reasoned supposition. The memoirs of his master of ceremonies, Johann Burchard, do not describe the carpets that customarily furnished the frequent consistories the pope held with the cardinals for discussions, diplomatic receptions and investitures. Nonetheless, we do know that consistories met in large halls that offered ample space for huge carpets. There were two in the former Apostolic Palace, between the Sistine Chapel and the Papal Palace, as well as a smaller room in the east wing of the pope’s residence

that normally housed the papal throne—the same room that would be repainted in 1517–18 by Raphael’s workshop, transforming it into the Sala dei Chiaroscuri.

Burchard, like Roman chroniclers, described remarkably lavish furnishings on two occasions that may have showcased the papal Mamluk carpets. In December 1489 and January 1490, Pope Innocent VIII received an embassy from Ottoman Sultan Bayezid II to negotiate terms for the papal custody of Prince Cem, the younger half-brother of the sultan. After two failed attempts to seize the Ottoman succession, Cem had fled to the Knights of Malta, who had transferred him to the Vatican in March 1489. The Ottoman ambassador had come to verify that the prince was alive and well before he gave the pope 120,000 gold ducats, an enormous three-year advance payment of what was to be the prince’s annual “maintenance fee” of 40,000 ducats. Cem agreed to receive the ambassador on the condition that he appear in an appropriately regal space.

Late-15th-century chronicler Stefano Infessura reported that the pope ordered Cem’s apartments—probably in an area of the Apostolic Palace reserved for princely guests—to be furnished with a throne, “carpets of the pope” and golden hangings “such as never before seen in Rome.” To such a display, the pope’s Mamluk carpets would have added pique because they were more magnificent and larger than any produced in Ottoman Anatolia.

A second occasion on which Pope Innocent might have displayed his Mamluk carpets would have been the June 1492 wedding of his granddaughter Battistina to Luigi d’Aragona, grandson of King Ferrante of Naples. It took place in the first room on the first floor of the north wing of the Papal Palace.

A grand floor carpet almost certainly would have been included among the furnishings for this dynastic alliance. The banquet that followed in the huge, adjacent corner room—under what would become Raphael’s Sala di Costantino—would also have been lavishly furnished.

Similar questions surround the single, huge carpet in Granada, Spain, dateable to the reign of Qaitbay. Now faded and fragmented, it may well have been ordered for a specific space in what was then the capital of the last Muslim sultanate in al-Andalus, or Muslim Spain. Measuring 1,184 by 322 centimeters and woven as a single piece, it is slightly too long for the most important space in the Alhambra, the Hall of the Ambassadors in the Comares Palace, which is 1,130 centimeters square. However, it would have easily fit into the Sala de la Barca that precedes it. At 2,400 centimeters wide and 335 centimeters deep, it is assumed to have been an antechamber, and probably also the sultan’s summer quarters, since it is open to fresh air through its entrance from the Courtyard of the Myrtles. (Curtains could have shielded such spaces during bad weather.) According to Alhambra Museum chief conservator Purificación Marinetto Sánchez, who first published detailed information about the carpet, such furnishings would have been welcomed in any interior room during Granada’s cold winters.

Another possibility, however, gave rise to the carpet’s name today. Near the Alhambra, on the second floor of the smaller Generalife Palace, overlooking the north end of its famous Courtyard of the Water Fountain, there is a comparable but enclosed room, measuring 1,340 by 340 centimeters. While the Generalife normally served as a summer residence, during the 14th and 15th centuries it was also used for cold-weather receptions. Recorded furnishings include floor carpets, curtains in doorways and over windows, and wall-hangings of heavy silk brocade. Because the surviving Mamluk carpet would have been a close, spectacular fit for this space, Marinetto Sánchez believes, it was commissioned.

Covering the foreground of the dias of the doge, ruler of Venice, a Mamluk carpet is one of several that appear in Paris Bordone’s 1534 painting, “The Fishermen Presenting the Ring to Doge Gradenigo.” Although the ceremony it depicts is an embellished legend from the 13th century, Bordone represented it in a contemporary setting that included carpets specifically from his own era. The painting shows the Mamluk carpet in full, *left*, and detail, *lower*.



The Generalife carpet was probably acquired earlier than the papal carpets, in the late 1400s, during the first reign of Nasrid Sultan Abu al-Hasan Ali. This was a period of relative peace and stability in Granada, during which the good relations that the Nasrids maintained with the Mamluks would have enabled such a commission. The carpet had almost certainly arrived before 1482. That was when the 10-year war between the Nasrids and the Catholic monarchs—that ended with the capitulation of Granada and the end of Muslim rule in Spain—began.

The field of the Generalife carpet has five sections, with large alternating octagons and eight-pointed stars in the center. In the three middle sections, a broad area of red ground frames the central figures, accenting them. Smaller figures and filling ornaments analogous to the blazon carpet surround the red flames. An inner border along the sides, concentric bands of ornament in the central octagons and square figures at its corners tightly fill the end sections. The heavier pattern effectively anchors the distant ends of the carpet.

Many of the carpet's geometric motifs echo in later Mamluk carpets, demonstrating the early development of an extensive, flexible repertory of ornament. For example, subtle changes in the borders of the end sections allow the motifs to be perceived differently. In the outer border of the Generalife,

WEAVING MATCHING CARPET HALVES

The largest Mamluk-carpet looms were strung and operated to produce equal linear knot counts, both horizontally and vertically. This created four-square symmetry and uniform dimensions in the geometric forms throughout the composition. A pattern chart was probably called out by the number of knots per color to weavers working simultaneously across a row of pile.

zigzag lines of little green stars and blue half stars emphasize the diagonals of the white strapwork against the red ground. In the border of the Bardini-Textile Museum carpet, a central line of larger multicolored stars emphasizes the octagonal stars formed by the white strapwork surrounding them. In the inner side strips of the Generalife, colors in tiny interstices of the deep red interlacy, composed of octagons around eight-pointed stars, create an underlying web of small eight-pointed stars.

The smaller figures of the Generalife, such as its eight-pointed stars, reappear in endless variations. The stars in the outer band of the central octagon are noteworthy for using colors to define the configuration clearly, even the over-and-under weave of the strapwork.

Unfortunately, the poor condition of the Generalife carpet inhibits assessment of

its tiny, vegetal filling ornaments.

At nearly the same time the Generalife carpet may have arrived in Granada, Sultan Qaitbay was finishing one of his landmark building projects: the reconstruction of the al-Ashrafiyya Madrasa (school) in Jerusalem, documented in 1480–1482. Just as the architectural decoration bore stylistic identifiers, he likely would have settled for no less than “branded” furnishings. The contemporary local historian Mujir al-Din al-Ulaymi called the new

A pattern diagram guides interpretation of the much-faded Generalife Mamluk carpet in Granada, Spain. Measuring 1,184 by 322 centimeters and woven in a single piece, it would have fit neatly into either the Sala de la Barca in the Alhambra palace or the second-floor room of the nearby summer palace, the Generalife. Its design, built around alternating octagons and eight-pointed stars, is most easily appreciated today in details, *opposite*, that include a layered, eight-pointed star, *left*, and strapwork with a pattern of stars and half-stars on a corner border, *right*.



al-Ashrafiyya the outstanding construction of the time—the “third star” of Jerusalem after the Dome of the Rock and the al-Aqsa Mosque. Notably, he lauded the madrasa’s “carpets and lamps of unsurpassed beauty, the like of which is not found elsewhere.”

An account by Mujir al-Din of the patronage of the al-Ashrafiyya by the sultan indicates that these carpets are approximately contemporary with the Generalife in Granada and probably earlier than those at the Vatican. They had come via a series of events: Shortly after Qaitbay’s accession in 1468, Jerusalem’s superintendent of the shrines persuaded him to take over the completion of a madrasa that had been supervised since 1465 for preceding sultans. A successor superintendent “saw to the completion of the madrasa, provided doors for it and furnished it with carpets.” Early in the reign of Qaitbay, this official probably acquired the carpets from nearby Damascus.

On his visit to Jerusalem in 1475, the sultan was not pleased by his adopted madrasa. In 1479 he sent an official from his court to oversee a reconstruction on a grander, more contemporary Cairene scale. The site was extended in the rear into the adjacent Haram al-Sharif, or Noble

Sanctuary. A year later Qaitbay sent a team of builders, craftsmen and an architect; an inscription commemorates completion in July-August 1482. The new madrasa was on the second floor, facing east. Its footprint survives in existing masonry: four *iwans* (vaulted rectangular rooms open on one long side) surrounded a covered courtyard about nine meters square. The larger north and south iwans were 1,350 centimeters wide by 802 and 531 centimeters deep, respectively, and thus appropriate for carpets as large as the one in Granada and those (later) in the Vatican. According to Atil, because these iwans were designed as gathering and teaching spaces, they were likely to have been cushioned. Mujir al-Din described the architectural decoration: polychrome marble pavements, marble wall panels, a high-gilt, blue-painted wooden ceiling and windows of “Frankish glass” (European, probably stained glass). It was, therefore, as lavish and colorful as Qaitbay’s showpiece mosque and madrasa in Cairo, completed in 1474. Because the early Mamluk carpets were designed with dimensions, colors and ornament to complement just such spaces, it is entirely reasonable that Qaitbay’s team in Jerusalem would have ordered the carpets from Cairo.



Scarcely two decades after the accession of Sultan Qaitbay and the likely foundation of the new carpet industry, the carpets of Cairo graced some of the most honored spaces in the multicultural Mediterranean. The Granada and Vatican carpets were intended for palatial rooms that few other than royalty had at the time. The price paid by Pope Innocent VIII suggests that the carpets were intended also for the very rich, who sought to—and would have been expected to—display splendor without precedent. During the second half of the 15th century, both Muslim and Christian elites around the Mediterranean cultivated and projected position and power through carpets. All evidence points to Qaitbay’s new “brand” as a status symbol meant to further the prestige of the carpet owners and, foremost, himself. The magnificent remnants of his success—testimonies of the interwoven cultures and economies of the era—remain for our admiration and study. 🌐



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THE STORYTELLER OF TANGIER

WRITTEN AND
PHOTOGRAPHED BY

Jeff Kochler



With a large-screen television on mute and a dull winter light seeping into the sitting room of his home in Tangier's Souani neighborhood, Mohammed Mrabet dips an old-fashioned nib pen into a dish of satiny India ink. On white paper that lays on a broad coffee table, he makes a mark. Then another, and another, and another, improvising an outwardly sprawling design that gradually fills the sheet.

Framed works cover the pale-yellow walls of the room. His earliest date from the 1960s. Some are bright with bold colors. More recent pieces are dense, intricate pen-and-ink drawings that consist of webs of lines and dozens or even hundreds of tiny marks, with no figurative shading or background. His compositions fall somewhere amid abstraction, Arabic calligraphy and the folk patterns created with henna that adorn the hands of women. Nestled within his feathery masses of lines rests a set of interlocking motifs and symbols—fish, eyes, claws and more—that Mrabet arranges and rearranges like constellations.

The marks he expresses on paper take shape, unfolding as words and sentences do, “and after it is a story.”

And it is spoken stories, too, that are Mrabet's great forte. Mrabet himself can neither read nor write. But his improvised oral stories weave everyday life into extraordinary tales that have been published in more than a dozen languages.

“A story is like the sea,” he said once. “It has no beginning and no end. It is always the same and still it keeps always changing.” This refers both to his oral tales and the ones he draws. While similar in style and with recurring imagery, each is unique. “Not one is like another,” he says of the dozens of pieces around the sitting room.

His art might be less well-known than his books, yet it flows simultaneously with them. With a light step, razor-sharp mind and, at age 83, a tongue that has lost neither snap nor music, he possesses a seemingly endless storehouse of tales. On this crisp December afternoon, in the house he shares with his extended family, a couple kilometers from the

gates of the old city, Mrabet tells—compulsively, mesmerizingly—one story after another, each based on his life.

He was born in Tangier, in 1936, to a family from the Rif Mountains. A rebellious child, he says, he ran away for the first time at age five. His father enrolled him in a madrasa (school) and then a French one, he says, sipping a glass of sweet mint tea. “When my father took me to school, the French teacher came to me to look at my book, and I had written nothing. I only had drawings in my book. That's why I didn't study, because the teacher hit me, and I hit him back.”

Mrabet fled. When he returned home, his father, a pastry chef at the Minzah Hotel who had 24 children by two wives, beat him. “I opened the door and told my father goodbye. I was 11 years old.”

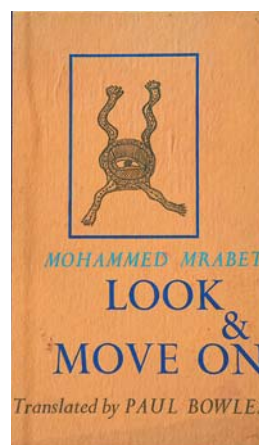
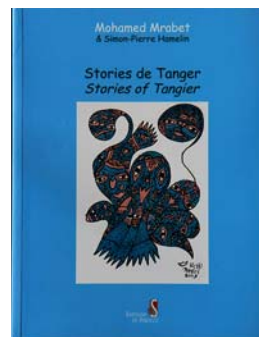
Mrabet never returned to school.

Mid-20th-century Tangier was an international creative capital, “something fantastic,” Mrabet says. In 1956, at age 20, he began working at the hotel that turned out to be a favorite for the likes of Jack Kerouac, William S. Burroughs, Allen Ginsburg and Gregory Corso, all members of the Beat Generation. All were a part of that 1950s, post-World War II literary movement that rejected traditional narrative values to embrace a new nonconformity, and all were drawn to Tangier's international atmosphere and the sense of personal freedom it offered.

In 1960, while working as a waiter at a party, Mrabet spotted a woman removed from the others, bored from the chitchat of the night,

as she said. Mrabet responded with a ribald story about a foolish man looking for a wife. Spellbound, she introduced herself as Jane Bowles, an American writer married to fellow writer Paul Bowles, who later would become best known for his novel *The Sheltering Sky*. Together, the Bowles were the doyens of Tangier's émigré literary community. That evening, Paul was away recording music in the Sahara; upon his return to Tangier, at Jane's insistence, he met with Mrabet.

So began a relationship that would forever link Mrabet's name to the American author who had settled in Tangier in



*Opposite: At home, Mohammed Mrabet, 83, lives surrounded by art he has created over six decades. Above left: A view from the room at the Grand Hôtel Villa de Frances where French artist Henri Matisse often stayed, hints at the attraction Tangiers held for artists and literati into the 20th century. This includes Paul and Jane Bowles, the former of whom Mrabet befriended and soon collaborated with on a number of publications, including his 1976 autobiographical *Look & Move On*, which Paul Bowles translated. Top right: A more recent collaborative work, *Stories of Tangier*, was published in 2009. Every one of Mrabet's stories is transcribed, as Mrabet himself never learned to write.*



Top: Evening in Tangier. Left: “Nobody taught me anything,” says Mrabet, whom Bowles regarded as “a virtuoso storyteller.” In this 1986 photo, the two stand in Bowles’s library in Tangier.

Mrabet recorded his stories on tapes in Maghrebi Arabic before translating them into Spanish, which Bowles then rendered into English. The books catapulted Mrabet to recognition as one of North Africa’s best-known authors.

“Some were tales I had heard in the cafés, some were dreams, some were inventions I made as I was recording, and some were about things that had actually happened to me,” Mrabet explained in *Look and Move On*.

Blending reality with fantasy, his stories are usually violent, often funny and not infrequently tragic, focusing often on the power and tensions between cultures that rarely, if ever, come together. Mrabet leads his audience on a journey through the

1947. For nearly 40 years, until Paul Bowles’s death in 1999, Mrabet worked as a cook, driver and general handyman—even frequent travel companion—for Bowles.

But Mrabet was just one of a number of Moroccan storytellers who, unable to read or write, worked with Bowles. Mrabet, however, demonstrated himself as “a showman ... a virtuoso storyteller,” according to the late author. In Mrabet, Bowles found his most steadfast collaborator. Their first book together was the novel-length *Love with a Few Hairs*, published in 1967 in New York and London, and produced for television by the BBC. They went on to coproduce more than a dozen novels and story collections, as well as Mrabet’s autobiographical *Look and Move On*.

alleys of a secret city few outsiders have access to. “He has found,” wrote Henry Miller, “the secret of communicating on all levels.”

Mrabet’s first lessons in storytelling came from his grandfather, from whom Mrabet developed a musical cadence that is particularly pronounced when telling stories in his native tongue. “Telling stories was just like doing music for two reasons,” says Simon-Pierre Hamelin, a French novelist and founder of Morocco’s first literary magazine, *Nejma*, which has published Mrabet’s works. “It is more pleasant for the public, and it is easier to remember the stories.”

Mrabet is a “representative of the storytelling tradition in this part of the world,” Hamelin explains in his small

office above Librairie des Colonnes, the storied, 70-year-old bookshop he manages that is the heart of the city's literary life. Hamelin met Mrabet after moving to Tangier in 2004, and he recently worked with Mrabet for two years transcribing and translating a collection of his stories and a novel. "Mrabet is in every story. He is the main character in all of his stories."

Hamelin explains that unlike many other professional storytellers who tell the same tales over and over, Mrabet continually improvises, and he works in new details from contemporary life into his fable-like yarns. "They change each day," Hamelin says.

It was while working on books with Bowles that Mrabet began to paint more seriously, but Mrabet "began drawing before," Hamelin notes.

Now, Mrabet's artistic imagery and literary creations are indivisible, says Hamelin. Mrabet insisted on illustrating their *Stories of Tangier* collection. "Storytelling and painting—for Mrabet, it's the same process."

A portal between north and south, Africa and Europe, Tangier has drawn Western artists since the early 19th century. French painter Eugène Delacroix came in 1839 and found that the city's unique light "gives intense life to everything." Along with Henri Matisse, who spent the winters of 1912 and 1913 at the Hôtel Villa de France, the years just before World War I saw a number of important painters in Tangier, including Henry Ossawa Tanner, the first African American painter to garner international recognition.

In the mid-1950s and 1960s, Tangier welcomed a new wave of artists. From his relationship with Bowles, Mrabet met them all. These included Brion Gysin, Maurice Grosser and Francis Bacon, one of the 20th century's greatest figurative painters. They impacted a pioneering generation of local artists who often rooted their abstraction in the signs and symbols of Morocco's vibrant visual artistic tradition.

"Their art was taken from imagination and spirit," says the well-known contemporary Tangier artist Abdelaziz Bufrakech, "and mixed the past, present and future."

Mrabet is a maverick, affirms Bernard Liagne, whose Artingis Gallery in Tangier held an exhibition in 2012 that featured 100 works by Mrabet. Standing beside some newly acquired pieces of his, including a large oil version of his black-and-white line drawings, Liagne says, "He paints by instinct."

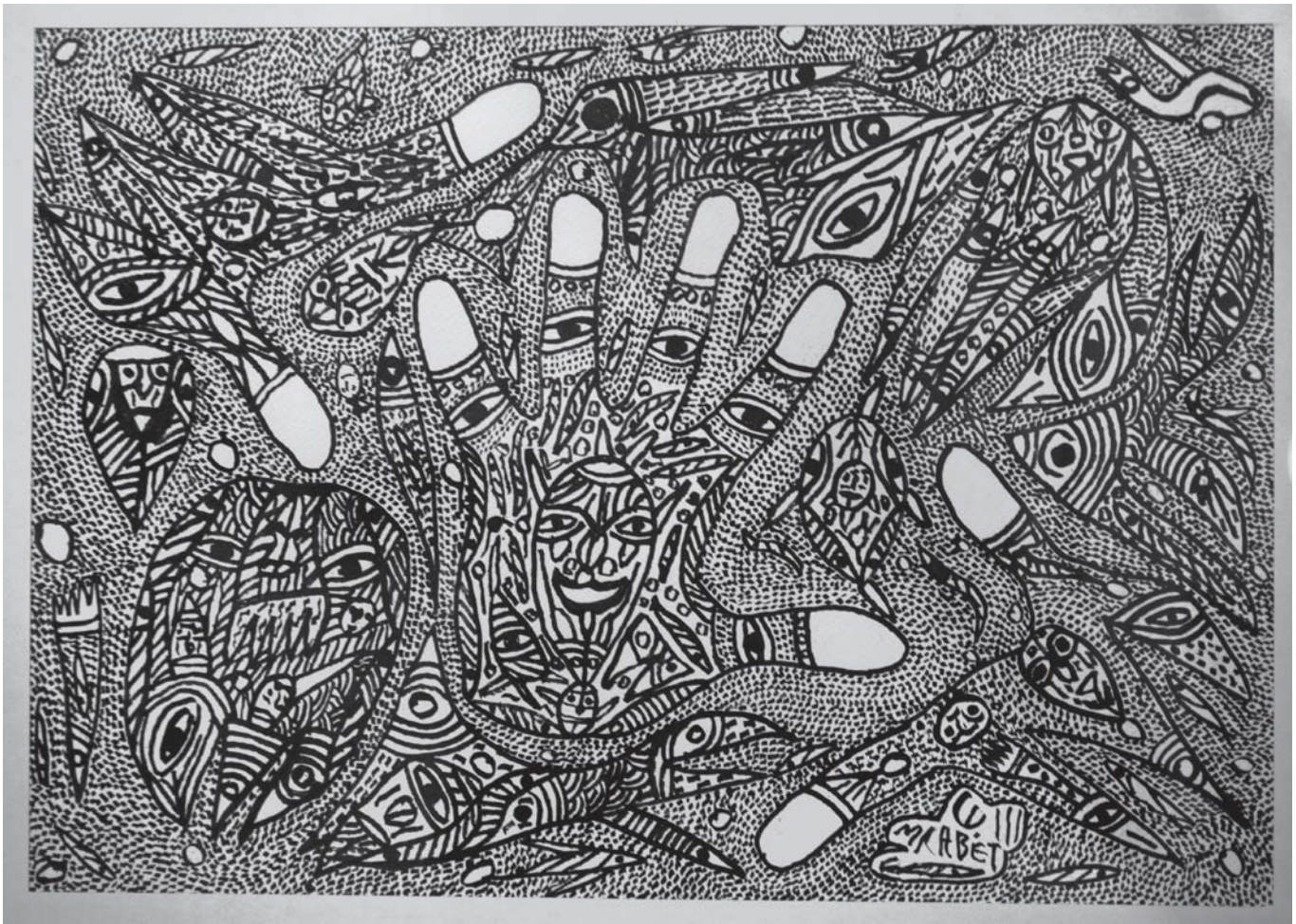
"Nobody showed me how to draw. Never. Nobody taught me anything," Mrabet insists in his home. He is completely self-taught. "The stories come out of my head. I invent everything."

Mrabet explains that when he tells a story, he doesn't know where it will begin, how it will continue or when it will end, and it is the same with pictures. He has no preconceived image in mind, not even a plan. "When I start drawing, I don't know what will come out," Mrabet says.

The same symbols appear over and over, often a dozen or more times within a single work. Open, unblinking eyes that keep the "evil eye" at bay are frequent; The hand of Fatima (*khamisa*, or "five" in Arabic) dominates many works.



Top: Simon-Pierre Hamelin, manager of the bookshop Librairie des Colonnes, met Mrabet 15 years ago and has since collaborated and translated for him. "Storytelling and painting, for Mrabet, it's the same process," he says. *Above:* In Tangier, Artingis Gallery in 2012 exhibited more than 100 of Mrabet's artworks.



“The hand takes care of you,” Mrabet says. “It protects you.”

While lacking professional training, Mrabet creates with an original authenticity in a straightforward style that has a proven universal appeal. “He is a ‘naïve painter,’” says Bufrakech, who has known Mrabet since the late 1970s.

“On one hand,” William S. Burroughs said of Mrabet’s work, “the paintings derive from the classical Arab tradition, as expressed in mosaics; there is also some resemblance to the spirit pictures drawn by Eskimo shamans.” Bufrakech likens them to certain Aztec ones.

Mrabet held his first exhibition in 1970 in New York at the offices of *Antaeus*, the literary journal that Bowles cofounded with publisher Daniel Halpern. Over the years, Mrabet has held more than a dozen exhibitions in Tangier as well as across North America and Europe.

While his works have entered various public collections, including the Institute du Monde Arabe in Paris and the Ministry of Culture of Morocco, most have been bought by those who have passed through the city and met Mrabet.

MRABET EXPLAINS THAT WHEN HE TELLS A STORY, HE DOESN'T KNOW WHERE IT WILL BEGIN, HOW IT WILL CONTINUE OR WHEN IT WILL END, AND IT IS THE SAME WITH PICTURES.

Notable collectors include Peggy Guggenheim, Libby Holman, Mick Jagger, Tennessee Williams, Henry Miller, Bernardo Bertolucci and publisher Peter Owen.

Mrabet still sells largely to people who come to his home in Souani to buy. Many are drawn to their visual density and rhythmic splendor of his spontaneous patterns, and to the array of allegorical

narratives that close viewing might conjure.

A few days later, Mrabet sits in the neighborhood café he frequents on a nearby grassy square. The weather has turned cool and misty. Over tea, he again tells stories. He can't help himself. He is a natural raconteur.

Yet Mrabet is unable to talk about what his paintings mean or where they originated. He won't explain their narrative or help decode the symbolism that is so obviously present, or even give the works names. Questions are met with a disinterested shrug.

“He says all the time, ‘I’m not a writer. I’m not a painter. I



As an artist, Mrabet draws partly on Moroccan folk imagery, but much of his symbolism is idiosyncratic, as shown *opposite*. The untitled textured kinetic abstraction, *above*, hangs at the American Legation in Tangier. *Right*: Mrabet keeps his nib pen and ink in his living room studio.

am a fisherman,” says Hamelin, who organized art exhibitions for Mrabet before their literary collaborations. “Today there are a lot of artists who are only speaking. You need to be able to speak about your art. If you can’t speak about your art, where it is coming from, you’re viewed as worthless. Mrabet is the opposite of that. He just does it. He doesn’t explain it.”

But by not discussing his work, or pursuing clients, commissions or exhibitions, his legacy has been left in question. Few people have access to his paintings; fewer have the occasion to acquire one.

Mrabet, meanwhile, shows little sign of slowing. Longevity runs in his family. He has outlasted all the Beats—from Bowles to Bacon to his fellow Moroccan artistic pioneers.

Mrabet continues to tell stories. They never dry up. But while his role as a storyteller might have brought him more fame than his art, it is the latter that today sustains him financially.

After finishing his tea, Mrabet puts on his scarf and leather gloves and heads home, where, with nib pen and India ink, he will turn a pattern of dashes, lines and symbols into a story that only he is able to fully read. 🌐



Jeff Koehler is an American writer and photographer based in Barcelona. His most recent book is *Where the Wild Coffee Grows* (Bloomsbury, 2017), an “Editor’s Choice” in *The New York Times*. His previous book, *Darjeeling: A History of the World’s Greatest Tea* (Bloomsbury, 2016), won the 2016 IACP award for literary food writing. His writing has appeared in the *Washington Post*, the *Wall Street Journal*, *Saveur*, *Food & Wine* and *NPR.org*. Follow him on Twitter @koehler-cooks and Instagram @jeff_koehler.



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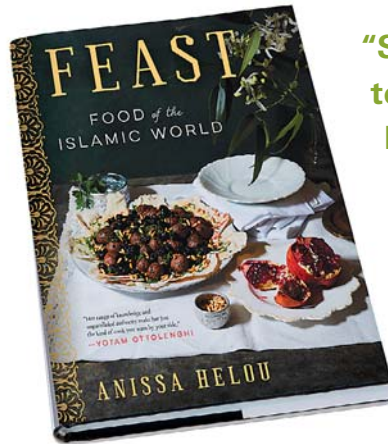
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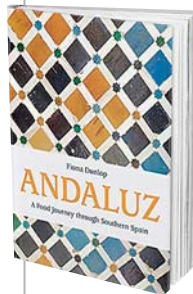


Feast: Food of the Islamic World

Anissa Helou. 2018, Ecco, 978-0-06236-303-9, \$60 hb.

It takes confidence to pull together an authoritative cross section of foods spanning “the Islamic World.” Veteran food writer Anissa Helou rises to the occasion with this 530-page collection of familiar (shawarma, hummus), vaguely familiar (Moroccan tagines, Persian pilaws) and not-so-familiar (Saudi camel meatballs) recipes from nearly every corner of the Muslim world. She presents fish dishes from the Gulf States, along with Saudi Arabia curries from India, Pakistan and Indonesia; savory one-pot rice meals from Afghanistan; sweets from Lebanon, Turkey and Iraq; scallion pancakes from China; and simple bread rolls from Senegal. This exhaustive volume, covering centuries of tradition and tens of thousands of square kilometers, should appeal to serious and curious cooks alike.

“Spices and spice mixtures are essential to cooking in practically the entire Muslim world.... [They range from] ... very complex—like the Moroccan *ras el-hanout* with more than twenty-five spices in the mixture—to others such as the Tunisian *b’harat*, which is simply two spices, one of them being a fragrant flower.”



Andaluz: A Food Journey through Southern Spain

Fiona Dunlop. 2019, Interlink Books, 978-1-62371-999-9, \$35 hb.

In a bid to canvas some 800 years

of the cultural and culinary history of Muslim Spain (al-Andalus), Dunlop sets out in search of “dishes that were . . . infused with the aromatic flavors of the Middle East and North Africa.” From Almería in the east, through the famed cities of Granada and Córdoba, to Seville and Cadiz in the west, she encountered food ways “deeply entrenched” in nearly every town and village. Spices introduced by Arabs, “kings of the spice trade,” enhance cod, potato and garlic soup from the Almería coast, redolent with “punchy paprika, cumin, and saffron.” Rice, the “millennial old grain from China,” arrived in al-Andalus in the 10th century via Iraq and is the centerpiece many dishes, from paella to sweet, cinnamon-rich pudding, studded with almonds, another Arab import. Extensive historical

sections add depth to this broad survey of Andalusian cuisine.



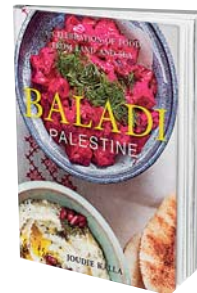
Asma's Indian Kitchen: Home-Cooked Food Brought to You by Darjeeling Express

Asma Khan. 2019, Interlink Books, 978-1-62371-912-8, \$30 hb.

Asma Khan's paternal culinary

pedigree stretches back to the spice-rich “food tradition of the [medieval] Mughal courts,” while the comfort food of her youth (rice-and-milk puddings and custardy egg halwas) stems from the “Bihari [pre-Mughal] Muslim food” of her mother’s side of the family. The two meet in this easy-to-use cookbook reflecting Khan’s heritage and a cross section of Indian cuisine, emphasizing its variety. “There is no generic Indian food,” she advises. Chicken *chaap*, a stew-like korma “infused with mace and nutmeg,” derives from dishes popular with Muslim “traders from Central Asia . . . and the Middle East” who settled in Bengal, in the east. Rich,

slow-cooked *kali dal* (black lentils with kidney beans) is a hearty dish from the Punjab, up north. An introductory section offers tips on techniques and spices essential to preparing these and other historic family favorites.



Baladi Palestine: A Celebration of Food from Land and Sea

Joudie Kalla. 2019, Interlink Books, 978-1-62371-981-4, \$35 hb.

Zaitoun: Recipes and Stories from the Palestinian Kitchen

Yasmin Khan. 2018, Bloomsbury Publishing, 978-1-4088-8384-6, £26 hb.



Both these titles explore the time-honored traditions of Palestinian cuisine, viewed from different

angles. Kalla, a London-based chef, has a long history with Palestin-



ian food, passed down from her grandmother, aunts and mother, while Khan, a cookbook author, absorbed her knowledge of and passion for the foods of the West Bank, Gaza and East Jerusalem during travels to the region as a human-rights worker. *Baladi* translates variously as “my home, my land, my country,” and Palestinian food is family matter to Kalla, be it her father’s soft-boiled eggs with yogurt, chili and lemon, or her aunt’s ground lamb, stuffed vine leaves with tomatoes and potatoes. She includes a recipe for salmon, “not common in the waters of the Middle East,” yet well suited to a classic Levantine marinade of pomegranate molasses, honey, olive oil and lemon. Khan was welcomed into Palestinian homes and kitchens where she detected the “influences of Armenian, Bedouin, Jewish, Roman, Arabic, Persian and Turkish cultures” on local cuisines. Galilee features “a magnificent array of colourful *mazze*h (mezze) dishes” developed on a wealth of local produce, while its coastal towns “make judicious use of . . . fresh fish and seafood.” The West Bank “focuses more on meat and bread, drawing its major influences from the cuisine of Jordan to the east and the Bedouin populations to the south,” where lamb stewed in yogurt (*mansaf*) and “*mussakhan*, roast chicken seasoned with sumac and caramelised onions and served on *taboon* flatbreads” are traditional favorites. In Gaza, “fresh dill, green chillies . . . copious amounts of garlic” and seafood form “the centrepiece for many meals.”

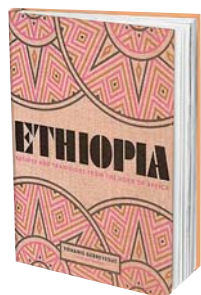


The Culinary Crescent: A History of Middle Eastern Cuisine

Peter Heine, Peter Lewis, tr. 2018, Gingko Library, 978-1-90994-225-7, \$44.95 hb.

This culinary history of the Middle East satisfies the elusive criteria of being all things to all people: broad in scope, yet detailed in discussion, and encyclopedic in its organization, but like a work of narrative nonfiction in its execution. There are sections recounting the importation of ingredients to the region from both the East and West (such as spinach, sugar and

tomatoes), and the export of products to Europe (including apricots, coffee and sorbets). Canvassing the distinguishing features of historic cookbooks, Heine provides insights into various cultures. Medieval Arab texts “stress the significance of food and drink as gifts from Allah,” while the Ottomans were most concerned with “how to conduct oneself when invited out to eat.” Recipes for classic dishes like shawarma (grilled marinated lamb) or *lokma* (fried dough in lemony sugar syrup) add practicality to this scholarly yet readable title.



Ethiopia: Recipes and Traditions from the Horn of Africa

Yohanis Gebreyesus. 2019, Interlink Books, 978-1-62371-963-0, \$35 hb.

Ethiopian cooking can be intimidating, especially *injera*, the country’s hallmark sourdough flatbread, the starter batter for which takes days to prepare and a magician’s touch to pour properly into a skillet. This colorful exploration of Ethiopia’s culturally diverse gastronomy, “influenced by . . . different climates and geography,” its role as an historic crossroads of faiths and by its trade with the Arabian Peninsula, Africa’s interior and Asia, guides the reader through dozens of recipes. Spices are key ingredients, especially *berbere*, a blend of chiles, ginger, cardamom and more, that is “hot, but not blisteringly so.” Fenugreek figures prominently in the meat stews featured here, favored by citizens of Harar, home for many of the country’s Muslims, while dates sweeten date and orange marmalade.

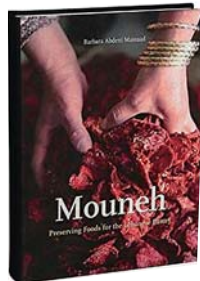


Lisbon: Recipes from the Heart of Portugal

Rebecca Seal. 2017, Hardie Grant London, 9-781-78488-103-0, \$35 hb.

Recipes for Indian fish curry or tempura-battered, fried green beans in a Portuguese cookbook might seem like publish-

ing errors. That is until one recalls how extensively Portuguese sailors, embarking from Lisbon, encircled the globe during Europe’s Age of Exploration, from the 14th through the 17th century. The Portuguese, explains Seal, introduced tempura to Japan, while medieval Moorish influences “changed [Portugal’s] cuisine completely” through the introduction of “figs, almonds, and coffee.” Rich in historical lore, this cookbook’s 80 recipes highlight Lisbon’s status as a cultural and culinary crossroads. There are some intriguing treats, such as “cat’s tongue” cookies, shaped just like they’re called and “originally French or Dutch,” as well as classics such as fiery piri piri sauce, made with African bird’s eye peppers. Like the Portuguese galleons of the past, this title takes the reader on a far-flung and colorful journey.



Mouneh: Preserving Foods for the Lebanese Pantry

Barbara Abdeni Massaad. 2018, Interlink Books, 978-1-56656-036-8, \$50 hb.

Mouneh, “from the Arabic word

mana, meaning ‘storing,’ is a custom that “continues to flourish in many parts of Lebanon,” writes Massaad, a Beirut native. Pickling, salting, sun-drying, sweetening with sugar or packing in oil—all these methods date back centuries in the region. They evoke memories of grandparents putting up fruit preserves and pickling garden vegetables. Massaad looks to this know-how, and history, in this expansive volume about how to preserve produce, from fresh herbs (sage, rosemary, wild thyme) to fruit jams (watermelon, fig, black sour cherry), to vegetables (stuffed eggplant in oil, red pepper paste) and cracked wheat and yogurt (*kishk*), a Bekaa Valley specialty. Reflecting the natural rhythms of food production, the book’s sections are arranged seasonally. Mastering many of these recipes will require time and practice. Yet the rewards of preserving one’s own food, Massad promises, can be gratifying.



Orange Blossom & Honey: Magical Moroccan Recipes from the Souks to the Sahara

John Gregory-Smith. 2018, Kyle Books, 978-1-90948-790-1, \$29.99 hb.

If you ever tried Moroccan food, then you sampled the cuisines

of many cultures. Building upon the foundations of richly spiced Berber and Arab diets, “[e]xiled Moors from Spain brought olive cultivation, citrus fruits, and paprika,” while Moorish Jews introduced pickling and preserving. The Ottomans, with their fondness for fiery grilled meats, added kebabs, while café culture and “an appetite for sophisticated pastries and breads” is a legacy of French colonizers. This book celebrates that mix, with a variety of dishes from all parts of the country. *Seffa*, a saffron-and-almond-infused chicken braise, is a celebratory dish of desert tribesmen; goat-cheese-and-grapefruit salad hails from the Bouhacem Forest in the north; and rosewater and lemon ricotta cheesecake blends “classic Moroccan fruits and flavors” with “a European style.” Personal stories and lovely illustrations complement the recipes in this enticing cookbook.



Together: Our Community Cookbook

The Hubb Community Kitchen. 2018, Clarkson Potter, 978-1-984-82408-0, \$16.99 hb.

The recipes in this book originated in the Hubb (Love) Community Kitchen in West London, near the site of the 2017 Grenfell Tower fire that took the lives of 72 people, most of Middle Eastern or North African descent. After the fire, women gathered to offer comfort and support by making meals for impacted neighbors and friends. United not only by their humanity, but by their “love of cooking and sharing food,” they prepared traditional comfort recipes—published here—such as braised Algerian sweet lamb, Moroccan chickpea-and-noodle soup and Indian shortbreads. Their efforts attracted the support of the duchess of Sussex, Meghan Markle, who donned an apron and joined them in a community kitchen that she describes in the foreword as “a place for women to laugh, grieve, cry and cook together.”



EVENTS

Highlights from
aramcoworld.com

CURRENT / MAY

Hikāyāt (stories) combines hand-crafted photogravure prints by Spain-based artist Tariq Dajani with Arabic poetry by Darwish, Qasim, Rumi and Gibran. Dajani uses old family photographs and other material to create poetic stories and ideas that reflect his personal feelings and thoughts, as well as his search for spiritual and earthly identity. Dark and evocative, his images hint of separation, pain and loss. At the same time, the depth of emotion kindles hope, even optimism. Photogravure printing is based on a technology from the 1870s in which a photographic image is etched onto a metal plate, inked and wiped by hand before being pulled through a traditional etching press, leaving a textured feel, depth and quality unlike any other photographic print form. Jacaranda Images, **Amman**, through May 11.

Roads of Arabia: Archeological Treasures of Saudi Arabia, an initiative of the King Abdulaziz Center for World Culture (iThra) in Dhahran and the Saudi Commission for Tourism and National Heritage, features important archeological relics illustrating the depth of Arab civilization. The exhibition reaches back more than a million years, covering prehistoric and pre-Islamic times, as well as the early, middle and late Arabian Kingdoms, up to the establishment of Saudi Arabia. Benaki Museum, **Athens**, through May 25.

CURRENT / JUNE

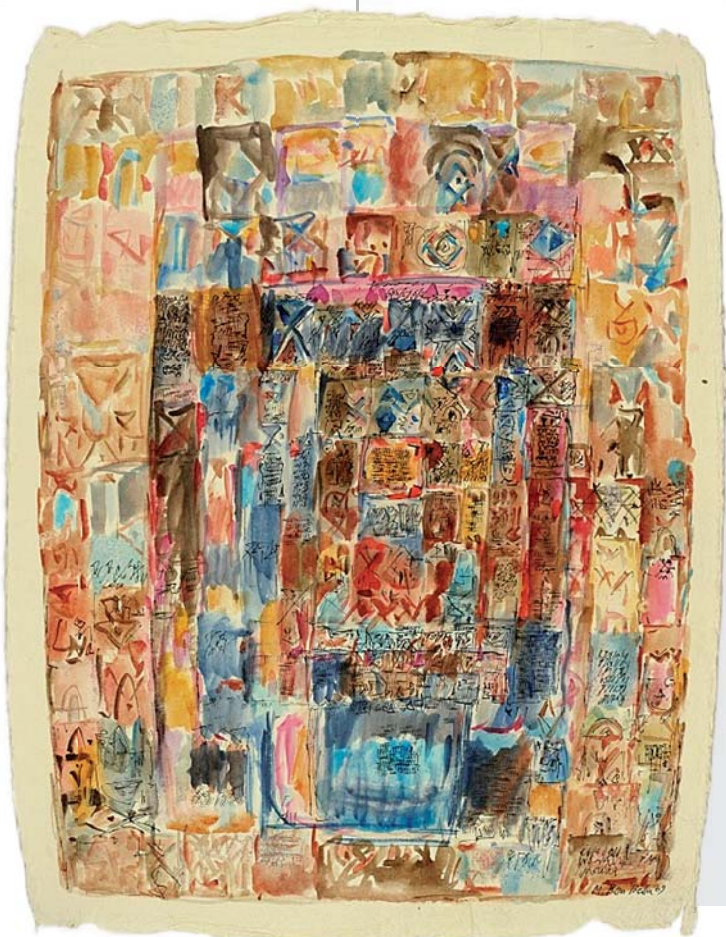
Traded Treasure: Indian Textiles for Global Markets. Known for many centuries as the source of fine cotton and silk textiles, India is home to some of the world's most innovative textile traditions. Spanning the five-hundred-year history of India's thriving commerce to Southeast Asia, Europe and Japan, this exhibition reveals why Indian textiles were in demand the world over. Some of the earliest surviving Indian textiles are printed and painted cotton fragments found in Indonesia. Along with silk double-ikat patola, these were used for ceremonial purposes and treasured in Indonesia as heirlooms. The maritime trade that relied on supplying Indian textiles to Southeast Asian markets in exchange for spices was first led by Arab, Persian and Indian merchants, but later dominated by Portuguese, Dutch and British

traders. This expanded the demand for Indian chintz and embroideries in Asia and Europe. Johnson Museum of Art, **Ithaca, New York**, through June 9.

Sharjah Biennial 14: Leaving the Echo Chamber showcases three exhibitions that explore the possibilities and purpose of producing art when news is fed by few sources, history is increasingly fictionalized, and when ideas are invariably displaced in an echo chamber of cultural, social and political systems. Except here artists are given the agency to tell stories that echo in a different way, creating new surfaces for a multiplicity of chambers revealing differing means of connecting, surviving and sustaining a collective humanity. Various locations, **Sharjah, UAE**, through June 10.

BLKNWS: Deconstructing European Philosophies. Kahlil Joseph, a visiting artist in the new Presidential Residencies on the Future of the Arts program, presents a two-channel video projection that is displayed at the Cantor, the dining hall in Lagunita and Harmony House. The broadcast project blurs the lines between art, journalism, entrepreneurship and cultural critique. Cantor Arts Center, **Stanford, California**, through June 16.

Ornamental Traditions: Jewelry from Bukhara. Located in present-day Uzbekistan, the Emirate of Bukhara (1785–1920) was an important center of Islamic religion



A la plume, au pinceau, au crayon:

Dessins du monde arabe, translated as “Pen, brush, pencil: Drawings from the Arab world,” presents hundreds of works from the collection of the Institut du Monde Arabe, recently enriched by a donation from Claude and France Lemand. These paintings, mostly figurative, date from the 11th century to today, some shown for the first time. “To dedicate an exhibition to drawing is to (re)discover the immense diversity of art—sometimes monochrome, sometimes figurative, sometimes informal, and even abstract, as one would describe it in the West,” say the organizers. Institut du Monde Arabe, **Paris**, through September 15.

Mahjoub Ben Bella, “Maya,” 2009.
Mixed media on Nepal paper, 88 x 68 cm.



and scholarship, and a key oasis on the Silk Road that traversed Central Asia, becoming home to the majority Uzbek and Tajik populations in addition to communities of Arabs, Jews and Turks who played a role in the emirate's vibrant trade. The exhibit brings together nearly 50 jeweled objects from Bukhara and rare ikat and embroidered textiles, revealing a rich and vibrant artistic heritage rarely seen outside the former Soviet Union. The Art Institute of **Chicago**, through June 30.

CURRENT / JULY

Faig Ahmed is an internationally recognized artist from Baku, Azerbaijan, known for his conceptual works utilizing traditional craft reimagined as contemporary sculptural art. He explores visual forms that both examine and challenge tradition through the use of iconic cultural objects. Ahmed's work engages viewers through its juxtaposition of tradition with hyper-contemporaneity, digitally distorting images through pixelation and three-dimensional shapes. Shangri La Museum of Islamic Art, Culture & Design, **Honolulu**, through July 13.

CURRENT / AUGUST

Hayv Kahraman: *Superfluous Bodies*. Los Angeles-based artist

Hayv Kahraman (b. 1981; Baghdad, Iraq) explores themes of identity, memory, gender and exile across paintings and sculptures that present and re-present the "colonized" female figure. She weaves, tears, patches and reworks materials to create exquisite artworks that nod to a breadth of artistic traditions found in Europe and Asia, creating a dialog between ideas of East and West while questioning concepts of agency and corporeality. **Honolulu** Museum of Art, through August 4.

COMING / MAY

Helen Zughaib: *Migrations*. 2019 marks the 100th anniversary of the Paris Peace Conference. The ending of World War I resulted in the creation of modern borders in the Middle East that have affected today's geopolitics. To mark this anniversary, the Wilson House features the most recent works from Beirut-born artist Helen Zughaib. Zughaib's *Syrian Migration Series* allows for an exploration of the contemporary consequences of post-world war peace through the lens of the current Syrian conflict and the mass migration it has triggered. Zughaib's series seeks to refocus attention toward the modern Syrian crisis and give voice to those affected, particularly women and children migrants and refugees.

The President Woodrow Wilson House, **Washington D.C.**, May 23 through July 28.

COMING / JULY

Seminar for Arabian Studies is the only annual international forum covering archeology, history, epigraphy, languages, literature, art, culture, ethnography, geography and more, from the earliest times to the present day or, in the case of political and social history, to the end of the Ottoman Empire in 1922. More than 200 scholars and students from throughout the world attend. Interested members of the public are also welcome. **Leiden University, the Netherlands**, July 11 through 13.

COMING / OCTOBER

Art and Peoples of the Kharga Oasis. In 1908 The Metropolitan Museum of Art began to excavate late-antique sites in the Kharga Oasis in Egypt's Western Desert. The Museum's archeologists uncovered two-story houses, painted tombs and a church. They also retrieved objects that reveal the multiple cultural and religious identities of the people who lived in the region. The finds represent a society between the third and seventh centuries CE, a time of transition between the Roman and early Byzantine periods, which integrated Egyptian, Greek

and Roman culture and art. This exhibition features some 30 works from these excavations. The Metropolitan Museum of Art, **New York**, October 11 through October 21.

REORIENT 2019 Festival of Short Plays celebrates the 20th anniversary of this innovative and spirited festival featuring seven works of theater from or about the Middle East. The lineup includes playwrights with longtime associations with Golden Thread and newcomers to the festival: Iraqi British writer and actor Rendah Heywood, Noor Theatre founding Artistic Director Lameece Issa and Turkish Kurdish writer and filmmaker Mustafa Kaymak. Selected from 108 submissions from 13 countries, the short plays are diverse in content and style, highlighting the multiplicity of Middle Eastern perspectives and identities. Potrero Stage, **San Francisco**, October 18 through November 17.

Most listings have further information available online and at aramcoworld.com. Readers are welcome to submit information for possible inclusion to proposals@aramcoservices.com, subject line "Events".

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