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EVO TOURISM 2017

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On Hawaii's Big Island, streams of lava have created a bright green patchwork of forested islands, or "kipukas," bursting with new life-forms

BY MARY ROACH

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Scattered across a clifftop in Newfoundland, the world's oldest deep-sea fossils, dating back more than 560 million years, beckon scientists and tourists alike

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Teeming with creatures, including its own species of wasp, a giant banyan in India is the world's broadest tree, measuring a whopping five acres across at the top

BY BEN CRAIR

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Photograph by Richard Barnes

THIS PAGE: Molten lava from

Kilauea volcano meets the sea in dramatic fashion at Kalapana on Hawaii.

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Stephen Fried

In his first piece for *Smithsonian*, the author and investigative journalist tackles a subject that can be found just down the street from his Philadelphia home: the Liberty Bell. As he dug into the history of its frenetic cross-country tour in 1915 (p. 36), Fried “started seeing the Bell and its influence everywhere—it became a living thing to me.” Fried, who is a two-time winner of the National Magazine Award, is at work on his sixth book, a biography of Benjamin Rush, who signed the Declaration of Independence and went on to become the founding father of American medicine and mental health care.

Neil Ever Osborne

The Canadian conservation photographer had never been to Newfoundland’s Mistaken Point before shooting some of the world’s oldest fossils for “Life on the Edge” (p.56). “It almost looked like a forest, but a forest that existed 500 million years ago on the bottom of the ocean,” he says. Osborne braved a spate of nasty weather—even a hailstorm—while trying to capture the faint imprints. “We had to wait through it until the angle of light worked for us.”



Terence Monmaney

The deputy editor of *Smithsonian* published his first story in the magazine in 1985, straight out of graduate school. His latest feature took him to Mistaken Point Ecological Reserve in Newfoundland (p. 56). “The landscape there is stark and desolate, even compared to the Maine coast,” he says. “You can drive a long time without seeing anything—no gas stations or strip malls. I found it refreshing and beautiful.”

ILLUSTRATIONS BY Kate Copeland

Michael Cannell

The author knew that he had found a suspenseful tale while reading a 1950s edition of a Buenos Aires newspaper on microfilm. “I noticed a headline about ‘The Mad Bomber of New York,’” says Cannell, whose previous subjects range from the 1961 Grand Prix to the architect I.M. Pei. “I knew immediately that this would be my next book.” The result was *Incendiary: The Psychiatrist, the Mad Bomber and the Invention of Criminal Profiling* (adapted on p. 25), Cannell’s account of the serial attacker who eluded capture for more than a decade. Cannell says his most colorful sources were “reporters who had worked in the Police Shack, a tenement across from police headquarters. Their stories resembled noirish gangster movies.”



Elyse Butler

The Hawaii-based photographer boarded a small tour boat before sunrise to shoot the lava stream flowing from Kilauea volcano into the Pacific. “You

could definitely feel the heat on your face—the steam was billowing up,” she recalls. Born and raised on the islands as the daughter of a seismologist, Butler hasn’t lost her sense of wonder about volcanoes. “I was just sitting there on this boat only 100 yards away watching the Big Island being created before my eyes!”

Mary Roach

Though she has written about everything from space travel to cadavers, Roach had never visited a volcano until reporting “Go With the Flow” (p. 48) in Hawaii. The biggest surprise: how dramatically lava levels shift throughout the day. “People would stand there complaining, ‘I rode my bike four miles to see nothing!’ And a couple hours later, all this glowing, churning stuff would bubble up.” Roach’s latest book is *Grunt: The Curious Science of Humans at War*.

Richard Barnes

The award-winning architectural photographer was given only 90 minutes to shoot one of the world’s most familiar symbols of freedom. “Figuring out how to light it was something you want to have the whole day to do,” says Barnes, who created the dramatic image of the Liberty Bell on this month’s cover. His latest exhibition, “State of Exception,” which explores the experience of migrants crossing the U.S.-Mexico border, runs through April 17 at Parsons School of Design.

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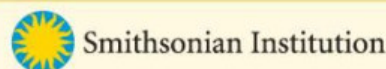
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Discussion

Beautifully written and relatable article about species discovery and its importance.

@EricRLGordon ON TWITTER

FROM THE EDITORS *The March issue story that sparked the most debate—and coverage in the New York Times—was “Transcendigital,” about a video game situated in Henry David Thoreau’s Walden. Some readers insisted that an electronic version was no substitute. “I would rather read about and visit the area than play some video game based on it,” Dave Treichel writes on Facebook. But others, like Marvinna Schmy, appreciate that the game incorporates “the little stuff—flowers by the wayside, fish in the pond. Many people have forgotten to look for those and enjoy them.” Matthew Shaer’s poignant article “The Holocaust’s Great Escape” was recommended by Politico, Huffington Post and Longform, and especially touched readers with ties to Lithuania. “All four of my grandparents left Lithuania in the early 20th century,” says Yvette Van Hise. “So glad to see that Lithuanians were able to fight their way to freedom.”*

Inspiring Escape

Just when I think I can’t hear something worse, I do (“The Holocaust’s Great Escape”). Yet just when I think I can’t hear another amazing survival story, I do. The Nazis and the Holocaust truly show the entire scope of humanity, at its most evil and its most resilient.

Erika Sponsler
FACEBOOK

Keeping the stories, both good and bad, about the Holocaust alive will hopefully ensure that nothing as horrible

as that human tragedy is ever allowed to happen again. Thank you.

George J. Wood
FACEBOOK

Land of Plenty

The biodiversity of the world is one of the greatest treasures we can pass on to our next generations (“The New Age of Discovery”). Multitudes of surprises have yet to reveal themselves to us. To destroy habitat unthinkingly is not only inhumane and immoral, it is also extremely penny-wise and pound-foolish.

Tobey WhiteHeart
Crockett
FACEBOOK



A new species is a new sentence in the book of natural history. Its discovery ensures a record. This may be the best tribute we can give to a species, its own mark on the record of planet Earth.

Adrian Bara-Popa
FACEBOOK

Probing the Past

We often hear about the advancement of DNA and genome research and how it applies to our current and future lives. “A Pox on History” was a reminder that we can apply such research to the past, and it can help reshape our concepts of eras before ours.

Alaina Boys
FACEBOOK

Science and Activism

Simply referring to loss of habitat, climate change and deforestation does not absolve scientists (or any of

us who love the Earth) from making strong efforts to prevent the devastation (“Mystery on the Savanna”). Scientists cannot act as if neutrality were a prerequisite for scientific research. All of us will mourn the loss of gorgeous creatures like the giraffes or elephants if we do not stop the slaughter by poachers and habitat destruction by greedy companies.

Trella Laughlin
EUREKA SPRINGS, ARKANSAS

Vanishing Vikings

I think the Norse made the best of the places they had chosen to go and settle (“Darkness at the Edge of the World”). I think as the weather changed they moved out, slowly at first. I am of Icelandic descent and now live in a warm climate with a short, mild winter and rarely long for cold extremes. Maybe the Vikings were the same.

AnneMarie Hansson
FACEBOOK

Correction

“Transcendigital” stated that “Walden: A Game” would be offered free. The developers now say the game is likely to cost \$18.45, a nod to the year Thoreau moved to Walden Pond.

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The lost
Simpsons
debut, 30
years ago

The Rise of Homer Sapiens

When American viewers first met the Simpsons, 30 years ago this month, Homer and Marge were lovingly tucking their children into bed. “Um, Dad,” Bart asked in his first appearance. “What is the mind? Is it just a system of impulses, or is it something tangible?” “Relax,” Homer responds. “What is mind? No matter. What is matter? Nevermind.” Lisa was close to drifting off when Marge cooed, “Don’t let the bedbugs bite.” “Bedbugs?” Lisa said, alarmed. Maggie *was* lulled to sleep, by “Rock-a-bye Baby,” only to end up dreaming about plummeting from a treetop. As profoundly influential as the maladjusted cartoon family would become—“an achievement without precedent or peer in the history of broadcast television,” as the *New York Times* critic A.O. Scott put it—only fans of a certain age may recall that the debut of the hapless parents and their strangely recognizable foibles took place close to three years before “The Simpsons” series premiered, in 48 long-lost shorts that appeared on “The Tracey Ullman Show,” the acclaimed but barely watched Fox variety program.

The mostly 20- or 30-second-long segments crash-landed in 1987 onto a TV landscape dominated by wholesomely corny sitcoms like “Growing Pains” and “The Cosby Show.” To create the bumpers, as the filler segments are called, producer

The old Simpsons “haunted” the family house in a 2014 Halloween episode.

by John Ortved

AMERICAN ICON

James L. Brooks turned to Matt Groening, whose “Life in Hell” comic strip (featuring the musings of angst-ridden rabbits and an identical-looking gay couple named Akbar & Jeff) was syndicated in alternative weekly newspapers across the country. Brooks hoped Groening would turn the comic into a series, but Groening instead proposed a new story of family dysfunction stocked with characters who were, as he later put it, “lovable in a mutant sort of way.”

In contrast with the seamless familiarity of Disney characters or Saturday morning cartoons, the Simpsons immediately stood out. The lines were sharp, jagged, irregular. The kids had pointy heads, and everybody looked as if they’d been electrocuted. And then there were the colors—bright yellow skin, blue hair—added on a lark by the animators, Gabor Csupo and Gyorgyi Peluce, Hungarian immigrants whose tiny animation shop underbid other competitors to win the “Simpsons” contract and threw the colors in for free to clinch the deal.

Looking back at the bumpers now, you discover curious relics. In one, Bart and Lisa watch TV on the couch, but as soon as the show breaks for a commercial the kids immediately begin fighting. (Even back then the family spent *a lot* of time

in front of the TV.) The moment their show resumes, they’re back on the couch, passively watching—an irreverent TV commentary about TV’s hypnotic effects on children.

But these ancestral Simpsons are undeniably of another epoch, more *Homo erectus* than modern man. And it seems that the differences sit uneasily with the show’s creators. The shorts have never been officially released by Fox, and only a handful can be found on YouTube. (Fox declined to make them available to *Smithsonian*.) They’re treated less like canon than apocrypha.

Yet the best parts of today’s “Simpsons” share a raw vibrancy with those primitive ancestors. That’s most evident when the show gives itself over unexpectedly to sight gags or visual experimentation, as when artists like Banksy and the filmmaker Guillermo del Toro have been invited to direct the opening credits sequence. The results have occasionally been bold, arresting or just plain silly, which can be good enough.

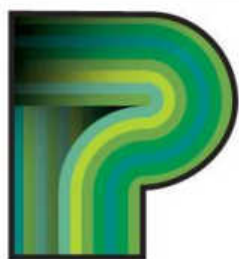
“The Simpsons,” *Time* magazine once said, “established a generation’s cultural references and sensibility.” But even so, the show has long since been normalized by its own success, reduced by a parade of gratuitous celebrity guest appearances (Lady Gaga, Mark Zuckerberg) and squeaky clean tropes derivative of the latest pop cultural trend. The oddly lovable mutants Groening first flung at us 30 years ago ushered lowbrow satirical art into the mainstream. And then comedy moved on.

Flaunting It

Lauren Greenfield’s in-your-face pictures of the new status seekers

ART

Whether it’s a \$50,000 platinum grill (worn by rapper Lil Jon, right) or an opulent necklace (eyed by a woman in Beverly Hills), “the desire for bling” cuts across race, class and gender, says the photographer and filmmaker **Lauren Greenfield**, who has spent 25 years documenting the growth of conspicuous consumption. Her new book, *Generation Wealth*, and a related exhibition at the Annenberg Space for Photography in Los Angeles, showcase her unsparing images of gilded heiresses, disgraced financiers and debt-laden middle-class folks trying to keep up with the Kardashians. All the glitter amounts to an indictment of materialism, yet the artist also has sympathy for her subjects. “In our culture, a lot of what drives us is this quest for more—money, fame, beauty,” Greenfield says. “This is an addictive quest. And you can know it’s bad, but you’re still addicted.” —AMY CRAWFORD







SMALL TALK

Misty Copeland

A principal dancer for the American Ballet Theatre and co-curator of "Ballet Across America," at the Kennedy Center this month

What is "Ballet Across America" all about?

It's an opportunity to represent American dance in a very inclusive way. I wanted to give smaller and more diverse companies an opportunity to perform. We have the Nashville Ballet, and Complexions, a company that draws on many cultures, and the Black Iris Project, which tells stories about black history.

What are three ballets everyone should see?

"Petite Mort," a contemporary work, is very close to my heart. I did it early on in my career at American Ballet Theatre. "Giselle" is a classic. And "work-within-work," a William Forsythe ballet. I'm a huge fan of his.

As a teenager, who was your favorite dancer to watch?

Paloma Herrera was my everything. She was in "Don Quixote," the first ballet I ever saw live—I was 14 or 15.

What other art form is similar to dance?

I feel like there's nothing that can truly be compared to dance—I think it's one of the few art forms where you're really using every part of your being. As a musician, you're a performer, and I think Lady Gaga and Beyoncé give a full body experience performance. Prince did, too.

Raging Belle

In a new biopic, the demure poet Emily Dickinson lets 'er rip

One startling early verse almost didn't make it into print. "Wild nights—Wild nights!" it cried. "Were I with thee / Wild nights should be / Our luxury!" The poet's editor dreaded publishing it, he wrote, "lest the malignant read into it more than that virgin recluse ever dreamed of putting there."

Though Emily Dickinson is one of America's most important poets, credited with inventing an explosive new type of verse, she's perhaps best known for the way she lived, withdrawing from daily life in her Massachusetts hometown in the mid-1800s and confining herself to her family home and, often, her room. Historians still can't agree if she did so for the sake of her health, her art or some other reason. But popular depictions tend to focus more on the closed door than the open mind, so she appears to us a painfully shy cipher or a clinically depressed recluse.

Now a new movie, *A Quiet Passion*, written and directed by Terence Davies, begs to differ. This Dickinson, played by Cynthia Nixon, best known for her role as uptight Miranda in the HBO series "Sex and the City," yells, cries and rages—and refuses to go along with her family, her community or her era. And in that regard, she lines up with the fierce, sometimes bitter figure known to today's scholars. "She felt strongly and rebelled against many received notions of her time," says Cristanne Miller,

a Dickinson expert and chair of the University at Buffalo's English department.

Church, for instance, Dickinson was intensely interested in both religion and spirituality, but she opted out of church altogether, famously writing that "Some keep the Sabbath going to Church / I keep it, staying at Home." In the movie, Dickinson exclaims to her father, "I will not be forced to piety!" While Dickinson surely tussled with her family, it's doubtful she did so in heated shouting matches like those in the film. But Miller, the scholar, acknowledges the challenge of portraying the

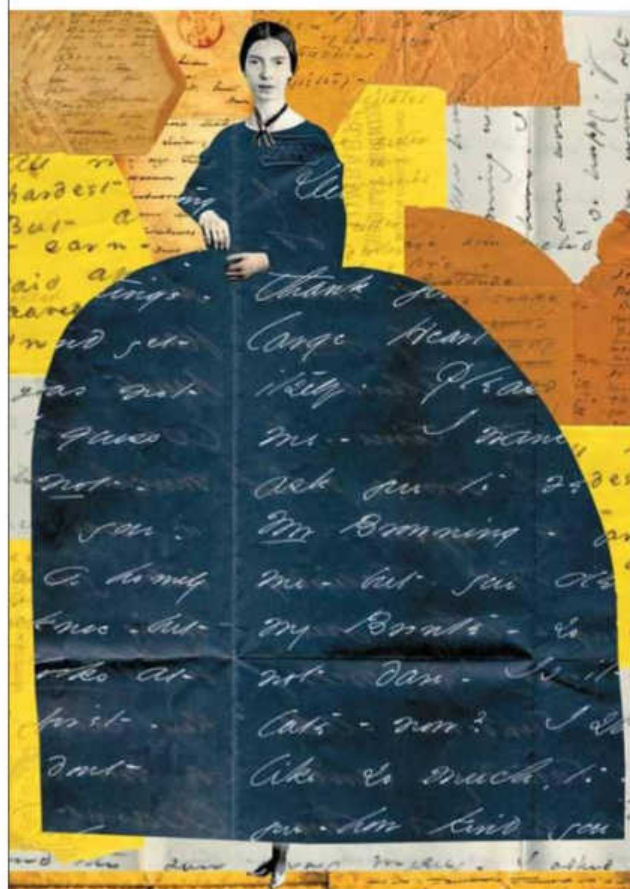
LITERATURE

ILLUSTRATION BY Johanna Goodman

defiance of a 19th-century poet in an overheated 21st-century medium.

In her poems—she wrote nearly 1,800, most only published after she died—Dickinson compared her life to a riddle to "a Loaded Gun," but the astonishing range of those images isn't so much a sign of disorder as imagination. "She made choices that enabled her to do the work she wanted to do," says Miller. "I don't think she was a tormented soul."

—ERIN BLAKEMORE



Born to Be Wild

A species of oryx, once eradicated in the wild, shows signs of revival

Last September, researchers at the Smithsonian Conservation Biology Institute in Front Royal, Virginia, were sitting at their computers poring over data that had been delivered via satellite from a game reserve in Chad, 6,000 miles away. The data—location coordinates and time stamps—had been collected on GPS collars worn by the most closely monitored herd of oryx on the planet. Over the last few days, a female had separated from that herd. Where was she?

The researchers emailed her last known coordinates to colleagues at Chad's Ouadi Rimé-Ouadi Achim Faunal Reserve. With that information, plus radio-telemetry antennas to detect signals from her collar, they headed into the wild—and found her with a newborn calf.

"That was a pretty big occasion for the team," says Jared Stabach, one of the researchers at the institute. It was a pretty big deal for the animals, too—the first wild birth of a scimitar-horned oryx in nearly 30 years, and a milestone in one of the world's most ambitious attempts to reintroduce a large-animal species that had been obliterated in the wild.

Scimitar-horned oryx can go for ten months without drinking water.

There was a time when as many as a million of this species of oryx—an antelope named for its magnificent curved horns—roamed the Sahel, the semiarid belt that stretches across western and north-central Africa.

"There's a whole assemblage of species that evolved

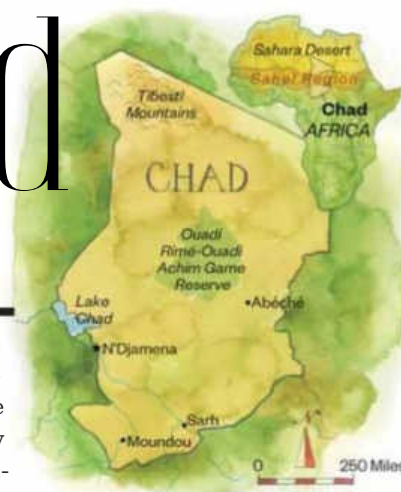
to thrive in the desert," says Steve Monfort, director of the Conservation Biology Institute and presi-

dent of the Sahara Conservation Fund, two of eight international partners in the reintroduction effort. "The oryx are the largest and most symbolic of all of that."

But parts of their habitat fell to agriculture or development, poachers went after the animals' coats and horns, and in Chad, combatants in the country's post-independence civil war in the 1960s hunted them for meat.

The last confirmed sighting of an oryx in the wild was in 1988, according to the International Union for Conservation of Nature.

Before the wild oryx disappeared, however, conservationists rescued scores of them to start captive herds. Today, the largest, about 3,000 strong, is controlled by the Environment Agency—Abu Dhabi, the lead partner in the restoration project. Last summer, 25 animals from that herd were airlifted to Chad and released at Ouadi Rimé-Ouadi Achim. The goal is to release a total of 500 animals over the next five years.



Rather than collaring just a few members of the herd with GPS devices, Monfort has arranged for each animal to wear one while on the reserve, which covers more than 30,000 square miles. "If

you don't know how an animal moves or where it goes or what its needs are during its life cycle, you can't design a program that will help it

to survive," Monfort says.

While it's too early to draw any grand conclusions, the calf's birth last September hasn't been the only hopeful sign. Some of the other females who were released then are showing signs of being pregnant now.

"A birth is a milestone because it shows they are acclimating," says Stabach. "Eventually they will be able to sustain themselves without human intervention."

—KATIE NODJIMBADEM

FORWARD LOOKING

Learn more about global conservation at the Smithsonian Earth Optimism Summit, April 21-23, at earthoptimism.si.edu

SCIENCE

MAP BY Steve Stankiewicz





The Alamo



Mission San José

San Antonio Missions, a UNESCO World Heritage Site

The construction of San Antonio's five Spanish colonial missions laid a cultural foundation along the city's river during the 18th century. In addition to Mission San Antonio de Valero (the Alamo), they include the Missions San José, Concepción, San Juan Capistrano and Espada. Today, four of the missions are actively serving their communities as parishes, and were recently honored as a UNESCO World Heritage Site.

An Authentic, Diverse and Unique Blend of Cultures

More than just an American city with considerable Mexican and Spanish heritage, San Antonio has been shaped by numerous other cultures—German, Chinese, Irish and African American, to name a few. From street names to cemeteries, evidence of this blurring and coming together of cultures is everywhere.

Museums Featuring Old West to Contemporary Art

San Antonio is home to world-class artistic institutions. If you're looking for family-friendly museums, visit the Briscoe Western Art Museum and The Witte. Villa Finale will amaze you with its collections that span generations. For modern palettes, visit Blue Star Contemporary or the McNay Art Museum. The San Antonio Museum of Art houses fascinating collections from around the world, and the Southwest School of Art offers educational programs.

Art and Folklore Abound

Shaped by progressive art and artists, San Antonio's cultural story is still being told. The city's rich Spanish and Mexican heritage has seeped into all forms of creative expression, from cowboy poetry to public art. Poets sprinkle their works with Spanish phrases, musicians play conjunto and dancers experiment with flamenco.

Architecture Layered With History and Innovation

San Antonio's creative architecture, ranging from Romanesque to Mid-Century Modern, reflects how the city grew from a frontier town to one of Texas's most architecturally historic cities. Early indigenous settlements became the modern city of San Antonio, and in between, the layers of architecture were shaped by 300 years of migration and integration of cultures.

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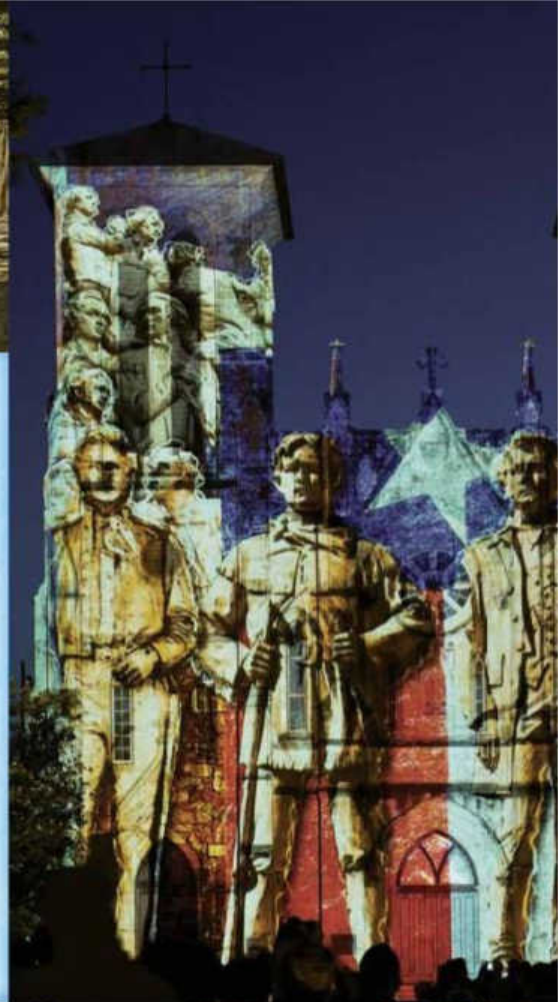


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SAN ANTONIO





Fighting the Nazis With Fake News



A new documentary rediscovered a World War II campaign that was stranger than nonfiction

HISTORY

including one anchored by a young German named “Vicki,” who read a mixture of real news culled from intelligence sources and fake items, including a fabricated report about an outbreak of diphtheria among German children.

In November 1943, Delmer ended Der Chef’s reign of error by penning a script that had Nazi troops storming the studio and “shooting” him mid-broadcast, but many other ruses lived on. Beginning in May 1944, he produced a German-language newspaper called *Nachrichten für die Truppe* (News for the Troops), which was air-dropped to soldiers on the Western front.

After the war, Delmer rejoined Britain’s *Daily Express*, revealing his earlier role as a source of fake news in a 1962 memoir. “Delmer was proud of his work,” says Gary Blount, producer of *Come Before Winter*. “His broadcasts had not only been heard extensively, but had contributed to the war effort.”

—MATTHEW SHAER

“Had his listeners been able to take a peek at the surroundings in which his messages were, in fact, recorded,” the British journalist Sefton Delmer wrote years later, “our audience would, I am sure, have shrunk to zero.” Delmer knew of what he spoke: He had helped create Der Chef.

Although this was hardly the first instance of a wartime disinformation campaign, Delmer’s “Black Propaganda,” as he called it, shared plenty with today’s “fake news.” It was agitprop masquerading as inside dirt. To be sure, British intelligence agents played a role, but it was behind the scenes, unlike traditional government propaganda. By most accounts the broadcasts were insidiously effective: Hitler’s high command repeatedly attempted to block the signal.

It turns out that Delmer, the subject of a new documentary, *Come Before Winter*, developed a fake news factory aimed at disrupting the Nazis. He introduced several other radio stations,

Between 1941 and 1943, an exceedingly peculiar series of transmissions reached radio sets in Germany. The broadcaster called himself *Der Chef*, or the chief, and his Berliner accent and prodigious knowledge of military affairs suggested he was a high-ranking German of the old guard, probably an army officer.

A patriot and Hitler loyalist, Der Chef bemoaned the corruption enveloping Nazi headquarters while the war was being fought across Eu-

Sefton Delmer reads in the radio booth in 1941.

rope. He disclosed worrying news that injured German soldiers were receiving infusions of syphilis-tainted blood from captured Poles and Slavs, and gossiped about an Italian diplomat in Berlin who was bedding the wives of German officers. German civilians picking up the shortwave radio transmissions thought they were eavesdropping on the affairs of a secret military organ led by Der Chef.

Never Happened

Three shameless examples of fabricated facts in history

The sixth-century Byzantine historian **Procopius** secretly scribbled a collection of defamatory writings about the Emperor Justinian and other figures, whom he glorified in his official works. When the writings were published, after his death, they became known as **Anecdota**, from the Greek for “unpublished items”—and gave us a new word for amusing but unsubstantiated stories.

In 1782, the **Independent Chronicle**, a Boston newspaper, reported on atrocities committed by a Native American tribe allied with the British. The report even quoted locals who described finding American scalps, left by the bandits as if they were gifts. But while the newspaper was real, the report was a fake, concocted by **Benjamin Franklin** to gin up popular fury against the British.

Paris in the 17th and 18th centuries was overflowing with printed broadsides called **canards** that disseminated fake news. One best seller, according to the historian Robert Darnton, “announced the capture of a monster in Chile that was supposedly being shipped to Spain” and had “the head of a Fury, wings like a bat, a gigantic body covered in scales, and a dragon-like tail.”



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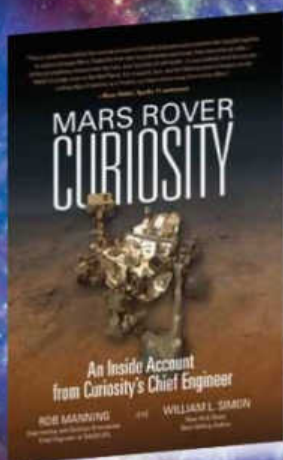


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WASHINGTON POST



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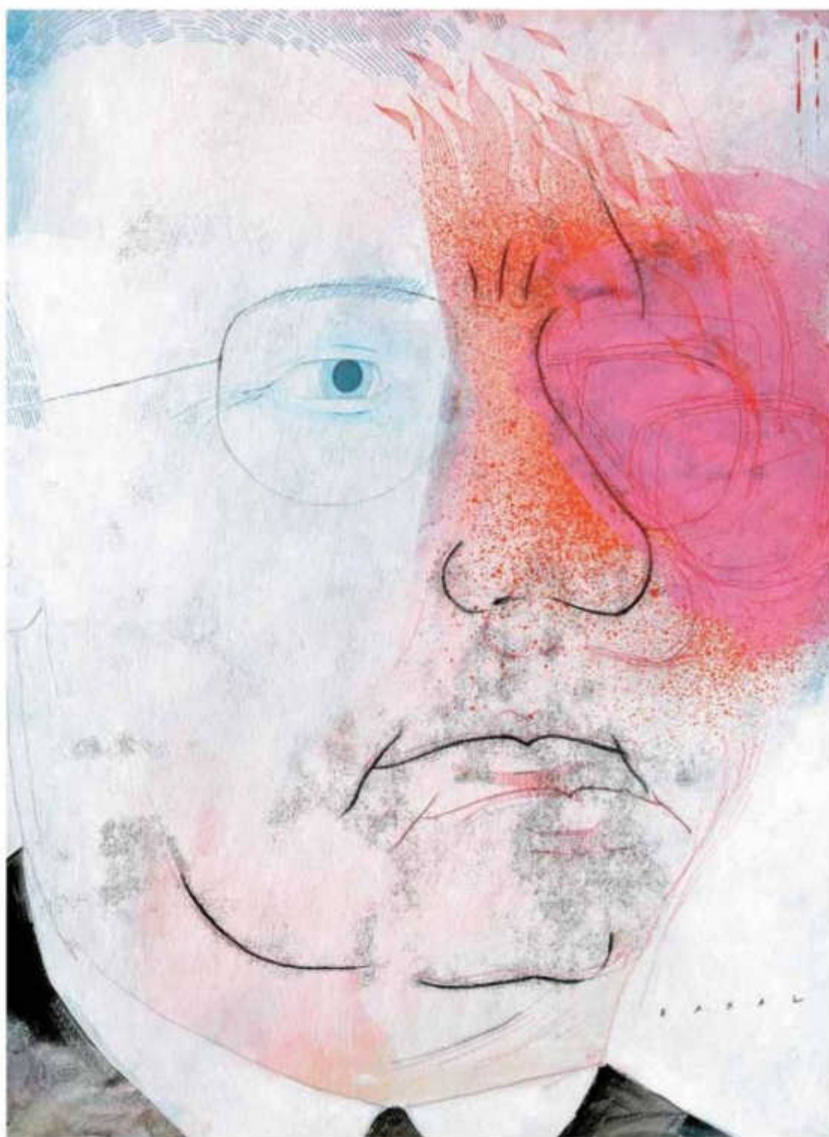
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Unmasking the Mad Bomber

When James A. Brussel used psychiatry to think like a criminal, he pioneered the science of profiling

BY MICHAEL CANNELL illustration by Scott Bakal

Shortly after lunch

on a cold December morning in 1956, a trio of New York City detectives stepped out the back door of the copper-domed police headquarters looming like a dirty gray temple above the tenements and trattorias of Little Italy. Across the street, half-shrouded in winter shadow, a revolver-shaped sign hung outside John Jovino's, the oldest gun store in the city, if not the country, where patrolmen bought the .38 Specials slung on their hips. Down the block, on the corner of Grand Street, was a German restaurant called Headquarters. Under its carved mahogany ceiling, at a long oak bar, the top brass took their off-duty rye and beer.

Today the three detectives had no time for such distractions. Led by a veteran captain, Howard Finney, they walked briskly to an unmarked police cruiser, a big green-and-white Plymouth idling at the curb, and drove south through the winding downtown streets on an urgent errand.

Four days earlier a bomb had exploded during a showing of *War and Peace* at the Paramount



movie palace on Flatbush Avenue, in Brooklyn. At 7:50 p.m., as an audience of 1,500 gazed up at a St. Petersburg drawing room rendered in Technicolor reds and blues, a thundering detonation flashed from orchestra row GG, followed by billows of ashen smoke. Then screams filled the theater—as moviegoers glimpsed faces and scalps scythed open by shrapnel.

The Paramount blast was not an isolated event. Any New Yorker who read newspapers knew that for 16 years the police had searched for a serial bomber who identified himself only as F.P. He had planted 32 homemade explosives in the city's most crowded public spaces—theaters, terminals, subway stations, a bus depot and a library—injuring 15.

F.P. had yet to kill, but it was only a matter of time. The *New York Jour-*

tain Finney and his two bomb squad sidekicks left headquarters to call on James A. Brussel, a psychiatrist with expertise in the workings of the criminal mind. If physical evidence could not lead the police to F.P., maybe emotional insights could. Nobody could recall an instance when the police had consulted a psychiatrist. A physical description of the bomber was unobtainable, Captain Finney reasoned, but maybe Brussel could use the evidence to draw a profile of the bomber's inner self—an emotional portrait—that would illuminate his background and disorder. It was a radical notion for 1956.

Brussel had at first demurred, citing his workload. The New York Department of Mental Hygiene had 120,000 patients, and the caseload grew by 3,000 a year. Patient files were stacked high on his desk. In addition he shouldered a full schedule of lectures and meetings and the demands of private practice. "I had real people to deal with," he said, "not ghosts."

Brussel had other reservations. He

deduce what sort of a person he might be. In other words, Brussel would work backward by letting F.P.'s conduct define his identity—his sexuality, race, appearance, work history and personality type. And, most important, the inner conflicts that led him to his violent pastime.

Brussel called his approach reverse psychology. Today we call it criminal profiling. Whatever the term, it was still a virtually untested concept in the 1950s. Brussel's role models at the time were fictional investigators, most notably C. Auguste Dupin, the reclusive amateur detective invented by Edgar Allan Poe in the 1840s. Dupin was the original profiler, a master channeler of the psychotic mind and the forebear of Sherlock Holmes and Hercule Poirot.

A wiry figure with a droll smile and a pencil mustache dyed to match his dark, combed-back hair greeted Captain Finney in the downtown Broadway offices of the Department of Mental Hygiene, where Brussel served as assistant commissioner. If Captain Finney was circumspect and grave, Brussel was his opposite: loud of opinion, quick-witted and manically animated.

Brussel was a dominant presence on and off duty. At parties, he was the fastest talker, the first with a one-liner, the guest most likely to seat himself at the piano for a round of show tunes.

He had composed an operetta, *Dr. Faustus of Flatbush*, which met a riotous reception at a psychiatric convention, and he had published psychoanalyses of Dickens and van Gogh. He saw in Tchaikovsky signs of an Oedipus complex. His analysis of Mary Todd Lincoln found her to be "psychotic with symptoms of hallucinations, delusion, terror, depression and suicidal intentions."

Brussel had an uncommonly quick mind and a facility for interlocking clues. In the evenings, when he



"I don't know what you expect me to do," Brussel observed skeptically. "If experts haven't cracked this case in more than ten years of trying, what could I hope to contribute?"

nal-American, an afternoon newspaper of scrappy disposition, called him "the greatest individual menace New York City ever faced."

In all those years, a period stretching back to 1940, the largest, most formidable police force in the nation had failed to hustle up any worthy leads. Its failings were forgivable as long as the bomber crafted crude and ineffective ordnance. But by 1956 his handiwork showed a lethal new proficiency. He declared his deadly intent in letters sent to newspaper editors. Each rambling, raging letter was cryptically signed "F.P."

Desperation drove the police to pursue a course they had never before considered in the department's 111-year history. On that late fall afternoon Cap-

hesitated to test his theories in such a high-profile case. What if his analysis failed to break the case or, worse, sent the police in the wrong direction? "I don't know what you expect me to do," Brussel observed skeptically. "If experts haven't cracked this case in more than ten years of trying, what could I hope to contribute?"

In the end Brussel couldn't resist the chance to participate in the biggest manhunt in New York history. Psychiatrists normally evaluate patients and consider how they might react to difficulties—conflict with a boss, sexual frustrations, the loss of a parent. Brussel began to wonder whether, instead of starting with a known personality and anticipating behavior, perhaps he could start with the bomber's behavior and

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treatment of psychotics and manic depressives in state hospitals, he sat in the upstairs office of his brick cottage on the grounds of a Queens asylum—where he lived with his wife, Audrey—and composed reams of crossword puzzles for the *New York Times* and *Herald Tribune* on graph paper he made by obsessively drawing grids on blank pages. Hour after hour he darkened the pages with words and lists of clues: goddess of peace. Neck muscle. Clusters of spores. Roman road. Honey drink. Glacial ridges. Hemingway epithet. Aesop's race. He produced so many puzzles that he was obliged to publish under three names, lest his byline become awkwardly pervasive.

Captain Finney took a seat facing Brussel's desk. "We'd appreciate any ideas you might have on this case,

a man who was quite definitely mad."

Captain Finney "was a short, stocky man of many accomplishments and few words," Brussel later wrote. "He was looking at me, waiting for me to say something. I was looking at the pile of photographs and letters he had tossed on my desk."

After two hours Brussel rose from his desk and stood at a window overlooking City Hall. Seventeen stories below, the first surge of rush-hour traffic thickened with long-finned sedans and Checker cabs clogging Broadway. Streetlights winked on. Chambers Street filled with men in trench coats and brimmed hats, heads down and shoulders slouched against the cold. They moved with haste, as New Yorkers do. "Any one of the people I saw below could have been the Mad Bomber," Brussel would write. "There was a man standing next to a car. Another man was lounging in a doorway. Another was strolling along, looking up intently at the buildings. Each of them was on these streets at that hour for some rea-

seemed to be made of night stuff, un-solid, bodiless, he patently did exist."

For a long moment Brussel looked as if he had slipped into a trance. While he was staring out at the strangers aswarm in the street, a detailed image of a living, breathing man took shape. He turned to Captain Finney and described his fugitive, down to the cut of his jacket.

The bomber, Brussel began, was a textbook paranoid schizophrenic. People suffering from this disorder, he explained, may believe other people are controlling them or plotting against them. They are typically reclusive, antisocial and consumed with hatred for their imagined enemies. For all their derangement, they're capable of acting quite normal—until, inevitably, some aspect of their delusions enters into their conversation. "The paranoid is the world's champion grudge-holder," Brussel would explain. "We all get mad at other people and organizations sometimes, but with most of us the anger evaporates eventually. The paranoid's anger doesn't. Once he gets the idea that somebody has wronged him or is out to hurt him, the idea stays in his mind. This was obviously true of the Mad Bomber."

The condition, Brussel said, worsened over time, progressively clouding normal logic. Most paranoids don't become fully symptomatic until after age 35. If the bomber was about that age when he planted his first bomb, in 1940, he would now be at least in his mid-40s, probably older. His guess about the bomber's age "could have been wrong," Brussel acknowledged, "but, I thought, the laws of probability were on my side." The laws of probability, or what Brussel called "inferential deductions," played into most of his conclusions. "They are not infallible," he said, "but neither are they mere guesses." Like Sherlock Holmes, he was playing the odds. ➔

"He seemed like a ghost, but he had to be made of flesh and blood. . . . Though he sometimes seemed to be made of night stuff, unsolid, bodiless, he patently did exist."

Doctor." Finney admitted that investigators had reached a dead end.

Captain Finney emptied a satchel of evidence on Brussel's desk. Out spilled photographs of unexploded bombs along with photostats of strangely worded letters and documentary reports amassed over 16 years. "The bombs and the letters: these were all the police had," Brussel would write. "The rest was a mystery."

Brussel picked through the evidence, pausing to write notes in a pad. His mind assembled the possibilities as the information accrued, drawing on psychiatric theory and probabilities. The evidence "showed one thing very plainly," Brussel would write. "At large somewhere in New York City was

son. Perhaps a legitimate reason, perhaps not. . . . So little was known about the Mad Bomber that virtually anyone in the city could be picked at random as a suspect. Anyone—and no one."

The manhunt had lasted so long and had engendered so much frustration that Captain Finney and his men had come to feel as if they were chasing a specter loose in the streets. "He seemed like a ghost," Brussel later recalled, "but he had to be made of flesh and blood. He had been born, he had a mother and father, he ate and slept and walked and talked. Somewhere people knew him, saw his face, heard his voice. . . . He sat next to people on the subways and buses. He strolled past them on sidewalks. He rubbed elbows with them in stores. Though he sometimes

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Now Brussel paused, “trying to screw up the courage to articulate my next deduction.” The bomber, he continued, is “symmetrically built . . . neither fat nor skinny.” From across the desk Finney shot him a skeptical look. “How did you arrive at that?”

Brussel cited a German psychiatrist, Ernst Kretschmer, who correlated body type with pathologies. In a study of some 10,000 patients, he found that a majority of paranoids had “athletic” bodies—medium to tall with a well-proportioned frame. The probability was 17 in 20 that the bomber fell into that category.

Brussel continued: Like most paranoids, F.P. felt the need to convey his superiority. He did so with a self-righteous insistence on order. A fastidiousness verging on prissiness showed in the letters to newspapers he’d hand-printed in nearly perfect block letters free of smudges or erasures. F.P., Brussel said, “was almost certainly a very neat, proper man. As an employee . . .

When detectives (below, after the 1957 arrest) nabbed Metesky, his sisters protested that “George couldn’t hurt anybody.”

he had probably been exemplary. He had turned out the highest-quality work. He had shown up precisely on time for work each morning. He had never been involved in brawls, drunkenness or any other messy episodes. He had lived a model life—until the alleged injustice, whatever it was, had occurred.”

The same care surely applied to his grooming. “He’s probably very neat, tidy, cleanshaven,” Brussel predicted. “He goes out of his way to seem perfectly proper. . . . He wears no ornament, no jewelry, no flashy ties or clothes. He is quiet, polite, methodical, prompt.”

Captain Finney nodded. The man who had eluded him for years was coming into focus.

The bomber, Brussel continued, was afflicted by a sense of persecution caused in the formative stages of his gender development, roughly ages 3 to 6. In his young life he’d confronted the shameful knowledge of a forbidden sexual desire—most likely an erotic fixation on his mother. He protected himself from the shame and horror with a twisted bit of Oedipal logic: I desire my mother. But that’s horribly unacceptable. She’s married to my father. I’m now competing with him for her affection. I’m jealous of him. He’s jealous of me. He hates me. He persecutes me.

The original cause of the hate never

surfaced in the young F.P.’s consciousness, and it gradually faded. All that remained was the sense of persecution and the searing desire for revenge.

According to Freudian theory, the Oedipus complex normally resolves itself. Most boys come to recognize that their grievance is misconceived, and they reconcile the sexual impulses that originally shamed them. But in a diseased mind such as F.P.’s, the paranoia spreads like a contagion. Any two entities with something in common would, no matter how illogically, meld into one in his mind. His sense of persecution could therefore disburse from his father to a boss, to a company, to politicians and to any organization that could plausibly symbolize authority.

To Brussel, the paranoid’s inclination to assign guilt by association explained an inconsistency that had stumped the police. In his letters the bomber had singled out Con Edison, the utility company, but he planted only the first of his bombs on Con Ed property. He would see people or organizations with the remotest connection to Con Ed as conspirators, no matter how illogical that might be. He might blame Con Ed for some unstated offense, Brussel said, “but he twists it around so that wherever a wire runs, gas or steam flows, from or to Con. Edison Co., is now a bomb target.”

F.P. seemed convinced, as a paranoid would, that a range of companies and agencies had conspired with Con Ed. By way of evidence his letters mentioned “Con Edison and the others” and “all the liars and cheats.” This, Brussel said, helped to explain why F.P. had bombed theaters and train stations. He was at war with a world colluding against him.

For the bomber, the drive for vengeance, the need to correct what’s amiss in the world, had likely assumed a religious ardor. He had, Brussel explained, formed a covenant



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with God to carry out a private mission of revenge, which would only make it harder to catch him. “This pact is a secret between him and God,” Brussel said. “He would never let a hint drop. Why should he ever let you catch him doing something wrong?”

Divine standing could lead the bomber to commit ever more drastic acts, Brussel warned, if the earlier blasts had not yet accomplished his goals. The bomber would feel that he possessed the righteous power to punish those who failed to accept the validity of his claims.

With godliness came omnipotence, and with omnipotence came contempt for lesser beings. The bomber’s confidence in his superiority, his arrogance would make it hard for him to hold a job. So he was likely to be, if not improv-

lose themselves in warped delusions, they continue to follow logical trains of thought and lead outwardly normal lives. They watch the world around them with a wary, distrustful eye.

“For a long while, as the three police officers sat and waited in silence, I studied the Mad Bomber’s letters,” Brussel would recall. “I lost all sense of time. I tried to immerse myself in the man’s mind.”

F.P.’s reliance on clunky, old-fashioned phrases, such as “dastardly deeds,” erratically spaced with phrases set off by dashes, suggested a foreign background. “There was a certain stilted tone in the letters, a total lack of slang or American colloquialisms,” Brussel would recall. “Somehow the letters sounded to me as though they’d been written in a foreign language and then translated into English.”

The police had long suspected F.P. was German, or of German extraction, because of his vaguely Teutonic lettering, particularly his G’s, which ended their circular form with a pair of hori-

letters were mailed in Westchester, the county immediately north of the city. Brussel guessed that the bomber was disguising his whereabouts by posting his letters halfway between New York and one of the industrial towns in Connecticut where Slavic immigrants had settled.

Now Brussel focused on the handwriting. The penmanship was nearly flawless, as Brussel would expect from a fastidious paranoiac. F.P. had formed almost perfectly rectilinear letters—with one exception. The W’s looked like double U’s, in a literal sense, with no overlapping diagonal arms. The sides were curved instead of straight. They also had peculiar rounded bottoms. “The misshapen W might not have caught my eye in most people’s hand-printing, but in the bomber’s it stood out. Consider the paranoiac: a man of obsessive neatness, a man who will not tolerate a flaw in what the world sees of him. If there is any little untidiness about this man, anything even slightly out of place, it catches a psychiatrist’s attention immediately.”

The W “was like a slouching soldier among twenty-five others standing at attention, a drunk at a temperance society meeting,” Brussel continued. “To me, it stood out that starkly.... Language is a mirror of the mind. That odd curved W had to reflect something about the Mad Bomber, it seemed to me.... Something subconscious had compelled the bomber to write this one particular letter in a distinctive way—something inside him so strong that it dodged or bulldozed past his conscience.”

Might the W’s resemble breasts, or maybe a scrotum? Brussel wondered. If so, had F.P. also unconsciously fashioned bombs shaped like penises? “Something about sex seemed to be troubling the bomber,” Brussel thought. “But what?” He deliberated for long moments, his eyes scanning the evidence. ➔

“Something subconscious had compelled the bomber to write this one particular letter in a distinctive way—something so strong that it dodged or bulldozed past his conscience.”

erished, then at least penurious. But even in poverty he would find a way to keep up a smart impression in his grooming and wardrobe. “He would always have to give the appearance of being perfect,” Brussel said.

The bomber, Brussel continued, almost surely operated as a lone wolf. Paranoics “have confidence only in themselves,” Brussel explained. “They are overwhelmingly egocentric. They distrust everyone. An accomplice would be a potential bungler or double-crosser.”

Brussel knew that the three detectives in his office had waged a long, frustrating manhunt. Paranoid schizophrenics, he explained, were the hardest of deranged criminals to catch because their mind splits between two realms: Even as they

zontal slashes, like an equal sign. Brussel thought of the many bombings by anarchists and other radicals in Eastern Europe and said, “He’s a Slav.”

The three detectives shot Brussel a startled look. “Mind giving the reasoning behind that?” Captain Finney asked.

“Historically, bombs have been favored in Middle Europe,” Brussel answered. “So have knives.” Of course, those weapons are used throughout the world. “But when one man uses both, that suggests he could be a Slav.”

Captain Finney looked skeptical.

“It’s only a suggestion,” Brussel said. “I’m just playing the odds.”

Brussel wasn’t finished. If the bomber was a Slav, that could also be a clue to his location: Brussel flicked through the postmarks, noting that most of the



— Josh Duhamel —

UNSCRIPTED

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He told Finney, “Sorry I’m taking so long.”

“Take all the time you want,” Finney said. “We didn’t come here expecting pat answers.”

Brussel had already established that an Oedipus complex had caused F.P. to develop into a full-blown paranoid. His Oedipal hatred for his father had spread in adulthood to a broad range of authority figures. “The bomber obviously distrusted and despised male authority: the police, his former employees at Con Ed,” Brussel would write. “To the bomber, any form of male authority could represent his father.”

Brussel now looked back through the evidence for signs of sexual disturbance. His eyes rested on photos of theater seats the bomber had slit open to secrete his explosives in a dark

he gave expression to a submerged wish to penetrate his mother or castrate his father, therefore rendering the father powerless—or to do both. . . . It fit the picture of a man with an overwhelming, unreasonable hatred of men in authority—a man who, for at least 16 years, had clung to the belief that they were trying to deprive him of something that was rightfully his. Of what? In his letters he called it justice, but this was only symbolic. His unconscious knew what it really was: the love of his mother.”

Brussel hesitated to explain these graphic psychiatric details to the detectives. They seemed too far-fetched. Instead he gave them a shorthand version, saying the bomber was probably unmarried and unattached—the classic loner. He was unfailingly courteous, but without close friends. “He wants nothing to do with men—and, since his mother is his love, he is probably little interested in women either.”

He was, Brussel added, “quite possibly a virgin. . . . I’ll bet he’s never even kissed a girl.” Slavs valued family ties,

nurtured a grudge against Con Ed and other powerful institutions.

Finney and his men put on their coats and packed the evidence. The two men shook hands, then the three detectives moved to the door. In the parting moment Brussel closed his eyes. An image of the bomber came to him with cinematic clarity. He wore outdated clothes since his contempt for others would prevent him from holding steady jobs. His attire was old-fashioned, but clean and meticulous. It would be prim, perhaps with an enveloping, protective aspect.

“Captain, one more thing. When you catch him,” Brussel said, “and I have no doubt you will, he’ll be wearing a double-breasted suit.”

Brussel added, “And it will be buttoned.”

The *New York Times* printed Brussel’s findings in a front-page story on Christmas Day. A few nights later the phone rang in Brussel’s Queens home. Because he treated so many violent criminals, Brussel had an unlisted number, but anybody could reach him by calling Creedmoor, the psychiatric hospital where he lived. The switchboard forwarded calls to Brussel’s home, patching in the police if the caller sounded suspicious. Brussel suspected that was the case when his phone rang at 1 a.m.

“Is this Dr. Brussel, the psychiatrist?”

“Yes, this is Dr. Brussel.”

“This is F.P. speaking. Keep out of this or you’ll be sorry.”

An image of the bomber came to Brussel with cinematic clarity. He wore outdated clothes since his contempt for others would prevent him from holding steady jobs.

place. “Something about the bomber’s method of planting bombs in movie houses had bothered me since I’d read the first newspaper account years before,” Brussel would say. “There was something strange, not fully explained by the available facts.” The slashing was an uncharacteristically violent act. Everything in the evidence suggested a careful man who would avoid unnecessary risks and minimize signs of his presence. Why did he go to the trouble of slitting open seats and stuffing his bombs in the upholstery?

“Could the seat symbolize the pelvic region of the human body?” Brussel wondered. “In plunging the knife upward into it, had the bomber been symbolically penetrating the woman? Or castrating a man? Or both? . . . In this act

so he probably lived with “some older female relative who reminded him of his mother.”

A long silence followed as the detectives absorbed Brussel’s assessment. It was a lot to take in, and it may have sounded preposterous to those uninitiated in the strange ways of Freudian reasoning.

By now the shadows of the December dusk had obscured the city outside Brussel’s office window. After four hours with Brussel, the ghost in the streets had assumed human form in Captain Finney’s mind—a fastidious, middle-aged loner of Slavic descent with a history of run-ins with neighbors and colleagues. He lived in a northern suburb, probably in Connecticut, with an elderly female relative, and secretly

Shortly before midnight on January 21, 1957, detectives armed with a warrant entered the home of George Metesky, a Con Edison plant worker forced to retire after toxic fumes from a furnace blast brought on a crippling case of tuberculosis.

As detectives entered the sagging three-story house near the top of a short, steep hill in Waterbury, Connecticut, they could see

CONTINUED ON PAGE 88



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SAVED



BY THE



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AS IT ENTERED WORLD WAR I, THE UNITED STATES WAS POLITICALLY
TORN AND FINANCIALLY CHALLENGED—UNTIL AN ICON FROM
THE AMERICAN REVOLUTION RODE TO THE RESCUE



A quarter of the U.S. population (including a girl in Moline, Illinois) turned out for the Liberty Bell.

JUST WEEKS AFTER JOINING WORLD WAR I

in April 1917, the United States was in deep trouble—financial trouble. To raise the money needed to help save the world from itself, the Treasury Department had undertaken the largest war-bond drive in history, seeking to raise \$2 billion—more than \$40 billion today—in only six weeks. The campaign's sheer scope all but reinvented the concept of publicity, but it was still coming up short.

Despite endless appearances by movie stars (who had previously considered explicit politicking taboo), 11,000 billboards, streetcar ads in 3,200 cities and towns, and fliers dropped from planes, bond sales lagged. Treasury Secretary William McAdoo, who also happened to be the son-in-law of President Woodrow Wilson, needed some kind of national loyalty miracle. So he and his propaganda advisers, the Committee on Public Information, who had produced a series of clever posters (the Statue of Liberty using a phone, Uncle Sam carrying a rifle), decided to take one of their most arresting images and bring it to life, no matter how risky.

They would actually ring the Liberty Bell. They would ring it even if it meant that the most emblematic crack in political history would split the rest of the way and leave a 2,080-pound pile of metal shards. And the moment after they rang the Liberty Bell, every other bell in the nation would be sounded, to signal a national flash mob to head to the bank and buy war bonds.

On the campaign's final day—June 14, 1917, which was also Flag Day—Philadelphia Mayor Thomas Smith and his entourage approached Independence Hall just before noon. Thousands were already

camped outside. Smith walked ceremoniously past the spots where Washington became commander in chief of the Continental Army and the Second Continental Congress adopted the Declaration of Independence, and he approached the rear staircase, where the bell was kept, below where it had once hung.

The bell was normally enshrined in a ten-foot-high display case of carved mahogany and glass, but today it was fully exposed and rigged with microphones underneath, as well as a three-foot-long metal trumpet at its side to capture the sound for a Victrola recording. As Smith stepped up to the bell with a small golden hammer, telegraphers in Philadelphia and Washington, D.C.

awaited their cue to alert the thousands of their fellow Americans standing by in churches, fire stations and schoolyards, any place with an active bell tower. They were all clutching their ropes, anxious to join what the *New York Times* called a “patriotic clangor from sea to sea.”

Smith looked a bit tentative in his three-piece suit and wire-rim glasses as he raised his arm to strike. But as he brought his hammer down for the first of 13 times, to commemorate each of the original colonies, the Liberty Bell was about to assume its rightful place in history—and maybe help save the world.

I have lived down the street from the Liberty Bell most of my adult life, so I have known it only as the main attrac-

tion at the site of our nation's founding. Every year, more than 2.2 million people come to see it and do their best to resist touching it. I don't always like the tourist traffic or getting caught behind horse-drawn carriages at rush hour, but there's no question that the bell is the most enduring, powerful, yet approachable symbol of our country.

What is less appreciated is how this bell became The Bell. It was, after all, abandoned and sold for scrap in the early 1800s, after the national capital moved from Philadelphia to Washington and the state capital to Harrisburg, and the old Pennsylvania State House, where it hung, was scheduled for demolition. It was saved only by inertia; nobody got around to knocking the build-





ing down for years, and in 1816 a local newspaper editor went on a crusade to save the structure where the Declaration of Independence had been signed—which he rebranded as “Independence Hall.” Its clock tower was restored in the 1820s with a new bell, and the original was rehung inside from the ceiling and sounded only for historic events. It was rung in 1826, for the 50th anniversary of the signing of the Declaration, and a few times in years afterward in memory of some founders. But it wasn’t called the “Liberty Bell” until 1835, and that was in a snide headline in an antislavery pamphlet, above an article noting

Before the Bell left Philadelphia (above, July 5, 1915), city officials quelled concerns about its safety by replacing its clapper with a metal “spider” for added stability.

all the slaves for whom the bell had never tolled. And its ascension as a national relic still had decades to go. The Bell reportedly cracked after being rung for Washington’s birthday in 1844. (What seems to be the first mention of its being cracked appeared that year in the *Philadelphia North American*.) In an attempt to fix it, the city had the hairline crack drilled out to half an inch and rivets inserted on either end of the new, more visible crack, thinking to make the bell more stable and even occasionally ringable. Soon after, it was brought to lie in state on the first floor of Independence Hall. At the 1876 world’s fair

in Philadelphia, more visitors saw replicas than the real thing because the fairgrounds were so far from the Hall. The actual Bell was taken on a half-dozen field trips between 1885 and 1904, to the two world’s fairs in Chicago and St. Louis and to New Orleans, Atlanta, Charleston and Boston, but it was retired from travel on the grounds of fragility without ever appearing west of the banks of the Mississippi. While popular, the Bell didn’t truly come of age as a national symbol until World War I. Its rise to glory began with a hastily organized train trip across the country in the summer of 1915, as President Wilson, former President Theodore Roosevelt and other leaders felt the need to whip the nation into a

patriotic frenzy to prepare for the war to end all wars, and culminated in the war-bond drives of 1917 and 1918.

I stumbled upon this resonant national drama while researching the World War I sections of *Appetite for America*, my book on the railroad hospitality entrepreneur Fred Harvey. Later, with the help of archivists all over Philadelphia—but especially Robert Giannini and Karie Diethorn at the Independence National Historical Park archive, and Steve Smith at the Historical Society of Pennsylvania—I was able to uncover many unseen documents, journals, scrapbooks and artifacts; explore and cross-reference newly digitized historical newspapers; and rescue more than 500 archival photographs, which the Independence National Park and the Athenaeum of Philadelphia then had digitized. This first in-depth reading of the Bell's history in the digital age allows us a much better understanding of its journey not only across the country, but also across our history.

In three short years, the Liberty Bell changed America and empowered America to change the world. During its excursion in 1915, nearly a quarter of the nation's population turned out to see it; in each of the 275 cities and towns where it stopped, the largest crowds ever assembled to that point greeted it. Many more Americans gathered along the train tracks to see it pass by on its specially constructed open car. At night a unique generator system kept a light on it, so it glowed as it traversed the countryside, a beacon across the land.

Over four months on the road, the Bell became a unifying symbol in a nation that had been increasingly divided. It went west across the northern United States, through Eastern and Midwestern cities wrestling with

racism and anti-Semitism fueled by a backlash against immigrants from our wartime enemy, Germany, and then it continued through the Pacific Northwest, where Native Americans and Asian-Americans struggled for their rights. It returned through Southern California and the Southwest, where Native Americans from other tribes and Hispanics fought for inclusion, and then into the Deep South not long after the premiere of *The Birth of a Nation*, the lynching in Georgia of a Jewish factory manager named Leo Frank and the resurgence of the Ku Klux Klan.

Among the passengers on the Liberty Bell Special, as the train was called, was Philadelphia City Councilman Joe Gaffney, who kept a diary he later turned into a slide presentation, which I discovered in the bowels of the Independence National Historical Park archive. "It seemed to have been the psychological moment," Gaffney wrote, "...when some such enterprise was needed to arouse the latent patriotic impulses of the people and give them opportunity to show their love of flag and country."

After the trip, it was no surprise that the Treasury Department saw the Bell as its last best hope to persuade Americans to support the world's first democratically financed war. Historian Frank Morton Todd, writing in 1921, claimed that during the "fiery test" of the Great War, nothing short of a Liberty Bell tour could have "stimulate[d] patriotism and [brought] the public mind to dwell on the traditions of independence and democracy that form the best inheritance of the Americans."

Of course, Americans came into their best inheritance only after some of the shabbiest dynamics of their political system played out. The story of the

1915 Bell tour is also the story of two of the nation's most progressive mayors and the epically corrupt U.S. senator who hated them.

The idea of sending the Bell to California had its loudest champion in San Francisco Mayor James "Sunny Jim" Rolph, a businessman who had risen to prominence running relief efforts in the Mission District while riding a white stallion through the streets of his broken neighborhood. When his city was awarded the Panama-Pacific International Exposition, a celebration of the completion of the Panama Canal and the first American world's fair to be held on the West Coast, he started obsessing over the Bell. Soon the fair organizers, the city's teachers and schoolchildren and San Francisco-based power publisher William Randolph Hearst joined him. They all came to believe a Bell expedition was the only way California—indeed, the entire West—could feel, for the first time, fully connected to the "original" America, sharing in its history as well as its future.

Philadelphia's mayor at the time, a Republican businessman named Rudolph Blankenburg, thought it was a great idea. Blankenburg was a scrawny German immigrant in his 60s whose biblical white beard gave him the look of someone's little old European grandfather—until he leapt to his feet and began swinging his fists in splendid oratory. He had been elected in 1911—the first time he held public office—as a progressive tied to Teddy Roosevelt's third-party presidential campaign. Given Philadelphia's reputation as the most corrupt city in the most corrupt and powerful state in the nation, the *New York Times* called his victory "the climax of one of the greatest reform cam-

"LET US, THEREFORE, ABOLISH ALL DISTINCTIONS THAT MAY LEAD TO ILL FEELING AND LET US CALL OURSELVES, BEFORE THE WHOLE WORLD, AMERICANS, FIRST, LAST AND ALL THE TIME."

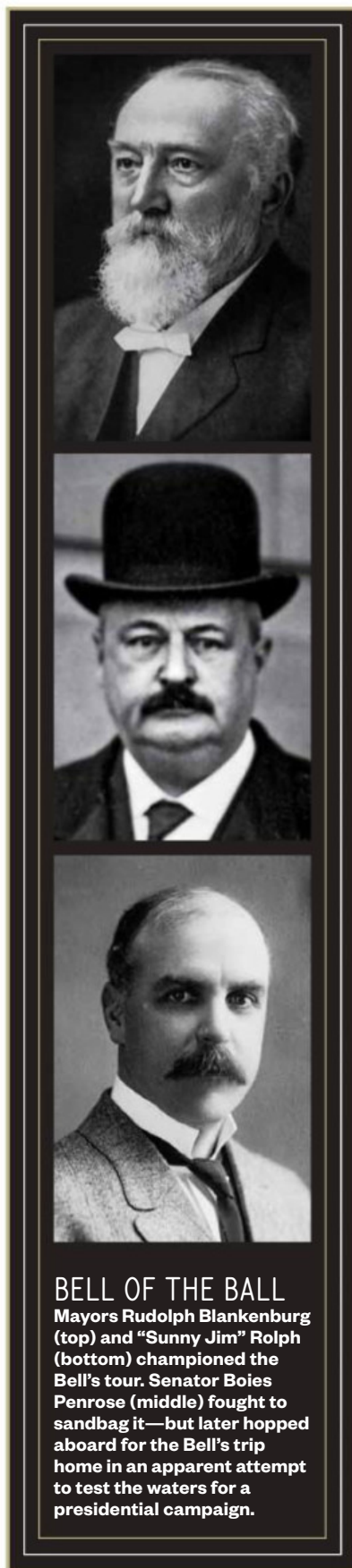
paigms ever fought in this country.”

Nobody was more upset about Blankenburg’s election than U.S. Senator Boies Penrose of Pennsylvania, a Harvard-educated lawyer and Republican Party boss. Known as “the Big Grizzly,” Penrose was one of the nation’s most grotesquely influential men, his dining habits widely viewed as a metaphor for his hunger for power. A huge, Weeble-shaped man with a round face, squinty eyes, thick mustache and ever-present bowler, he was known to order so much food in restaurants, and to devour so much of it without benefit of utensils, that waiters would put up screens around his table to spare other patrons the sight. He was also the rare public figure who remained unmarried throughout his career, boasting of his abiding love of prostitutes because he didn’t “believe in hypocrisy.”

Penrose made it his mission to torpedo any initiative Blankenburg undertook. So when the mayor came out in favor of sending the Bell to San Francisco, all the old-line Republicans in Philadelphia followed the Big Grizzly and opposed it. The cities argued about it for almost four years. Philadelphia lawmakers and metallurgists banded together to insist that the Bell should never leave Independence Hall again, for its own protection. Besides, they argued, the American roadshow had become undignified.

“The Bell is injured every time it leaves,” claimed former Pennsylvania governor Samuel Pennypacker, because “. . . children have seen this sacred Metal at fairs associated with fat pigs and fancy furniture. They lose all the benefit of the associations that cling to Independence Hall, and the bell should, therefore, never be separated from [Philadelphia].”

With San Francisco’s fair about to open in February 1915, Blankenburg had failed to get permission for the Bell trip, so he offered the next best thing: a ringing of the Bell that would be heard over the new transcontinental phone line Bell Telephone had just completed, 3,400 miles of wire strung between 130,000 poles across the na-



BELL OF THE BALL

Mayors Rudolph Blankenburg (top) and “Sunny Jim” Rolph (bottom) championed the Bell’s tour. Senator Boies Penrose (middle) fought to sandbag it—but later hopped aboard for the Bell’s trip home in an apparent attempt to test the waters for a presidential campaign.

tion. When the Bell was sounded at 5 p.m. Eastern time on Friday, February 11, two hundred dignitaries listened on candlestick phones set up at the Bell office in Philadelphia, along with an additional 100 at the Bell office in San Francisco. In Washington, Alexander Graham Bell listened in on his private line, one of the perks of having patented the telephone.

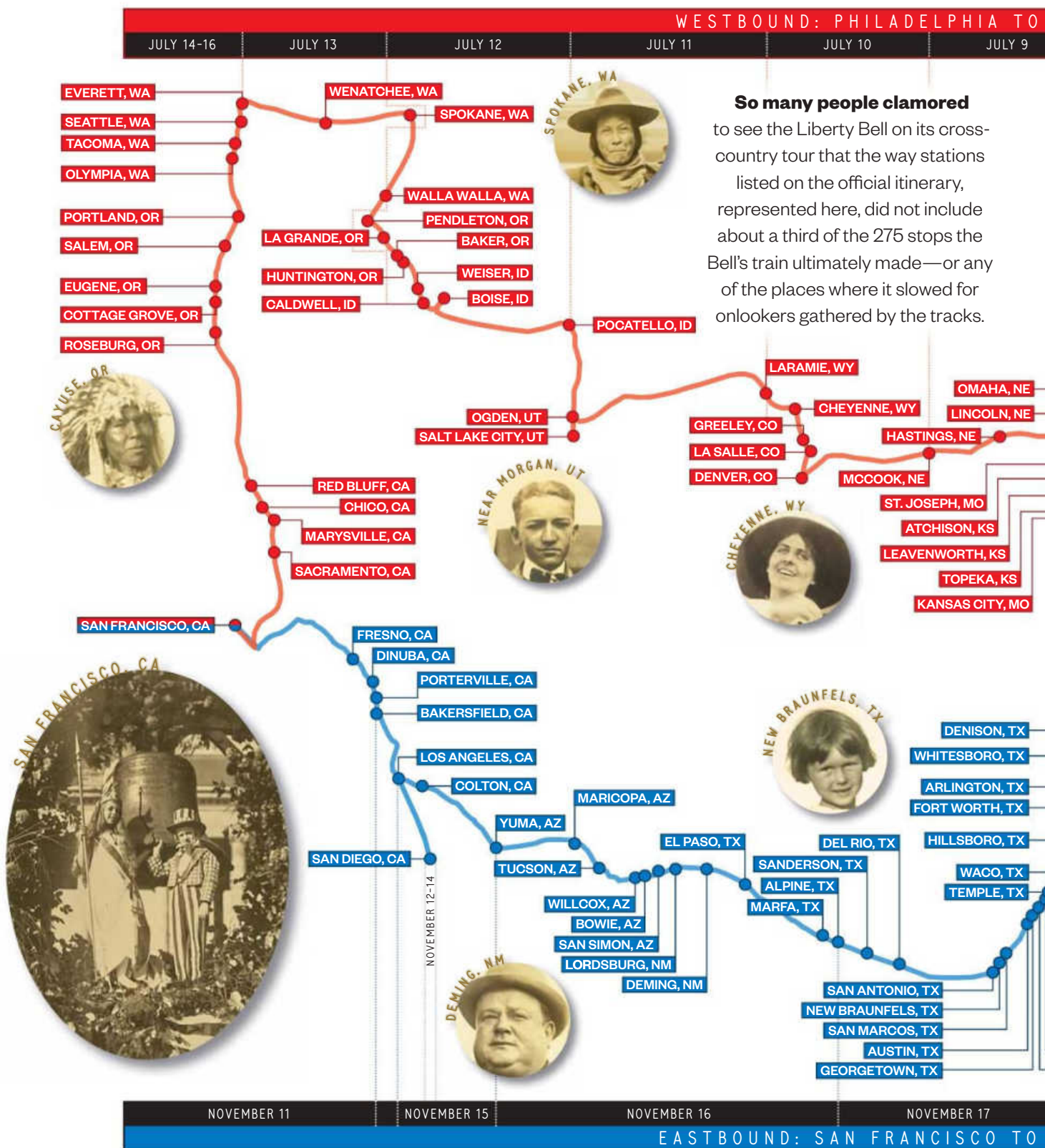
That call was supposed to end the discussion, but Sunny Jim kept pushing. Eventually President Wilson and ex-President Roosevelt joined him. Their pressure led to some tentative city council action, but nothing got funded or finalized until after May 7, 1915, when the Germans sank the British liner *Lusitania* off the coast of Ireland, creating the first American casualties of World War I. After that, the city powers allowed Blankenburg to risk letting the Bell make a whistle-stop tour of America.

As soon as it was clear the Bell would travel, the discussion about its crack and physical condition stopped being political and became very practical. The city heard from every expert (and crackpot) in the country with an idea about how to repair, restore or otherwise de-crack the Bell. There were suggestions from the Department of the Navy, major foundries, even garages around the country, all offering to heal the fracture for the good of the nation. Blankenburg, however, was appalled by the idea. He made it clear that the crack would never be “fixed” as long as he was the guardian of the Bell.

The Pennsylvania Railroad had only weeks to prepare for a trip that normally would have taken months or years to plan—including the construction of the best-cushioned rail car in history, with the biggest springs ever used. The Liberty Bell Special would be a private, all-steel train with luxurious Pullman cars—sleepers, a dining car and a sitting car—the very best the “Pennsy” had to offer.

The train was originally going to be one car longer, with a sleeper for the mayor, his very politically active wife, Lucretia Mott Longshore Blanken-

VENERATION N



ATION

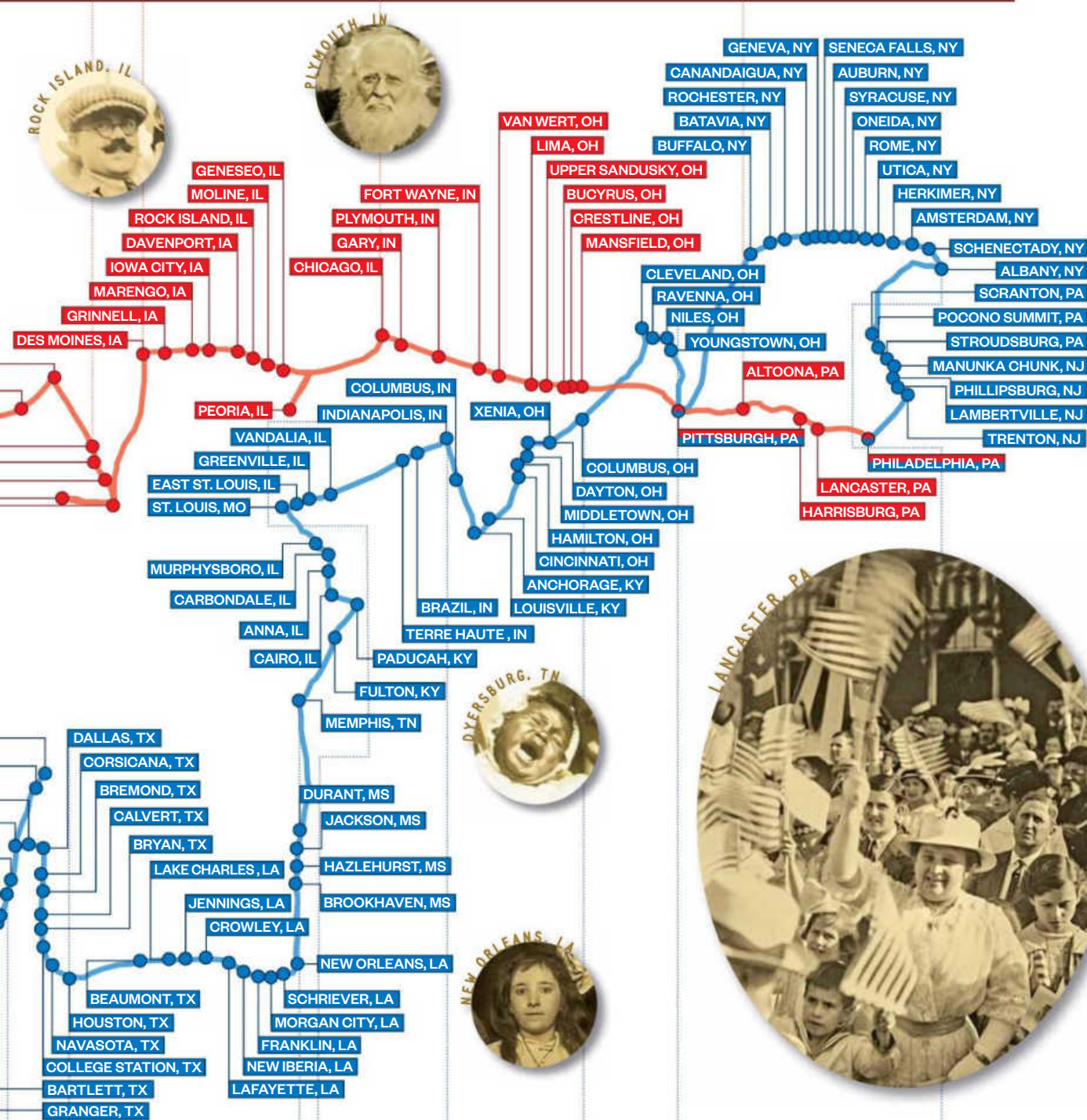
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JULY 8

JULY 7

JULY 6

JULY 5



NOV. 18

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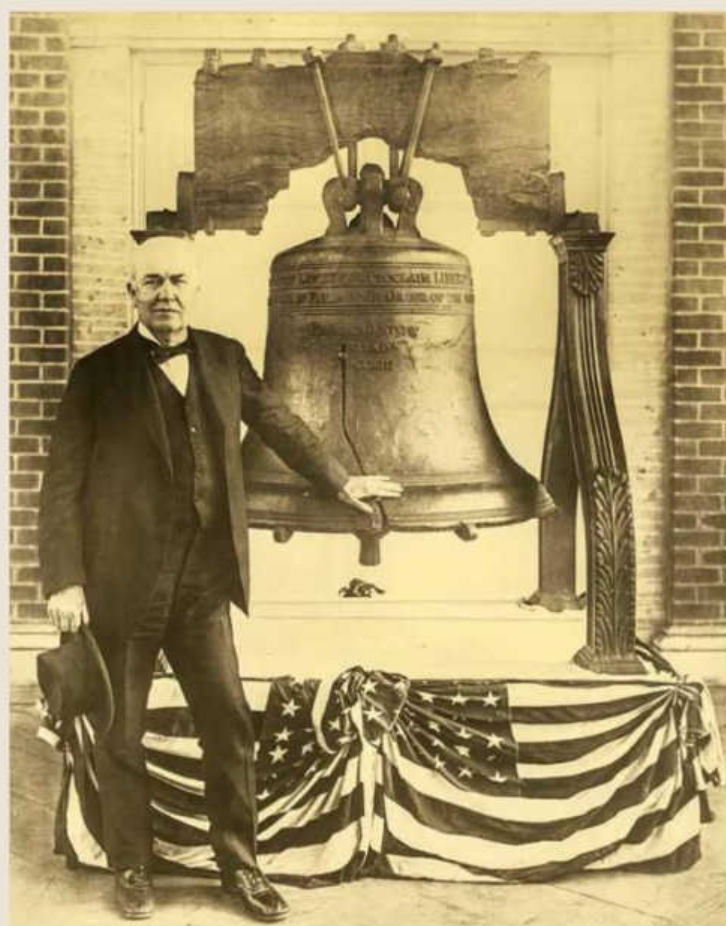
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NOV. 25

PHILADELPHIA • NOVEMBER 1915



burg (who had recently helped create the Justice Bell, a copy of the Liberty Bell intended to promote women's suffrage), and some family and staff. But, like everything else during his administration, Rudy Blankenburg's Liberty Bell trip became enmeshed in ugly city politics. Even though he had agreed, up front, to pay all the expenses for himself and his family, his political opponents made the trip out to be a "junket" that was wasting taxpayer money.

Blankenburg, who deserved the honor not only for his difficult time as mayor but also for a lifetime of service to Philadelphia and the nation, announced that he would not be able to make the trip. He blamed it on his health, but everyone knew different.

Since Blankenburg was the nation's most prominent German-American public official, President Wilson invited him to come along on a cross-country series of "loyalty lectures" to remind immigrants of how important it was that they support the United States over their homelands.

Blankenburg doubled down on his role as a national spokesman for its message. He not only lectured to immigrant groups about loyalty, but also made in-your-face speeches to self-proclaimed "Anglo-Saxons" about their rising racism. At a banquet at the Waldorf Astoria in New York, he threw down the challenge to a large group of white civic leaders who were expecting light after-dinner remarks.

"The notion of a small but clamorous section of Americans, who blazon forth their fancied claim to superiority over the rest of their countrymen by calling themselves the 'Anglo-Saxon race,' is as absurd as it is unsound," he said. "Yet we often hear that the Anglo-Saxon race should dominate our country. There is no Anglo-Saxon race. . . . An overwhelming majority of our white population is a mix of all white races of Europe—Teutonic, Latin, Slav. And where would you place the ten million colored people who live among us?"

"It is important to prepare against a possible foe abroad, but more against the domestic foe who may, unrecognized for years, appeal to our preju-



Atchison, Kansas (middle), was one of scores of added stops. Thomas Edison (left) and the Blackfoot chief Little Bear (right) were among millions of visitors in San Francisco.

dice, our love of riches, our political ambitions and our vanity. . . . Let us, therefore, abolish all distinctions that may lead to ill feeling and let us call ourselves, before the whole world, Americans, first, last and all the time.”

Blankenburg ordered that Independence Hall remain open late on Independence Day 1915. He wanted Philadelphians to have a chance to “say goodbye to the Liberty Bell.” Just in case they never saw it in one piece again.

The next day, at 3 p.m., the Liberty Bell Special pulled out of the Pennsylvania Railroad’s main Broad Street

Station. The passengers on the train—mostly city councilmen and their families—were in no way prepared for the volume of people who greeted them. At one of the first stops, Lancaster, Pennsylvania, so many people gathered

that no one on the train could tell where the crowds ended.

The Bell hung from a wooden yoke bearing the painted words “Proclaim Liberty—1776,” a brass railing its only protection from the mobs. The privilege of touching the Bell was supposed to be reserved for blind people, but the guards often allowed babies and toddlers up over the railing for a closer

look and a photo op. “They set the little ones upon the rough, black lip of the Liberty Bell,” a reporter for the *Denver Times* wrote, “. . . and they placed both hands upon the Bell or pressed their lips against its cold surface, beamed suddenly and dimpled into smiles as if the great bell had whispered a message to them.”

Adults who got close enough asked the guards if they could touch the Bell with something, anything.

“Women drew gold and diamond bracelets from their arms without fear of pickpockets from the vast mob,” the *Times* reporter wrote. “Little children drew rings from their fingers and took gold locket and chains from their necks. Prosperous businessmen,

who looked as if sentiment played a small part in their everyday dealings with the world, handed up heavy gold watches and chains. Negroes, who showed a solid and dazzling expanse of white teeth, and even men ragged and unshaven, hobos apparently, dug down into their pockets and pulled out dilapidated pocket knives with the same simple but fervid words: 'Please touch the bell with that.'

In the first 24 hours, the train stopped in Frazer, Lancaster, Elizabethtown, Harrisburg, Tyrone, Altoona and Pittsburgh in Pennsylvania; in Mansfield, Crestline, Bucyrus, Upper Sandusky, Dunkirk, Ada, Lima and Van Wert in Ohio; in Fort Wayne, Plymouth and Gary in Indiana before heading to Chicago. (This itinerary represents both the official published schedule and the typed lists of 103 cities added along the way that I discovered in the records of Philadelphia's Chief of City Property.)

The Liberty Bell had never been farther west than St. Louis, and that trip had been a crucial decade before. So as the Liberty Bell Special crossed into the Great Plains and across the Rockies, it passed through cities that were relatively new—some only recently created by railroads—and populated by citizens more likely to be struggling to understand their place in America.

The Philadelphians were constantly astonished by what they saw on, and from, the train.

"In Kansas City, an old colored man who had been a slave came to touch it—he was 100 years old," recalled James "Big Jim" Quirk, one of four Philadelphia police officers assigned to guard the Bell. (One of his descendants, Lynn Sons, shared with me the archive Quirk left his family.) When they pulled out of another town, "an aged Mammie hob-

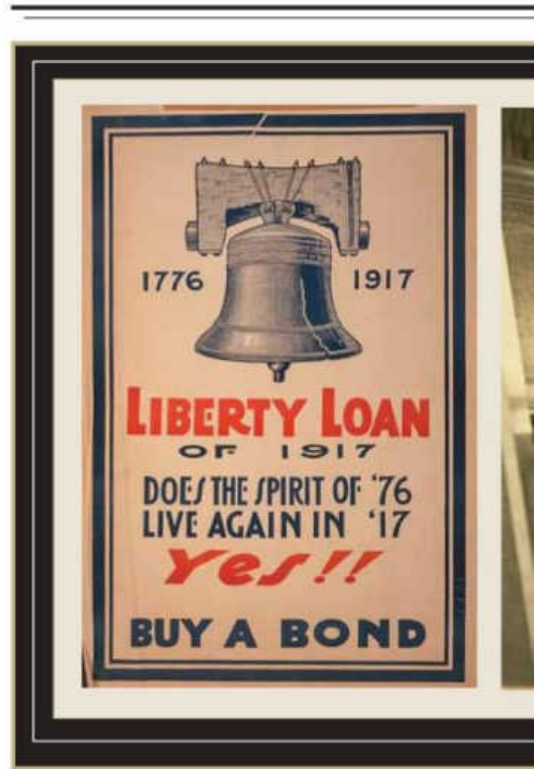
bled to the door of her cabin near the tracks, raised her hands and with her eyes streaming tears called out, 'God Bless the Bell! God Bless the Dear Bell!' It got to us somehow."

In Denver, a group of blind girls were permitted to touch the Bell, but one of them started sobbing and exclaimed, "I don't only want to touch it. I want to read the letters!" While the crowd was hushed, the girl slowly read the inscription by running her fingers over the raised letters, methodically calling the words to her companions: "Proclaim . . . Liberty . . . throughout . . . all . . . the . . . land."

As the train approached Walla Walla, Washington, there was panic aboard as small, hard projectiles began raining down on the Bell. While the guards first worried someone was shooting at it, they looked up to a ridge where some boys were standing and decided they were stoning the train. This "first act of vandalism" against the Bell made national news, although police later determined that the boys hadn't thrown anything, that the stones had shaken loose from the ridge when the train went by.

In Sacramento, the Bell even helped catch a criminal: the notorious safe-robber John Collins, who had eluded capture until Max Fisher, an officer from the police department's criminal identification bureau, recognized him among the crowd of those who couldn't resist coming to see the Liberty Bell. Fisher promptly had Collins, whom he considered "one of the cleverest crooks in the country," arrested.

The Bell arrived in San Francisco on July 17. City officials proclaimed that it had been unharmed by the journey, but privately they and the Pennsylvania Railroad worried that the Bell car vibrated far more than



they had predicted, and they started searching for a way to make sure the Bell was safer on the way back.

The city held gala Bell ceremonies, which doubled as a huge preparedness rally for the coming war. Big Jim Quirk never forgot the tens of thousands of flowers on the parade floats, or the roses that women and children tossed at him as the Bell passed. ("Tossed is right," he joked, rubbing his left ear in recollection. "The ladies weren't always the best shot, and [someone] . . . beaned me with the thorniest American Beauty you ever saw.")

The Bell then went directly on display at the fair in the Pennsylvania pavilion, where it remained for four months. Its platform rested on a priceless 400-year-old Persian rug, and it was cordoned off with red-white-and-

BY THEN, THE LIBERTY BELL HAD BECOME THE DOMINANT SYMBOL OF
THE WAR EFFORT, AND THE SOUNDING OF BELLS BECAME
THE PAVLOVIAN CUE TO DO THE RIGHT THING.



blue silk rope—which Eva Stotesbury, the redecorating-obsessed second wife of the richest man in Philadelphia, had ordered. Each evening guards removed it from the platform and stored it in what fair officials promised was an “earthquake-proof” vault.

The Bell became, in the opinion of many, the exhibit that saved the fair from what had been pretty underwhelming attendance. Fairgoers took an estimated 10,000 photos of it every day.

Even people who had seen the Bell many times, like Thomas Edison and Henry Ford, were fascinated to view it in this incongruous setting. Teddy Roosevelt took one look at it and declared, “Can any puerile, peace-talking molly-coddle stand before this emblem of Liberty without a blush of shame?”

It made many people weep, although others admitted that, frankly, they thought it would be bigger.

Four months later, on November 10, 1915, San Francisco gave the Liberty Bell the send-off it deserved, a massive parade celebrating American patriotism.

While nobody knew it at the time,

a group of preparedness extremists planned to blow up the Bell during the parade, hoping to prod the United States into the war faster. These extremists reportedly paid a bootblack \$500 to drop off their suitcase bomb near the Bell—which was spared only because the bootblack changed his mind at the last minute and threw the suitcase into the bay. The terror plot was revealed months later when the same group bombed another San Francisco parade, killing ten people.

After the parade, the Bell was loaded onto the Liberty Bell Special, and most of the Philadelphia city councilmen who had accompanied it west returned for the ride home. They were joined by a controversial new passenger: Senator Boies Penrose, who suddenly wanted to be part of the Bell tour now that it was a national sensation. After appointing himself “orator in chief” for the return trip, he began appearing in nearly every photo taken aboard the Liberty Bell Special, looming in his dark suit, overcoat and bowler.

The Big Grizzly claimed to be doing his patriotic duty by joining the excursion, but since he was considering running for president against Wilson in 1916, it is more likely he viewed this as a taxpayer-funded whistle-stop tour through the Southwest and South, where voters knew little about him.

The Bell headed south for a three-day residence in San Diego, where a smaller world’s fair was underway, before the long journey home began. It hugged the Mexican border all the way into Texas. In Arlington, in the heart of the Lone Star State, a riot broke out when a young black girl kissed the Bell. “A crowd of fools and idiots gathered,” the *Chicago Defender*, a leading black newspaper reported, “and, because an innocent child, a mere baby, showed appreciation of well-trained parents and kissed the old bell whose touching appeal first kindles the fires of patriotism in the bosom of Amer-

ican citizens, she was jeered, hissed, scolded and cursed, and efforts [were] made to do violence.” The *Defender’s* reporter added: “No act, however skillfully planned with the brains of satan, would compare with this vile spirit.”

The train went to New Orleans, then north through Mississippi and Tennessee. In Memphis, the crowds pushing to see the Bell crushed a young woman to death. And only five hours after she died, as the train pulled into Paducah, Kentucky, two warehouses burst into flame just a thousand feet from where the Bell car

was parked. Station crews immediately attached the Bell to another engine and dragged it to safety.

From there the train visited St. Louis, then leapfrogged through Indianapolis, Louisville and Cincinnati, where the director of a school choir that would perform “Liberty Song” at

trackside announced he was deleting a reference to “slavery’s chains” being “ground to dust” because it did not “strike a harmonious chord.”

As the Liberty Bell Special headed for Pittsburgh, and the last straight shot of Pennsylvania Railroad tracks home to Philadelphia, it was diverted all the way up to Buffalo, Rochester, Syracuse and Albany, before heading south through the Poconos and Trenton and finally home. The announced reason for the extra destinations was that more people could see the Bell; many suspected those new stops were to help the Big Grizzly troll for votes.

Ultimately, however, Penrose chose not to run. Instead, he focused on making sure Rudy Blankenburg was voted out of office and even tried to get him indicted. He succeeded only in getting one of his puppets, former postmaster Thomas Smith, elected mayor.

Thus Smith received the honor of sounding the Liberty Bell for the first war bond drive in June 1917. Smith got to walk heroically through the throng gathered at

After the Bell’s tour in 1915 (opposite, in Moline, Illinois), Americans were moved to buy an average of \$170 each (about \$3,400 today) in war bonds during the drives of 1917 and 1918.

CONTINUED ON PAGE 90

GO WITH

THE FLOW

Lava that spews from a volcano in Hawaii creates startling new ecosystems that grow into islands of evolution

V

olcanologists have a flair for under-

statement. Here is the term for the roiling, spattering 2,000-degree Fahrenheit liquid rock visible in the caldera of Kilauea volcano this afternoon: lava lake. As though, had I a more powerful pair of binoculars, I could make out rowboats and little people picnicking on the shore. I forgive the volcanologists, because no words I know adequately capture the beautiful, violent strangeness of molten lava. You can see Kilauea's churning "lake" from overlooks in Hawaii Volcanoes National Park, and you can watch its lava tubes bleed into the ocean several miles southeast.

For all these reasons, Kilauea is the park's star attraction. But don't overlook Mauna Loa (also active but currently "in repose"). Mauna Loa has the kipuka trails. Kipukas have been described as living laboratories for evolution. They're pocket forests isolated by lava flows that went around them instead of over. Sometimes the greenery was spared because it was at a higher elevation than the sur-

by
Mary
Roach

photographs
by Elyse Butler

Reaching the Sea
Kilauea is Hawaii's most active volcano. Its name means "spewing" in the local language.





rounding terrain, and sometimes it just got lucky. Members of species that used to share turf and swap genes got separated by Nature's igneous paving crews. If the environments in their respective kipukas differed, they adapted to the local conditions and began to evolve separately. Drift far enough genetically, and you become a new species. Kipukas help explain Hawaii's extraordinary

Kipukas have been described as living laboratories for evolution. They're pocket forests isolated by lava flows that went around them instead of over.

rate of speciation. From as few as 350 insect and spider colonizers, for instance, Hawaii now has 10,000 species. Six original colonizations of bird ancestors have become 110 species. And because lava flows are easily datable, scientists can look at two closely related species and know which evolved from which. Hawaii, one scientist wrote, "is God's gift to the evolutionist."

Steve Hess, a wildlife biologist who works out of the Kilauea Field Station of the U.S. Geological Survey's Pacific Island Ecosystems Research Center, offered to show me around a couple of kipukas alongside the Kaumana Trail, on Mauna Loa's eastern flank. (Nearby Puu Oo Trail also traverses kipukas.) A lot of the evolution research done here has focused on *drosophila*—fruit flies. In part, this is because they're short-lived. A generation comes and goes in a couple of weeks, so evolved traits show up much more quickly than they would in mammals. And *drosophila* are poor fliers, rarely commuting between kipukas. From one (or a few) original immigrants from Asia, Hawaii now has as many as 800 *drosophila* species. (And seemingly as many *drosophila* researchers. The Hawaiian *Drosophila* Project, begun in the 1960s, is still going strong.)

Kaumana Trail is an easy hike, winding over broad, rounded moon pies of pahoehoe lava. (Pahoehoe's Scrabble-friendly cousin aa—a sort of knee-high stone popcorn—is also plentiful in the area, but challenging to hike.) Though the vegetation along the path is sparse, there's abundant beauty in the contrast of the black lava and the bright greens of the shrubs and grasses that manage to take root in the organic debris that settles between mounds of pahoehoe. Other than a few six-foot ohia trees, we're the tallest organisms on the trail.



Hess points out Hawaiian blueberries, which are less blue (they're red) than other states' blueberries.

After 15 minutes of hiking, a stand of older-growth ohia trees appears on our right: kipuka! Although it's small (about nine acres) and no sign marks the boundary, it's not hard to locate. It's like when my husband takes the clippers to his hair. *Hey, Lava, you*



On the Rocks

The ground near Kilauea is black and stony, but that hasn't stopped locals from buying cheap plots and building houses there. The volcano's lava typically flows rather than erupts, which makes it less likely that residents will meet a Pompeii-like demise.

missed a spot. As we push into the interior, tree ferns come into view and thick undergrowth slows our travel. We no longer see lava underfoot, because it's buried under 3,000 to 5,000 years of rotted logs and leaves. It's just a lot messier in here. I look up to see a blue kitchen sponge attached to the trunk of an ohia tree, as though someone else had had that

same thought. Hess explains that researchers soak the sponges in yeasty water to attract fruit flies, then return a couple of hours later with an aspirator to suck them up for study. The sponges are supposed to come down when the project ends, not just because they're eyesores, but because leaving litter in the forest is disrespectful. Deities of Hawaiian

DYNAMIC VOLCANOES

Kilauea is one of the most active lava sites in the world. Here are others worth visiting, from the South Pacific to the Ionian Sea.

Mount Semeru

East Java, Indonesia

This iconic spot became even more popular after it was featured in the 2012 Indonesian film *5 cm*. Its eruptions, as frequent as every 20 minutes, are small but sometimes dangerous. In 1969, the political activist Soe Hok Gie died the day before his 27th birthday after inhaling poisonous gases here.

Mount Yasur

Tanna Island, Vanuatu

The best way to view this volcano, northeast of Australia, is from the air: Various tour companies offer flights that swoop right over the explosive lava displays.

Erta Ale

Northeast Ethiopia

It's a rugged hike, three or four hours in often-swelting heat, but the giant, bubbling lake of lava looks like something from another planet.

Volcán Sangay

Central Ecuador

Located in a lush national park, this volcano is one of the most active in South America. The trek to it is fairly smooth, but it takes about a week. Hiring a local guide is a must.

Mount Etna

Sicily, Italy

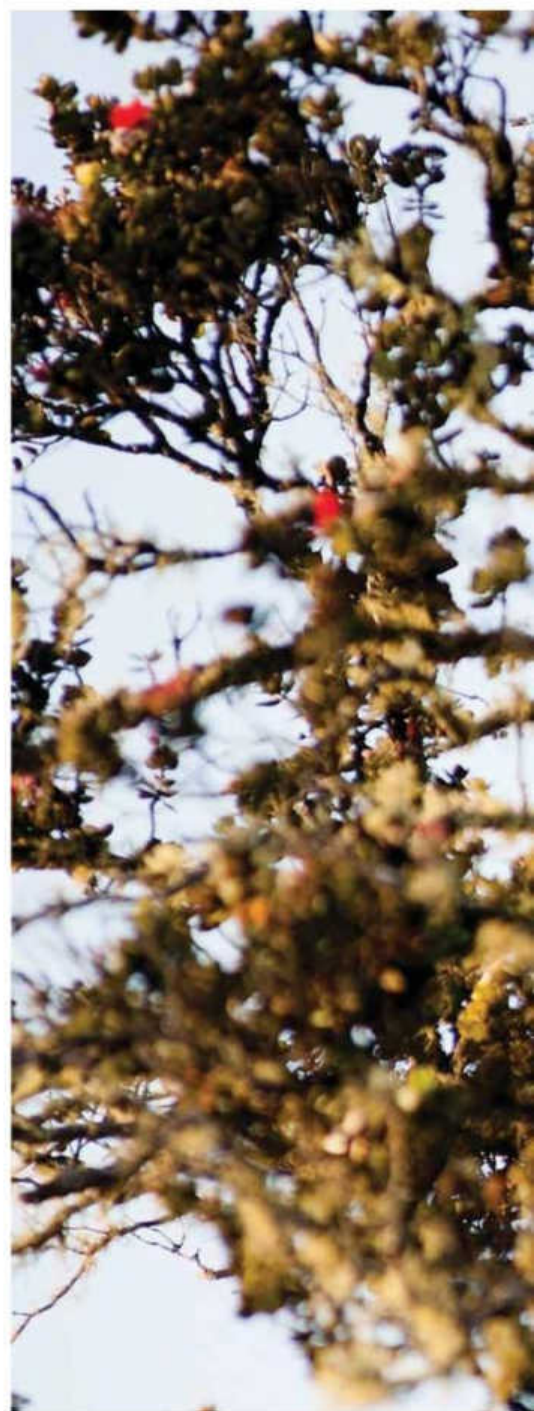
This volcano is easy to access, thanks to a cable car that takes visitors up and down in two hours, with a guided bus tour in between.

mythology can take the form of natural elements, including the forest itself (the god Kamapuaa) and lava (the goddess Pele). This explains the Hawaii Volcanoes National Park signage admonishing visitors, "Do not roast marshmallows over lava (Pele)."

Shade inside the kipuka makes it appreciably cooler than out on the lava fields. It's also noisier in here. Kipukas provide food and housing for more than half a dozen vocally energetic endemic bird species. Flocks of scarlet-red apapane—honeycreepers—keep up a whistling chitter-chat. The songs differ subtly from one kipuka to another. I had hoped to be able to hear these honeycreeper "dialects" in the kipukas we're visiting today, because the differences predate speciation. From the honeycreeper ancestors that arrived in Hawaii between five million and six million years ago, at least 54 different species have evolved. Hess explains that to make out the differences, I'd need to look at spectrograms: visual representations of frequency, pitch and loudness—a sort of EKG for bird song.

This I do on a different day, at the University of Hawaii at Hilo, in the bioacoustics lab of biologist Patrick Hart. Because the material under study is sound, the lab lacks the more stereotypical trappings of biology. No microscopes or autoclaves, just computers arranged in two long rows. Hart stops in while I'm there, and I ask him to clear something up for me. Given that birds can fly from kipuka to kipuka—that is, they're not isolated like plants or snails, or weak fliers like *Drosophila*—why have they speciated so dramatically?

Let's say a population of apapane is split apart by lava flows, Hart begins. Even though the birds are able to fly to each other's kipukas, they spend far more time in their own. Like New Yorkers in different boroughs, they start to develop distinct accents or "slang," if you will. When an apapane



does travel to a distant kipuka, she may not recognize the locals' song. This is key, because bird song is the first way a female apapane judges a male's appropriateness as a mate. He may talk a good talk, but she doesn't know what he's saying. Genetically the pair are still viable—they'd be able to produce offspring—but behaviorally they are not. They're never going to



See more of Elyse Butler's photographs of Hawaii at Smithsonian.com/lava



Branching Out

An apapane sits atop an ohia tree. These birds, also known as honeycreepers, live on six of Hawaii's eight main islands. Hawaiian nobles used to decorate their capes and helmets with the bird's distinctive red feathers. Today the greatest threat to the apapane is malaria.

hook up. Soon (evolutionarily speaking) the birds of these two kipukas will diverge sufficiently to be classed as separate species. In this way, kipukas may drive—and help explain—the rapid speciation of Hawaiian birds.

Hart's colleague Esther Sebastian Gonzalez showed me her glossary of hand-drawn notations for 348 different syllables sung by one species of

apapane. They are like hieroglyphs of unknown meaning. Although she can't translate them, she knows they are not random. One grouping of syllables may allow members of a flock to keep track of each other in the leafy kipuka canopy. Others may be warnings, flirtations, a tip. *Don't leave without me. Feral cat! Awesome nectar here. Some jerk left a sponge in my yard.*

The Kaumana Trail makes it easy to be one of those annoying hikers who can call out the names of every plant species they pass. Out on these lava fields, there are a dozen or so native ones. This is everything Kamapuaa has managed to create in the 150-plus years since Pele poured through here.

Hawaii's ecosystems are isolated enough—and thus simple enough—that ecologists can recite the typical order of arrival on new lava. Lichens appear first, needing only air, moisture, rock. Dead, decomposing lichens form the paltry substrate that enables everything else to get established. Moss and ferns are early settlers, as well as the extremely undemanding ohia tree, which makes up the majority of the biomass in

Like New Yorkers in different boroughs, apapanes start to develop different accents or “slang.” A wandering apapane might not recognize the locals’ song.

any native Hawaiian forest.

The leaves and red spiky stamen and other detritus the ohia drops and the shade it provides set the stage for the next wave of plant life: club moss, grasses, shrubs. This is why there's so much concern about a new fungal disease called rapid ohia death—why, as Hess puts it, “Everyone's screaming with their hands in the air. The landscape as we know it is driven by this species.”

The simplicity of Hawaii's ecosystems is another reason it attracts researchers. It's easy to isolate the effect of, say, a rise in one species population on another. “In a place like Costa Rica,” Hess says, “it's just a huge mass of hun-



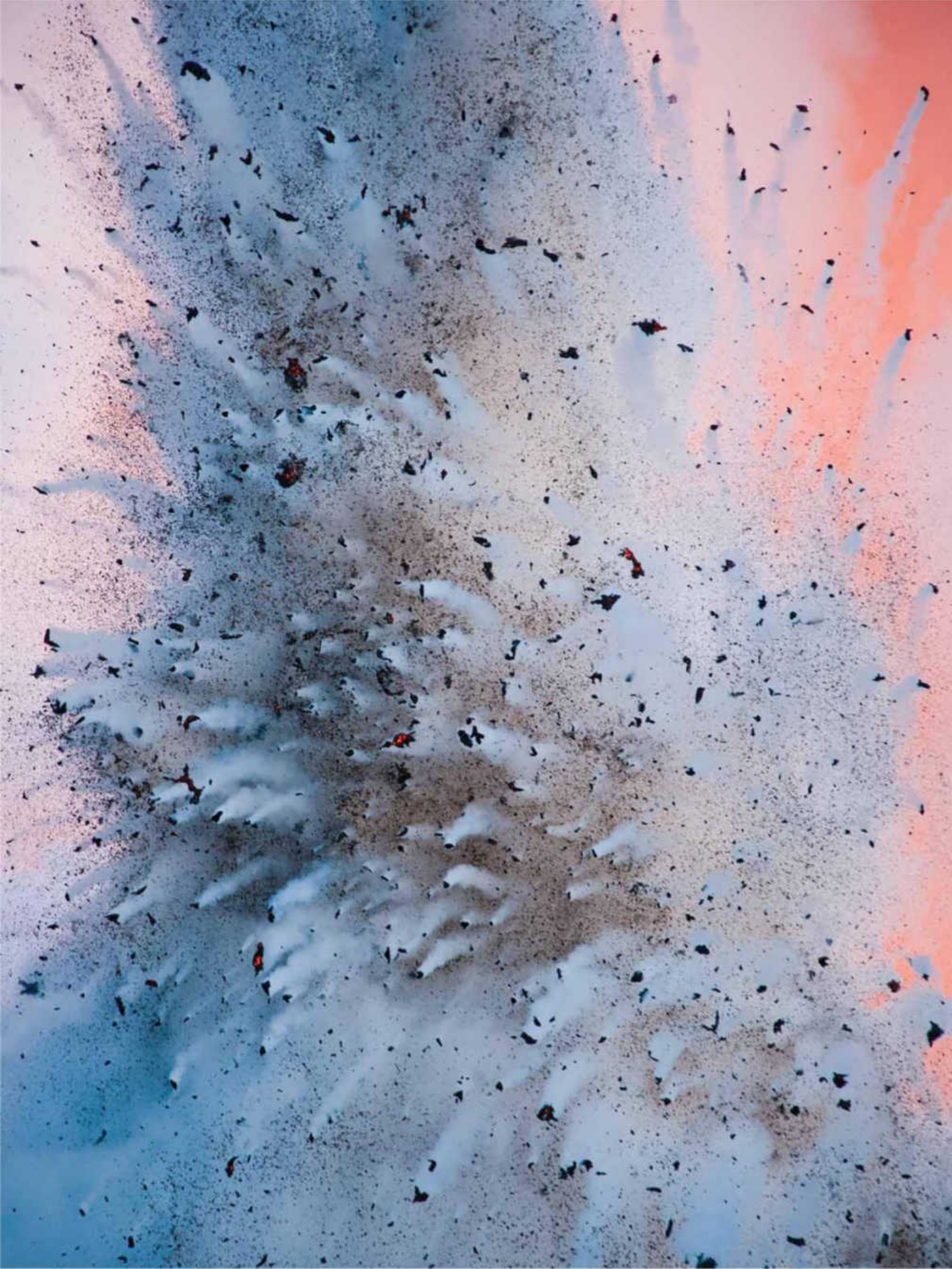
Lava Land

From top: Ohelo berries growing along the Kaumana Kipuka trail; ferns sprouting from cracks in the lava; the lehua flower flourishes within a kipuka. Right: A stream of lava from Kilauea explodes into the ocean. Visitors must hike or ride bicycles four miles to glimpse this sight.

dreds of species.” It's too complicated to know what's causing what with any degree of certainty.

There's beauty in Hawaii's simplicity, not only for the ecologist but for the traveler. The day I arrived, I rented a bicycle and rode out to the point along the coast where some of Kilauea's newest lava tubes ooze their contents into the ocean. (As a lava flow cools, it forms a tubular crust that insulates the lava inside and keeps it hot enough to continue flowing.) The gravel road cut through the simplest ecosystem of all: the rippling brownie-batter plains of Kilauea's recent flows. No kipukas out here: just mile upon mile of the black undulations formerly known as magma. A postcard from earth's unfathomable innards. With the white-capped cobalt water beyond, the scene was both breathtaking and apocalyptic.

For half an hour I sat on a bluff watching molten lava transform seawater to a fast-billowing steam cumulus. As the lava cools and hardens, the island extends itself, minute by minute. This is the process by which all of Hawaii was formed. Just as stepping into a kipuka on the Kaumana Trail allows you, in a few footsteps, to go from an ecosystem 162 years old to one that's 5,000 years old, here you are time-traveling tens of millions of years. It's hard to imagine a more awesome trip.



LIFE

ON

THE

EDGE

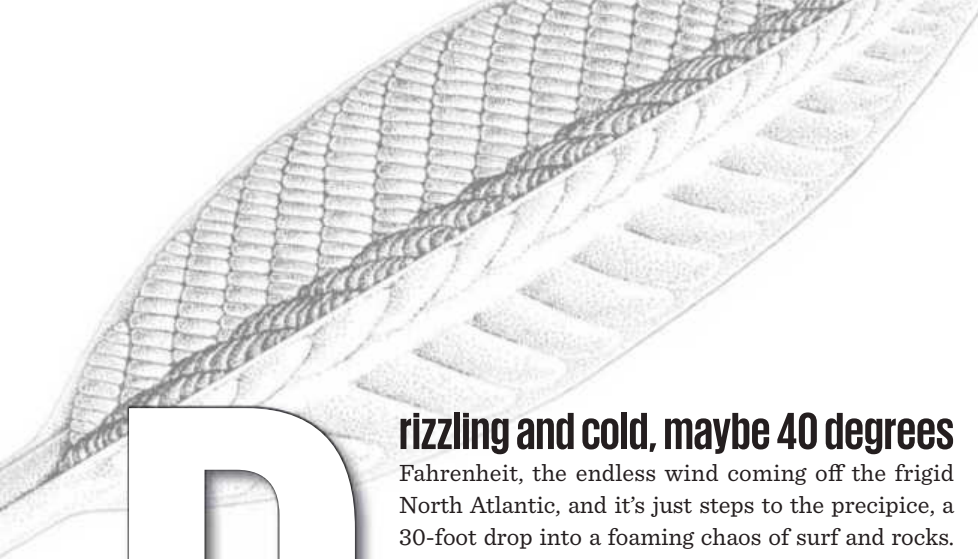
Step back
in time half a
billion years to a world
of mysterious sea
creatures that would
have thrilled Darwin

by Terence Monmaney

photographs by Neil Ever Osborne



Set in Stone
Researchers
have documented
more than 4,000
fossils on cliff-top
beds accessible
to the public.



D rizzling and cold, maybe 40 degrees

Fahrenheit, the endless wind coming off the frigid North Atlantic, and it's just steps to the precipice, a 30-foot drop into a foaming chaos of surf and rocks. Richard Thomas, a tall geologist in his 60s with a Prince Valiant haircut, says it's time to take our shoes off. "I'm going to take my socks off too because they'll just get wet in these," he says with a chuckle, holding up one of the light blue cotton booties that you have to wear if you want to step onto this particular clifftop on the forbidding coast of southeastern Newfoundland.

We unlace our hiking shoes, place them upside down on the ground to keep the rain out, remove our socks, pull the blue slippers onto our bare feet and tiptoe onto the bedding plane, as geologists call it. It's about the

size of a tennis court and pitched like the deck of a heeling sailboat. The surface itself is slightly rippled, and scattered all over it are what local children years ago, back when children and anyone else could romp here as they pleased, called "flowers in the rocks." Fossils. Some look like ferns, some like cabbages, others like peace lilies. Mostly, though, they look like nothing alive today. A foot-long oval split down the middle, and each half is full of little capsules like the vesicles in an orange segment. A cone shape, about the size of a hand, like a cartoon heart.

"Thectardis," Thomas says, pointing to the heart, and for a moment, thrown off by his British accent—he's originally from Wales—I wondered if he said "TARDIS," the time-traveling police box in the BBC's mind-bending "Doctor Who." "Thought by some to be a primitive sponge. There's no proof, of course." The fossils at our feet are in fact the subject of intense study and wide debate, but it's not because



of scientific controversies that the place is called Mistaken Point. The name dates to the early 18th century, and refers to the tragic tendency of ship captains to mistake this often fog-shrouded headland for Cape Race several miles up the coast, steer accordingly and run aground.

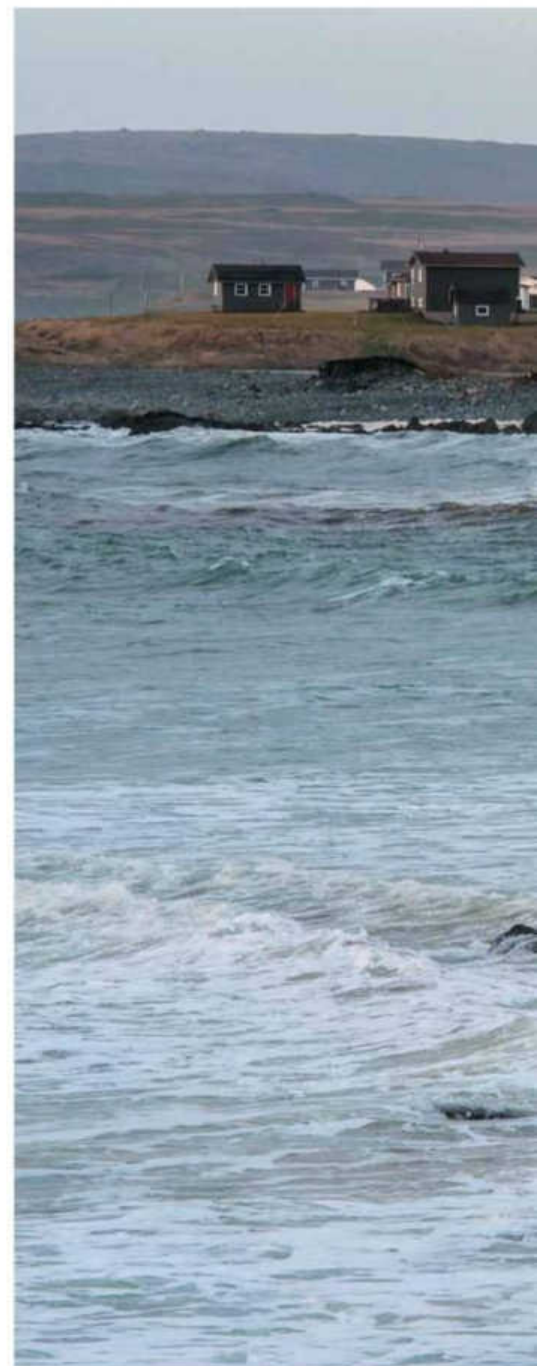
It might be nice to borrow Doctor Who's TARDIS and return to where and when this strange heart-shaped

creature lived, to answer the question of its true nature, whether animal or plant or something else entirely. Then again, that world was no place for middle-aged journalists. By nearly all accounts this clifftop originally lay on the ocean floor, as much as half a mile below the surface, in perpetual darkness, not far from where Brazil is today. And the most precise dating methods known to geochemistry show

beyond a doubt that these seafloor creatures, whatever they were, lived more than 560 million years ago.

We are standing on the oldest fossils of multicellular life on the planet.

They hail from a climactic but little-understood chapter in the planet's past called the Ediacaran Period. It began 635 million years ago, long into the great heyday of microbes and other single-celled organisms, and ended 542





Coastal Barrens

Visitors to Mistaken Point start in Portugal Cove South (pop. 150), a town that was twice as populous before the cod-fishing industry collapsed in the early 1990s. The wind-scoured landscape supports few trees other than stunted balsam firs known locally as “tuckamore.”

million years ago, when the first groups of major animals, things that had muscles and shells and so forth, arrived in the Cambrian Period, such a wild burst of biological diversification it's also called the Cambrian Explosion.

One of the dozens of researchers who've come to Mistaken Point to study these fossils is Emily Mitchell, a Cambridge University paleobiologist. She says the Ediacaran Period

“is the most important transition in the history of life on earth, changing from microbial organisms only to complex large organisms and the onset of animal life.”

Another way of putting it is that these fossils represent “when life got big.” If that sounds a little like a marketing slogan, it is: Experts seized on the phrase when they petitioned Unesco in 2014 to recognize Mistaken

ANCIENT ORGANISMS

Many of the world's oldest fossils are in off-limits research zones. Here are some of the most visitor-friendly sites.

Chengjiang Fossil Site

Chengjiang County, China

The complex Cambrian marine creatures that lived here 530 million years ago appeared on the evolutionary scene relatively quickly, possibly due to a sudden rise in oxygen levels.

Miguasha National Park

Quebec, Canada

The onsite museum includes more than 10,000 fossils from the early Devonian Period (about 370 million years ago), including ancestors of the first air-breathing terrestrial vertebrates and one of the world's oldest flowering plants.

Monte San Giorgio

Lake Lugano, Switzerland

Today, this spot is a wooded lake-side mountain. But the Triassic fossils unearthed here (from about 245 million years ago) recall a time when the area was a tropical lagoon.

Ischigualasto Provincial Park

San Juan Province, Argentina

Some of the world's earliest dinosaur remains have been found here (dating back to the Triassic Period, about 230 million years ago). Individual access is limited, but tours allow visitors to see plenty of fossils.

Fossil Hominid Sites

Near Johannesburg, South Africa

The oldest hominid remains found in these limestone caves date back 3.3 million years, offering important clues about human evolution.

Point as a World Heritage site. The agency agreed to do so just last year, calling the fossils "a watershed in the history of life on earth."

Thomas, who is the jolliest pessimist I've ever met, tends to think life on earth is at another watershed, though this one is self-inflicted. "For me, it puts everything into perspective, how arrogant we are," he says, reflecting on these vanished life-forms. "We've been around for a blink of an eye. People say, Save the planet! Well, the planet will survive us. Earth will endure. Something will replace us. Some days I think, the sooner, the better!" He laughs.

Standing on the bedding plane, I feel the cold November damp seeping through the blue slippers, which Thomas later explains are called Bamas, a brand of insulating "boot socks" worn inside Wellingtons and beloved by sheep farmers everywhere. Scientists as well as tourists are required to wear them to minimize wear and tear on the fossils.

"Charniodiscus," Thomas says, crouching by a fossil about a foot long. It looks like a giant feather with a bulb at the tip of the quill. "That's the holdfast, attached to the seabed," he says of the disk. "This is the stem. And there's the frond." This signature Ediacaran creature would have swayed in the ocean currents like kelp. Its shape is so distinct, so well defined, that it clearly didn't die slowly and decompose. "It appears that something came and knocked it down," Thomas says.

The same goes for all the creatures here, victims of catastrophe half a billion years ago.

Charles Darwin, refining his theory of evolution in the 1860s, famously lamented the total lack of fossils older than those from the Cambrian Period. The "difficulty of assigning any good reason for the absence of vast piles of strata rich in fossils beneath the Cambrian system is very great," Darwin wrote with a sigh. To his critics, that absence was a fatal flaw in his theory: If evolution was gradual, where's the

evidence of complex creatures that lived before the Cambrian?

Answer: Mistaken Point.

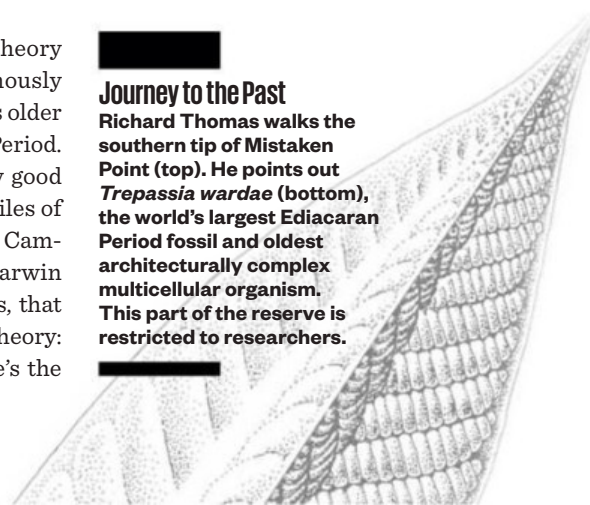
It's not the only site of its kind; a cluster of pre-Cambrian fossils found in 1946 in the Ediacara Hills of southern Australia would give this newly recognized geological period its name. But no Ediacaran Period fossils are more numerous, better preserved, bigger, more accessible or older than those at Mistaken Point, which were discovered 50 years ago this summer by a geology graduate student and his undergrad assistant, both at Memorial University in St. John's, Newfoundland. The surprise find was announced in the journal *Nature*, and scientists have been traipsing over the misty coastal barrens to these cliffs and ledges ever since.

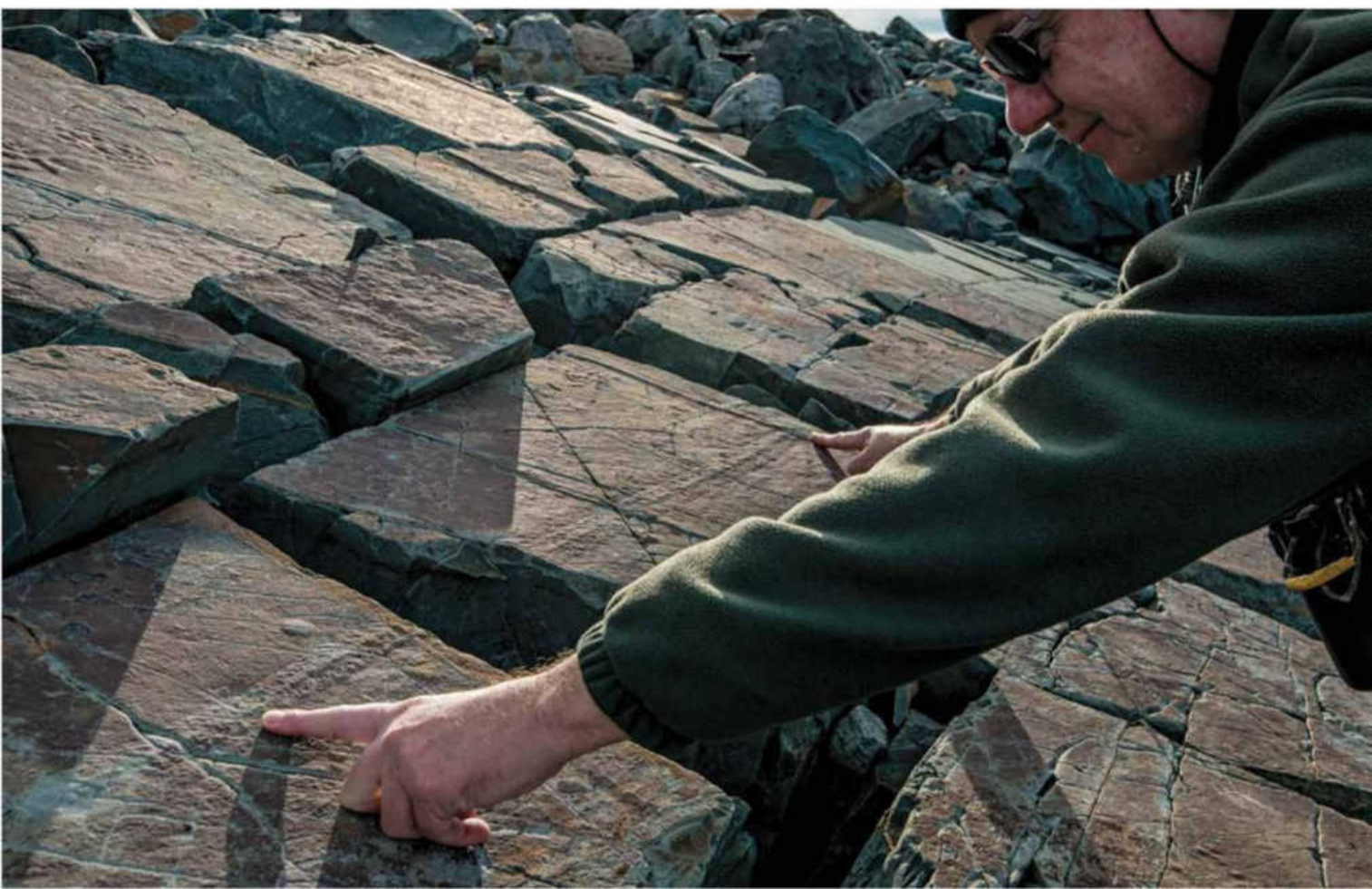
In part to safeguard the area from fossil thieves, the provincial government in 1987 designated a sliver of coast as the Mistaken Point Ecological Reserve, now 11 miles long. The fossils themselves are off-limits to the public except in two particular spots, called the D and E beds, and to visit you must be on a tour led by an official guide. Tours run from May to mid-October and depart from the Edge of Avalon Interpretive Centre in the tiny town of Portugal Cove South. Tourists drive down a gravel road several miles to a trailhead, then hike through wild heaths and over streams to the fossil beds.

Just as English literature has *Beowulf*, an important text that causes stupefying boredom in all but a few, geology has Pangea, the tedious theory of how all the continents once were

Journey to the Past

Richard Thomas walks the southern tip of Mistaken Point (top). He points out *Trepassia wardae* (bottom), the world's largest Ediacaran Period fossil and oldest architecturally complex multicellular organism. This part of the reserve is restricted to researchers.







Lasting Impressions

A detail of a *Fractofusus misrai* fossil (above). Several kinds of fossils (opposite) are covered by a large, intact layer of coarse volcanic ash. Ediacaran creatures grew in self-similar, modular patterns, allowing their simple structures to extend into larger forms.

joined together hundreds of millions of years ago in a great mass, and eventually drifted apart into the different puzzle pieces we know today. Maybe Pangea seems boring because of the way we first learn about it in junior-high science class, or maybe it's simply impossible to comprehend unless you're a geologist. But Pangea and the related concepts of plate tectonics explain how a seafloor near Brazil ended up as a clifftop in Newfoundland.

What's so amazing about Mistaken Point is that the ancient imponderable drama is still unfolding right on the bedding plane, and you can touch it. There are patches of charcoal- and rust-colored material, shaped like puddles but gritty and solid like mortar, that are about an eighth of an inch deep. This material once blanketed this clifftop, but as the stuff has worn away in places, the fossils have emerged—thousands so far. Geologists have identified this mortar-like layer as ash, and therein lies the clue.

These bottom dwellers, mostly sedentary and soft-bodied but in a wonderful profusion of primitive shapes, were suddenly buried in a deadly flood of debris spewing from nearby volcanoes—an “Ediacaran Pompeii,” one paleontologist called it. Guy Narbonne, a paleontologist at Queen's University in Kingston, Ontario, and a leading authority on the Ediacaran Period, be-

gan studying the Mistaken Point fossils in 1998. “The first time I saw it I was simply astonished,” he says. “The organisms were all killed catastrophically where they lived, preserving entire community surfaces. Looking at it now is like snorkeling over a 560 million-year sea bottom. Everything is exactly as it was. It's the one place in the world where you can actually see an Ediacaran sea bottom, and that's because of the ash.”

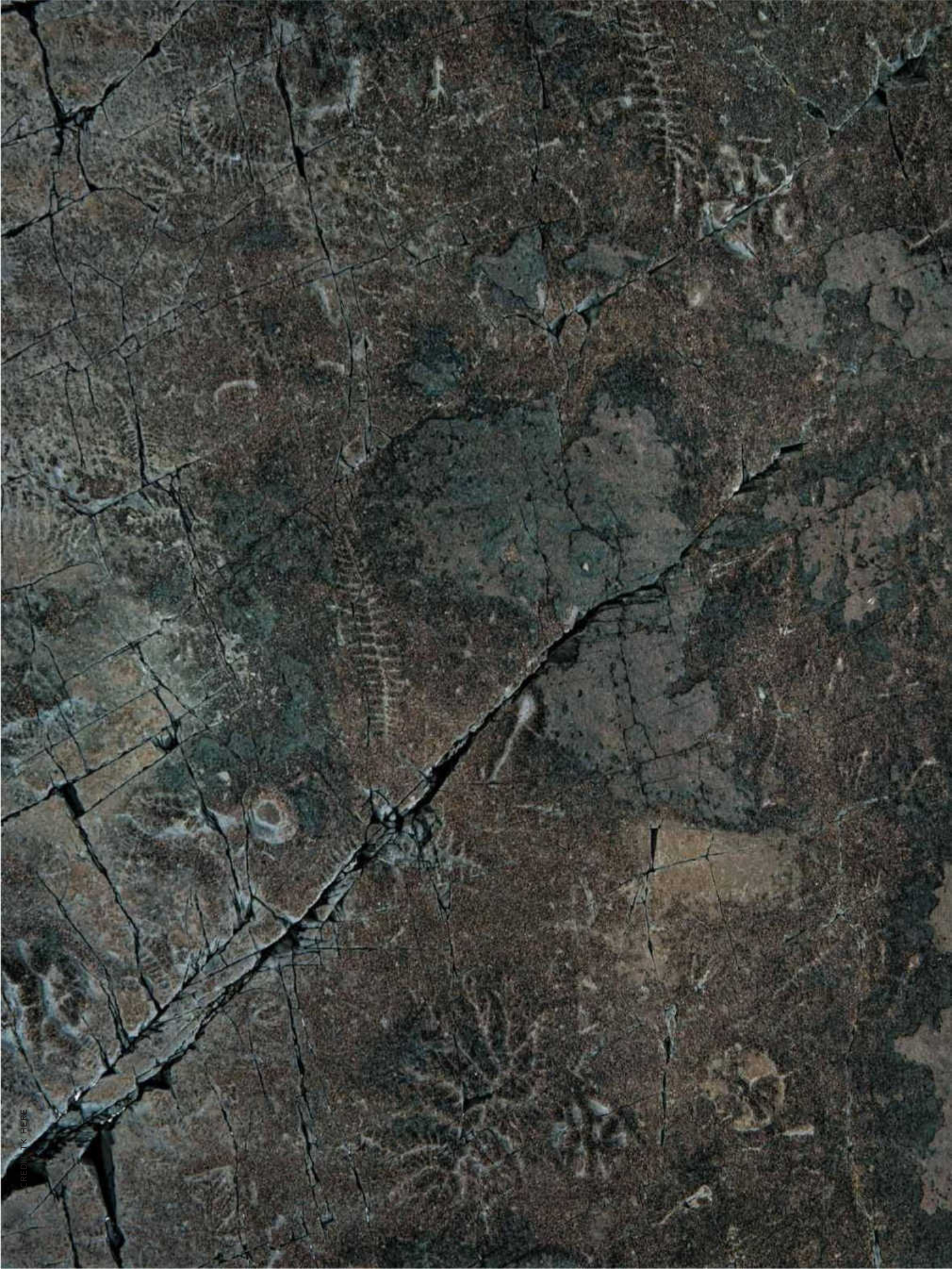
After Thomas and I doff our Bamas and don our boots, we hike back to the trailhead, then ride in the truck about a mile down the coast. He wants to point out an oddity that verges on the revolutionary. Outside the public viewing space, it was first documented by the Cambridge University paleobiologist Alexander Liu on one of his research trips here. The marking on the rock looks rather like a fat pencil, the fossil remains not of a creature but of its travels—what experts call a trace. The min-

ute waves and ridges most closely resemble those created by a sea anemone moving across a soft surface, as Liu and co-workers found when they brought sea anemones into their lab and analyzed the trails they leave in a sandy surface as they move across it at about one inch every few minutes. “This is the oldest, (fairly well-) accepted evidence of animal locomotion in the fossil record,” Liu says in an email, “the first evidence for movement by an organism with muscular tissue.” To nail down proof that animals were already at large in the Ediacaran is no small thing. “If they turn out to be animals,” Liu says, “they effectively demonstrate that the Cambrian Explosion was a much more drawn-out, transitional event than has been considered.”

Rumbling in the truck back to Thomas' office in the interpretive center—he's employed by the provincial government to monitor and protect the fossil sites—we see several small white birds in the dirt road up ahead. An avid birder, he stops the truck and grabs binoculars off the dashboard. “Snow buntings!” he says, and flashes a big, almost optimistic smile.

We live nowadays, of course, in a degraded world, not just environmentally but numerically. Billionaires are a dime a dozen. We're such data gluttons that the once stupendous gigabyte—a billion bytes!—is next to nothing. So how do you even begin to sense the immensity of life making its way half a billion years ago?

Fortunately there is the white-capped Atlantic in its primordial glory, the fog clinging to the vast, unpeopled rolling heath, the jagged rocks glazed with drizzle, the roaring wind and the crash of the churning green waves. Even the necessity to take off your shoes is a grateful act, reminiscent of sacred ritual. “Underfoot, petrified deep time rises in welts / to prod our soles, here and there / breaking into sudden bas-relief,” the Canadian poet Don McKay writes in his stirring ode “Mistaken Point.” If you listen to it you might get the other meaning of “soles.”



THE FIG AND THE WASP

In remote India, the biggest tree

canopy on the planet is a spectacular lesson in the vital coexistence of living things

The road to Thimmamma Marrimanu leads through one of the driest parts of India. I picked it up in a town called Kadiri and drove another hour through camelback mountains and peanut fields. Granite boulders covered the brown landscape like a crumble topping. Nature had been stingy with the flora—saving up, perhaps, so it could splurge on my destination. “Thimmamma Marrimanu is one of the superlative organisms of the planet,” a treetop biologist named Yoav Daniel Bar-Ness told me before I left.

Bar-Ness knows more about the magnitude of giant banyans than just about anyone. Between 2008 and 2010, while working on a project called Landmark Trees of India, he measured the canopies of the most enormous banyans in the country. Seven of them were broader than any other known trees

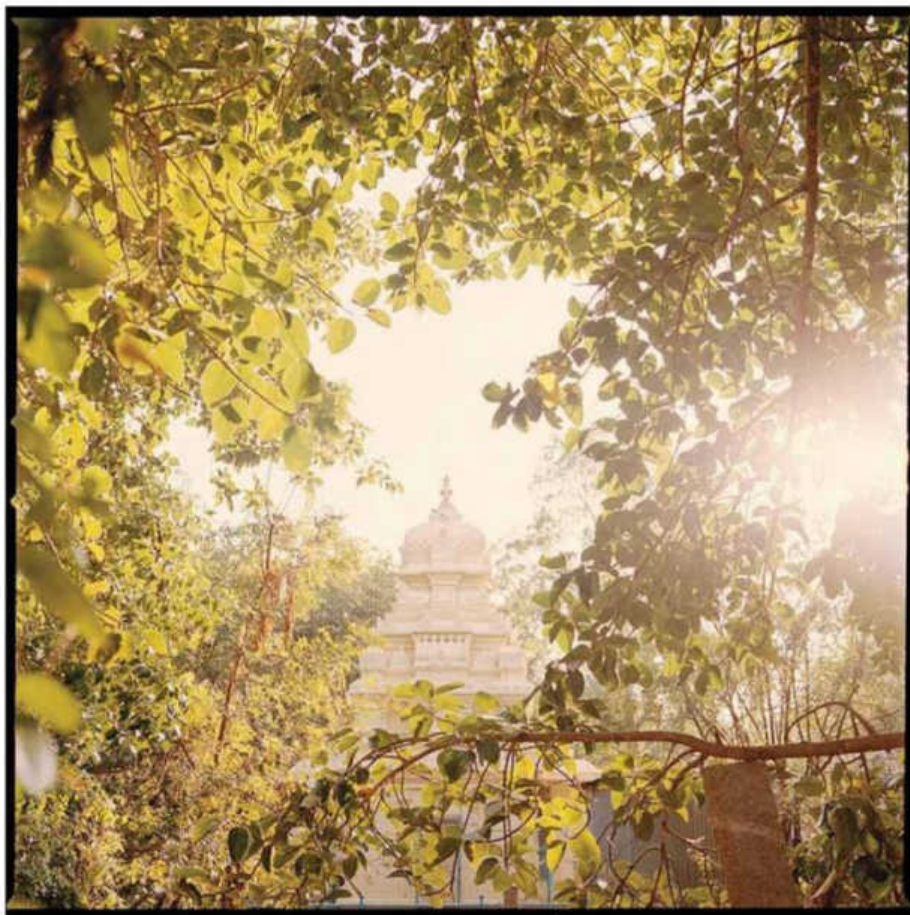
by
Ben
Crair

photographs
by Chiara Gola





The Caretaker
The government
worker Chandra
Rangani tends
to the health of
Thimmamma
Marrimanu.



Inner Sanctum

From left: A temple dedicated to the widow who threw herself on her husband's pyre; a selection of figs from Thimmamma Marrimanu; women listening to a lecture as monkeys crawl among them.

on earth. Thimmamma Marrimanu had the widest spread, with a canopy of nearly five acres. The tree is about 100 miles north of Bangalore, India's third-largest city, but there's no mention of it in the popular travel guides. There are no hotels nearby, just a basic guesthouse kept by the state tourism department in the tiny village around the tree. Its windows look out on the banyan, but an uninformed visitor might easily miss the tree for the forest: Thimmamma Marrimanu's roots and branches spread in every direction, appearing like a grove.

The banyan is a kind of strangler fig tree, and unlike most plants, which grow from the ground up, it thrives when it grows from the sky down. The seed catches in the branches of another tree and the young sprout dangles a braid of tender tendrils down to the forest floor. When that braid hits the soil, it takes root there, and the aboveground part thickens

and hardens. The banyan becomes its host's coffin: It winds around the original tree, growing branches that rob the host of sunlight. Its roots spread underground, depriving the host of nutrients and water. As the banyan grows, more "prop roots" descend from the branches to support the enormous canopy. Thimmamma Marrimanu is still expanding: It sits in an agricultural clearing, between two mountains in a patchwork of fields. That space has allowed it to keep growing until it looks like a forest unto itself. Over the years, Thimmamma Marrimanu has been damaged by cyclones, but it's still remarkably healthy at more than 550 years old.

Its life expectancy is helped by the fact that the banyan is the national tree of India. People are reluctant to chop them down. The roots of the banyan are associated with Brahma the creator, the trunk with Vishnu the main-





tainer and the leaves with Shiva the destroyer. In the Bhagavad Gita, one of Hinduism's most famous philosophical dialogues, an upside-down banyan is used as a metaphor for the material world. "Cut down this strong-rooted tree with the sharp ax of detachment," Lord Krishna counsels. Throughout the country, people tie ribbons to banyan branches and tuck religious idols in the alcoves between their roots

Thimmamma Marrimanu has a legend of its own: Hindus believe the tree grew from the spot where a widow named Thimmamma threw herself on her husband's funeral pyre in 1433. Because of her sacrifice, one of the poles supporting the pyre grew into a tree with mystical powers. Thimmamma Marrimanu is said to bless childless couples with fertility and curse anyone who removes its leaves. Even birds are said to revere the tree by not sleeping in its branches. The local forest department pays laborers to guide young

prop roots into bamboo poles filled with manure and soil; they place granite plinths beneath heavy branches for extra support; and they water the tree with underground pipes. These efforts help the tree's radius expand about half a foot per year.

It's common in India to find smaller

A brown wasp emerged. The wasp had lived its entire life inside that fig. It was no bigger than a sesame seed, but the giant banyan would not exist without the tiny bug.

banyan trees in temple courtyards, but Thimmamma Marrimanu is so large that it contains a temple at its core. Every day during my stay, I watched pilgrims remove their shoes and follow a soft dirt pathway to a small yellow pavilion where the funeral pyre is said to have burned. An old couple reached for a low-hanging branch and rubbed its leaves on their faces. They rang a bell and touched a statue of a bull, while a shirtless monk chanted and waved a flame before a black stone idol of Thimmamma. Irreverent red-faced monkeys fornicated on the temple roof and patrolled the tree's lower branches, while hundreds of flying foxes hung like over-ripe fruits in the canopy. There were also parrots, doves and beehives, as well as village dogs and lean reptilian chickens resting in the shade. Despite the animal abundance, Thimmamma Marrimanu was nowhere near capacity: The villagers said 20,000 people

LEAFY WONDERS

Thimmamma Marrimanu has the widest canopy on earth. Here are some of the world's other superlative trees.

Tallest: Hyperion

Redwood National Park, CA

At 379.1 feet tall, this coast redwood might have grown even taller had it not been for woodpecker damage near the top.

Stoutest: El Árbol del Tule

Oaxaca, Mexico

The trunk of this Montezuma cypress measures 148 feet around. It's located on the grounds of a church, and local children are often on hand to point out the shapes resembling various animals that can be found within its gnarled trunk.

Oldest Living: Methuselah

White Mountains, CA

This 4,765-year-old Great Basin bristlecone pine germinated during the Bronze Age. It's slightly younger than another of its species, discovered in 2013, but that 5,062-year-old tree remains unnamed, and its location has been kept secret.

Deepest roots: Echo Caves Fig

Ohrigstad, South Africa

This wild fig, situated just outside a limestone labyrinth near Kruger National Park, has roots that reach 400 feet underground.

Most Volume: General Sherman

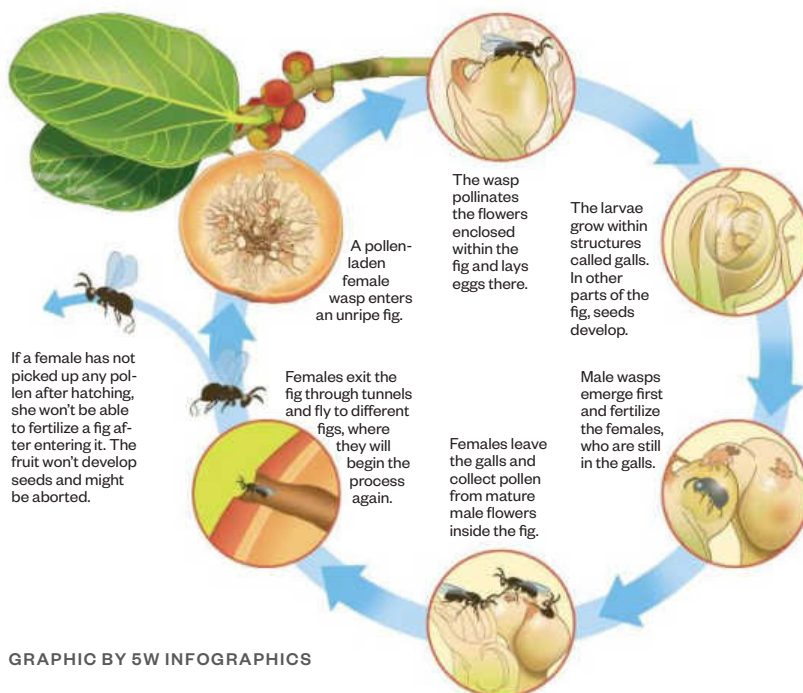
Sequoia National Park, CA

Named after the Civil War general, this giant sequoia was declared the world's largest tree in 1931. It still is, if you go by its wood mass: 52,500 cubic feet. It's also among the tallest, stoutest and oldest trees on earth.



Evolution's Odd Couple

How a small insect and an enormous plant work together to ensure their mutual survival



GRAPHIC BY 5W INFOGRAPHICS



could stand together under the canopy.

The tree's canopy encompassed the entire scene like a circus tent. Unlike the staid and perpendicular redwoods of California, the tallest trees on earth, Thimmamma Marrimanu is tied up in knots. Its nearly 4,000 prop roots create an impression not just of multiple trees but of multiple personalities. In some sections, there is something almost carnal in the way the roots and branches curl together. In others, there is torture in their twisting, as though they've been writhing over centuries. The tree's curves make its stillness seem unstable: If you watch it long enough, you feel you might just see it squirm.

On the northern edge of Thimmamma Marrimanu, I found a cluster of round red figs. The fig is one of the most popular foodstuffs in the forest, and squirrels and black birds were foraging for them in the branches. The an-

One Becomes Many

The banyan—with its numerous trunks and complex root system—has inspired many religious metaphors. In one scene in the Upanishads, a father compares the universe to an elaborate banyan that emerged from a single, tiny, hollow seed.

imal I sought, however, was in hiding. I picked a fig and split it with my finger. A brown wasp emerged, slightly stunned. The wasp had lived its entire life inside that fig. It was no bigger than a sesame seed, but the giant banyan would not exist without the tiny bug.

Evolution is usually represented as an orderly tree, but in reality its branches can become intertwined. Biologists call it "coevolution" when two species adapt to serve each other's needs, and "obligate mutualism" when they need each other to survive. It's

hard to find a better example than the fig plant and the fig wasp.

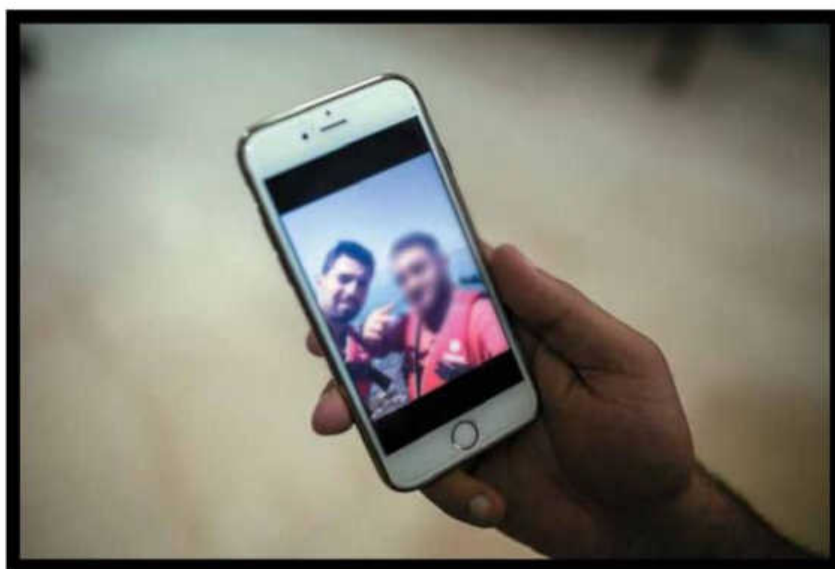
A fig is not actually a fruit but a geode of inward-looking flowers. While other plants' flowers offer up their pollen to all sorts of birds and bees, the fig sends out an aroma that attracts the female of its particular wasp species. The wasp then crawls through a tiny opening in the fig, where it lays its eggs and then dies.

Once those eggs hatch, and the larvae turn into wasps, they mate inside the fig and the females collect pollen from its internal flowers. The male wasps chew a tunnel to the fig's surface, and the females crawl through it, departing to lay their eggs in other fig plants of the same species. Then the cycle begins anew.

Any given species of fig plant would go extinct without its pollinator, and a fig wasp would also disappear without its favorite figs. While this seems like an extreme vulnerability, it is, in fact, an amazingly efficient system of pollination. It has made fig plants (*Ficus*) the most diverse plant genus in the tropics. There are more than 800 fig species, and most have one main species of fig wasp. (The banyan's fig wasp is called *Eupristina masoni*.) The faithful wasps can travel over great distances, bringing pollen from their birthplace to another tree far away. This allows fig trees to thrive in desolate places instead of clustering in forests. High above tropical forests, fig wasps are often the predominant form of insect life.

On my last day at Thimmamma Marrimanu, music woke me early. Sunbeams had lanced the darkness, and the flying foxes were returning to the tree to roost. I walked to the temple. Monkeys sat on the roof beside the speakers, while three workers swept the floor and brushed their teeth. It did not seem so important whether a funeral pyre once burned at this location or a banyan seed hatched in another tree. Thimmamma Marrimanu's biology and mythology shared themes of death, love and sacrifice. Under its giant canopy, faith and science have grown together. ○

A MODERN ODYSSEY



Fleeing violence in Iraq, two close friends embarked on an epic journey across Europe—and ended up worlds apart. *Smithsonian* documents the complex drama of Europe's refugee crisis

BY JOSHUA HAMMER

*Sing to me of the man, Muse, the man
of twists and turns, driven time
and time again off course*
Homer, *The Odyssey*, Book 1

T WAS JUST AFTER 11 O'CLOCK ON A STIFLING AUGUST NIGHT

when Salar Al Rishawi got the feeling that it might be his last. He and his best friend, Saif Al Khaleeli, had been in the back seat of a banged-up sedan barreling up a highway in Serbia. Iraqi refugees, they were on their way to the Hungarian border, and from there on to Austria. Salar had paid the driver and another smuggler, who was also in the car, \$1,500 from the wad of bills that he kept wrapped in plastic and hidden in his underwear; the rest of the \$3,300 fee would come later. Suddenly, the driver turned off the highway and parked in a deserted rest stop.

"*Policija*," he said, and then unleashed a stream of Serbo-Croatian that neither Iraqi could understand. Salar dialed Marco—the English-speaking middleman who had brokered the deal in Belgrade—and put him on the speakerphone.

"He thinks there is a police checkpoint on the highway," Marco translated. "He wants you to get out of the car with your bags, while he drives ahead and sees if it is safe to continue." The other smuggler, Marco said, would wait beside them.

Salar and Saif climbed out. The trunk opened. They pulled out their backpacks and placed them on the ground. Then the driver gunned his engine and peeled out, leaving Salar and Saif standing, stunned, in the dust.

"Stop, stop, stop!" Saif yelled, chasing after the car as it tore down the highway.

Saif kicked the ground in defeat and trudged back to the rest stop—a handful of picnic tables and trash cans in a clearing by the forest, bathed in the glow of a nearly full moon.

"Why the hell didn't you run after him?" Saif barked at Salar.

"Are you crazy?" Salar shot back. "How could I catch him?"

For several minutes they stood in the darkness, glaring at each other and considering their next move. Saif proposed heading toward Hungary and finding the border fence. "Let's finish this," he said. Salar, the more reflective of the two, argued they would be crazy to attempt it without a guide. The only possibility, he said, was to walk back to Subotica, a town ten miles south, slip discreetly onto a bus and return to Belgrade to restart the process. But Serbian police were notorious for robbing refugees, and the duo were easy prey for ordinary criminals as well—they would have to keep a low profile.

Guided only by phone GPS, Salar, left, and Saif crossed the Aegean. "I downloaded every possible map," says Salar.

Salar and Saif cut through the forest that paralleled the highway, tripping over roots in the darkness. Then the forest thinned out and they stumbled through cornfields, keeping their bearings by consulting their smartphones—crouching low and cradling the devices to block the glow. Twice they heard barking dogs, then hit the soft earth and lay hidden between rows of corn. They were hungry, thirsty and weary from lack of sleep. “We didn’t have papers, and if somebody had killed us, nobody would ever know what had happened to us,” Salar recalled to me. “We would just have disappeared.”

Salar (below, in Berlin) and Saif (right) maintain ties across distance. “We are not just friends,” says Saif, “but family.”

Salar and Saif—then in their late 20s, friends since their college days studying engineering in Baghdad, partners in a popular restaurant, each born into a blended Shia-Sunni family—were among the more than one million people who fled their homes and crossed either the Mediterranean or Aegean Sea into Europe in 2015 because of war, persecution or instability. That number was nearly double the number in any previous year. The exodus included nearly 700,000 Syrians, as well as hundreds of thousands more from other embattled lands such as Iraq, Eritrea, Mali, Afghanistan and Somalia. In 2016, the number of refugees traveling across the Aegean dropped dramatically, following the closure of the so-called Balkan Route, though hundreds of thousands continued to take the far longer, more perilous trip from North Africa across the Mediterranean to Italy. The U.N. High Commissioner for Refugees estimates that some 282,000 made the sea crossing to Europe during the first eight months of last year.

This modern-day Odyssey, a journey through a gantlet of perils that can rival those faced by the hero in Homer’s 2,700-year-old epic, has both aroused the world’s sympathy and created a political backlash. German Chancellor Angela Merkel earned global admiration in 2015 when she expanded her country’s admission of refugees,

taking in 890,000, about half of whom were Syrian. (The United States, by contrast, accepted fewer than 60,000 that year, only 1,693 of whom were Syrian.) The number admitted into Germany dropped to about one-third of that total in 2016.

At the same time, populist leaders in Europe, including France’s Marine Le Pen and Germany’s Frauke Petry, head of a surging nativist party called Alternative for Germany, have attracted large and vocal followings by exploiting fears of radical Islam and the “theft” of jobs by refugees. And in

cess of gaining asylum to finding work and a place to live. And then there’s the crushing weight of sorrow, guilt and fear about family members left behind.

As a result, a growing number of refugees have become returnees. In 2015, according to German Interior Minister Thomas de Maizière, 35,000 refugees returned voluntarily, and 55,000 repatriated themselves in 2016 (25,000 were forcibly deported). Out of some 76,674 Iraqis who arrived in Germany in 2015, some 5,777 had gone home by the end of November 2016. Eritreans, Afghanis and even some Syrians have also elected to head back into the maelstrom. And the pace is quicken-



the United States, President Donald Trump, just seven days after taking office in January, issued an initial executive order halting all refugee admissions—he singled out Syrians as “detrimental to the interests of the United States”—temporarily barring citizens from seven Muslim-majority countries. The order provoked a national uproar and set off a confrontation between the executive and judicial branches of the U.S. government.

While hostility toward outsiders appears to be on the rise in many nations, the historic masses of refugees themselves face the often overwhelming challenges of settling into new societies, from the daunting bureaucratic pro-

ing. In February, partly as a means of reducing a glut of asylum applications, the German government began offering migrants up to €1,200 (\$1,300) to voluntarily return home.

That agonizing quandary—stay in a new land despite the alienation, or go back home despite the danger—is one that Salar and Saif faced together at the end of their long journey to Western Europe. The two Iraqi refugees always had so much in common they seemed inseparable, but the great upheaval that is reshaping the Middle East, Europe and even the United States would cause these two close friends to make different choices and end up worlds apart.

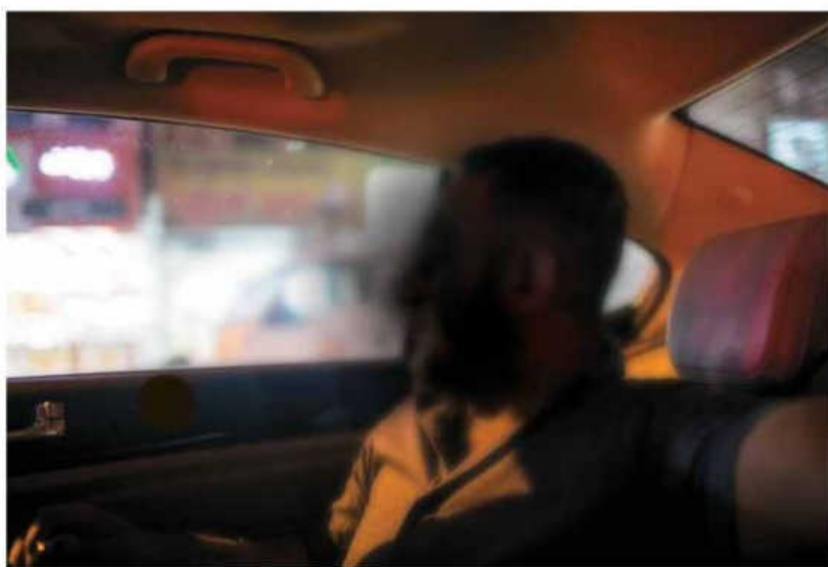
*For a friend with an
understanding heart
is worth no less than a brother*

Book 8

Salar Al Rishawi and Saif Al Khaleeli—their last names altered at their request—grew up five miles apart on the western side of Baghdad, both in middle-class, mixed neighborhoods where Shias and Sunnis, the two main denominations of Islam, lived together in relative harmony and frequently intermarried. Saif's father practiced law and, like nearly all professionals in Iraq, became a member of the Ba'ath Party, the secular, pan-Arabist movement

1995 he quit and opened a streetside stall that sold grilled lamb sandwiches. It was a comedown, but he earned more than he had as an aeronautical engineer.

In grade school, the stultifying rituals and conformity of Saddam's dictatorship defined the boys' lives. The Ba'athist regime organized regular demonstrations against Israel and America, and teachers forced students en masse to board buses and trucks and attend the protests. "They put us on the trucks like animals, and we couldn't escape," Salar said. "All the people [at the rallies] were cheering for Saddam, cheering for Palestine, and they didn't tell you why."



that dominated Iraq during Saddam Hussein's dictatorship (and was later excluded from public life). Salar's father studied aeronautical engineering in Poland in the 1970s, and returned home to provide technical support to agricultural ministry teams fertilizing fields from helicopters. "He carried out inspections, and flew with the pilots in case something went wrong in the air," remembers Salar, who joined him on half a dozen trips, swooping at 150 miles an hour over Baghdad and Anbar Province, thrilling to the sensation of flight. But after the first Gulf War in 1991, United Nations-imposed sanctions wrecked Iraq's economy, and Salar's father's income was slashed; in

In 2003, the U.S. invaded Iraq. Watching American troops in Baghdad's streets, Salar thought of the Hollywood action movies his father had taken him to as a child. "At first I thought, 'It is good to get rid of Saddam,'" he recalls. "It was like we were all asleep under him. And then somebody came and said, 'Wake up, go out.'"

But in the power vacuum that followed Saddam's fall, freedom gave way to violence. A Sunni insurgency attacked U.S. troops and killed thousands of Shias with car bombs. Shia militias rose up, seeking revenge. "Many Ba'athists were killed by Shia insurgents, so [my father] was too terrified to go out of the house," Saif

says. Salar recalls walking to school one morning and seeing "a pile of dead people. Someone had shot them all."

After Salar finished high school in 2006, an uncle helped him obtain an administrative job with Kellogg, Brown and Root, the U.S. military contractor, in the Green Zone—the four-square-mile fortified area that contained the U.S. Embassy and the Iraqi Parliament and presidential palace. Salar was a prized hire because of his English proficiency; his father had studied the language in Poland, two aunts were English teachers, and Salar had excelled in high-school English class, where he read American short stories and Shakespeare. But three months into the job—coordinating the Iraqi staff on building projects—militiamen from the Mahdi Army, the anti-U.S. Shia militia, led by Moktada al-Sadr, sent him a frightening message. Determined to chase out the American occupiers and restore Iraqi sovereignty, they warned Salar to quit the job—or else. Dejected, he sent in his notice immediately.

Saif went to work for an Iraqi building contractor, supervising construction projects. Early one morning, at the height of the sectarian violence, he and six workmen showed up to paint a house in the town of Abu Ghraib, a Sunni stronghold next to the infamous prison where U.S. soldiers had tortured suspected insurgents. The homeowner, an imam at a local mosque, invited them in and served them a meal. When one painter blurted out a Shia invocation—"Ya Hussain"—before sitting down to eat, the imam froze. "Did you bring a Shia to my house?" he demanded of Saif. Saif recognized the danger. "[Radical Sunnis] believe that the Shia are infidels and apostates, deserving death. The preacher said, 'Nobody will leave this house today,'" he recalls. The imam summoned several armed fighters. "I was begging him, 'Hajj, this is not true, he is not a Shia,'" Saif says. Then the men turned on Saif, demanding the name of his father's Sunni tribe. "I was scared and confused and I forgot what my tribal name was. I even forgot my father's name," he recalls. After beat-

ing Saif and the others and holding them for hours, the insurgents allowed six to leave—but detained the Shia. Saif says that they killed him a short time later.

Salar and Saif survived three bloody years of the U.S. occupation and the insurgency, and began to concentrate on building their careers. Fondly remembering his experience flying with his father, Salar applied to a training school for Iraqi pilots, run by the U.S. Air Force in Italy. He studied for the written exam for months, passed it—but failed the physical because of a deviated septum. He pressed on, studying computer science at Dijlah University College in Baghdad.

One day a rival for a young woman's affections confronted Salar in the hallway with a group of friends, and began to taunt him. Saif noticed the commotion. "The guy was telling Salar, 'I'll put you in the trunk of the car,'" he recalls. "There were five boys against Salar, who was alone. He looked like a peaceful, humble guy." Saif intervened, calming the other students. "That's how the friendship started," Saif says.

Salar and Saif discovered an easy affinity and soon became inseparable. "We talked about everything—computers, sports, friends, our future," Salar says. "We ate together, barbecued together and drank tea together." They took extra computer hardware courses together at a Mansour night school, played pickup soccer in public parks, shot billiards at a local pool hall, watched American TV series and movies like *Beauty and the Beast* together on their laptops, and came to know each other's families. "We really became like brothers," Saif says. And they talked about girls. Good-looking and outgoing, both were popular with the opposite sex, though Iraq's conservative mores required them to be discreet. As the violence ebbed, they would sometimes spend weekend evenings sitting in cafés, smoking *shishas* (water pipes), listening to Arabic pop music and enjoying the sense that the horrors that had befallen their country were easing.

Salar, in his Berlin apartment, hopes for permanent residency. "I start from zero here. I want this life."

Salar and Saif graduated from college in 2010, but they quickly discovered that their engineering degrees had little value in Iraq's war-stunted economy. Saif drove taxis in Baghdad and then worked as a tailor in Damascus, Syria. Salar barbecued lamb at his father's stand for a while. "I was living with my parents, and thinking, 'all my study, all my life in college, for nothing. I will forget everything I learned in four years,'" Salar says.

Then, at last, things began to break in their favor. A French company that had a contract to clear imports for Iraq's Customs Department hired Salar as a field manager. He spent two or three weeks at a time living in a trailer on Iraq's borders with Syria, Jordan and Iran, inspecting trucks that carried Coca-Cola, Nescafé and other goods into the country.

Saif landed an administrative job with the Baghdad Governorate, overseeing construction of public schools, hospitals and other projects. Saif had the authority to approve payments on building contracts, single-handedly disbursing six-figure sums. In addition, Saif took his savings and invested in a restaurant, bringing in Salar and another friend as minority partners. The threesome leased a modest two-story establishment in Zawra Park, an expanse of green near Mansour that contains gardens, a playground, waterfalls, artificial rivers, cafeterias and an expansive zoo. The restaurant had a seating capacity of about 75, and it was full almost every evening: Families flocked there for pizzas and hamburgers, while young men gathered on the rooftop terrace to smoke shishas and drink tea. "It was a good time for us," said Salar, who helped manage the restaurant during sojourns in Baghdad.

Then, in 2014, Sunni militias in Anbar Province rose up against the Shia-dominated Iraqi government and formed an alliance with the Islamic State, giving the jihadists a foothold in Iraq. They soon advanced across the country, seizing Mosul and threatening Baghdad. Shia militias coalesced to



stop the jihadist advance. Almost overnight, Iraq was thrust back into a violent sectarian atmosphere. Sunnis and Shias again looked at each other with suspicion. Sunnis could be stopped on the street, challenged, and even killed by Shias, and vice versa.

For two young men just out of college trying to build normal lives, it was a frightening turn of events. One night, as Salar drove back to Baghdad through Anbar Province from his job on the



Syrian border, masked Sunni tribesmen at a roadblock questioned him at gunpoint. They ordered Salar out of the vehicle, inspected his documents, and warned him not to work for a company with government connections. Months later came an even more frightening incident: Four men grabbed Salar off the street near his family's home in Mansour, threw him into the back seat of a car, blindfolded him and took him to a safe house. The men—from Shia mi-

litias—demanded to know what Salar was really up to along the Syrian border. "They tied me up, they hit me," he says. After two days they let him go, but warned him never to travel to the border again. He was forced to quit his job.

The Shia militias, having rescued Baghdad, were becoming a law unto themselves. In 2014, at the Baghdad Governorate, a supervisor demanded that Saif authorize a payment for a school being built by a contractor with

ties to one of the most violent Shia groups. The contractor had barely broken ground, yet he wanted Saif to certify that he had finished 60 percent of the work—and was entitled to \$800,000. Saif refused. "I grew up in a family that didn't cheat. I would be held responsible for this," he explained. After ignoring repeated demands, Saif left the documents on his desk and walked out for good.

The militia didn't take the refusal lightly. "The day after I quit, my mother

United States of Refugees

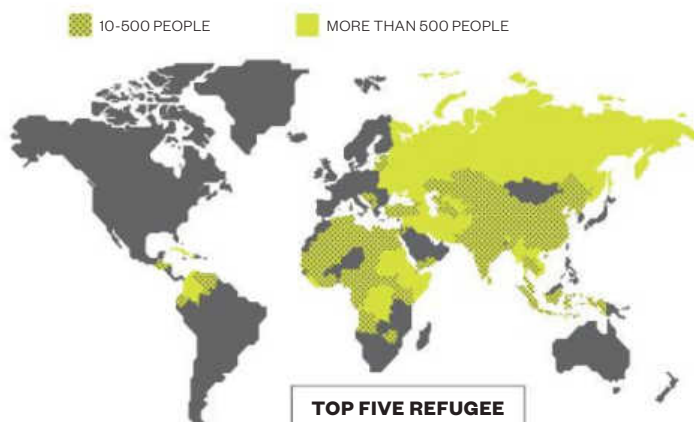
President Trump's order temporarily barring all refugees and many immigrants has ignited debate about U.S. policies toward outsiders. Here, a breakdown of refugees to America over 15 years

MAP AND GRAPHICS BY HAISAM HUSSEIN

THE UNITED STATES HAS LONG BEEN THE global leader in resettling refugees, strictly defined as people forced to flee their home country to escape war, persecution or violence. Since October 2001, more than 895,000 refugees have settled here, typically after being referred by the United Nations and vetted by the State Department in a process that takes at least 18 months. (By comparison, a million or so legal immigrants arrive annually.)

As you can see from the map at right, refugees to the United States have come mostly from the Middle East, Asia and Africa. While many immigrants, legal and undocumented, come from Latin America, U.S. regulations make it difficult for Central and South Americans to qualify as refugees.

Where They're From (October 2001 through 2016)

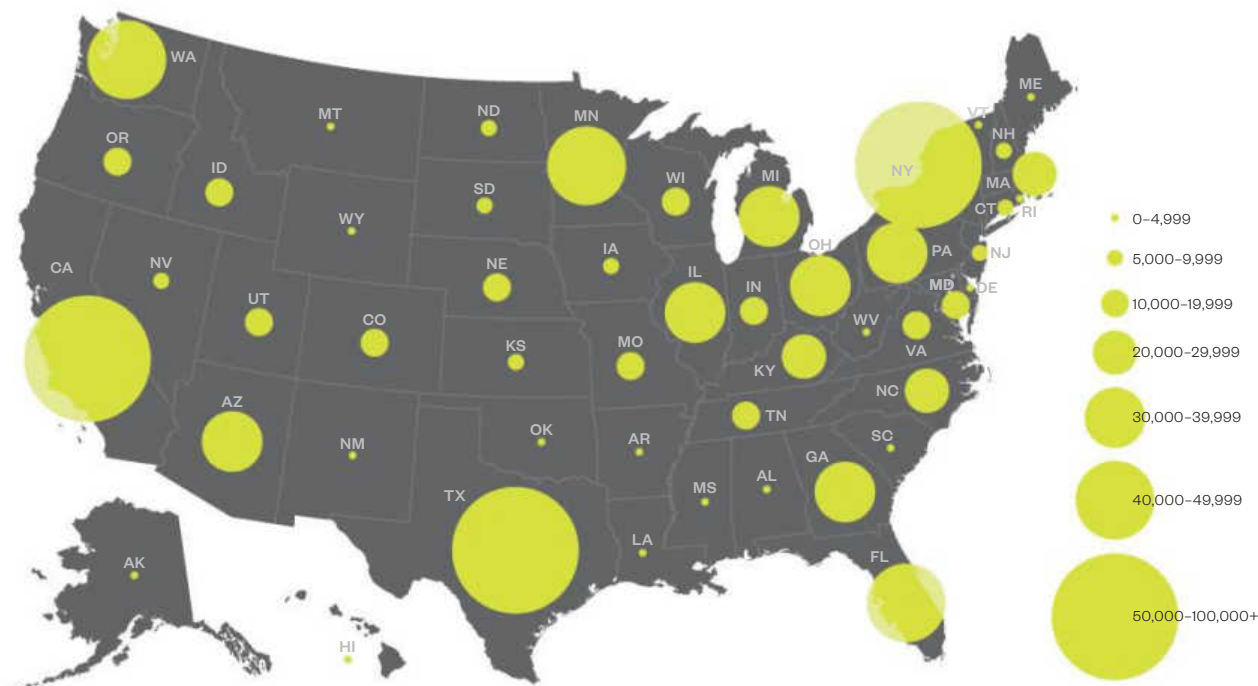


TOP FIVE REFUGEE NATIONALITIES

BURMA
IRAQ
SOMALIA
BHUTAN
IRAN

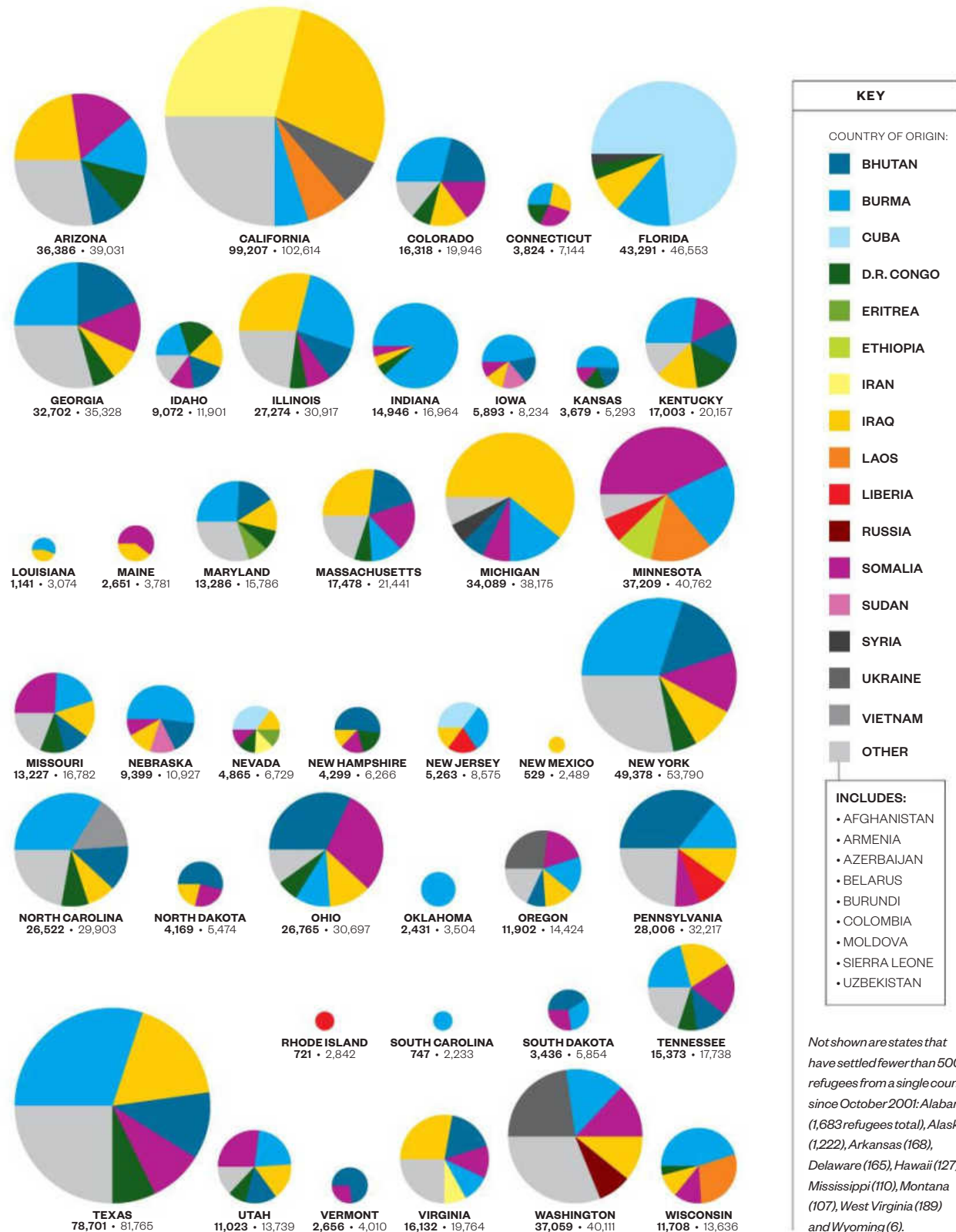
Where They End Up

Since October 2001, the most populous states have resettled the most refugees (below), but some states have accommodated more than might be expected, while others have taken in fewer.



Somalia to Minnesota. Burma to Indiana. Settling in the States

These pie charts compare refugee populations resettled in 41 states since October 2001. For clarity, the breakdown in each state is limited to nationalities with at least 500 people, and no more than the top 5 nationalities are shown. Below each state name is the number of refugees, in bold, reflected in the pie chart; it's followed by the total number of refugees.



called me and said, 'Where are you?' I said, 'I'm in the restaurant, what's up?'" Two black SUVs had pulled up outside the house, she told him, and men had demanded to know, "Where is Saif?"

Saif moved in with a friend; gunmen cruised past his family's house and riddled the top floor with bullets. His mother, father and siblings were forced to take refuge at Saif's uncle's home in Mansour. Militiamen began searching for Saif at the restaurant in Zawra Park. Unhappy about the thugs who came by searching for Saif—and convinced that he could make more money from other renters—the building's owner evicted the partners. "I started thinking, 'I have to get out of here,'" Saif says.

Salar, too, had grown weary: the horror of ISIS, the thuggery of the militias, and the waste of his engineering degree. Every day scores of young Iraqi men, even entire families, were fleeing the country. Salar's younger brother had escaped in 2013, spent months in a Turkish refugee camp, and sought political asylum in Denmark (where he remained unemployed and in limbo).

Both men had relatives in Germany, but worried that with so many Syrians and others heading there, their prospects would be limited.

The most logical destination, they told each other as they passed a water pipe back and forth at a café one evening, was Finland—a prosperous country with a large Iraqi community and plenty of IT jobs. "My mother was afraid. She told me, 'Your brother left, and what did he find? Nothing.' My father thought I should go," Salar says. Saif's parents were less divided, believing the assassins would find him. "My parents said, 'Don't stay in Iraq, find a new place.'"

In August, Saif and Salar paid an Iraqi travel agency \$600 apiece for Turkish visas and plane tickets to Istanbul, and stuffed a few changes of clothes into their backpacks. They also carried Iraqi passports and their Samsung smartphones. Salar had saved \$8,000 for the journey. He divided the cash, in hundreds, into three plastic bags, placing one packet in his underpants, and two in his backpack.

Salar also gathered his vital docu-

ments—his high-school and college diplomas, a certificate from the Ministry of Engineering—and entrusted them to his mother. "Send this when I need them. I will tell you when," he told her.

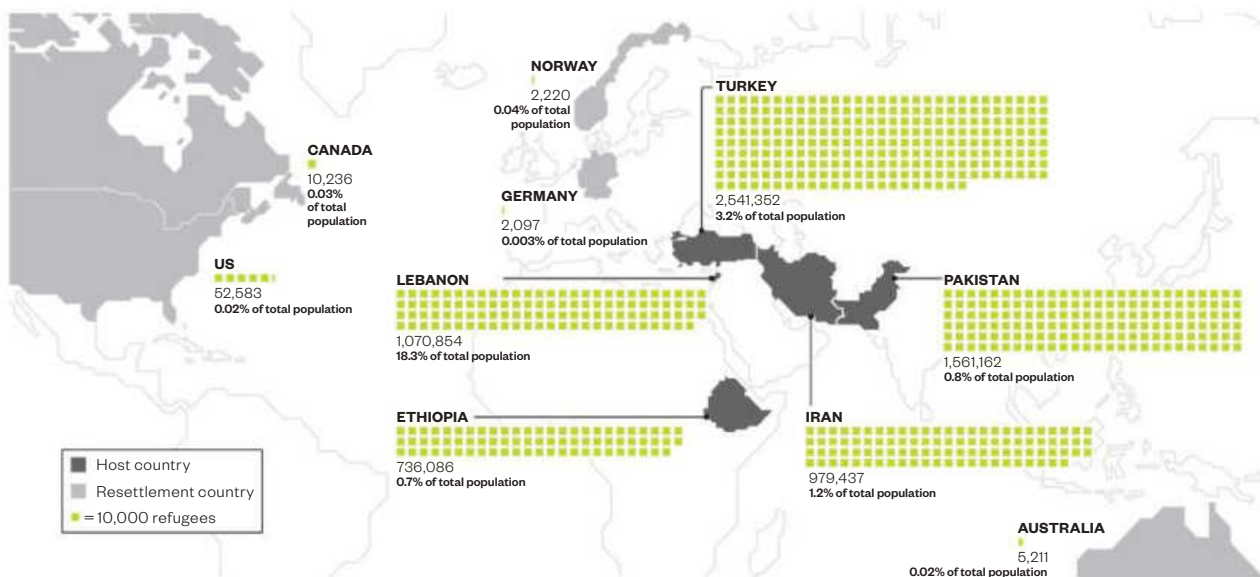
Not far away, Saif was planning his exit. Saif had just \$2,000. He had spent almost everything he had investing in the restaurant and supporting his family; he promised to repay Salar when they got established in Europe. "I was living at my friend's house, in hiding, and Salar came to me, and I had packed a small bag," he says. "We went to my uncle's house, saw my father, my mother and my sisters, and said farewell." Later that morning, August 14, 2015, they took a taxi to Baghdad International Airport, hauling their baggage past three security checkpoints and bomb-sniffing dogs. By noon, they were in the air, bound for Istanbul.

For a man who has been through bitter experiences and traveled far can enjoy even his sufferings after a time

Book 15

Nations That Take Refugees

Refugees typically end up in a nearby **host country**, which provides a haven for an indefinite time but not citizenship. Less than 1% of all refugees are ever permanently **resettled**. Below, the five leading host and resettlement nations in 2015



Istanbul in the summer of 2015 was crowded with refugees from across the Middle East, South Asia and Africa, lured to this city on the Bosphorus because it served as a jumping off point to the Aegean Sea and the “Balkan Route” into Western Europe. After spending two nights in an apartment with one of Saif’s relatives, Salar and Saif found their way to a park in the city center, where Iraqi and Syrian refugees gathered to exchange information.

They led the pair to a restaurant whose owner had a side business organizing illegal boat trips across the

longer?” demanded Salar, who was one of the few people in the basement who could converse with the Afghan. “Soon,” the man replied. The Afghan went out and returned with thick slices of bread and cans of chickpeas, which the famished refugees quickly devoured.

Finally, after another day and night of waiting, Saif and Salar, with other Iraqi refugees, decided to act. They backed the Afghan into a corner, pinned his arms behind his back, seized his keys, opened the door and led everybody outside. They marched back to the restaurant, found the owner—and demanded he put them on a boat.

That night a smuggler packed Salar and Saif into a van with 15 others. “All the people were squeezed into this van, one on top of the other,” Salar remembers. “I was sitting between the door and the seats, one leg down, my other leg up. And nobody could change positions.” They reached the Aegean coast just at dawn. The Mytilene Strait lay directly in

front of them, a narrow, wine-dark sea that divided Turkey from Lesbos, the mountainous Greek island sacked by Achilles during the Trojan War. Now it served as a gateway for hundreds of thousands of refugees lured by the siren song of Western Europe.

In good weather, the crossing typically took just 90 minutes, but the graveyards of Lesbos are filled with the bodies of unidentified refugees whose vessels had capsized en route.

Four hundred refugees had gathered on the beach. Smugglers quickly pulled seven inflatable rubber dinghies out of boxes and pumped them full of air, clamped on outboard motors, distributed life jackets, and herded people aboard. The passengers received brief instruction—how to start the motor, how to steer—then set out by themselves. One overloaded vessel sank immediately. (Everyone survived.)

Salar and Saif, too late to secure a place, dove into the water and forced their way aboard the fourth boat filled with about 40 members of an Iranian family. “The weather was foggy. The sea was rough,” Saif remembers. “Everybody was holding hands. Nobody said a word.” They had decided that they would try to pass themselves off as Syrians when they landed in Greece, reasoning that they would arouse more sympathy from European authorities. The two friends tore up their Iraqi passports and threw the shreds into the sea.

The island appeared out of the fog, a few hundred yards away. One refugee turned off the engine and told everyone to jump off and wade ashore. Saif and Salar grabbed their packs and plunged into the knee-deep water. They crawled up on the beach. “Salar and I hugged each other and said ‘*Hamdullah al Salama*.’” [Thanks to God.] Then, together, the refugees destroyed the dinghy, so that, Salar explained, it couldn’t be used by Greek authorities to send them back to Turkey.

They trekked 11 hours through a wooded country with mountains wrapped in mist. The scorching August sun beat down on them. At last they reached a refugee camp in the capital, Mytilene. The Greeks registered them and herded them onward. They caught a midnight ferry to Kavala on the mainland, and traveled by bus and taxi to the border of Macedonia.

Just the day before, Macedonian security forces had used shields and truncheons to beat back hundreds of refugees, and then strung barbed wire across the border. As news reporters descended on the scene, the authorities capitulated. They removed the wire, allowing thousands more—including Salar and Saif—to cross from Greece into Macedonia. A Red Cross team conducted medical checks, and passed out chicken sandwiches, juice and apples to the grateful and weary throng.

The next day, after trekking the countryside, then taking an overnight train and a bus, they reached Belgrade in Serbia. A student rented them a room and introduced them to Marco,

WHEN HE DIDN'T RETURN AFTER TEN MINUTES, SHE HAD GONE OUTSIDE— AND FOUND HIM LYING IN FRONT OF THE HOUSE IN A POOL OF BLOOD.

Aegean. He took \$3,000 from Salar to secure two places—then handed them off to an Afghan colleague. The man led them down a flight of steps and unlocked a basement door. “You will wait in here just a little while,” he assured Salar in Kurdish. (Salar had learned the language from his mother, a Kurdish Shia.) “Soon we will take you by car to the departure point.”

Salar and Saif found themselves sitting amid 38 other refugees from all over the world—Iran, Syria, Mali, Somalia, Eritrea, Iraq—in a Cyclopean cellar wrapped in near-total darkness. The single light bulb was broken; a trickle of daylight pierced a window. The hours passed. No food appeared. The toilet began to stink. Soon they were gasping for air and bathed in sweat.

For a day and a night the refugees languished in the basement, pacing, crying, cursing, begging for help. “How much

the Serb with contacts in the smugglers' world.

After the smugglers abandoned them at the rest stop, the two friends stumbled to Subotica, then made their way by bus two hours back to Belgrade. At Marco's place, Salar, a pacifist with a strong aversion to violence, tried to assume a threatening posture and demanded that Marco refund their money. "If you don't, I will burn your apartment and I will sit and watch," he warned.

Marco repaid them and introduced them to a Tunisian guide who took \$2,600 and dropped them on a forest trail near the Hungarian border. They opened the fence at night with wire cutters, scrambled through, and paid \$1,000 for a ride through Hungary, and another \$800 for a ride through Austria. The police finally caught them during a sweep through a train heading north through Germany. Ordered off in Munich along with dozens of other refugees, they were herded onto a bus to a holding center in a public gymnasium. German authorities digitally scanned their fingerprints and interviewed them about their backgrounds.

Only days earlier, Chancellor Merkel had eased restrictions on refugees trying to enter Germany. "*Wir schaffen das*," she had proclaimed at a press conference—"We can do it"—a rallying cry that, initially at least, most German citizens greeted with enthusiasm. Abandoning the notion of reaching Finland, Salar begged a friendly German official to dispatch them to Hamburg, where an aunt lived. "Hamburg has filled its quota," the official said. Salar's second choice was Berlin. She could do that, she said, and handed them documents and train tickets. A van transported them to Munich's central station for the six-hour journey to the German capital. They had been on the road for 23 days.

Nobody is my name

Book 9

Before midnight on Saturday, September 5, 2015, the two young Iraqis dis-

Tragedy struck Saif's family back in Iraq. "I feel in danger wherever I go," he says.

embarked from the Inter-city Express train at Berlin Hauptbahnhof, the capital's central station, a ten-year-old architectural marvel with an intricately filigreed glass roof and a glass tunnel that connects four gleaming towers. The Iraqis stared in wonder at the airy, transparent structure. With no idea where to go or what to do, they asked a police officer on the platform for help, but he shrugged and suggested they look for a hotel. At that moment, two German volunteers for a refugee aid agency, both young women, approached the two Iraqis.

"You guys look lost. Can we help you?" one asked in English. Relieved, Salar explained the situation. The volunteers, Anne Langhorst and Mina Rafsanjani, invited the Iraqis to spend the weekend in the guest room of Mina's apartment in Moabit, a gentrifying neighborhood in northwestern Berlin, a 20-minute subway ride from the central station. It was just a short walk, they said, to the Landesamt für Gesundheit und Soziales, or LaGeSo (State Bureau for Health and Social Services)—the Berlin agency responsible for registering and taking care of refugees. Anne, a graduate student in foreign affairs in Berlin and the daughter of physicians from a town near Düsseldorf, promised to take them there on Monday, as soon as the agency opened.

Three days later, Saif and Salar found a mob standing in front of LaGeSo headquarters, a large concrete complex across the street from a park. The staff was overwhelmed, struggling to cope with the flood of humanity pouring in after Merkel lifted restrictions on refugees. The two Iraqis managed to push their way inside the building after an hour, were issued numbers and were ushered into a waiting area in the inner courtyard.

Hundreds of refugees from all over the world packed the grassy space. All had their eyes glued to a 42-inch screen that flashed three-digit numbers every two minutes. The numbers didn't flow



in sequence, so the refugees had to keep watching, trading off with friends for bathroom breaks and food runs.

For 16 days, Salar and Saif held vigil in the courtyard from 7 a.m. to 7 p.m., returning to Mina's house for the night. Then, on the afternoon of day 17, as Salar was dozing, Saif nudged him awake. "Salar, Salar," he shouted. "Your number!" Salar leapt up, raced inside the building, and emerged triumphantly with his registration doc-



ument. He sat with Saif until his number came up—seven days later.

Salar and Saif found Berlin to be a congenial city, filled with all the things that Baghdad sorely lacked—verdant parks, handsome public spaces, an expansive and efficient public transit system, and above all, a sense of security. But even after making it past this critical step at LaGeSo, they faced new obstacles, new frustrations. The initial government subsidy—€560 for

the first three months—was barely enough to survive. German language classes in Berlin were already filled. They shuttled by streetcars and subways from hostel to hostel, only to find that managers wouldn't rent rooms to refugees because LaGeSo took so long to pay the bill. (Luckily, Mina had told them to stay in her apartment as long as necessary.) Salar and Saif longed to work, but the temporary registration prohibited them from holding a job.

To fill their days, Salar and Saif played soccer with other refugees in parks around the city.

Salar's English proved to be invaluable in Berlin, where nearly every educated person under 50 is at least conversant in the language. Saif, who was unable to speak any English, felt increasingly isolated, lost and dependent on his friend. Sometimes, waiting in line at LaGeSo for his monthly hand-out, or a voucher for a doctor's appoint-

ment, Saif even began to talk in frustration about returning to Baghdad.

Salar begged him to be patient, reminding him why he had fled in the first place. “From day one, Salar said to me, ‘I will only go back to Iraq when I’m dead,’” says Anne, drawing a contrast between the two men’s psychological states. Saif “wasn’t prepared. He went into the whole thing as a big adventure. And then the language difficulty [and] the humiliation of standing in line for money and other assistance wore him down.” Anne recalls how “he would force himself to say ‘I will learn German, I will find a job,’ and then he would lose his resolve. Saif’s mother called Salar once and said, ‘I can’t stand it anymore, he needs to make a decision.’” For his part, Saif insists that he was well-prepared for setbacks. “I knew that I was going to Germany not as a tourist,” he says. “I knew you had to be patient, you had to wait. My uncle in Germany had already warned me that it would take a long time.”

Just before New Year 2016, Salar and Saif received one-year German registration cards, giving them permis-

sion to travel within Germany, raising their stipend to €364 a month, and providing them with a bank account, medical insurance and permission to seek employment. They were slowly gaining more independence: Salar finally found them a double room in a hostel in Prenzlauer Berg, an affluent neighborhood in eastern Berlin. They started twice-weekly German classes with a volunteer teacher. And Salar’s job prospects in particular were looking good: First he landed an internship with a Berlin software company. Then Siemens, the electronics giant, interviewed him for a job developing a website to guide refugees to job opportunities, and invited him back for a second round.

By a stroke of bad luck, Salar took a hard fall playing soccer, and fractured his leg days before the second interview. Forced to cancel the appointment, he didn’t get the position, but he had come close, and it boosted his self-confidence. And his friendship with Anne provided him with emotional support.

Saif, meanwhile, kept getting dragged back, psychologically, to Iraq. Twice-daily Skype calls to his family

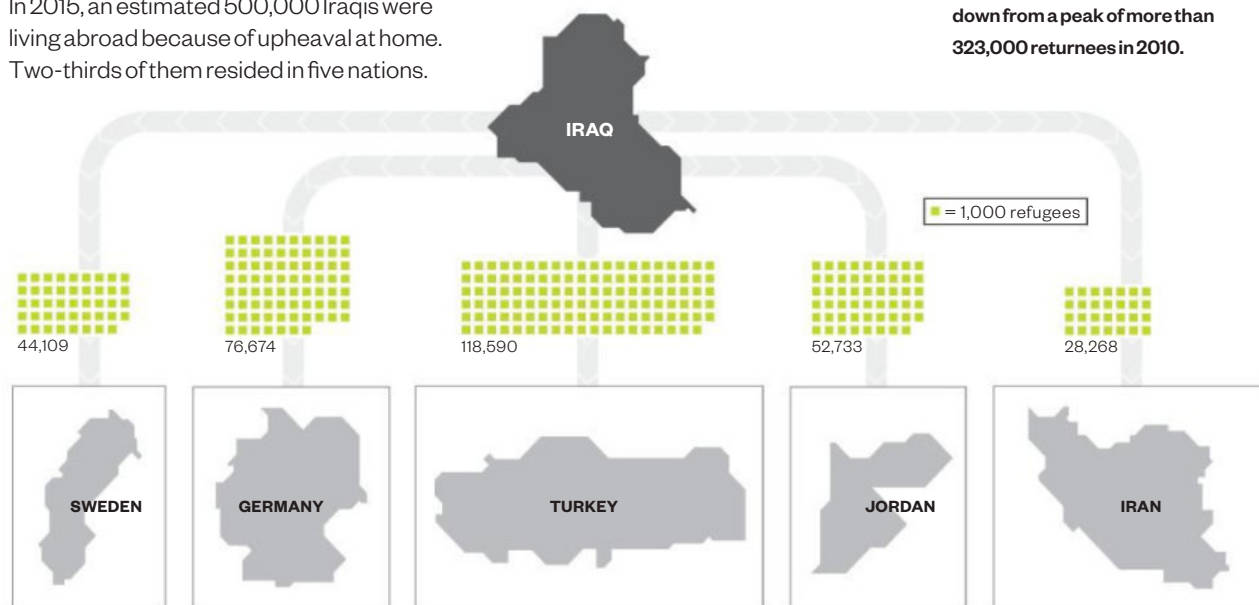
from his room in the hostel left him heartbroken and guilty. He was tormented by the thought of his aging parents hunkering down in the uncle’s crowded house in Mansour, too frightened to go out—all because he had refused to authorize the illegal payment to the Shia militia. “People are intimidating us, following us,” his brother told him. Saif seemed irresistibly drawn to his homeland. Like Odysseus, gazing toward Ithaca from the beach of Ogygia, the island where Calypso held him captive for seven years, “His eyes were perpetually wet with tears. . . . His life draining away in homesickness.”

Then, one day early in 2016, Saif received a call from his sister. She and her husband had gone the previous night to check on the family house in Mansour, she told him, voice breaking. She had been playing with her 1-year-old son when someone knocked on the door. Her husband went to answer it. When he didn’t return after ten minutes, she went outside—and found him lying in a pool of blood. He had been shot in the head and killed. It wasn’t clear who had murdered him—but the

Fleeing Iraq

In 2015, an estimated 500,000 Iraqis were living abroad because of upheaval at home. Two-thirds of them resided in five nations.

Many refugees eventually return home. In 2015, nearly 10,000 Iraqi refugees were back in their own country again, down from a peak of more than 323,000 returnees in 2010.



sister had little doubt that the thwarted contractor was taking revenge on Saif by targeting members of his family.

"Because of you," she said, sobbing, "I have lost my husband."

Saif hung up the phone and wept. "I told the story to Salar, and he said, 'Don't worry, it's a lie.' He was trying to keep me calm." Saif's brother in Baghdad later confirmed to Salar that the brother-in-law had indeed been murdered. But fearful that Saif might rush back and put his life in jeopardy, Salar and Saif's brother agreed that Salar should keep pretending that the story

was false, concocted by family members to bring Saif back to Baghdad. bus with them. In the terminal, they followed him to the Turkish Airlines check-in counter. Saif seemed confused, even distraught, pulled in two directions. Perhaps, Anne thought, he would have a change of heart.

"I was crying," Saif recalled. "I had done the impossible, just to get to Germany. Leaving my best friend [seemed unimaginable]. I thought, 'Let me give it one more try.'" Then, to the astonishment of his friends, Saif ripped up his passport and his plane ticket and announced he was staying. "We all hugged, and then I came back to the hostel with Salar and Anne, and we hugged again."

But Saif couldn't get the dark thoughts, the self-doubt, out of his mind. Three days later, he obtained yet another Iraqi passport, and a new ticket to return home.

"No. Don't. We are friends. Don't leave me," Salar pleaded, but he had grown tired of his friend's vacillations, and the energy had gone out of his arguments.

"Salar, my body is in Germany, but my soul and my mind are in Baghdad."

The next morning, while Salar was at a German class, Saif slipped away. "I was riding past the streets [where we had walked], and the restaurants where we had eaten together, and I was crying," he recalled. "I was thinking about the journey we had taken. The memories flooded my mind, but I was thinking about my family as well. I sat on my emotions and I said, 'Let me return.'"

*The wind drove him on,
the current bore him here . . .
And I welcomed him warmly,
cherished him*

Book 5

Three months after Saif's return to Baghdad, Salar and I met for the first time at a café in Moabit, not far from the LaGeSo headquarters. Salar's leg

was still encased in a cast from his winter soccer accident, and he hobbled down the sidewalk on crutches from the U-Bahn station, accompanied by Anne. A mutual friend had put us in touch, after I had called him for help finding refugees who had given up and returned home. Salar, chain-smoking over cups of tea as we sat at an outdoor table on a warm spring evening, began telling the story of his journey with Saif, his life in Berlin and Saif's decision to return to Baghdad. "I fear for him, but I have to concentrate on my own life now," he told me. He was still living in the hostel, but he was eager to find his own apartment. Salar had been to two interviews with rental agents, and each had left him feeling self-conscious and inadequate. "When you have a job you are comfortable to talk to them," he told me. "But when you go there as a refugee, and tell them 'LaGeSo pays for me,' you are shy. You feel ashamed. I cannot deal with that, [because] maybe they will laugh." After the interviews that went nowhere, he had given up the search.

Then, in June 2016, Anne heard about an American woman living in the States who owned a studio apartment in Neukölln, a lively neighborhood in eastern Berlin with a large Middle Eastern population. Her current renter was moving out, and the place would soon become available. The rent was €437 a month, €24 above LaGeSo's maximum subsidy, but Salar was happy to pay the difference. A half-hour interview with the owner on Skype sealed the deal.

I met him in the fourth-floor walk-up in early July, just after he moved in. A septuagenarian uncle from Mannheim, who was visiting for the weekend, was snoring on a foldout couch in the sparsely furnished living room. Salar was ecstatic to be on his own. He brewed tea in his tiny kitchen and pointed out the window at the maple-lined street and, across the way, a grand apartment house with a neo-Baroque facade. "For a single guy in Germany this is not so bad," he told me.

Salar's integration into German society continued apace. We met

**ELATION WORE OFF QUICKLY.
"AS SOON AS I STEPPED
OUT OF THE AIRPORT,
I REGRETTED
WHAT I HAD DONE," HE
ADMITTED. "I KNEW IT
WAS THE WRONG CHOICE."**

was false, concocted by family members to bring Saif back to Baghdad.

But Salar's effort didn't work. One January morning, while Salar was asleep, Saif traveled by subway across Berlin to the Iraqi Embassy in the affluent Dahlem neighborhood and obtained a temporary passport. He bought a ticket to Baghdad, via Istanbul, leaving the next night. When he told Salar that he had made up his mind to leave, his best friend exploded.

"Do you know what you are going back to?" he said. "After all that we've suffered, you're giving up? You need to be strong."

"I know we took the risk, I know how difficult it was," Saif replied. "But I know that something is very wrong in Baghdad, and I cannot be comfortable here."

Salar and Anne accompanied him by bus to Tegel Airport the next evening. Four Iraqi friends boarded the

again one July evening at an Iraqi-owned falafel restaurant on Neukölln's Sonnenallee, a crowded thoroughfare lined with Middle Eastern cafés, tea shops and shisha bars. An Arab wedding convoy rode past, horns blaring, cars garlanded with pink and red roses. Salar said he had just returned from a one-week holiday in the Bavarian Alps with Anne and her parents. He showed me photos on his Samsung of green valleys and granite peaks. He had found a place in a subsidized German language class that met for 20 hours each week. He was gathering documents from home in Baghdad to apply for certification in Germany as a software engineer.

And he was excited about new legislation that was working its way through the German Parliament, making it easier for refugees to find a job. Until now, asylum seekers have been barred from being hired if Germans or other European workers can fill the position, but the restriction is being removed for three years. He was philosophical about the long road ahead. "You are born and grow up in a different country," he said that evening. "But I don't have another solution. I will never return to Iraq to live. The situation is maybe hard at the beginning until you get accepted, but it's good after that. Germany is a good country."

Yet ten months after his arrival, he was still waiting to be summoned for his interview for asylum—an hours-long interrogation by an official from Germany's Federal Office for Migration and Refugees that would determine if he would be able to stay permanently in Germany. The day before I met him on Sonnenallee, an Iraqi friend who had arrived two months before Salar and Saif had lost his bid for asylum. The friend could buy himself a year or two while his lawyers pressed his case through the courts, but if two appeals were rejected, he would face immediate deportation. (Political attitudes in Germany are hardening, and deportations of asylum seekers

Saif (with his nephew, below) and Salar (right, at a Berlin market) phone daily. "Long friendship, and now—separation," says Saif.

rose from 20,914 in 2015 to 25,000 in 2016; 55 percent of Iraqis who sought asylum last year were denied.)

"Of course it makes me worried for myself," Salar said, as he washed down his falafel with a glass of *ayran*,

a Turkish salty yogurt drink. With Anne's help, he had hired an attorney at Kraft & Rapp, a reputable Berlin firm, to help him prepare for the interview.

In September I got a call from Salar: His interview had been scheduled for the following Monday morning at 7:30. I met him, Anne and Meral, an assistant from the law firm, at daybreak at

via the messenger app Viber, all professionally translated into German. He had even printed out a screen shot of a Shia militiaman brandishing a Kalashnikov—sent to him by one of his kidnappers. "He has a strong case," Meral told me. "He has plenty of proof that his life would be in danger if he returned to Iraq."

About 30 refugees and a few attorneys were waiting in front of the agency when we arrived. Salar lit a cigarette and shivered in the autumn chill. Meral told him to be prepared for a grueling day: Some refugees had sat in the waiting room for five or six hours before their interview, which



the U-Bahn station at Hermannplatz, down the street from his apartment. Salar had gelled his hair and dressed for the occasion, with a short-sleeved, plaid button-down shirt, pressed black jeans and loafers. He clutched a thick plastic folder filled with documents—"my life in Iraq and in Germany," he said—and huddled with Meral on the subway as we headed to the Federal Office for Migration and Refugees in western Berlin.

He had rehearsed with her the details of his story—the masked Sunni militants along the border, the abduction in Baghdad—and had backed up his tale with a Baghdad police report and threatening messages sent to him

could last another five hours. Four people would be present for the meeting: Salar, Meral, the interviewer and a German-Arabic interpreter. It would take several months before Salar received an answer.

A security guard opened the door and beckoned to Salar and Meral. "I'm not nervous," he insisted, slipping inside. "I just wish that Saif could be here too."

Winter approached, and Salar waited for an answer. On Thanksgiving Day, he and Anne joined my family at our apartment in Berlin for turkey, sweet potatoes and cranberry sauce. He still hadn't heard a word from his lawyer, he said, as he dug contentedly into his first-ever Thanksgiving meal,

but he remained optimistic. Across Europe and the United States, however, the tide was turning against refugees: Donald Trump had won the election, partly by promising to bar citizens of some Muslim-majority nations as a threat to American security. In Hungary, the right-wing government said it was making plans to detain asylum seekers during their entire application process, a contravention of EU rules.

In Germany, the political backlash against Merkel and her refugee policy reached a new level after December 19, when a Tunisian immigrant drove a truck at full speed into a crowded Christmas market in Berlin, killing 12

Muslims and other people in America,” Salar told me. “I am thinking maybe the European Union will do the same thing.”

It was this past February that Salar called me to say, cryptically, that he had important news. We met on a frigid evening at a shisha bar near his apartment in Neukölln. Over a water pipe and a cup of tea in a dim, smoke-filled lounge, he said his lawyer had called him in the middle of a German class the previous day. “When I saw her number on the screen, I thought, ‘uh-oh, maybe this is a problem.’ My heart was pounding,” he told me. “She said, ‘You got your answer.’” Salar pulled a letter from his pocket and

to German citizenship. “On the whole, the news is very positive,” he said.

Salar was already making plans to travel. “I will go to Italy, I will go to Spain, I will go everywhere,” he exulted. As a sign of its confidence in him, the German government had offered him a scholarship for a graduate program in IT engineering, and he expected to begin his studies in the spring. His German was fast improving; Anne was speaking to him almost exclusively in her native language. He had even found time to study guitar for a few hours a week, and would be playing his first song—John Lennon’s “Imagine”—at Berlin’s Brandenburg Gate in the middle of February.

*Let him come late,
in bad case, with the loss
of all his companions,
in someone else’s ship,
and find troubles in his household.*

Book 9

The sky was a leaden gray and the temperature pushing 110 degrees as I inched with my driver-interpreter through traffic across the Al-Jamhuriya Bridge, an ugly steel-and-concrete span over the Tigris. Slate gray and murky, the river flowed sluggishly past sand banks and palm trees, their fronds wilting in the mid-August heat. Baghdad revealed itself in a harsh landscape of blast walls, piles of rubble, cylindrical watchtowers, military check points and posters of martyrs who had died fighting the Islamic State. A Ferris wheel stood, immobilized, in Zawra Park, the green expanse at the edge of Mansour where Saif and Salar had run their restaurant. We parked outside a concrete house with grimy windows behind a metal fence.

Salar had told Saif the previous week that I was coming out to visit him, and Saif had replied that I would be welcome. Implicit was the hope that I might somehow pull strings and undo the decision he’d made; Saif, Salar said, was still in danger and desperate to leave again. He stepped into the street to greet us. He was solidly built, hand-



people. “The environment in which such acts can spread was carelessly and systematically imported over the past one-and-a-half years,” the far-right leader Frauke Petry declared. “It was not an isolated incident and it won’t be the last.” Salar’s anxiety deepened as the New Year began. One after another, Iraqi friends had their asylum requests rejected and were ordered to leave the country.

In late January, President Trump issued the immigration ban that included Iraqis. A relative of Salar’s who has lived in Texas for decades phoned Salar and said he no longer felt safe. He also expressed fears about the future, saying the ban was “creating divisions between

thrust it in my hands. On the one hand, German authorities had denied him political asylum. On the other hand, because of the danger he faced from the militiamen who had kidnapped him and threatened his life in Baghdad, he had received “subsidiary protection.” The new status gave Salar the right to remain in Germany for one year with additional two-year extensions, with permission to travel in the European Union. The German government reserved the right to cancel his protection status and deport him, but, according to his lawyer, as long as he continued learning German and found a job, he had an excellent chance to obtain permanent residency—a path

some, with a neatly trimmed beard and mustache and an aquiline nose; he hugged me as if greeting an old friend, and I handed over a parcel from Salar filled with small gifts. Saif led us into a sitting room, furnished with fake-gilt-edged chairs and sofas. A stand-alone air conditioner rattled in the corner.

He recalled the night that he had arrived in Baghdad, after a flight from Berlin to Erbil. Saif was glad at finding himself in his own country, but the elation wore off quickly. "As soon as I stepped out of the airport, I regretted what I had done," he admitted. "I knew it was the wrong choice." He caught a taxi to the house where his family was hiding out, and caught them unawares. "When I walked into the house, my sister started screaming, 'What are you doing here?' My mother was sick in bed. She started crying, asking 'Why did you come back? You are taking another risk, they may chase you again.' I told her, 'I'm not going to leave the house. I'm not going to tell anybody that I'm here.'"

Seven months later Saif was still living basically incognito. Iraq had become more stable, as the Iraqi Army, the Kurdish forces known as *pesh-merga* and the Shia militias had driven the Islamic State out of most of the country (a factor often cited by Iraqi refugees as a motive for returning). At that very moment the forces were converging on Mosul, the last stronghold of the Islamic State, for a final drive against the terrorist group.

But in Baghdad, Saif's troubles seemed unending. He had heard that his tormentors were still looking for him. He had told only one friend he was back, steered clear of his neighbors, and even posted fake Facebook updates using old photos taken of him in Berlin. Each week, he said, he wrote on his Facebook page: "Happy Friday, I miss you my friends, I'm happy to be in Germany." He had found a job in construction in a largely Sunni neighborhood where he didn't know a soul, taking a minibus to work before dawn and returning after dark. He stayed home with his family at night. It was,

he admitted, a lonely existence—in some ways made even more painful by his daily phone call to Salar. "To live in exile, to suffer together—it makes your friendship even stronger," he said.

The coming months would bring little to change Saif's predicament. In February, while Salar was celebrating his new government-sanctioned status in Berlin, Saif was still posting phony Facebook messages and hiding from the militia, convinced that he remained a target. Late one night, a hit-and-run driver smashed into Saif's car as he drove through Mansour. Saif walked away from the collision uninjured, but his car was destroyed, and he suspected that the crash had been deliberate.

"He has no place in the world where he could be happy now," says Anne, who stays in touch with him.

I asked Salar if it was really possible that Shia militias would maintain their grudge against him for so long. "Of course," he said. "In Iraq you can never be sure 100 percent that you are safe."

Toward sunset on my second evening in Baghdad back in August 2016, we drove to the Beirut Café, a popular shisha bar on a bend in the Tigris. A massive suicide bomb had gone off in central Baghdad a few weeks earlier, killing nearly 300 people—a reminder that the Islamic State, though diminished, was still capable of unspeakable violence. But Iraqis' desire for normality had trumped their fear, at least for the moment, and the riverside café was packed. It was a rare outing for Saif aside from his trips to work. We stepped into a motorboat at the end of a pier and pattered upstream, passing clumps of dead fish, a solitary swimmer and an angler pulling in his net. Saif smiled at the scene. "This is a cup of tea compared to the Aegean," he said as multicolored lights twinkled in a string of shisha bars along the river.

After serving us a meal of biryani chicken and baklava at his home that evening, Saif stepped out of the room. He returned holding his curly-haired, 18-month-old nephew, the son of his murdered brother-in-law. "I have to take care of my nephew because he lost his father," he said. "I feel like he is my son."

The little boy had given him a sense of purpose, but Saif was in a bad place. He had relinquished his one shot at living in Europe—tightening asylum laws made it unlikely he would ever be able to repeat the journey—yet he was

**"HELP ME PLEASE," HE SAID
SOFTLY. "I WANT TO BE IN
ANY COUNTRY
BUT IRAQ.
THERE IS DANGER HERE.
I AM AFRAID."**

desperately unhappy back home. The experience had left him disconsolate, questioning his ability to make rational decisions. He was cursed by the knowledge of what might have been possible if he had found the inner strength, like Salar, to remain in Germany.

After the meal, we stepped outside and stood in the dirt street, bombarded by the hum of generators and the shouts of kids playing pickup soccer in the still-hot summer night. Women clad in black abayas hurried past, and across the alley, fluorescent lights garishly illuminated a colonnaded villa behind a concrete wall. I shook Saif's hand. "Help me, please," he said softly. "I want to be in any country but Iraq. There is danger here. I am afraid." I climbed in the car and left him standing in the street, watching us. Then we turned a corner and he disappeared from view. ○

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Criminal Profiling

CONTINUED FROM PAGE 34

for themselves that Metesky matched the criteria Brussel had itemized. Metesky met them at the doorstep wearing round gold-rimmed eyeglasses and burgundy pajamas buttoned to the neck under a bathrobe. He was a thick-set middle-aged man of Lithuanian descent with a history of workplace disputes. He shared the house with a pair of unmarried older sisters. He'd never married, never had a girlfriend. Neighbors described him as fastidious with a reputation for petty disputes.

In Metesky's creepily neat bedroom, detectives found a notebook filled with handwriting similar to F.P.'s block lettering. They handed Metesky a pen and asked him to write his name on a

"Tell me, George," a detective asked, "what does F.P. stand for?"

Metesky exhaled. His frown relaxed. "Fair play." With those two words, barely whispered, the 17-year man-hunt came to a quiet end.

To gain footing in the ensuing years, profiling had to be sold by a performer, and Brussel knew how to put on a performance. He had a head for science and a showman's touch. His charisma and confidence swept detectives along with him as he made nimble leaps of deduction, not to mention the FBI agents who learned at his feet. By the 1970s Brussel was known as a founding father of the emergent field of profiling. The press variously called him the "Prophet of Twelfth Street," "Sherlock Holmes of the Couch" and "the Psychiatric Seer."

As much as anyone, it was Brussel who united the fields of psychiatry and policing. "Those of us who were interested in combining criminology and medicine keenly followed

easy and sometimes it was impossible. There were times when I made mistakes. There were times when I simply lacked enough information to build an image of the criminal. There were times when the law of averages let me down: I'd diagnose a man as a paranoiac and imagine him as having a well-proportioned physique and then he'd turn out to be among the 15 percent of paranoiacs who are not so built. Yes, there were cases on which I failed. But I continued to succeed often enough so that the police kept coming to me."

Even as he consulted with police around the country, Brussel—who would be active in the field until his death at age 77 in 1982—continued to work for the Department of Mental Hygiene. In that capacity he occasionally visited Matteawan, a Hudson Valley hospital for the criminally insane where Metesky was incarcerated. On one trip he asked to see Metesky.

It was the first and only meeting between the bomber and the psychiatrist. "He was calm, smiling and condescending," Brussel wrote. Metesky told Brussel of his plans to be discharged and deprecated his bomb-making skills. The devices had never been powerful enough to cause much damage, Metesky claimed.

Was it possible, Brussel asked, that during all that time Metesky had actually suffered from mental illness? Was it possible that he really was a paranoid schizophrenic, as Brussel had concluded?

"He didn't become angry," Brussel wrote. "He was the patronizing and successful paranoiac who, as God, could appreciate and magnanimously forgive his children's mistake. He smiled at me. With a wave of his hand he said, 'It could have been, it could have been. But I wasn't.' Then he bowed graciously and left the room." ○

"At times I was almost sorry I had been so successful in describing George Metesky, for I had to live up to that success. It wasn't always easy and sometimes it was impossible."

sheet of yellow paper. They watched, spellbound, as the familiar block letters appeared on the page—the G in George had the telltale double bars. The Y had a distinctive serif.

"Why don't you go ahead and get dressed, George," a detective said. Here was a moment of truth. The detectives knew that Brussel had also predicted the bomber would dress in a buttoned double-breasted jacket. Sure enough, Metesky stepped from his bedroom wearing sensible brown rubber-soled shoes, red-dotted necktie, brown cardigan sweater, and double-breasted blue suit.

his work," says Park Dietz, a forensic psychiatrist who has consulted on cases including the Unabomber. Although Brussel may at times have seemed more promoter than scientist, there is no denying his accomplishments. "He made predictions with striking precision," says psychologist Kathy Charles of Scotland's Edinburgh Napier University. "He kick-started the police thinking that psychiatry could be an effective tool for catching offenders."

The Metesky case, more than any other, had established Brussel as a folk hero of criminology. "At times I was almost sorry I had been so successful in describing George Metesky, for I had to live up to that success," he later wrote. "It wasn't always

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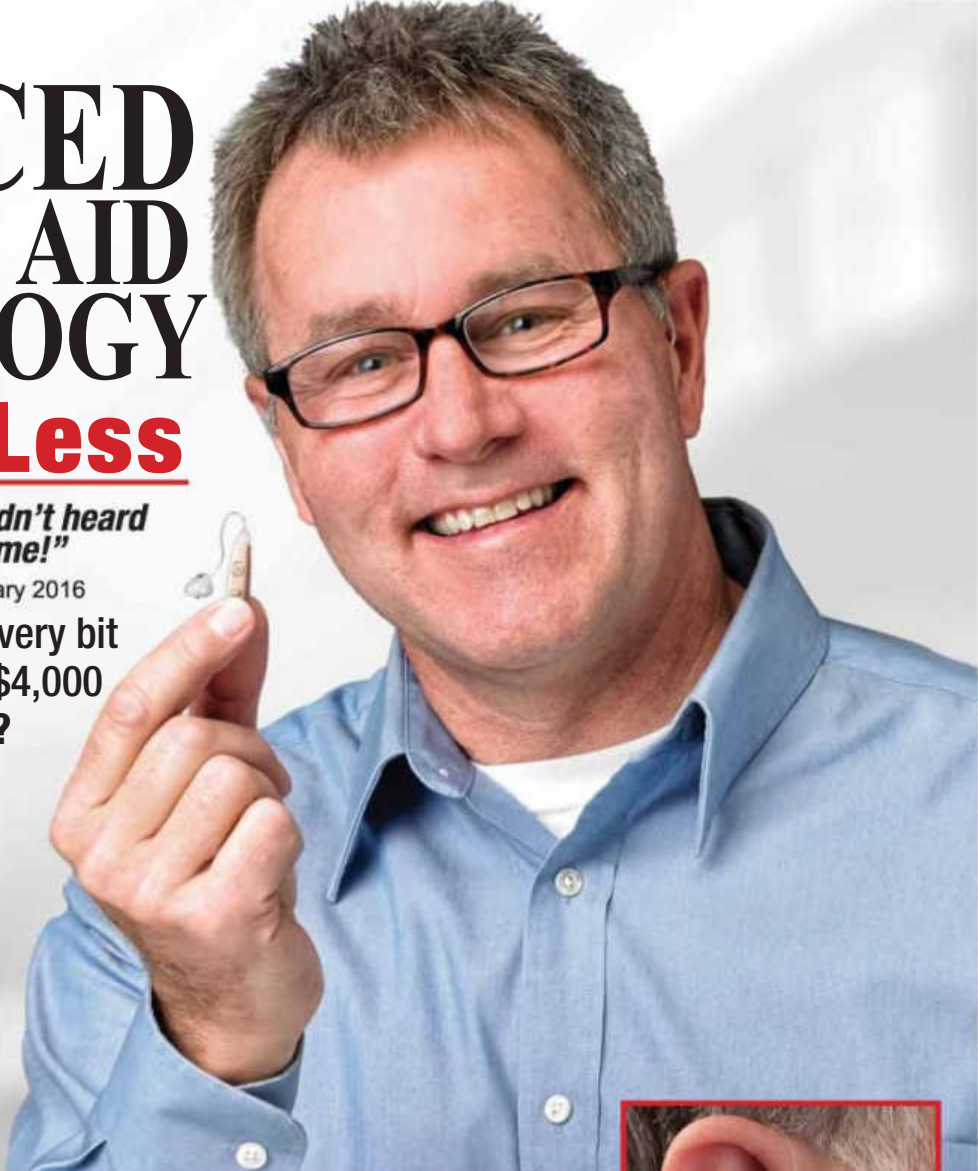
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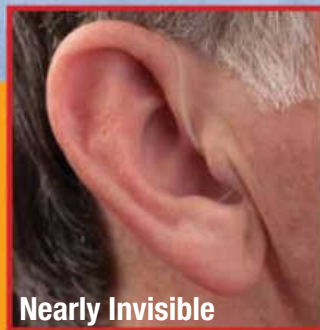
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Liberty Bell

CONTINUED FROM PAGE 47

Independence Hall, ring the Bell to trigger the great national clangor, and be interviewed for the many stories the government's war propaganda office set up. (The releases were full of overstatements, including the "fact" that the Bell hadn't been rung in decades when, of course, it had been rung over the transcontinental phone line just two years earlier.) Americans rushed to their banks to buy up the war bonds, and sales far surpassed the \$2 billion goal.

But by the time of the second Liberty Bond drive, in October 1917, Smith had other concerns: He had become the first sitting mayor in American history to be indicted for conspiracy to commit murder—in the street killing of a police officer who was trying to protect a progressive city council candidate from being beaten up by hired thugs. This took place in Philadelphia's Fifth Ward, which included Independence Hall, and which was thereafter known as "the Bloody Fifth." Smith was brought to trial and acquitted.

When the Treasury Department decided to recreate its national bell-sounding for the second bond drive, it chose to trigger the clangor from a new location—St. John's Church in Richmond, Virginia, where Patrick Henry had delivered his "give me liberty or give me death" speech.

But by then, the Liberty Bell had become the dominant symbol of the war effort, and the sounding of bells (and whistles where there were no bells) became the Pavlovian cue to do the right thing—whether that meant buying war bonds, enlisting in the military or raising money for the Red Cross. Making a pilgrimage to see and kiss the Bell became a wartime fad. It began in 1917 when the top French general, Joseph Jacques Césaire Joffre, visited Independence Hall. After standing reverently before the Bell, he moved closer, until he reached out to touch it and then kissed his hands.

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Finally, he just bent down and kissed the Bell directly.

After hearing about what their commander did, a group of French soldiers touring the United States arrived at Independence Hall to do the same thing. And soon American soldiers were coming in alone or with their units to kiss the Bell for luck before leaving for Europe.

So the Bell was taken on patriotic parades around Philadelphia, and it was rung again as part of the third and fourth Liberty Bond drives—with the nation's bells rung once more in response. As a stunt for the fourth and last Liberty Bond drive, 25,000 troops at Fort Dix were herded into the shape of the Bell and photographed from above—and copies of the photo were distributed nationwide. For the last day of the final bond drive, in August of 1918, the Treasury Department arranged again for the Bell to be struck 13 times, but this time it triggered not a national bell-ringing but a simultaneous singing of "The Star-Spangled Banner" across the land. The four drives raised more than \$17 billion.

Just weeks before the war ended, in November 1918, the leaders of all the new Mid-European countries created by the war—representing some 65 million people—descended upon Philadelphia to sign their declaration of independence, led by Tomas Masaryk, soon to be the first president of a free Czechoslovakia. They arrived with a cast replica of the Liberty Bell, which they created to ring in the presence of the original.

The only difference was that, on their bell, the biblical quote had been changed to read, "Proclaim liberty throughout all the *world*."

On the morning of Thursday, November 7, more than a million people reportedly poured into the streets of Philadelphia, shredded paper rained from office windows, schools closed, tens of thousands of workers at the city's Navy shipyards laid down their tools and ran to celebrate. Bells chimed, whistles shrieked, sirens



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moaned, planes flew low over the city. Mobs descended on Independence Hall, and the city ordered the new Independence Hall bell rung—along with every other bell in the city—and even had the Liberty Bell struck.

It was pandemonium in Philadelphia—and in every other city in the country, since word had gone out on the United Press International wire that the war was over. After so much celebrating, it was that much harder to convince everyone that the report was premature. Revelers across the country refused to accept the fact until they saw it in the newspaper the next morning.

At about 3:30 on the following Monday morning, however, word again began circulating that peace was at hand. Within an hour, every hotel room in Philadelphia was booked. When the usual morning bells and whistles and sirens were sounded—and then kept right on sounding—people understood it wasn't a false alarm. They didn't bother to go to work—they headed into town.

Most headed to Independence Hall, to be near the Bell and the nation's birthplace. Many arrived with their shirt collars and sleeves loaded with confetti, which was carpeting the streets like an early snowfall.

So many people wanted to be in the presence of the Bell that the guards finally removed the turnstiles from the entrance to Independence Hall. The eldest of the guards, 80-year-old James Orr, who had been on duty at Independence Hall for more than 25 years, told his fellow officers just to give up.

Thousands of people kissed the Liberty Bell that day, more than ever had before and ever would again. A *Philadelphia Inquirer* reporter stood there taking in the scene, noting all the different nationalities of people who had come to kiss the Bell. But then he had an epiphany.

"Most of the throng," he wrote, "had become so Americanized that it was difficult to tell the people of one race from those of another."

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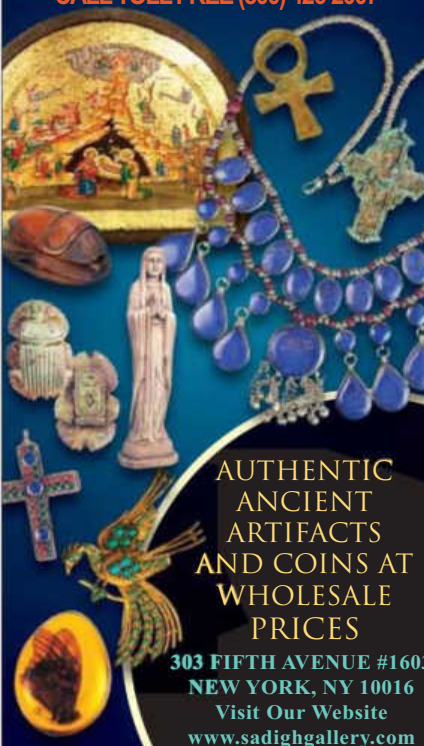
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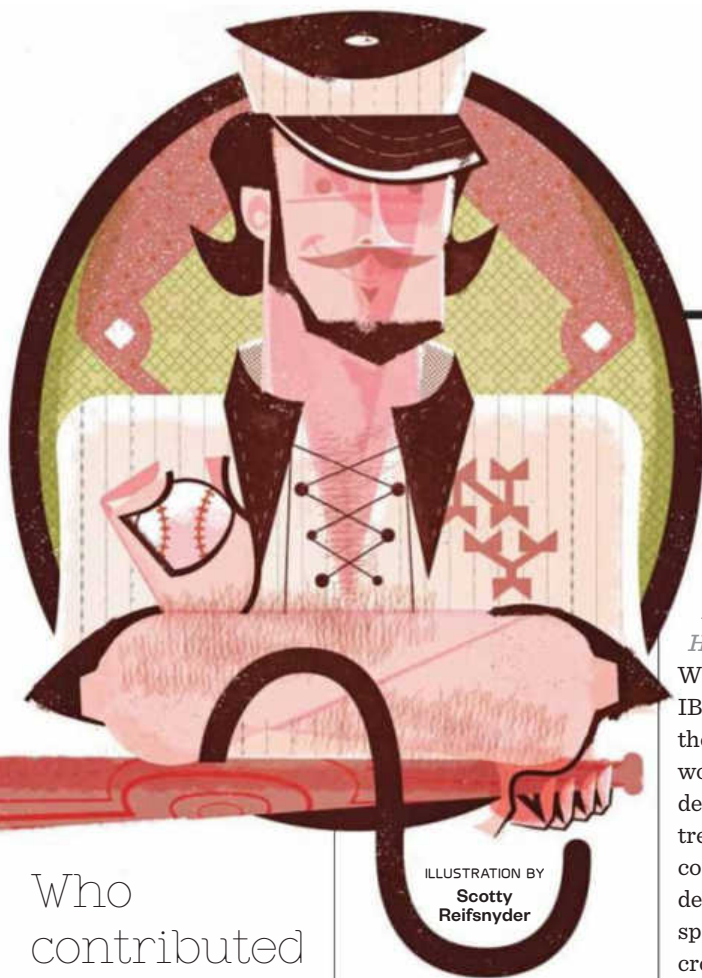


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Scotty Reifsnyder

Who contributed more to the origin of baseball—Abner Doubleday or Alexander Cartwright?

Patrick Ian
Catonsville, Maryland

Baseball evolved from a host of precursors, but here the power hitter was Cartwright (above), says *David Ward, senior historian at the National Portrait Gallery*. In the early 20th century, baseball organizers accepted a claim that Doubleday (1819-93) invented it in 1839 during an Army posting in Cooperstown,

New York, because it helped promote the game as bucolic and all-American. But that claim has been debunked. Cartwright (1820-92), a ex-bank clerk, helped codify the game's rules while playing for New York's Knickerbocker Base Ball Club in the mid-1840s. (Ninety feet between bases? His idea.) He may have been forgotten because he headed west for the California gold rush and then to Hawaii, but he was inducted into the National Baseball Hall of Fame in Cooperstown in 1938 in recognition of his contributions to the game.

Can IBM's Watson solve a crossword puzzle?

John Kudlaty,
St. Paul, Minnesota

IBM programmed Watson to play Jeopardy!, but not other games, says *Peggy Kidwell, curator of mathematics at the National Museum of American History*. Of course, Watson is no dummy—IBM is now training the supercomputer to work with doctors in determining cancer treatments. But another computer program, developed by a computer specialist and frustrated crossword solver named Matt Ginsberg, solves crosswords. He calls it Dr. Fill. Unlike Watson, it has not bested human competition. Yet.

In terms a layperson can understand, what is dark matter? Art Rubin,
Randolph, New Jersey

We should have named it “invisible matter,” says *Doug Finkbeiner, professor of astronomy and physics at the Harvard-Smithsonian Center for Astrophysics*. It's hidden from view because it does not emit, absorb or reflect light. It makes up about five-sixths of the matter in the universe, and we know it's there only because it exerts a gravitational pull on the visible objects. Dark matter

may even be holding entire galaxies together.

During a presidential inauguration, five U.S. flags hang vertically from the Capitol. At the center is the 50-star flag, and two 13-star Betsy Ross flags are at either end. But what are the other two?

Richard Stalter,
Concord, California

The flags flanking the 50-star flag represent the new president's home state, says *Jennifer L. Jones, chair of the division of armed forces history at the National Museum of American History*. The number of stars on these flags corresponds to when the president's home state joined the nation. The flags at President Trump's inauguration bore 13 stars because New York was one of the original states, while the flags at President Obama's inaugurations bore 21 stars because he came to the presidency from Illinois, the 21st state.

TEXT BY Katie Nodjimbadem



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