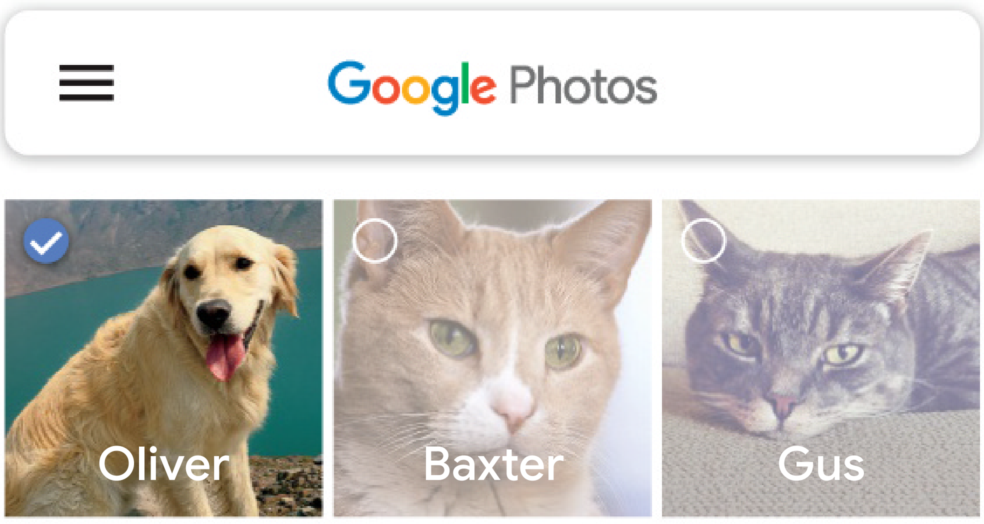
DEADBEAT BILLIONAIRE • HOW TO BEAT AMAZON


MILAN
Wallpaper*
City Guide

The same technology that knows your dog from your cat



Google

This feature is not available in all countries.

helps doctors know a healthy eye from an at-risk one.

Google Photos uses AI to organize your images and help you quickly find what you are looking for. And for doctors who are working to prevent blindness in 415 million diabetics worldwide, AI is also being used to quickly identify damaged blood vessels in retina scans.

Empowering doctors through diagnosis, with a little help from Google.

ai.google/healthcare

Forbes

ON THE COVER

COVER PHOTOGRAPH BY ETHAN PINES FOR FORBES


REWRITE HISTORY IN 3.96 SECONDS
THE 2020 LEXUS RC F TRACK EDITION
It's time for a different path to performance. One that begins from a place of refinement. Because when you craft exhilaration with the same attention to detail you apply to crafting indulgence, you don't merely repeat history, you write your own. Introducing the all-new 2020 Lexus RC F Track Edition, featuring a 472-horsepower[1] 5.0-liter V8 engine, a titanium exhaust, class-leading power-to-weight ratio,[2] carbon-ceramic disc brakes[3] and an RC F GT3–inspired carbon fiber rear wing. Capable of going 0 to 60 mph in a staggering 3.96 seconds.[4] We didn't settle for just a performance car; we demanded intensity with elegance, then crafted a Lexus for the track. We come from somewhere else. So we feel like nothing else.
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Options shown. 1. Ratings achieved using the required premium unleaded gasoline with an octane rating of 91 or higher. If premium fuel is not used, performance will decrease. 2. 2020 RC F vs. 2018/2019 competitors. Information from manufacturers' websites as of 12/4/2018. 3. High-friction brakes may require additional maintenance, be louder and have a shorter life than conventional brakes, depending on driving conditions. See the *Warranty and Services Guide* for more information. 4. AMCI Testing Certified. ©2019 Lexus


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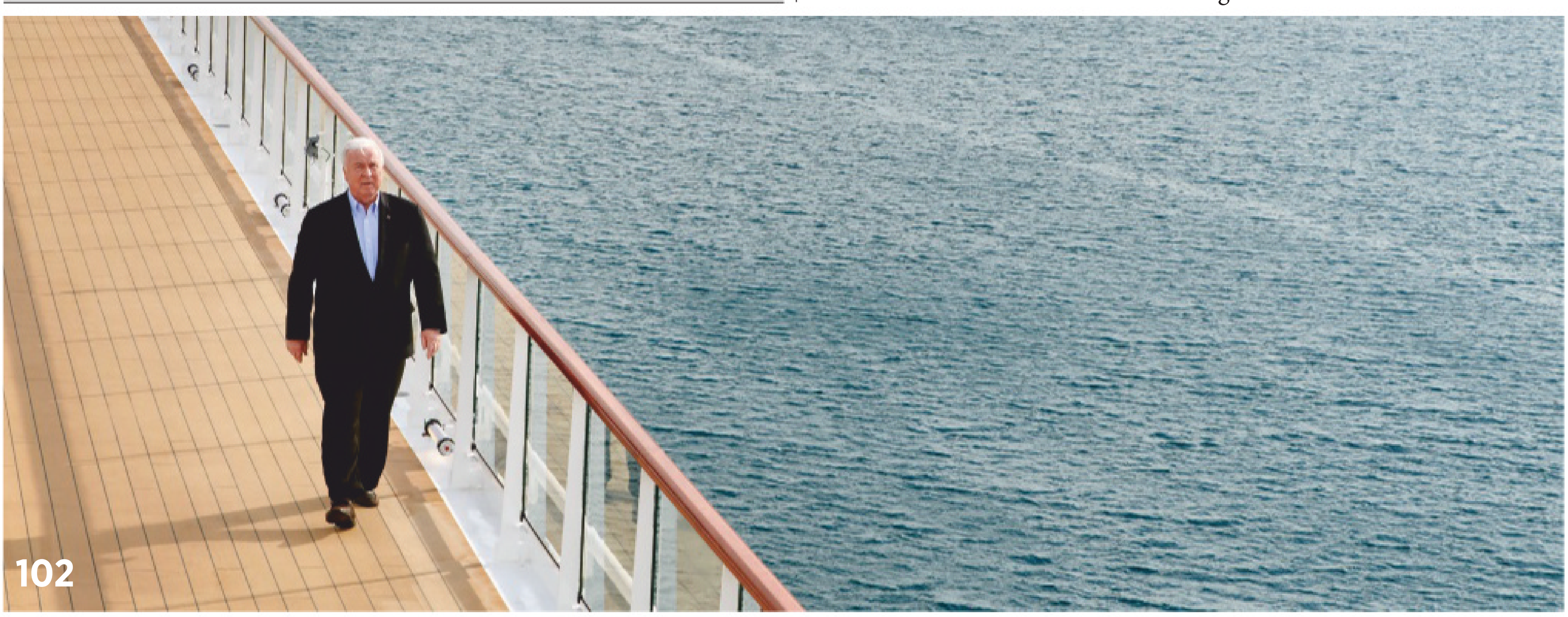
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CIGARETTES

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SIDELINES

Protecting the Truth-Tellers

***FORBES* IS WELL KNOWN** for our lists, and we recently published our most important one in quite a while. All the great journalism in this issue, including our story about the billionaire governor of West Virginia's pesky habit of avoiding paying his bills, stems from the freedoms we have in this country under the First Amendment.

Most of the world isn't so lucky. Press freedom is under attack globally, with an appalling rise in harassment and violence against journalists whose only offense is trying to report and share the truth. In January, at an International Media Council dinner at the World Economic Forum, I heard firsthand as editors from around the world spoke of their journalists who have been imprisoned, beaten—or murdered. While the *Washington Post*'s Jamal Khashoggi is the most high-profile example, the same fate has met reporters from Mexico to Slovakia.

I made a suggestion: What if those present banded together to support those under pressure? Specifically, to shine a collective light on those threatened for trying to report the truth. The One Free Press Coalition was born. *Time* joined us immediately. As did Yahoo News and HuffPost, the AP and Reuters. And then the *Financial Times* and a slew of major European news outfits. The *Boston Globe* and *Fortune* soon followed.

Maria Ressa, the editor of Philippines-based *Rappler*, was arrested in February as part of a campaign against the news site.

DIA DIPASUPIL GETTY IMAGES FOR CPJ

Together, we launched the 10 Most Urgent list, highlighting some of the most endangered journalists in the world—truth-tellers in jail, under threat or even no longer with us, killed (and denied justice) for trying to inform the public. All told, the One Free Press Coalition has an audience reach of over a billion people, and we're not going anywhere: This group has agreed to publish and promote the 10 Most Urgent list every month. That should hopefully give all press oppressors and thug autocrats pause, and provide some cover for those languishing in jail or under harassment for the temerity to ask questions or speak truth to power.

—RANDALL LANE, CHIEF CONTENT OFFICER


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"With all thy getting, get understanding"

THE INSOLVENT THINKING OF CENTRAL BANKERS

BY STEVE FORBES, EDITOR-IN-CHIEF

THE UTTER INTELLECTUAL bankruptcy of most modern economic policymakers was starkly displayed when European Central Bank boss Mario Draghi recently and unexpectedly announced that the ECB would be making a new round of cheap loans to banks this September to help stimulate the Continent's sputtering economies.

Despite decades of disappointing data demonstrating that central banks cannot guide the pace of economic activity in the way a thermostat does the temperature of a room, political and economic leaders still persist in pursuing this fantasy. The cost in forgone prosperity is immense. Had central banks and their political masters sought the goal of stable currencies—and had the U.S. dollar remained fixed to gold—the material well-being of the world would probably be double what it is today.

Central bankers and all too many economists can't grasp this basic truth: Money is not wealth. Printing a bunch of dollar bills doesn't in and of itself create wealth. It merely means you can use those pieces of paper to purchase a product that someone else has *created*. The seller accepts the pieces of paper because he or she can use them to buy whatever he or she may want, that is, a product or service someone has created.

Money is a claim not for something specific, such as a coat, but for anything on sale in the marketplace. It allows you to exchange your labor or goods for other things you might want or need. In effect, money is a receipt for the value of goods and services we produce and may wish to sell.

This is why counterfeiting is illegal. If you print a $100 bill and use it to buy something, you are stealing that something, because that bogus Benjamin wasn't the result of a good that was actually made. When governments engage in excess money printing, the result is inflation, which is an invidious stealth tax.

All this is why most of what passes for monetary policy wisdom these days is vastly more harmful than the cow flatulence that's worrying a growing number of Chicken Little politicians. Central banks and governments do not create resources. They *take* resources from the rest of us for their own purposes. It's preposterous to think that a new round of futile bank stimulus by the ECB will lead Europe to sustainable growth.

Let's look at the record. What triggered the great post-WWII boom in Europe, most particularly in Germany and Japan, were stable money and sensible taxes. In contrast, Britain lagged, hobbling itself with a chronically weak pound and sky-high tax rates, until Margaret Thatcher came along.

The Federal Reserve repeatedly tried to stimulate the U.S. economy during the 1970s by engaging in "loose money," and the result was a generation of terrible inflation and stagnation.

Again, in the early 2000s, prodded by the Treasury Department, our central bank weakened the dollar, which led to the debacle of 2008–09. After the immediate panic in the fall of 2008 the Federal Reserve engaged in quantitative easing, quintupling its portfolio with Treasury bonds and packages of mortgages. Result: the worst economic recovery from a sharp downturn in American history.

Here's the rub. Under QE the Fed, in effect, seized nearly $4 trillion in securities from the private sector. The combination of this seizure with regulations that made it extremely expensive for banks to lend to small and new businesses distorted credit markets and smothered the economy. Some stimulus!

A few destructive myths must be faced.

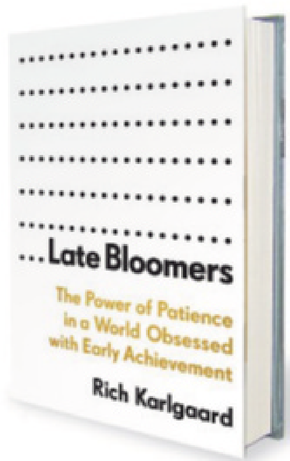
- **Economies don't "overheat."** The Fed has no business trying to curb the economy when it's growing rapidly. The only time prosperity should be suspect is when it's been artificially engineered by cheapening the dollar, as happened frequently in the 1970s and again in the years leading up to the 2008–09 economic train wreck. Otherwise, leave the markets alone. They will quickly correct any excesses.
- **Price controls on the cost of borrowing money don't work.** Even conservatives seem to buy into the fallacy that central banks should try to fix the cost of borrowing. Most economists know rent controls distort the market. Interest is the "rent" paid to borrow money. Let markets work instead of central bank planning.
- **Monetary policy cannot overcome nonmonetary structural barriers to economic progress.** The biggest of these barriers are high taxes and excessive regulations.

A Genuine Gem: Late Bloomers

by Rich Karlgaard *(Currency, $28)*

What Yogi Berra observed about a baseball game—it ain't over till it's over—is true about life, and Rich Karlgaard's new book is the ultimate proof of this. Read it, and you'll be both relieved and inspired. It's a keeper.

There are three big takeaways.



• **We're destructively overdoing the "You must be on the road to big success when you're young, or you'll never really amount to much" mentality.** Today's culture obsessively glorifies youthful prodigies and is hostile or oblivious to the basic truth that many of us don't reach a productive career rhythm until years after we leave school. It often takes a lot of trial and error to discover our path and then develop our real talents. Rich, a Stanford graduate, even did a stint as a nighttime security guard before he bloomed!

But such is the zeitgeist that people are made to feel inadequate if they're not quickly in an ostensible success groove, which, perversely, then stands in the way of their breaking away from conventional expectations and trying to find the right path for themselves.

Or, just as harmful, individuals pursue careers for which they're not really suited, trying in workaholic fashion to achieve success and then finding themselves deeply dissatisfied when they reach their goals. Rich cites the case of a brilliant woman who vaulted to partnership in a prestigious, high-pressure law firm. Shocked at how profoundly unhappy she was, she made the courageous decision to quit and start over on another career.

A manifestation of this do-it-young-or-bust mania is the extraordinary pressure parents feel to shepherd their kids into the "right" schools. A vast industry of consultants has arisen. Woe to the adolescent who hasn't been tutored in how to do better on the SATs; 50 to 100 extra points await those who have been! Summer activities must be carefully calibrated to impress admissions officers as to the social consciousness of your offspring. Play a sport just because you like it? Heaven forbid! It must be one that will help you gain that coveted acceptance—and to do that, you must relentlessly practice 10,000 hours a year!

The scandals erupting over "fixing" college admission test scores and bribing coaches are an ugly symptom of this frenzy. Rich cites a Stanford professor lamenting the brittleness of incoming undergraduates.

This book will help create a collective cry of "Time out!" The happy truth is that what really counts for a satisfying life is what you do after you leave school.

• **We must, as individuals and as a culture, "celebrate the full range of human ability and diverse timetables for individual success and achievement."** We should embrace the need for "a kinder clock for human development."

This brings us to the heart of Rich's masterpiece. Skillfully mining a treasure trove of informative studies, as well as a number of interesting and instructive individual stories, he walks us through the ways we can actually become "late bloomers" despite cultural prejudices and obstacles ("when it comes to cultural norms, breaking up is hard to do"), not to mention "a near-universal human trait, our tendency toward conformity."

Reassuringly he cites a mountain of evidence that proves we develop many critical attributes as we age, such as wisdom, insight, curiosity, compassion, creativity, dealing with ambiguity and "mental calmness, composure and evenness of temper, especially in a difficult situation." Even self-doubt can be a positive catalyst.

It's no coincidence, myth to the contrary, that most entrepreneurs are middle-aged or older.

The book is no Panglossian guide that guarantees all will be well, which gives its positive insights such credibility. In fact, in one sobering chapter we are warned there may be times when an activity we're passionately engaged in isn't going to work out, and despite the "never be a quitter" motif of our culture, we must drop it and move on. We'll ultimately be better off. After all, we're not endowed with unlimited energy: "We can't simply apply determination like a jelly spread to everything we do in our lives—we'll burn out."

The theme of Rich's book is optimistic, very much reflecting the American trait of never giving up the "pursuit of happiness." As Rich concludes, "Blooming has no deadline. Our future story is written in pencil, not carved in stone . . . . As we lose some capabilities, we gain others that far outweigh what is lost." As wise employers recognize that productive careers don't follow a rigid trajectory, they will develop ways to nurture and tap a mother lode of unrecognized and underused talent.

• **We are wasting immense talent by the way we treat older people.** Understandably, companies always want to have open pathways for younger, dynamic people and, concurrently, want older managers and executives who are slowing down and are "past their prime" to make way for those who can better do their jobs. So employers try to find ways to put "oldies-but-goodies" out to pasture. Yet while these individuals may not be willing to travel a zillion miles a year anymore or work umpteen extra hours a week, they still possess immense experience and wisdom that can be enormously helpful to younger people. Shouldn't we work to develop a legal and cultural environment in which, if a person chooses, he or she will take a cut in pay but remain available as a mentor and consultant? Their credibility advantage is that they're not competing for promotions or expanding their turfs—those parts of their career are over—but they can still play highly useful roles.

Something to think about.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REAL ESTATE

GOLDEN COAST

Point Piper is the pinnacle of Sydney living.

IN 1980, JACK COWIN and his wife, Sharon, decided to move from Perth to Sydney, on the opposite side of Down Under. His fast-food business had grown across Australia, and he wanted to be in the country's largest city. "We needed a house big enough to accommodate everybody," he recalls, with space for their four young children. The Cowins knew Sydney for one thing: "traffic." So they picked a secluded neighborhood called Point Piper, selecting a mansion steps from the ocean. They paid $870,000 (roughly $2.3 million today)—"a big gulp . . . three times what we had"—but Cowin felt they'd lucked out finding such a beautiful spot. Until he discovered the seller had bought the place for $555,000 ($1.7 million) just a year prior.

"I thought I was the biggest wood duck that ever walked the face of the Earth," Cowin says. That is, he felt a bit duped. "Thirty-nine years later, it doesn't matter."

Indeed, Cowin, now 76, and Point Piper have both prospered since. He's a billionaire today—the biggest Burger King franchisee in Australia—and Point Piper, situated on a small peninsula extending into Sydney Harbor, is now home to five other billionaires, the daughter of another and a former prime minister. The area is almost entirely residential aside from two yacht clubs. In recent years, prices in the neighborhood—named after John Piper, a Scottish sea captain who built a home there in the nineteenth century—have skyrocketed. Mike Cannon-Brookes, 39, the billionaire cofounder of software maker Atlassian, paid $72.2 million for a 2.7-acre estate there in 2018. That shattered the record for the most expensive home ever sold in Australia, a mark previously held by Cannon-Brookes' cofounder, Scott Farquhar, 39, who lives next door. Still, not everyone is as close with their neighbors as the Atlassian partners; some Point Piper homes are owned by wealthy foreigners who are seldom in town.

"They obviously bought them, but they don't live there," says Cowin. "Anyway, less traffic, so that's okay."

PHOTOGRAPH BY MARK MERTON / SYDNEY IMAGES


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Reconnect.
Montblanc 1858 Geosphere
montblanc.com
39° 35' 0.478" S 71° 32' 23.564" W

A Noted Photographer Ventures Into Nature to Detach and Discover

As a sought-after high fashion and celebrity photographer, Dennis Leupold is always on the go, jetting from Los Angeles to London to New York. When work gets overwhelming, which he says happens about once a month, Leupold heads for the outdoors. “For me it’s almost like you’re going to church. You connect to a higher power.”

Originally from Germany, Leupold moved to New York in his early twenties and stayed for ten years before moving to LA. He was attracted to the panoramic landscapes of California and its surrounding states. When he ventures beyond the city, he looks for something undiscovered. “I like to go into the desert and walk off the path,” he says.

Leupold’s off-the-beaten path excursions recently took him to Chile. There, he found himself surrounded by breathtaking contrasts of the natural world, from a lagoon draped in mist to a snow-dusted mountain range.

“It feels like we are kind of at the end of the world,” he said during the trip. “But it’s beautiful because it feels authentic, it feels raw.”

The new Montblanc 1858 Geosphere accompanied Leupold on the trip, a journey that helped the photographer **find inner clarity and renewed strength through a reconnection with nature — and himself.**

PHOTO CREDIT: Montblanc

REAL ESTATE

ANDREW "TWIGGY" FORREST (NET WORTH: $5.9 BILLION)

Sale price: $11.9 million (2018)

The mining magnate, once Australia's richest man, purchased the modernist home sight unseen. The four-bedroom residence has a private jetty, a boat shed and a pool.

ALAN RYDGE ($1 BILLION)

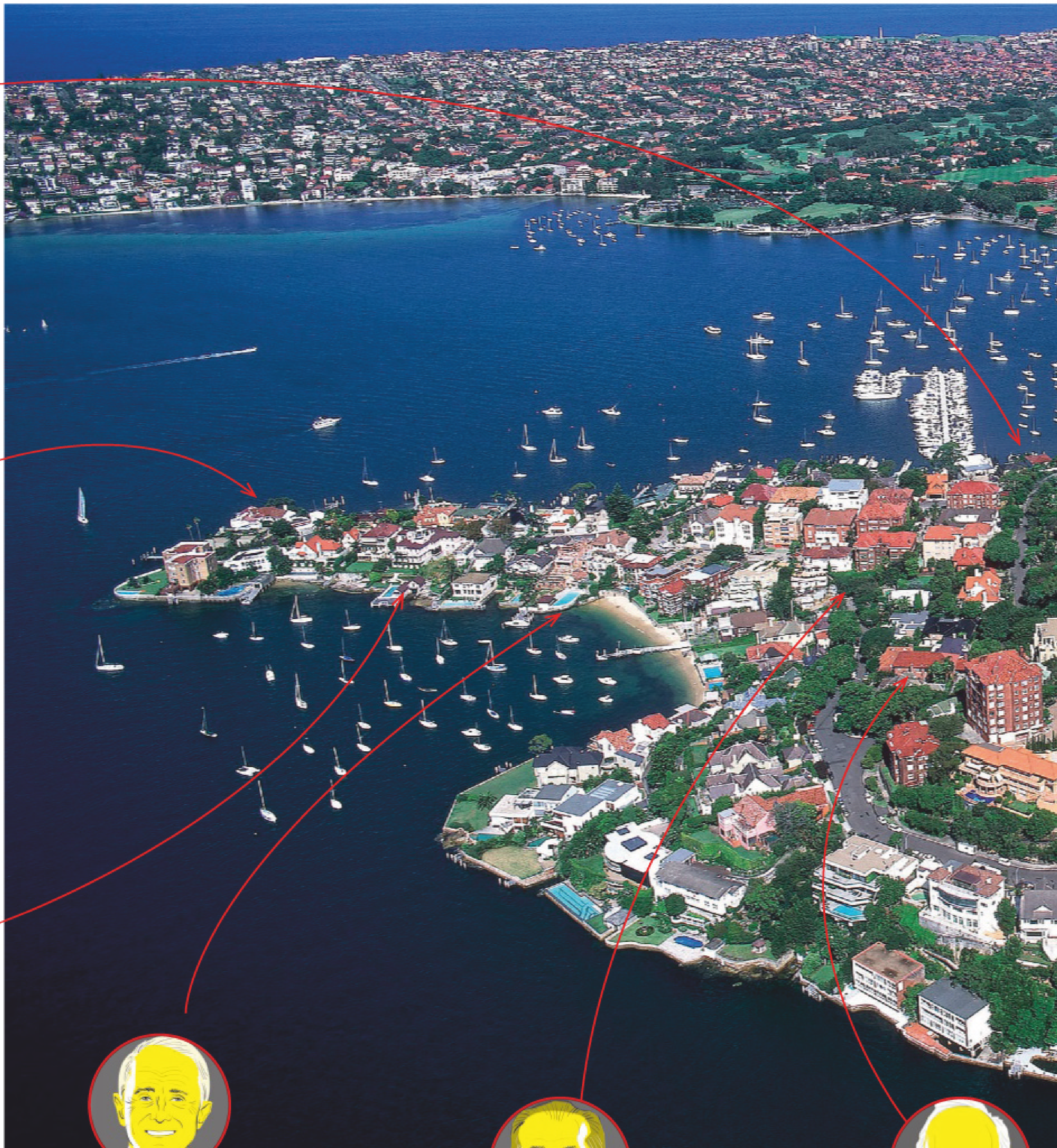
Sale price: $6.7 million (2005)

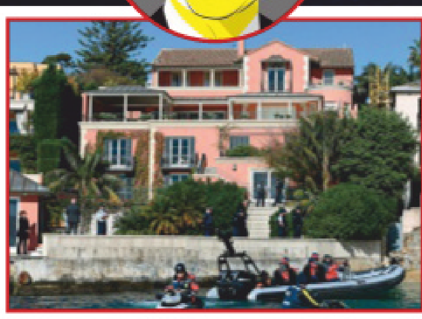
The Rydge family, who made their money from cinemas and hotels, has lived in Point Piper since 1960, when family patriarch Sir Norman Rydge bought a home there. Son Alan's place is on the tip of Woollahra Point.

HUANG XIAOLIN

Sale price: $46.2 million (2016)

The owner of record is the daughter of Chinese packaging billionaire Huang Bingwen (net worth: $1.2 billion). The Italianate mansion sports colonnaded verandas, marble fireplaces, 360-degree views of the city skyline and a rooftop Jacuzzi. Prior owners include Matt Handbury, a nephew of Rupert Murdoch, and teen-magazine publisher Deke Miskin, who frequently rented out the house to celebrities such as Bono, Hugh Jackman and Naomi Watts.

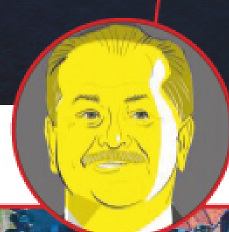




MALCOLM TURNBULL

Sale price: $3.2 million (2010)

Turnbull, the former Australian prime minister who worked in finance before entering politics, was mocked as "the Prince of Point Piper." During his term, Turnbull only lived in one of the two official prime minister residences, declining the Kirribilli House in Sydney in favor of his more luxurious Point Piper home.



ANDREW LIVERIS

Sale price: $7.9 million (2013)

The Australian-born former Dow Chemical CEO—and past advisor to Presidents Obama and Trump—has a triplex apartment next to the Royal Prince Edward Yacht Club.

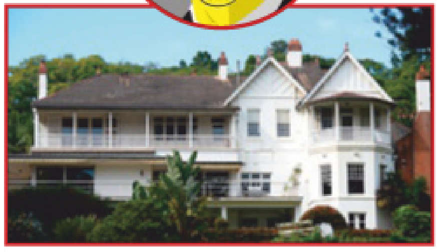
JACK COWIN ($1.7 BILLION)

Sale price: $870,000 (1980)

The Victorian-style five-bedroom is ringed by sandstone walls and a balcony overlooking the bay. Cowin has also adorned the home with murals depicting the Sydney area.

FRANK LOWY ($6.5 BILLION)
Sale price: $350,000 (1971)

While Lowy has seen neighbors come and go, the real estate mogul has stayed ensconced here for decades—and shrouded in secrecy. Not even Google Earth has fully mapped the street outside.



SCOTT FARQUHAR ($7.4 BILLION)
Sale price: $53.1 million (2017)

MIKE CANNON-BROOKES ($7.4 BILLION)
Sale price: $72.2 million (2018)

In 2017, Farquhar bought the 1.7-acre Elaine estate from the Fairfax newspaper family, who had owned the property for 126 years. The estate, with its three-story house, sits on the shore of Seven Shillings Beach and includes a grass tennis court and century-old pine trees. The following fall, Cannon-Brookes took up residence in the neighboring 2.7-acre Fairwater estate, which the Fairfaxes had also owned.

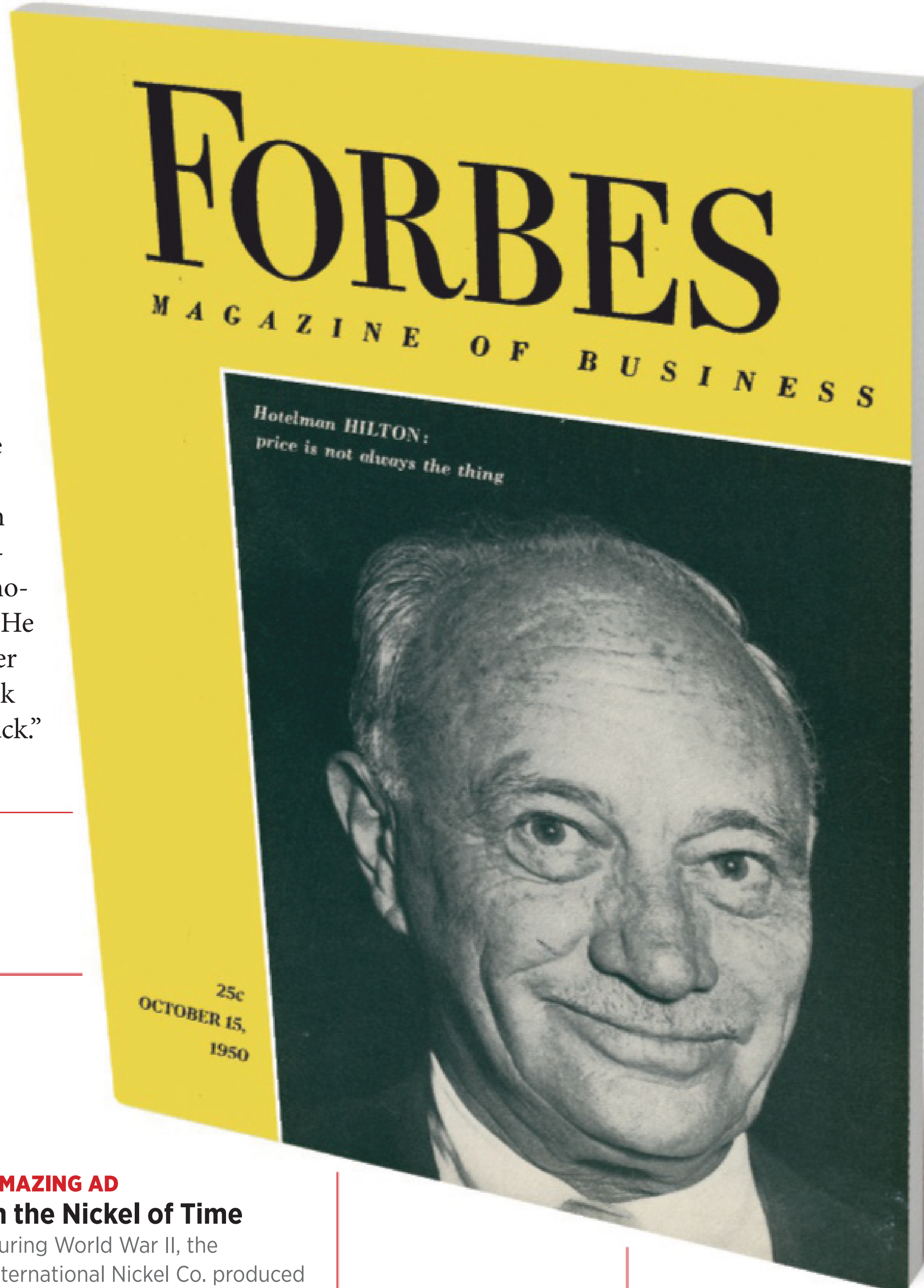
BY HAYLEY CUCCINELLO
ILLUSTRATIONS BY BRIAN TAYLOR; DAVID MESSENT-GETTY IMAGES; PROPERTY DATA PROVIDED BY PROPERTY REGISTRY

FROM THE VAULT

ROOMS TO GROW: OCTOBER 15, 1950

"THE GREATER PART of my selling experience has been in the role of a buyer trying to get somebody to sell me a certain property at a price I am willing to pay," Conrad Hilton admitted in an essay for *Forbes* outlining how he had built his hotel empire, which included New York's Waldorf-Astoria and Chicago's Palmer House.

Hilton learned the art of the deal as a purveyor, though, not a purchaser—as a clerk at his father's general store in San Antonio, New Mexico, back when the West was still a woolly frontier. One frequent customer back then: "Old John," a shaggy-haired prospector who dropped dead in front of the shop a few days after claiming to have found a massive silver deposit. Customers like Old John "did not buy at the Hilton store . . . they traded there . . . [and] Old John and his fellows would have taken most unkindly to be hurried out past an impersonal cashier." Hilton applied the lessons he learned as a boy to his hotels and stressed the importance of keeping guests happy. He had recently informed his staff, "One hotel is like any other hotel. The difference is how you treat the guests. All we ask of you is to be nice to people so they will want to come back."



NOTABLE AND NEWSWORTHY

Fallout Farms

D.C.-area realtors "who wanted to capitalize on the fears of bureaucrats" were "advertising farms 10 to 100 miles from Washington as 'A-bomb havens.'" The *Washington Star* newspaper tried to stamp out the trend, telling realtors using "'scare' words in copy that the frightening aspects of the ad must be deleted."

SIGN OF THE TIMES

Proto-Amazon

Freiman's Department Store in Pembroke, Ontario, didn't carry any products. Instead, customers came in and selected items by browsing through color slides. Orders were delivered by truck promptly—"sometimes within a matter of a few hours."

AMAZING AD

In the Nickel of Time

During World War II, the International Nickel Co. produced the same amount of ore as it had during the entirety of its 54 years in operation. In peacetime, its nickel went into everyday products like eyeglass frames and diagnostic instruments.

FROM THE EDITOR'S DESK

Cold War Calm

A year earlier, the Soviets had shocked the West with their first test of an atomic weapon. Yet B.C. Forbes cautioned against full-blown panic: "My belief is that Russia is not prepared, at least at this time, to throw down the gauntlet to all the rest of the world."

BY ABRAM BROWN

GALERIE BILDERWELT/GETTY IMAGES; BERNARD HOFFMAN/LIFE PICTURE COLLECTION/GETTY IMAGES; HOWARD SOCHUREK/LIFE PICTURE COLLECTION/GETTY IMAGES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"2018 Retirement Healthcare Costs Data Report," HealthView Services, 2018
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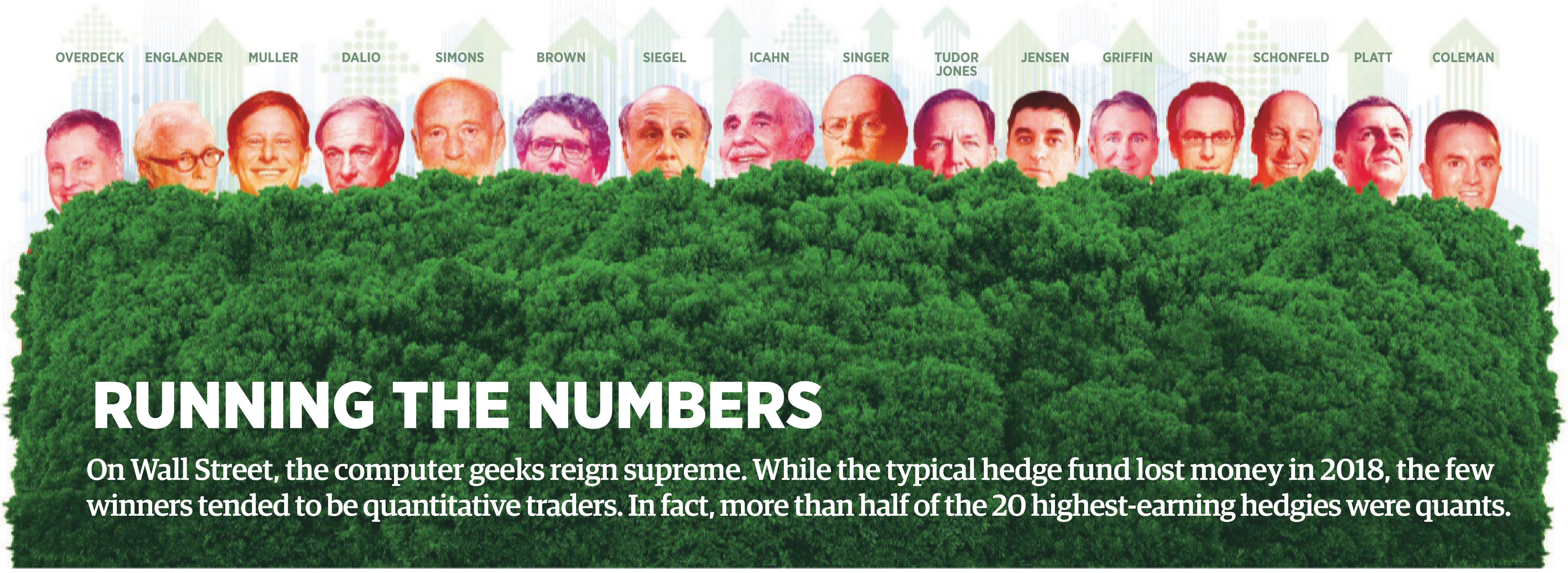


RUNNING THE NUMBERS

On Wall Street, the computer geeks reign supreme. While the typical hedge fund lost money in 2018, the few winners tended to be quantitative traders. In fact, more than half of the 20 highest-earning hedgies were quants.

	NAME / ORGANIZATION	EARNINGS ($MIL)
1	**JIM SIMONS** / RENAISSANCE TECH. CORP.	$1,600
2	**MICHAEL PLATT** / BLUECREST CAPITAL MGMT.	$1,200
3	**RAY DALIO** / BRIDGEWATER ASSOC.	$1,000
4	**KEN GRIFFIN** / CITADEL LLC	$870
5	**JOHN OVERDECK** / TWO SIGMA INVESTMENTS	$700
5	**DAVID SIEGEL** / TWO SIGMA INVESTMENTS	$700
7	**ISRAEL ENGLANDER** / MILLENNIUM MANAGEMENT LLC	$500
7	**PAUL TUDOR JONES II** / TUDOR INVESTMENT CORP.	$500
7	**DAVID SHAW** / D. E. SHAW & CO. LP	$500
7	**JEFFREY TALPINS** / ELEMENT CAPITAL MGMT.	$500
11	**CARL ICAHN** / ICAHN CAPITAL MGMT.	$480
12	**CHASE COLEMAN III** / TIGER GLOBAL MGMT.	$450
13	**ALAN HOWARD** / BREVAN HOWARD ASSET MGMT.	$300
14	**CRISPIN ODEY** / ODEY ASSET MGMT.	$200
15	**GREG JENSEN** / BRIDGEWATER ASSOC.	$150
15	**PETER MULLER** / PDT PARTNERS	$150
15	**ROBERT PRINCE** / BRIDGEWATER ASSOC.	$150
18	**STEVEN SCHONFELD** / SCHONFELD GROUP	$130
19	**PETER BROWN** / RENAISSANCE TECHNOLOGIES CORP.	$100
19	**PAUL SINGER** / ELLIOTT MGMT.	$100

= QUANTITATIVE TRADER

NEW BILLIONAIRE

DOWAGER OF DENIM

With a revamped product mix, Levi's is thriving again—and continues to enrich members of its founding family, such as Mimi Haas.

LOOK WHAT'S BACK in style: Levi's. The clothing maker is increasingly popular not only in stores but on Wall Street, too, where it staged a triumphant return to the New York Stock Exchange last month in a $623 million IPO. The last time Levi Strauss' shares traded publicly, Ronald Reagan was president and jeans came acid-washed.

The revival of the brand is particularly good for Mimi Haas. The former Levi's board member inherited a 16.3% stake in the company from her late husband, Peter, a descendant of the founder and a former Levi's CEO. Those shares are now worth $1.3 billion. In all, ten members of the Haas clan control almost 70% of company stock and nearly three quarters of the voting rights.

They have plenty not to be blue about. Levi's has produced four straight years of sales growth following the 2015 relaunch of its women's line and a new focus on T-shirts and other tops. Says Levi's CFO Harmit Singh: "Our results have been very strong—our outlook for the future is high, and our brands are hot."

BUY, HOLD, SELL

SPRING IN A GLASS, TIMEPIECES IN SPACE

Expert advice on luxe investments.

BELINDA CHANG

James Beard Award–winning sommelier and wine writer

BUY

2016 Vin Blanc de Palmer, Vin de France

A dry, lush, ripe blend of Muscadelle, Lauzet and Sauvignon Gris, this white *(below)* represents a renaissance in Bordelais thinking—and drinking. It's around $190. Buy every bottle you can and cellar it.

HOLD

Venica & Venica Sauvignon Ronco Delle Mele, Collio 2016

Spring in a glass for $50 to $60 a bottle, with citrus, melon and stone fruits on the nose and a decadent texture on the palate. If you can manage to wait, it'll get even better—and more valuable.

SELL

Pét-Nat

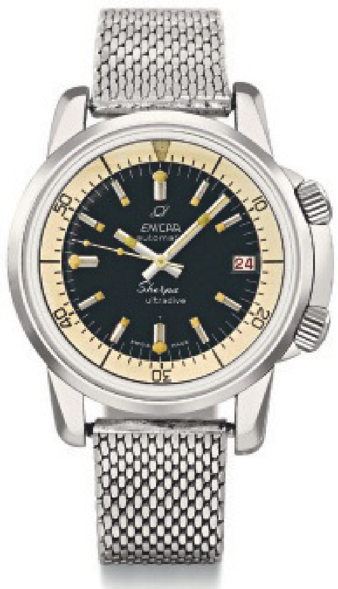
These gently sparkling, typically unfiltered wines, made according to the difficult *méthode ancestrale*, were a bargain at $30, but they were never meant to age like a vintage champagne. Let them go.

JOHN REARDON

International head of watches, Christie's

BUY

Enicar



A new book on the legacy Swiss watchmaker is in the works from timepiece guru Martijn van der Ven. All indications are that vintage Enicar watches *(above)*, some available for less than $1,000, will be the next big thing.

HOLD

Vintage Gilbert Albert Ricochet Collection pocket watches

At the moment they cost less than $10,000 apiece, but prices will be enhanced when collectors learn how rare and special these offbeat handmade watches truly are.

SELL

Omega

With the 50th anniversary of the moon landing nigh, all eyes are on Omega, whose timepieces accompanied Apollo 11 there. Have a particular timepiece related to the space race? It'll go for $100,000-plus: one giant leap for your bottom line.

MOTI SHNIBERG

Chairman of MutualArt, a comprehensive online art-market information guide

BUY

Viviane Sassen

Straddling fine art and fashion photography, the Dutch artist, whose work *(below)* runs in the $5,000 range, is known for her portraiture and abstractions. Although her auction activity is light, everything up for bid has sold.

HOLD

Bridget Riley

The contemporary British artist—known for her optical-illusion paintings—has always been a hit with collectors. Her work has gone for as much as $5.8 million, and her solo exhibition at London's Hayward Gallery this autumn will likely drive demand up.

SELL

Kerry James Marshall

Marshall's paintings, which depict working-class African-Americans, rocketed to fame last year, when his *Past Times* (1997) sold for an astonishing $21.1 million at Sotheby's. Own a Marshall? Move it.

RICHEST BY STATE

NEW JERSEY

POPULATION:
9 MILLION
GROSS STATE PRODUCT:
$592 MILLION (0.9% GROWTH)
GSP PER CAPITA: **$65,708**
(RANKS 10TH)
NUMBER OF BILLIONAIRES: **8**
RICHEST:
JOHN OVERDECK
NET WORTH:
$6.1 BILLION

AFTER YEARS OF solid returns at his quant hedge fund, Two Sigma, John Overdeck is used to winning. But recently he had to settle for third place while competing at the National Museum of Mathematics' annual charity math competition. Overdeck, who placed second in the 1986 International Math Olympiad, lost to Geva Patz, a former CUNY physics professor, at the Manhattan museum's event in February. Nonetheless, Patz says, "If you put the two of us in a room and asked us difficult mathematical problems, I suspect that John would do better."

Prior to cofounding Two Sigma in 2001, Overdeck spent two years at Amazon, which included a stint as Jeff Bezos' technical assistant. He now divides his time between the fund and his foundation, which focuses on improving American education. To date, Overdeck and his wife, Laura, have given more than $100 million to organizations such as the Robin Hood Foundation, which fights poverty in New York City, and Teach for America.

NEW BILLIONAIRE BY LAUREN DEBTER AND WILL YAKOWICZ; HEDGE FUNDS BY NATHAN VARDI; BUY, HOLD, SELL BY CHRISTIAN KREZNAR; RICHEST BY STATE BY NOAH KIRSCH
ILLUSTRATION BY CHRIS LYONS (RIGHT); SEAN MCCABE (FAR LEFT); MIMI HAAS BY ANTHONY BEHAR/SIPA/NEWSCOM; VIVIANE SASSEN BY CHRISTINA SABROWSKY/GETTY IMAGES

STOP BUYING “ANALYTICS.”

LeaderBoard

CONVERSATION

WHO KNEW nutrition bars were so contentious? Daniel Lubetzky, founder of Kind Healthy Snacks, graced the cover of our March 31 World's Billionaires issue. Echoing writer Angel Au-Yeung, some readers scoffed at the bars' nutritional profile and what they regard as skinflint behavior from Kind, which boasts of its social consciousness. *Forbes* found Lubetzky himself has given some $10 million to the company's Kind Foundation, though the foundation had doled out just $2 million in grants. Kind pushed back, noting in a statement that "between KIND and The KIND Foundation" it has "donated and invested more than $20 million in cash and Kind products"—including $8 million of items and cash to places like City Harvest and Feeding America. (*Forbes* excluded product donations from our tally of Kind's giving.) Mused reader Brienna Wagner on Instagram: "It's not enough for companies to be good at something. They have to be *great* at supporting the greater good."

KYLIE'S COLD CASH

The inescapable Kylie Jenner is the world's youngest-ever self-made billionaire. What does "self-made" mean, though? Even the dictionary (which ought to know) weighed in.

@DICTIONARYCOM: "Haven't we gone over this? *Self-made:* having succeeded in life unaided."

MEDINA MENDEZ: "Kylie is not 'self-made.' She began her venture off an inheritance. If she'd started it at zero dollars, perhaps 'self-made' would apply."

PHILLIP BARR: "Regardless of all the critics, she owns 100% of the company. She had money behind her, yes, but she's turned millions into billions. It's a huge achievement."

DAVE CASTILLO: "I wish people who were born rich, have always been rich and will likely always be rich would stop getting called 'self-made.'"

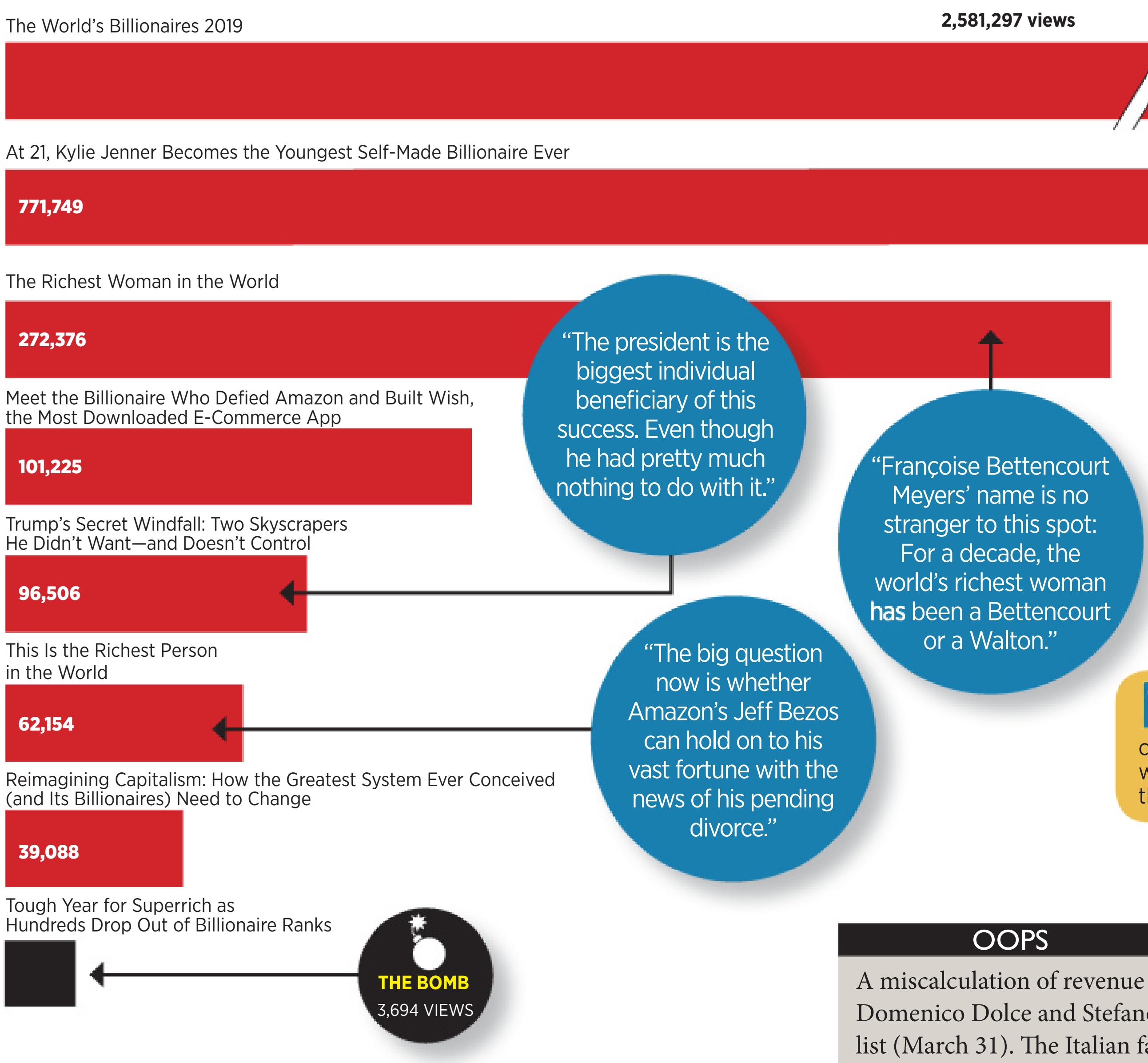
CHAD SPRINGER: "I know I'm in the minority, but I think Jenner is an amazing example of knowing what you have at your disposal and using it to build a brand and a fortune."

@NRENNIS: "[Mark] Zuckerberg started Facebook in his dorm room with no money. *That's* self-made."

MARY NOSIR: "It was her idea to invest all her money into this company. If she had not done so, she wouldn't be a billionaire. Don't listen to the haters."

THE INTEREST GRAPH

Love 'em, hate 'em or envy 'em, Earth's 2,153 billionaires are nothing if not click magnets. (Oh, and really, really rich. They're that, too.)



OOPS

A miscalculation of revenue led us inadvertently to leave Domenico Dolce and Stefano Gabbana off the World's Billionaires list (March 31). The Italian fashionistas are worth $1.3 billion each.

BY KRISTIN STOLLER

Verticals

PHOTOGRAPHS BY TIM PANNELL FOR FORBES

TECH DISRUPTORS

Robo-Rigs

Self-driving cars are at least five years away. Eighteen-wheelers are coming first, and a 34-year-old Caltech Ph.D.'s unicorn is king of the road.

BY ALAN OHNSMAN

Southeast of Tucson's airport, tucked into a patch of Sonoran Desert dotted with cholla cactus and paloverde trees, is a sand-colored industrial building with a horizontal emerald-green slash over the entry doors. Only when a Peterbilt semi-truck loaded with cameras and sensors rumbles out does a visitor get any hint of the technological revolution brewing within.

TuSimple cofounder Xiaodi Hou established this depot last year to test the company's self-driving big rigs on paid runs, the next step in commercializing an autonomous system for the $700 billion trucking market. (The trucks currently operate with a safety driver and an engineer on board; Hou wants to start making runs "driver out" next year.)

TuSimple isn't the only startup focused on driverless trucks. Embark Trucks, Ike, Starsky Robotics and Kodiak Robotics, all based in the San Francisco Bay Area, are racing to develop their own autonomous big rigs, but TuSimple is on the fast track. Hou, a 34-year-old computer scientist, has raised $178 million for the San Diego startup at a $1.1 billion valuation, making it the first self-driving trucking unicorn and giving it more than three times the war chest of Embark, its closest startup rival. The cash pile gives it an edge in expanding its fleet, key to inking more deals with clients such as Phoenix-based Royal Paper. With 15 Peterbilts and Navistars, it has more semis transporting goods for paid customers than any competitor, *Forbes* estimates, and Hou claims a technological record, too—TuSimple has a proprietary vision system that can see a kilometer ahead, farther than any other driverless tech company, including Waymo.

"Our 1,000-meter perception—I think this could be the biggest strength of the company so far," Hou says.

Waymo, a unit of Alphabet, the parent company of Google, launched its autonomous taxi service in Phoenix in December, beating GM Cruise and Uber to market. Last year it also started testing self-driving trucks, using the same suite of sensors and software that successfully pilot its hundreds of minivans. If Waymo wanted to double down on trucking, its deep pockets could quickly fund a fleet bigger than all the others combined.

Along with his vision system, Hou has created software designed exclusively to drive big trucks, not cars, by using deep learning—a cutting-edge field that trains machines to recognize objects and figure out their own responses. He's convinced it will set TuSimple apart from even Waymo.

If he's right, TuSimple will be early to profit from the autonomous-driving boom. Dozens of tech giants, startups and global auto players are jostling to catch up to Waymo. But most self-driving car programs are still experiments, at least five years out from being sustainable businesses. Autonomous trucking looks like it could become a commercial success earlier, propelled by a driver shortage that the American Trucking Associations puts at 60,000 a year for semi drivers. TuSimple also hopes to benefit from the relatively easier challenge of navigating interstates rather than crowded city streets. The plan is to have self-driving trucks haul goods long-distance between depots on the outskirts of big metros, and then transfer the cargo to smaller, manned trucks for local delivery.

This technology isn't fully proven yet, but every truck taking off in autonomous mode from the Tucson depot makes the system that much smarter. Road tests and video-game-like testing are speeding development. The more complex, the better. "Designing a problem is becoming my signature ability," says Hou, an Xbox gamer in his spare time.

A NATIVE OF BEIJING, Hou earned degrees in computer science and engineering from Shanghai Jiao Tong University in 2008, then made his way to Pasadena, California, for doctoral studies at the California Institute of Technology, deciding that Caltech—home to NASA's Jet Propulsion Laboratory—was a better fit than grad schools in the Bay Area. "I wanted to live deliberately," he says, quoting Henry David Thoreau's *Walden*. "I didn't want to be harassed by a lot of so-called opportunities around me."

During his six years at Caltech, he studied how the brain processes visual information—including an unpleasant stint in the neuroscience department's monkey lab. He also explored artificial intelligence developed with the use of deep learning, a field so little understood that he says it was "like alchemy. People didn't know what to do with it."

By 2015, one thing he thought it could do: help create a driverless system faster than was possi-

Cofounder Xiaodi Hou, inside the cab of a TuSimple truck in San Jose, California. His self-driving trucks will soon start 22-hour runs, with no overnight stops.

MUNSHI AHMED FOR FORBES

balance your mind, body and taste buds.

antioxidant

ble when Google began its self-driving research in 2009. Rather than rely on thousands of lines of code for specific features, deep learning teaches computers to recognize patterns from images, mimicking human brains. (Waymo has since become a heavy user of deep learning.)

And while he respected Google's progress, Hou was convinced that complex city environments were too tough for robo-cars. Highways are another matter. For cars, the artificial intelligence "is not there, and it's not going to be there until we have a revolution as big as deep learning," he says, estimating that will take another five years.

Bernd Heid, a senior partner at McKinsey & Company, agrees trucking faces a smoother ride. "Highway is a very easy application, or relatively easy, because it's controlled. It can be easily mapped," he says. "You do not have kids playing around."

Hou envisioned TuSimple while still at Caltech, founding it in 2015 with his friend and business partner Mo Chen, who is CEO, while Hou opted for the CTO and president titles. Chen is based in China, where TuSimple has a second headquarters and is developing robot trucks to carry cargo at local ports. "Xiaodi's role is to build the technology, because that is our future. My role as the CEO is to support him," Chen says.

TuSimple closed a $95 million round in late 2018, led by Chinese tech firm Sina Corp., its earliest backer, with investment from Hong Kong-based Composite Capital Management. U.S. backers include Nvidia, which supplies TuSimple's computing system. Hou expects to raise more money over the next year. Revenue from runs, mainly within Arizona and starting last summer, brought in less than $100,000 last year. As the company expands its fleet to 50 in June, revenue from paid runs should rise to $1 million a month in the second half of 2019, chief product officer Chuck Price says. Individual states' restrictions on self-driving vehicles prevent TuSimple from taking autonomous commercial loads coast to coast; for now its self-driving is limited to states like Arizona and Texas. There's also the worry another fatality could complicate its plans: After an Uber self-driving test car hit and killed a pedestrian in Arizona a year ago, the ride-hailing company's program was stalled for months.

To customize its fleet, TuSimple collaborates with industry heavyweights, including Peterbilt and Navistar, as well as truck engine maker Cummins. In the next few months, TuSimple says, it's launching a paid pilot program with a large U.S. agency to make 1,000-mile runs autonomously.

Cash flow from these runs helps offset the estimated $200,000 expense of robotic trucks: about $150,000 for the vehicle itself and the rest for its nine cameras, two lidars (laser sensors for 3-D imaging), forward radar and onboard computer. There's also the cost of TuSimple's constant road tests, which for now include salaries for a safety driver and an engineer in the cab. TuSimple thinks it will have a compelling pitch to customers: You'll make back the added expense in two years. Big, class-8 trucks, the kind you see on open 300-mile stretches, need technology designed specifically for their mass, such as the ability to avoid hard braking or sudden maneuvers that cause jackknifes. They also need to see as far ahead as possible. Like Waymo, TuSimple uses lidar and radar, but it predicts long-range cameras will be the best option for trucks. Its one-kilometer vision system is key to that, and also a selling point for future customers. By being able to see as far as a kilometer ahead, TuSimple maintains, it can cut fuel costs by up to 15% a year by better regulating speed and lane position to avoid rough braking.

Market demand and basic economics could trump jitters about putting 40-ton driverless trucks on the road. In Tucson, just off U.S. Interstate 10, the vital cargo corridor that links the port of Los Angeles to the Southwest and ultimately Florida, Hou sees success ahead: "It is going to happen in trucking." ✱

HOW TO PLAY IT BY JON D. MARKMAN

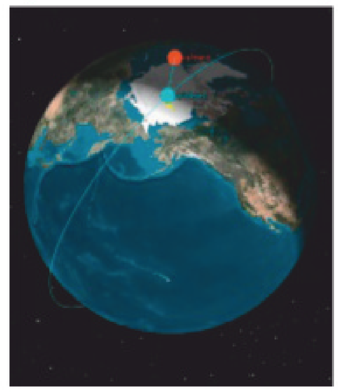
The idea of robotic 40-ton tractor-trailers speeding down public roads is one part exciting and two parts terrifying. To ensure safety, sensors and software need to connect to fast, battle-tested networks for instantaneous data analytics. **Crown Castle International** is in the business of connecting telco networks to the mere 29 billion devices expected to be hooked up by 2022. The REIT claims market leadership in small-cell technology, which can support the increased bandwidth required for 5G. Sales reached $5.4 billion in 2018, up 25%, and it raised guidance for 2019. Plus, its dividend yields 3.6%.

Jon D. Markman is president of Markman Capital and author of Fast Forward Investing.

FINAL THOUGHT

✱ *"Driving is a spectacular form of amnesia. Everything is to be discovered, everything to be obliterated."* —**JEAN BAUDRILLARD**

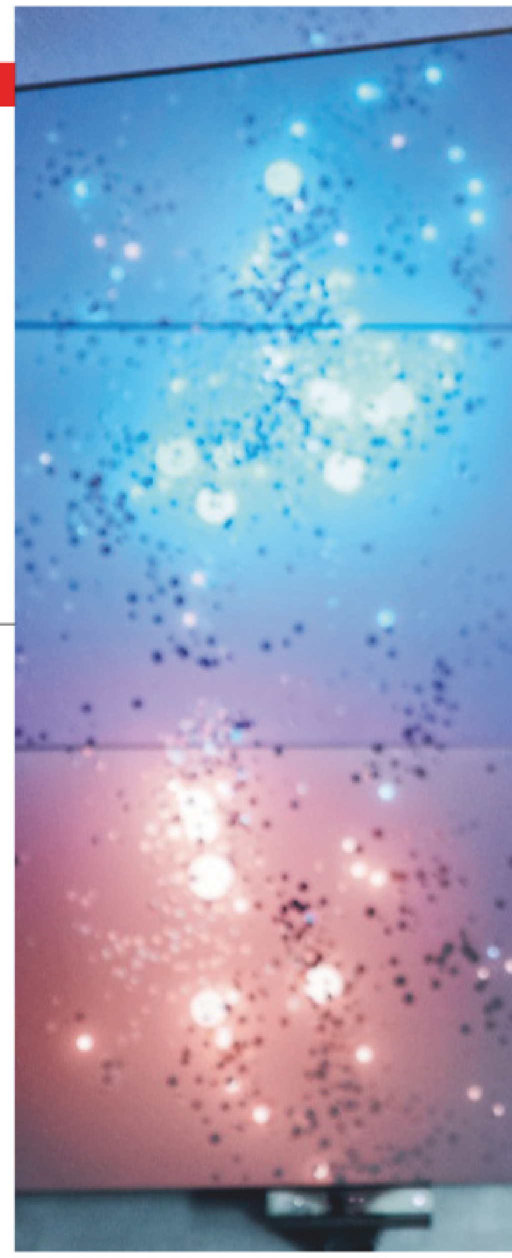
COMING ATTRACTIONS



LINKED OUT

We humble earthlings have been flinging satellites hither and yon since 1957. Staying connected to the growing number of missions in the heavens above is a more novel challenge. Hello, then, to Audacy (audacy .space), a four-year-old company founded by Stanford grads and SpaceX veterans that's working to create what you might call a dial tone in space via a constellation of communication nodes, ground stations, a radio-and-antenna user terminal and open-source software, which it expects will be able to monitor space missions anywhere from the Earth to the moon. As older, strained systems reach capacity, Audacy—which has raised some $15 million and has a terrestrial station in San Francisco, with more planned for Singapore and Luxembourg—seeks to capture the booming demand for real-time "space talk" as commercial satellites proliferate. Audacy aims to launch some commercial ground-station services later this year and full commercial service in 2021 with the help of its partner, Earth-imaging company ICEYE. Eat your heart out, Sputnik.

COMING ATTRACTIONS BY KATHLEEN CHAYKOWSKI



Mind Over Mortar

A former Goldman Sachs trader's $800 million company wants to extend the wellness fad from aromatherapy and hair gummies to condominiums and casino hotels.

BY SAMANTHA SHARF

"Wellness" is one of those extremely broad words that mean everything and nothing. To its adherents, it signifies more than "health," which is dismissed as merely the absence of illness. Wellness has become a giant industry, or at least a very flexible marketing term. In the grossly inflated view of one industry group, wellness is a $4 trillion global business. Gym memberships and organic produce can be considered part of the trend. But so can incense, DNA tests and sleep aids. So why not "well" buildings?

"If you believe in the wellness trend, why wouldn't you apply it to the largest asset class there is?" asks Paul Scialla, the 45-year-old former Goldman Sachs partner and founder of Delos, a New York City-based startup. "That seems to be the way to extract the most value from it."

Scialla is selling a "Well" building certification that real estate developers, employers and hotel and resort operators can display in their lobbies and use in their marketing materials. Modeled after the well-known LEED green building standard, which is administered by a nonprofit, Scialla's project differs in one key aspect: Delos is very much a for-profit company. Over the last five years, he has raised $237 million at a valuation, most recently, of $800 million.

Backers include Bill Gates' personal investment office and Jeff Vinik, the former manager of the Fidelity Magellan fund. The New Age celebrity doctor Deepak Chopra sits on Delos' board, as does actor Leonardo DiCaprio. Scialla even persuaded Rick Fedrizzi, a creator of LEED, to put off retirement to run the International Well Building Institute, the part of Delos' business that evaluates buildings.

Scialla hopes that his customers will be as eager to pay for Well as property owners have been to embrace LEED, which has certified 76,800 projects since its inception in 2000. LEED charges $13,000 to evaluate a new 100,000-square-foot property. In a recent study, a third of building owners said that going green added more than 10% to their properties' value.

It's too soon to say whether a Well certification gives the same boost. But developers are desperate for anything that might allow them to charge a premium for cookie-cutter condos, offices and standard-issue hotel rooms. In a city flooded with indistinguishable accommodations, the MGM Grand in Las Vegas bills 20% more for 500 rooms kitted out with Delos-approved "Stay Well" products.

A Delos evaluation for a 100,000-square-foot space costs some $20,000. When the Manhattan construction firm Structure Tone moved from leafy Greenwich Village to congested 34th Street, Robert Leon, who oversees sustainability at the company, thought reluctant staffers would appreciate a Well certification for the new space. Clients also like that the firm is ahead of the wellness-trend curve. "We want to be able to say we did it first," he says. In 2017, Structure Tone spent $90,000 to get its Well certification and make the office upgrades required by Delos.

Scialla, raised by immigrants from Italy and Holland in suburban Plainfield, New Jersey, got the idea for Delos in 2009 when he was a newly minted partner at Goldman Sachs. A passing interest in sustainability led him to wonder why so much was made of how buildings affected the planet, rather than how

HOW TO PLAY IT BY WILLIAM BALDWIN

So, wellness comes from using smaller plates and drinking water? Once upon a time, medicine was based on science; that's how we got the pharmaceutical industry. Now it seems to be tilting in Deepak Chopra's direction. If you want to bet on that trend, look for companies that will prosper in a world of science-free thinking. Put vitamins in your portfolio with Herbalife Nutrition and Vitamin Shoppe. Ride the growth in organic food with Hain Celestial Group and Sprouts Farmers Market. Own a piece of the yoga business via Lululemon Athletica. National Beverage, which sells LaCroix, is your water play.

William Baldwin is Forbes' Investment Strategies columnist.

Delos founder and CEO Paul Scialla in his startup's downtown Manhattan office, where 15 plant-covered walls help clean the air.

they affected people. It didn't take his undergraduate finance degree from New York University for him to see the potential in the wellness trend.

The idea seemed so obvious that he spent a few years poking at it on nights and weekends to be certain no one had beaten him to it. He found decades of research linking buildings to health, but no one trying to build a brand around it. "I couldn't find the bogeyman," he says.

He named his nascent project after the Greek island of Delos, where, according to myth, the god Apollo was born and, he says, its inhabitants lived forever. By 2013, Paul and his twin brother, Peter, also a partner at Goldman, left the bank to focus on Delos full-time. (Peter is president and chief operating officer.) Both brothers invested in the venture (they won't say how much). That December, Delos scored its first $24 million in outside funding.

Delos' certification business has ramped up slowly, but 2018 was a big year. It has now handled 1,555 projects totaling 314 million square feet in 48 countries. *Forbes* estimates that revenue came to $20 million last year. The firm has 170 employees.

The office certification process starts with Delos assigning a concierge, who guides the customer through the more than 200 elements Delos uses to evaluate a space, including the proximity of workstations to windows, easy access to drinking water and the size of the plates in the cafeteria (10 inches or smaller discourages overeating). Then an independent reviewer comes in with a suitcase full of sensors that measure air, water and sound quality.

Scialla says wellness is a "gigantic" market and he's not concerned about competition from Fitwel, a building wellness certification service launched in 2017 by the Centers for Disease Control & Prevention and the General Services Administration. A nonprofit, the Center for Active Design, operates the service. Fitwel isn't as comprehensive as Well but costs a lot less. Its customers pay $8,000 for a project of up to one million square feet. Tishman Speyer, whose properties include Rockefeller Center in New York, is using Fitwel to certify its global portfolio by the end of this year.

Looking ahead, Scialla has his sights on other revenue streams, including smart homes. For a price starting at $3,500, homeowners can buy a Delos app called Darwin that gives them wellness readings that include air and water quality. Simonds, an Australian homebuilder, is installing the system in 1,000 new houses this year, and KB Home is testing it in California. Insurance companies could use Delos' environmental data to make smarter health-coverage decisions, he says, cutting premiums for customers who live in wellness-outfitted homes. When pressed for details, he admits it's just a concept. "I'd like people to look back 20 years from now and think, 'Remember when we didn't consider the human condition when designing and building these spaces that we're spending 90% of our lives in?' " he says. "How did that get missed?" *

TIMOTHY ARCHIBALD FOR FORBES

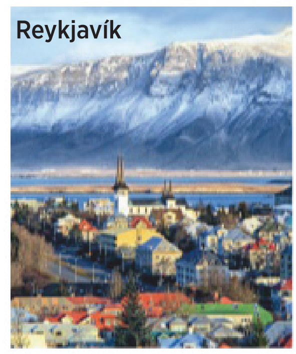
FINAL THOUGHT

* *"It is not to live but to be healthy that makes a life."* —**MARTIAL**

BY THE NUMBERS

WOMEN ON THE VERGE

Where's the best place on earth to be a female in the workforce? Get thee to Reykjavík. PwC's annual deep dive into workplace equity gathered data from nearly every country in the Organization for Economic Cooperation & Development, weighing the pay gap, boardroom representation, job security and more.



Reykjavík

The Best
(100 IS TOP POSSIBLE SCORE)

1. Iceland **79.1**
2. Sweden **76.7**
3. New Zealand **73.6**
4. Slovenia **73.5**
5. Norway **72.3**

(The U.S., at 61.1, ranked 23rd.)

The Worst

33. South Korea **39.1**
32. Mexico **40.7**
31. Greece **44.1**
30. Chile **45.3**
29. Italy **49.6**

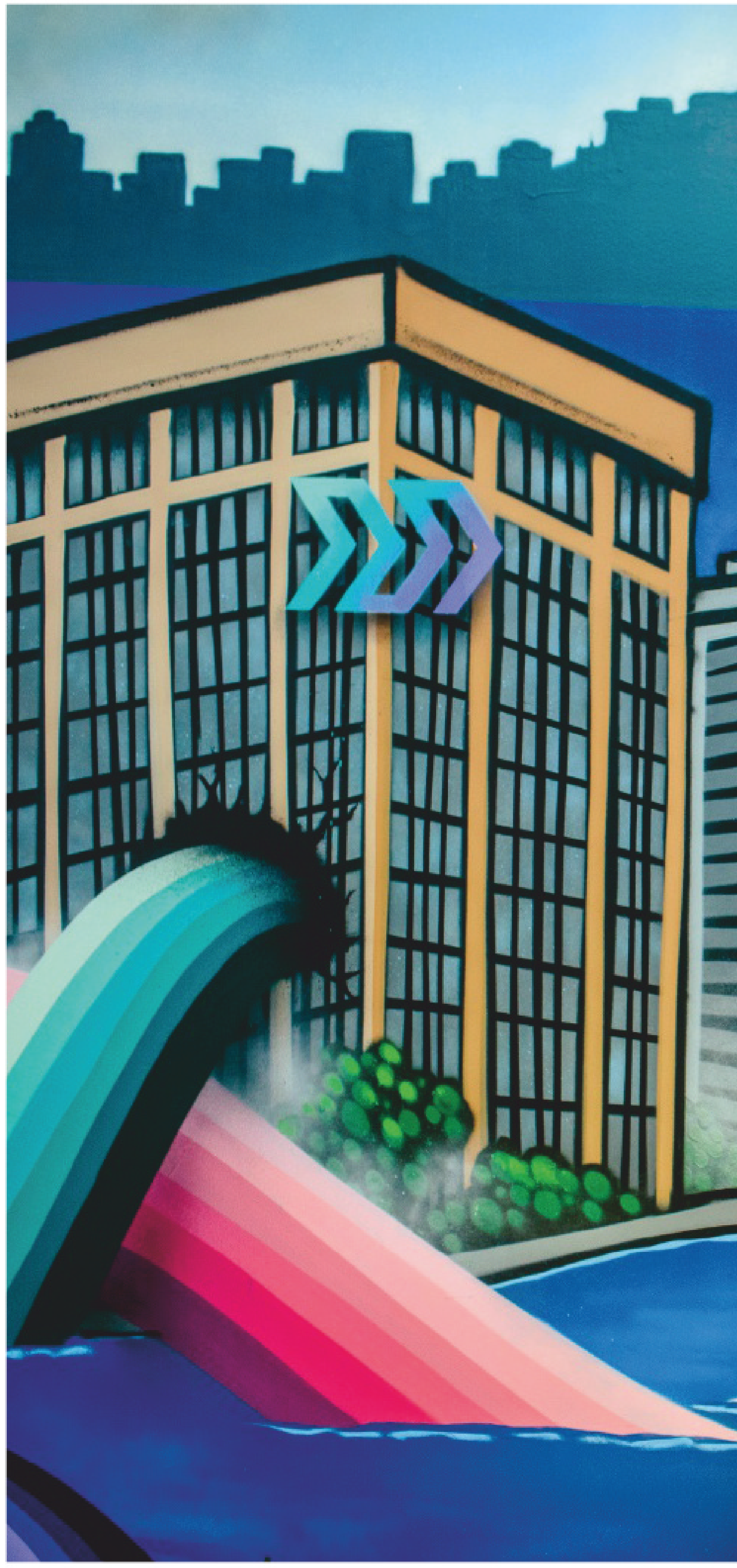
Source: PwC Women in Work Index 2019.

BY THE NUMBERS BY NIALL MCCARTHY; REYKJAVÍK: TOSHIO KISHIYAMA/GETTY IMAGES

Third Time's the Charm

Jason Gardner struggled to find a winning formula. Now his plug-and-play payments company has venture firms begging to hand him money.

BY JEFF KAUFLIN



Jason Gardner, Marqeta's founder, in the company's headquarters in Oakland. Over the past two years, Marqeta has grown from 75 to 275 employees.

TIMOTHY ARCHIBALD FOR FORBES

In the spring of 2015, Jason Gardner, the founder of Marqeta, a payments processor, left a grim board meeting and went for a walk with his lead investor, Arnon Dinur of 83North. Facebook had pulled the plug on a joint initiative, and Marqeta had fallen far short of its revenue target.

Walking the streets of Emeryville, California, a small town between Berkeley and Oakland, Gardner told Dinur that Marqeta wouldn't last long with the cash it had. He needed to buy time. The company moved to a weekly budget, and Gardner volunteered to cut his own salary by 40%. "Ninety out of one hundred entrepreneurs would have asked for more money," Dinur says.

"I wanted to show my commitment to not only the board but the company, that I'm willing to do anything to get to the next step through determination," Gardner says. "It's almost like inflicting pain on yourself. . . . It gets you to understand what's at stake here." Two other executives also volunteered to slash their salaries by 40%, and the startup didn't lay anyone off.

Four years later investors were meeting again at Marqeta's office, now a 16-story building in Oakland with the company's name on it. This time the meeting's tone was different. Revenue had doubled every year since 2016, reaching close to $150 million in 2018, a source tells us. Marqeta was finalizing plans to raise at least $250 million at a valuation of about $2 billion, nearly quadrupling its value from two years ago.

Despite a rough start, Marqeta has had the right idea since its founding in 2010. It pursued a niche in the payments-processing business that had seen little innovation in over a decade: card issuing and processing, which involves deciding whether a debit card transaction should be approved. It iterated through three business models, staying frugal along the way and ultimately landing on an open-software platform that outside engineers could easily plug into. It identified Square and Instacart as future winners, recruiting them as customers and latching on for the ride.

Gardner, 49, is hardly the type you'd expect to become a successful Silicon Valley entrepreneur. Growing up in a middle-class family in New Jersey, the son of a stockbroker father and a legal mediator mother, he had a motley assortment of jobs in high school, from working at a thrift shop to selling tie-dyed shirts on New Jersey trains on his way to some of the 80 Grateful Dead concerts he attended. Although he wasn't a coder, he liked hanging around Radio Shack and taking apart radios and TVs. In college at Arizona State, he worked as an assistant to Senator John McCain in his early 20s but decided politics wasn't for him.

Later he worked in sales at research companies like Gartner, eventually founding a payments startup in 2004 that allowed people to pay rent electronically. Gardner was so short on cash over

ing firm was already using the name Marketo. He raised $6 million from investors like the Israeli VC firm 83North.

It took him almost two years to release the product, because he'd built an entirely new payment processor along the way. He opted not to partner with one of the big companies that had been doing issuing and processing for decades, like First Data or FIS, because he thought going solo would give him speed and flexibility. But the loyalty card flopped. Gardner learned that it took too much capital to scale a consumer retail product and that he wasn't good at consumer-facing design. "I like the complexity of building infrastructure," he says.

Gardner's second business product was commissioned by Facebook: a gift card that you could send to friends and was redeemable at places like Target and Olive Garden. Facebook launched it in January 2013 but was disappointed in the sales and shut down the card about a year later.

Around this time, companies like the communications software maker Twilio were starting to let clients access their technology and customize it via application programming interfaces, or APIs. Gardner chose that approach for Marqeta's third product and announced it in late 2014.

With Marqeta's API, companies that wanted to issue debit cards could authorize transactions themselves and set the criteria for accepting them. "We move the system of record or ledger to our customer," Gardner says. And companies no longer needed to separately solicit relationships with a card network (like Visa), a bank, a transaction processor and a plastic card manufacturer. Marqeta had built those partnerships and wrapped them up in one package.

Once customers were set up, Marqeta would make money the same way Visa and Mastercard do, by taking a cut of every transaction. How much? Marqeta is mum, but we're told the average fee is roughly 1% before rebates to clients.

One of its first clients was DoorDash, the San Francisco food delivery company whose thousands of "Dashers" retrieve takeout meals from restaurants on behalf of customers. With Marqeta, DoorDash has issued debit cards that don't work unless a Dasher is at the correct restaurant, and it won't authorize transactions for values that exceed the customer's order amount. Over the past two years, Marqeta's technology has helped delivery companies cut fraud in half, to 5% or less.

In 2016, Marqeta's trajectory tilted upward. Instacart let Marqeta power the debit cards its freelance delivery people used to buy groceries. When Square decided to issue a virtual debit card

the next few years that he sometimes put mortgage payments on his credit card. In 2007 he sold the company to MoneyGram for $28 million and stayed on as an executive for two years.

Then he started to think about new uses for debit cards. His first idea was a prepaid loyalty card sold at grocery stores where you could pay $50 for $55 worth of items from retailers like Jamba Juice. Gardner called it Marqeta (after a woman he and a friend had traveled with in Prague), brushing off the fact that a market-paired with its fast-growing money-transfer app, Square Cash, Marqeta helped it build the product within six weeks, rather than the months a traditional issuer-processor would have taken. Square also used Marqeta to create the plastic debit card it released the following year.

Kabbage, a small-business lender, signed on, issuing a Marqeta-powered debit card that let customers spend some of their loaned funds at retail merchants. It took Kabbage "months versus quarters" to release the cards, says Kathryn Petralia, Kabbage's president. "All traditional providers remain cumbersome."

Two insights drove Marqeta's success. First, instead of focusing on banks as customers—as Fiserv, Tsys and FIS have done profitably for decades—it looked sideways, directly targeting tech-enabled service providers in the new economy. Second, by taking an API approach, Marqeta sped up the setup process and catered to companies that want to control how digital payments are authorized.

In 2017 Alipay, the Chinese payment app that has more than 900 million global users, signed on to enable Chinese nationals to use the app at U.S. retailers while traveling. Brex, the credit card startup, became a customer. Marqeta raised $25 million that year from investors like Visa, Granite Ventures and 83North, while bringing in $70 million of revenue, we estimate. It doubled its staff to 160 employees.

"Payments is deceptively complex," says Omri Dahan, Marqeta's chief revenue officer. "There are a range of varied interests in the ecosystem who need to be balanced just to produce one card swipe that's successful. . . . You have to get used to getting punched in the face every day."

It helps to have healthy clients. Square went from a $4 billion market value in 2016 to $32 billion today, becoming Marqeta's largest customer and processing more than $5 billion in volume through Marqeta last year, estimates Brett Winton at Ark Investment Management, a large Square investor. In three years, DoorDash's valuation has gone up tenfold to $7 billion and Instacart's fourfold to $8 billion.

Dahan says Marqeta hunts for clients in large markets that are being disrupted. And it thinks like a venture capitalist. "What do we think of the company? Is it well funded? Well led? How are their engineers?"

Marqeta expects to double revenue again this year. Dahan says its clients are evenly spread across a handful of industries, which include lending, delivery, e-commerce, travel and one he thinks is the most promising: digital banking. In addition to Square, which has 15 million monthly users for its Cash app and is looking more and more like a bank, Marqeta is working with (as yet unnamed) digital-first "challenger banks" in Europe.

What could go wrong? FIS has APIs with features that are similar to what Marqeta offers and could make them better if its bank customers want more. Stripe, the payments giant that's worth $22.5 billion, released a card-issuing service last year at what is rumored to be half Marqeta's price.

"You can put 50 engineers on something and maybe move five times faster," Dahan says. "But being in-market, scaling programs, learning from those programs? That is not something that can be fast-forwarded."

For now, Marqeta has something else in its favor: its clients' trust, which is rather important in a money-handling business. But there's nothing permanent about even this advantage, so Jason Gardner is going to be looking over his shoulder. He's had some practice with that. *

HOW TO PLAY IT BY JOHN DOBOSZ

Changing the focus of a young company the way Jason Gardner is doing with Marqeta can pay big dividends down the road. It did for **Gentex**. Fred Bauer founded the Zeeland, Michigan, company in 1974 and enjoyed success selling proprietary dual-cell photoelectric smoke detectors and other industrial fire-protection equipment. Growth shifted into overdrive in 1982, when Gentex entered the automotive market with the first automatically dimming mirror, followed by the introduction five years later of an electrochromic mirror with optical sensors to detect glare and darken automatically. Automotive sales account for 98% of Gentex's $1.8 billion in annual revenue, and the company is expanding its dimmable-glass business into aircraft. Gentex has a 20% return on assets and no debt. Dividends have grown 7.3% annually since the first payout in 2003.

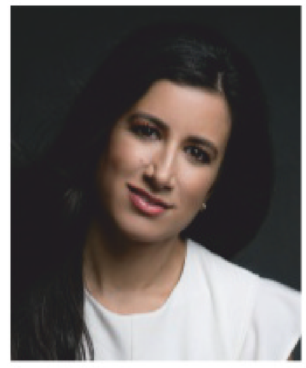
John Dobosz is editor of Forbes Dividend Investor *and* Forbes Premium Income Report.

FINAL THOUGHT

* *"An exchange is a transaction in which the two contracting parties both gain."*

—ANTOINE LOUIS CLAUDE DESTUTT DE TRACY

MARGIN PROPHET



SWADDLED IN VENTURE CAPITAL

When **Monica Royer** gave birth to her daughter in 2010, she was dismayed by the "tattered, stained" clothing the hospital dressed her newborn in. In 2013 Royer launched Monica+Andy, a multichannel retailer of organic, sustainably made baby clothes. She has raised $12 million in venture funding; celebrity-mom fans of the brand include Serena Williams and Jessica Alba.

After you got home, you found standard baby clothes weren't much better than what your daughter got at the hospital.

It all left her skin irritated. I learned that so many brands spray flame retardant on clothing and [the garments] have allowable amounts of lead.

Your younger brother is the founder of Bonobos, the successful menswear startup.

Before Walmart acquired his company, I had a front-row seat to everything Andy had done as a pioneer for digitally native clothing brands, how he built a completely new marketplace. He advised me and introduced me to his network of retail experts.

What hurdles have you had to surmount?

The biggest challenge I've faced is raising capital as a woman with a baby brand, when so many venture capitalists are males who aren't in charge of buying baby clothes. But I was fortunate to meet feminist men who believed in the brand, and in me.

MARGIN PROPHET BY TANYA BENEDICTO-KLICH; MARIA PONCE

Whopper of a Turnaround

To fix Burger King, Daniel Schwartz, 38, turned to 3G Capital's standard recipe for comebacks: cut costs, incentivize management—and stay hungry for acquisitions. This time it worked.

BY CHLOE SORVINO

Challenge: Make a 60-year-old hamburger chain into something cool. Daniel Schwartz accepted that assignment six years ago after 3G Capital took over Burger King and named Schwartz chief executive. He was 32.

Burger King was a tired outfit, with a confusing menu and sales going sideways. Its restaurants averaged half the revenue of McDonald's. But where there is underperformance, there is opportunity. Schwartz slashed overhead at the Miami headquarters. He streamlined food prepa-

Daniel Schwartz (left) and Jose Cil dine on Burger King Whoppers, Tim Hortons donuts and Popeyes fried chicken at the St. Regis hotel in New York, where Cil had a meeting with investors.

JAMEL TOPPIN FOR FORBES

ration. He dished out stock to middle managers. He shrank the payroll and the capital budget by selling company-owned stores to franchisees.

In the years since, Burger King has become Restaurant Brands International (following some more classic 3G dealmaking). Restaurant Brands is now a growth stock. Burger King opened up 1,000 restaurants around the globe last year, to 600 for McDonald's. McDonald's stores still have a bigger average volume, but Burger King's are gaining on them; in the U.S., BK boosted its average volume per outlet by 30%, to $1.4 million, while McDonald's had a gain of only 20%. All of Burger King's success is, of course, in stark contrast to what's going on at Kraft Heinz, another 3G turnaround that went the other way. In February, Kraft Heinz said it was taking a $15.4 billion write-down, a signal that its classic food brands were losing value.

The situation is different at Burger King. At the parent-company level, where revenue consists mostly of franchise fees, Restaurant Brands took in $5.4 billion last year, up 17% from 2017. McDonald's revenue was off 8%.

"How many companies that have been around since the 1950s grow the top line at 10%?" says Schwartz, 38.

For a fast-food conglomerate that oversees 26,000 locations with combined sales of $32 billion, Restaurant Brands is quite agile. Three months ago the company introduced the Whopper Detour promotion, in which Burger King offered its signature item for a cent if the customer ordered food on the BK phone app within 600 feet of a McDonald's location. In February came the 45-second Super Bowl ad featuring historic footage of Andy Warhol slowly unwrapping and methodically eating a Whopper. The BK app topped the charts in Apple's App Store during the campaign; throughout the Super Bowl, "Andy Warhol" was the most searched term on Google.

Maybe Schwartz can even make his hamburger chain cool enough for New Age customers. Plans are under way to introduce a plant-protein patty from Impossible Foods, the startup backed by investors like Bill Gates and the venture capital arm of Alphabet. This is a big deal for Impossible, with an expected rollout in 7,000 Burger Kings soon.

The past decade has been a whirlwind for Schwartz, who combined a certain amount of luck—in the right place at the right time—with a large amount of energy. A lanky guy who has a big smile and a tendency to speak with his hands, Schwartz left Cornell in 2001 with a degree in applied economics. Four years later, he landed a job at 3G Capital, the private equity firm that became famous for engineering the Anheuser-Busch InBev merger (and later infamous for the sickly Kraft Heinz merger).

The King's New Reign

MCDONALD'S HAS RULED AS AMERICA'S TOP BURGER FOR DECADES, BUT BURGER KING IS MAKING GAINS.

	McDonald's	Burger King
Total restaurants globally	37,855	17,796
Percent of locations franchised globally	93%	99%
Systemwide sales for franchisees	$86 billion	$21.6 billion
Revenue from franchise locations	$11 billion	$1.6 billion
Annual revenue change from franchise locations	9%	35%
Earnings from franchise location revenue	$9 billion	$928 million
EBIT of parent company	$8.8 billion	$1.9 billion
Enterprise value of parent company	$173 billion	$40 billion

Schwartz became a 3G partner at 27. "The group believes in investing in young people and giving them opportunities," he says. "I worked hard and proved that I really cared. More so than anything else, I put the business and the firm ahead of myself." His wife tolerated the long hours, perhaps because, as a physician in residency, she worked late too.

Schwartz went hunting for deals. Burger King looked intriguing. "I'd ask my wife or my mom, 'If McDonald's is worth $70 billion, what do you think Burger King is worth?' They'd say, '$30 billion?' " Schwartz recalls.

Paying a 46% premium for the publicly traded shares, 3G acquired the chain for $4 billion, including debt. Schwartz then raised his hand to help run it. "I wanted to be part of this. And I didn't want to just sit in an office and get monthly reports."

At 29, Schwartz became BK's chief financial officer. He sold the corporate jet. He told employees to use Skype to make free international calls. And to get a feel for the whole business, he worked shifts off and on at Miami Burger Kings, cleaning toilets, cooking burgers and manning the drive-thru.

In 2012, 3G took Burger King public again, and Schwartz got the chief executive slot in June 2013. In the next 18 months, Burger King stock doubled, while McDonald's lost 8%.

Focused as he was on selling hamburgers, he hadn't left behind his deal-making instincts. Rechristened Restaurant Brands, his company acquired Canadian coffee chain Tim Hortons in 2014. In 2017 it spent $1.8 billion in cash to get the Popeyes chicken chain.

Warren Buffett is a fan, having put up $3 billion in equity to help finance the Hortons deal. So is Bill Ackman, whose Pershing Square hedge fund owns 5% of the stock; 3G owns 41%.

The second-largest shareholder: the employees, with more than 5% of stock. Thanks to a match for those who invest their bonuses in RBI shares, nearly all 300 middle managers (average age: 37) own shares; at least 100 have become millionaires. Schwartz is sitting on about $100 million in stock and options.

"I'm comforted as an owner when all of the key employees own a lot of stock," Ackman says. "It makes them much less focused on short-term things. They're much more focused on 'Will this make the business more valuable in five years, ten years?' "

Recently, Schwartz was moved up to executive chairman, and longtime Burger King exec Jose Cil, 49, became CEO. "We take bets on people," Cil says. "When they are ambitious and willing to work harder than anybody because they're driven by something beyond a paycheck, they want to do something big."

Schwartz lives in Florida with his wife and three kids. He has been working out of RBI offices in Miami and Toronto, but now he's going to be spending more time at the 3G office in New York, with assignments that range beyond the restaurant chains. "I'm not gonna be CEO at another company," he says. "But we aspire to do more, and over time we can buy another business down the road."

Or perhaps repair some of the businesses that 3G already owns. Could someone who has engineered a turnaround at Burger King work some magic on old ketchup and cheese brands? His diplomatic answer: "Maybe you could ask me that question in six months, when I hopefully get a little bit closer to the business of Kraft Heinz."

3G's business is as much about building as buying and selling. Schwartz says: "Most traditional investment firms, if they were in our shoes, probably would have sold [RBI] many years ago. Not only did we not sell, we bought more brands along the way. We are building this into a big company with a long-term mindset." ✱

HOW TO PLAY IT BY JOHN BUCKINGHAM

If the high multiples of restaurant stocks scare you, another way to play the success of chains like Burger King is through suppliers like Arkansas' **Tyson Foods.** Headwinds from trade disputes, falling margins in the chicken business and increased input costs have pressured shares, but global protein demand remains strong, bolstered by increasing consumption in emerging economies. Chicken offers a relatively better cost and health profile among proteins. Of course, Tyson is diversified, offering beef, pork and prepared foods in addition to poultry. Given expectations for solid profit growth, the current P/E of 11 for Tyson is much too low.

John Buckingham is CIO of AFAM Capital and editor of The Prudent Speculator.

FOLLOW-THROUGH

ODD COUPLE

On March 20, the $71.3 billion Disney-Fox merger became official. Disney's new assets will make it an even bigger entertainment powerhouse—and the unlikely pair who might help it tie up loose ends are rapper Ice Cube and billionaire jeweler **Carolyn Rafaelian**. The two are bidding $10 billion for 21 of Fox's regional sports networks, which Disney (owner of ESPN) must divest within 90 days. "People ask, 'How did this crazy duo come together?' but that's when the best stuff happens," says Rafaelian, the founder and CEO of Alex and Ani, who was *Forbes'* cover star for June 13, 2017. They're a good match: Rafaelian invested in Ice Cube's Big3 basketball league, which put the Disney bid together, getting $1 billion commitments from Rafaelian, investment bank Macquarie Group and private equity firm Centerbridge Partners. If the group wins the bid—they're up against a potential offer from Major League Baseball and a reported bid from John Malone's Liberty Media—the networks will host local MLB, NBA and NHL games, plus Big3 contests and assorted nonsports content. "When you're flipping channels," Rafaelian says, "it'll be the one you can't flip off."

FOLLOW-THROUGH BY MADELINE BERG
PHOTOGRAPH BY JAMEL TOPPIN

FINAL THOUGHT

✱ *"Established patterns, incapable of adaptability, of pliability, only offer a better cage. Truth is outside of all patterns."* —BRUCE LEE

Lively CEO Alex Cyriac (left) and COO Shobin Uralil, shown on the balcony of the startup's San Francisco headquarters, split work based on their talents and experience. Cyriac runs engineering and operations, while Uralil heads marketing and finance.

TIMOTHY ARCHIBALD FOR FORBES

Fintech's Next Frontier

Best friends Alex Cyriac and Shobin Uralil believe stodgy health savings accounts can be turned into a Millennial-friendly investment vehicle. They're not alone.

BY ASHLEA EBELING

Alex Cyriac was 33, single and healthy when he got a wake-up call about medical costs in retirement. His mom confided she'd stopped taking a medication because the co-pay under her Medicare drug plan had risen $200 a month. Cyriac insisted she fill her prescription and said he'd pick up the tab. "I had naively assumed that when you retire you have Medicare," he says.

Shocked by how high out-of-pocket costs for seniors can be, Cyriac called his best friend, Shobin Uralil, to ask whether his parents were prepared. It was a natural question. The two knew each other through their parents: immigrants from southern India who met up at weddings, birthdays and religious conventions staged by their small Knanaya Christian sect. Uralil responded that his parents hadn't saved for retiree healthcare costs either and added that he himself had just been socked with large out-of-pocket medical bills for the birth of his first child.

That conversation, in 2015, started Cyriac, now 36, and Uralil, now 37, on the path to launching Lively, a VC-backed startup that aims to offer health savings accounts that meet Millennials' expectations for financial products: low (or at least transparent) fees and easy to manage online. Four other fintech startups have HSAs in beta testing.

In 2003, Congress authorized HSAs as tax-shelter bait to lure families into high-deductible plans, which—the theory went—would turn them into more cost-conscious healthcare consumers. At the end of January, Americans held $60 billion in 26 million HSAs, an average of $2,300 per account, reports HSA advisory firm Devenir. Still, that's a pittance compared to how big the pot could grow if Millennials embraced HSAs as they have 401(k)s; more than 90% participate in employer-sponsored retirement plans when eligible, the National Institute on Retirement Security reports.

If you're covered by an eligible high-deductible health plan, in 2019 you can contribute up to $3,500 for an individual or $7,000 for a family to an HSA, reducing your taxable income by that amount. HSA money is tax-free when withdrawn, provided it's used to pay for medical, dental or long-term care expenses. Here's the key: You don't have to use what's in your HSA right away. Instead, you can invest and let your money grow for decades tax-free, so long as you, or a surviving spouse, eventually use it for medical expenses. An HSA can even serve as a backup rainy-day fund; should you suddenly need cash, you can take money out tax-free to reimburse yourself for any prior years' medical expenses paid from outside the


KNOW YOU'RE
ON THE
RIGHT PATH.
Fidelity
Planning & Guidance Center
Retirement Analysis
Good: 87
Show Me:
In This Market:
$6,798/mo
$7,750/mo
$1,042/mo
Get the clarity you need to make the best decisions for your retirement.
• Find out how much you may need to cover your essential expenses, and still do what you want.
• Factor in uncertainties such as health care, Social Security, inflation, and more.
• Get an action plan with specific steps to help you stay on the right track.
Fidelity INVESTMENTS
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IMPORTANT: The projections or other information generated by the Planning & Guidance Center's Retirement Analysis regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Your results may vary with each use and over time.
Investing involves risk, including risk of loss.
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HEALTHY COMPETITION

LOOKING TO INVEST THROUGH AN INDIVIDUAL HEALTH SAVINGS ACCOUNT? HERE'S WHAT LIVELY AND THE FIVE LARGEST HSA PLAYERS (BY ASSETS) OFFER.

HSA PROVIDER	MONTHLY FEE	CASH MINIMUM[1]	INVESTMENT CHOICES AND FEES
FIDELITY	$0	$0	FREE ACCESS TO 37 FUNDS FROM 6 FUND FAMILIES, SOME COMMISSION-FREE ETFS; OTHER TRADES, $4.95
HEALTHEQUITY	$3.95 BELOW $2,500	$2,000	0.4% OF ASSETS A YEAR FOR ACCESS TO 23 VANGUARD FUNDS
HSA BANK	$2.50 BELOW $5,000	$1,000	0.3% OF ASSETS A YEAR FOR ACCESS TO 31 MUTUAL FUNDS OR $3 A MONTH FOR TD AMERITRADE ACCOUNT[2]
LIVELY	$0	$0	FREE TD AMERITRADE ACCOUNT WITH SOME COMMISSION-FREE ETFS; OTHER TRADES, $6.95
OPTUM BANK	$2.75 BELOW $3,000	$2,000	UP TO $10 A MONTH FOR ACCESS TO 31 MUTUAL FUNDS FROM 11 FUND FAMILIES
UMB BANK	$2.95 BELOW $3,000	$1,000	$3 A MONTH FOR ACCESS TO 34 MUTUAL FUNDS FROM 11 FAMILIES

[1]NO NEW INVESTMENTS MAY BE MADE IF CASH HOLDINGS FALL BELOW THIS LEVEL. [2]MONTHLY FEE WAIVED IF CASH BALANCE IS OVER $5,000.

account. Plus, once you turn 65, you can withdraw money for nonmedical uses, paying the same tax as you would on withdrawals from a pretax 401(k).

When they first discussed medical expenses, Cyriac and Uralil already knew a bit about HSAs, both their tax advantages and their drawbacks in practice. Cyriac, a computer engineer by training, had spent two years running operations at Justworks, a New York cloud-based payroll and benefits provider. Uralil, with an M.B.A. from MIT, was running operations at Boston-based Retroficiency, which sold software to monitor buildings' energy efficiency. He oversaw company benefits, including an HSA, which, he says, had a terrible interface and forced participants to keep their savings in cash. (Most of the 2,600 HSA providers in the U.S. are small banks and credit unions that offer only savings accounts and CDs.)

The friends decided they could do better with a digital-native product. In mid-2016, Cyriac quit his new job at payments company Worldpay in San Francisco and rented space at WeWork, becoming Lively's CEO. Startup funds of $600,000 came from friends, a Worldpay executive, the founder of Justworks and PJC, a venture fund that had backed Retroficiency. New dad Uralil held on to his day job longer, moving out to San Francisco in January 2017, just in time for the two to begin an intensive 12-week stint at famed incubator Y Combinator.

By March 2017, Cyriac and Uralil had Lively's simplified HSA, with its exclusively online administration, up and running. By that October, they had added investment options through a brokerage account at TD Ameritrade and had an additional $3.5 million in funding from a group that included NBA star Kevin Durant. This past October, Lively raised $11 million to fund expansion. Its 28 employees now work in a loft space opposite San Francisco's ballpark.

Most of the $100 million in HSA assets Lively has gathered so far has flowed in through word of mouth and online reviews. Its website features videos, snippets of advice and a "no paper cuts" boast. Lively's first iOS app is due to launch in April.

The founders generated early buzz by offering basic individual HSAs for free—plus, later, $2.50 a month if you wanted a TD Ameritrade account. While just 13% of HSA assets are in individual plans, interest in them is strong among self-employed folks and job hoppers rolling over HSA accounts. Lively's small business plan has attracted employers seeking to move benefits administration to the cloud. Zaid Ashai, CEO of Nexamp, a solar company in Boston, says he's switched to Lively for HSAs and fintech startup Guideline for 401(k)s to reduce HR overhead and attract Millennials. "It's a differentiator in recruiting."

Make no mistake: Lively faces some stiff competition, and not just from startups in beta testing. Last November, Fidelity Investments added fee-free individual HSAs to its lineup of employer HSA plans. "We're positioning HSAs as a critical component of employee retirement savings," says Begonya Klumb, head of Fidelity's $4.1 billion-in-assets HSA operation. Lively responded by dropping its $2.50 a month charge for a TD Ameritrade account.

Mark Selcow, a partner at Costanoa Ventures, which led Lively's $11 million round, figures there's plenty of growth to go around. "HSAs are underutilized and under-optimized by consumers," he says. No kidding. While 26.1 million adults under age 65 now have health insurance plans with HSAs, the Employee Benefit Research Institute estimates another 57 million could opt for them through their employers, the Obamacare exchanges or the private market. ✱

FINAL THOUGHT

✱ *"America's health-care system is neither healthy, nor caring, nor a system."* —WALTER CRONKITE

THE CONTRARIAN PICK

COMEBACK KID

The financial crisis hit Ariel Investments' **John Rogers** hard: His $2.2 billion (assets) Ariel Fund plunged 48% in 2008. So he used the tumult to pick up left-for-dead blue chips (Tiffany, Royal Caribbean), and since the March 2009 market trough, Ariel Fund has averaged a 20% annual return, making it the top-performing midcap core fund. Two non-tech picks:

LAZARD

Wall Street forgets about this firm's $215 billion (assets) investment arm, which has a specialty in emerging markets. Those out-of-favor locales are primed for a boost. So, too, is Lazard, which trades at a 44% discount to Rogers' $66 share valuation.

MSG NETWORKS

New York Knicks owner James Dolan, kicking a fan out of Madison Square Garden, told him to "enjoy watching them on TV." That's been a bad bet for shareholders of the Knicks/Rangers broadcaster. Shares and subscribers are down, but Rogers is betting a Knicks turnaround drives a rebound of the battered sports network as well.

CONTRARIAN PICK BY ANTOINE GARA

"Let's recycle right!®"

The recycling program in your company is far too important to let go to waste.

KRISTEN BELL
ACTRESS AND VOLUNTEER "LET'S RECYCLE RIGHT!" SPOKESPERSON

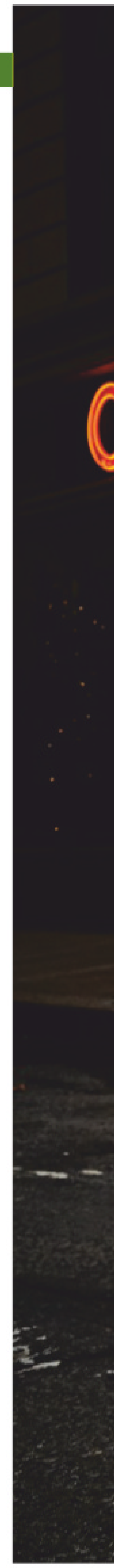
We applaud all companies that are trying to ...
be more environmentally sustainable. And kudos to all of you trying to have a successful recycling program in your buildings -- recycling is one of the most visible actions a company can do to demonstrate its commitment to the environment.

What you might not know is that recycling ...
is collapsing in the U.S. because inconsistent labels on recycling bins throughout society are causing public confusion and leading to millions of tons of 'garbage' being thrown in recycling bins. That contamination is crippling the economic viability of recycling. It also undermines your company's sustainability efforts and the investment in your recycling program.

There is now a national nonprofit solution to fix ...
the public's confusion at the bin. The society-wide standardized labels for recycling bins make it easy for people to recycle properly wherever they might be. Please consider displaying the standardized labels on your recycling bins so that your recycling program, U.S. recycling and sustainable packaging can truly thrive.

Visit recycle across america.org

... to learn about the Recycle Across America® (RAA) 501(c)3 non-profit society-wide standardized labels for bins.



Passive-Aggressive ETFs

If your portfolio needs a dose of something exotic—like green bonds or Egyptian stocks—you might find it at Van Eck.

BY WILLIAM BALDWIN

The broad-market index funds championed by the late John Bogle have a problem. They're boring. For sizzle, go to Van Eck Associates Corp.

Van Eck is a family-owned, midtown Manhattan manager of $48 billion, with most of that money in the 58 exchange-traded funds that it offers to U.S. investors. Some of these are real doozies.

On the Van Eck equities menu are a fund for Egypt (did you even know there was an Egyptian market?), another for Vietnam, one limited to video-gaming and e-sports, one for steel, yet another for minerals like zircon and tantalum. Among such a collection of portfolios it is inevitable that, at any given moment, there will be some duds. But when a Van Eck fund is hot, it is very hot.

One of Van Eck's funds follows a handcrafted index of Chinese companies that omits the banks and state-run enterprises that dominate mainstream indexes. It has climbed 36% this year. A Van Eck junk-bond fund, following a peculiar index limited to "fallen angel" borrowers (those that used to have good credit), has delivered almost twice the return of mainstream junk funds over the past five years.

Van Eck's Junior Gold Miners ETF has all the sizzle anyone could want. "Junior" refers to the smaller, sketchier outfits that either haven't started production or spend a lot to get one ounce out of the ground; a small swing in the price of bullion has an exaggerated impact on their prospects.

WHEN A PLAIN OLD INDEX FUND WON'T DO

THIS SAMPLER FROM THE VANECK VECTORS PRODUCT LIST SHOWS THE EXCITEMENT AND THE RISKS OF ECCENTRIC PORTFOLIOS.

TICKER	EXCHANGE-TRADED FUND	ASSETS ($MIL)	NET COST (%)[1]	YIELD (%)[2]	TOTAL RETURN 5-YEAR[3]	TOTAL RETURN YTD
CNXT	CHINA AMC SME-CHINEXT	$36	0.65%	—%	—%	38.3%
ANGL	FALLEN ANGEL HIGH YIELD BOND	921	0.27	5.6	6.7	7.4
GDX	GOLD MINERS	10,450	0.50	0.5	–1.8	7.0
GRNB	GREEN BOND	26	0.30	1.3	—	1.8
FLTR	INVESTMENT GRADE FLOATING RATE	536	0.14	2.8	1.6	2.1
GDXJ	JUNIOR GOLD MINERS	4,070	0.43	0.4	–2.4	9.4
MOAT	MORNINGSTAR WIDE MOAT	2,100	0.48	1.6	11.8	13.4
PFXF	PREFERRED SECURITIES EX-FINANCIALS	558	0.20	6.0	5.1	9.7
REMX	RARE EARTH/STRATEGIC METALS	143	–1.51	NM	–10.3	16.5
RAAX	REAL ASSET ALLOCATION	23	0.64	—	—	2.3
NLR	URANIUM & NUCLEAR ENERGY	27	0.57	3.8	4.6	5.3
VNM	VIETNAM	419	0.87	0.7	–3.1	13.1

NM: NOT MEANINGFUL. [1]EXPENSE RATIO LESS THE BENEFIT FROM SECURITIES LENDING IN MOST RECENT FISCAL YEAR. [2]LAST 12 MONTHS OF INCOME DISTRIBUTIONS DIVIDED BY NET ASSET VALUE. [3]ANNUALIZED. *SOURCES: MORNINGSTAR; SEC FILINGS.*

Jan van Eck in New York City's Tribeca neighborhood. When his money-manager brother died young of ALS, he had to carry on the business solo.

DAVID YELLEN FOR FORBES

In bad years for gold this fund does very badly, but so far this year, with gold up 2%, the ETF is up 9%, and in 2016, when gold went up 9%, it zoomed 74%.

Van Eck's ETFs occupy a twilight zone midway between active portfolio management and the usually very passive business of index investing. They have fairly rigid holdings, determined by an index. But the indexes they follow are specialized and often concocted in-house.

You could call the Van Eck approach passive-aggressive. The implicit sales pitch is this: Don't settle for the uninteresting result of a conventional index that tracks the whole market. Dare to be different.

Is that a prudent way to invest? Maybe. The answer coming from Jan van Eck, the cautious 55-year-old Stanford law graduate who presides over this empire of risk, is dutifully circumspect. "A steel ETF is not designed for the average retirement plan," he intones. "It's a tool for portfolio managers."

Indeed, in the right hands, a narrow sector fund is more tool than speculation. Suppose you want to harvest a tax loss in a steel stock but don't want to be on the sidelines for the 31 days required by the wash sale rule. The Van Eck fund would be just the right temporary holding.

Consider now emerging markets, where Van Eck has placed a lot of its bets. The obvious choice would be one of the diversified EM funds from Vanguard and BlackRock. But a tax-sensitive investor might rationally buy, instead, all 11 of Van Eck's single-country and regional emerging-market funds. This carved-up portfolio would offer more loss-harvesting opportunities.

How did a smallish money manager wind up with the first, and sometimes still the only, ETF for faraway places like Egypt? Or for a category covering obscure minerals mined in Australia? "We're an American firm, but we've always had an international perspective," Van Eck says.

In 1955 his father, John van Eck, quit a steady Wall Street job to open up a mutual fund called International Investors. The idea was to get Americans interested in then-emerging markets like Japan.

They weren't particularly interested. Assets scraped bottom at $200,000, and to pay bills Van Eck moonlighted as a research analyst, his son relates. Desperate to advance himself, the elder Van Eck took courses at New York University toward a Ph.D. in economics. He never finished the degree, but he came under the influence of a professor who changed his fortunes. That was Ludwig von Mises, the Austrian monetary theorist with a libertarian streak.

Governments borrow money and governments print money, Von Mises lectured. That's a recipe for inflation. Take refuge in hard assets.

It was then illegal for Americans to own gold, but they could own shares in gold producers. In 1968 John van Eck converted his woebegone global stock fund into the first gold mine mutual fund. The next decade vindicated Von Mises' skepticism of paper money. Savers flocked to precious metals and shares of miners. Sixteen years after the switch, assets of International Investors crossed the $900 million mark.

Jan van Eck continues to extract value from hard assets, with funds devoted to bullion, larger gold miners, inflation hedges and natural resource producers. He also has returned the company to its globalist roots. Among his overseas adventures are a German subsidiary designing custom indexes and a Dutch operation selling ETFs to Europeans. The lineup for U.S. customers includes, besides single-country funds, six ETFs that hold overseas bonds.

Do you want international bonds that finance only environmentally worthy projects? Or perhaps bonds that are both foreign and high-yield? Van Eck has what you need, for a price.

Some items on Van Eck's shelves are bargains. Its preferred-stock fund, which specializes in securities of U.S. issuers that aren't banks, is priced at a competitive 0.4% of assets annually, and last year shareholders earned back half that fee via stock lending to short-sellers. Its fallen-angel fund is cheaper than the diversified junk funds from BlackRock and State Street.

Most of the specialized ETFs, though, are premium-priced, with expense ratios half a percentage point or so above those on diversified index funds from Vanguard. Jan van Eck explains that you are paying his firm not just for the construction of a custom index but also for knowing what custom index to construct. "Part of our job is to be a good picker of ideas," he says. "In 2016 no one thought [fallen-angel debt] was a good idea. Everyone was running for the hills."

As John van Eck discovered with his gold mine stocks, just one portfolio that turns into a hit can cover a lot of overhead. The patriarch died five years ago at 98, leaving to his relatives a firm that is now, we speculate, worth $1 billion. There's gold in those gold funds. *

COMPANIES WITH MOATS

To own shares of big companies, you could buy Vanguard's S&P 500 index fund. Or you could try the VanEck Vectors Morningstar Wide Moat ETF, which tracks a list of companies believed by Morningstar to be somewhat impregnable to competition. Starbucks and Salesforce.com are on the list.

The "moat" meme is ancient—Warren Buffett had it in a shareholder letter 32 years ago—but maybe it still has some sizzle. Notwithstanding a higher expense ratio, the moat fund has, over the past five years, outpaced the S&P 500 fund by a percentage point a year. —*W.B.*

FINAL THOUGHT

* *"In this age, the mere example of nonconformity, the mere refusal to bend the knee to custom, is itself a service."* —**JOHN STUART MILL**

SOUND STRATEGIES

FINE-PRINT PROFITS

Public firms sometimes disclose potential problems in tiny type in tedious securities filings. **Zhiping Zhao** learned this in her 13-year Wall Street career, spotting (for example) bombs at AT&T subsidiaries BellSouth and Cingular hidden in subtle word changes. Her startup, **280first**, monitors filings of 1,600 companies, charging fund managers $15,000 a year to sift through the babble. Two possible surprises Zhao sees:

PAPA JOHN'S

It's been a slog for the pizza padre since *Forbes* revealed founder John Schnatter's use of racist language, for which he was eventually ousted. Is the worst over? In its November 10-Q, Papa John's tucked in a warning about "the Company's ability to continue to pay dividends to shareholders based upon profitability."

PFIZER

CFO Frank D'Amelio lauded soaring growth in China on a recent earnings call. A month later, in the pharma giant's 455-page 10-K: "In China . . . we are expected to face strong competition by certain generic manufacturers in 2019, which may result in price cuts and volume loss of some of our products."

SOUND STRATEGIES BY ANTOINE GARA; MARIA PONCE

ForbesLife

PLUS

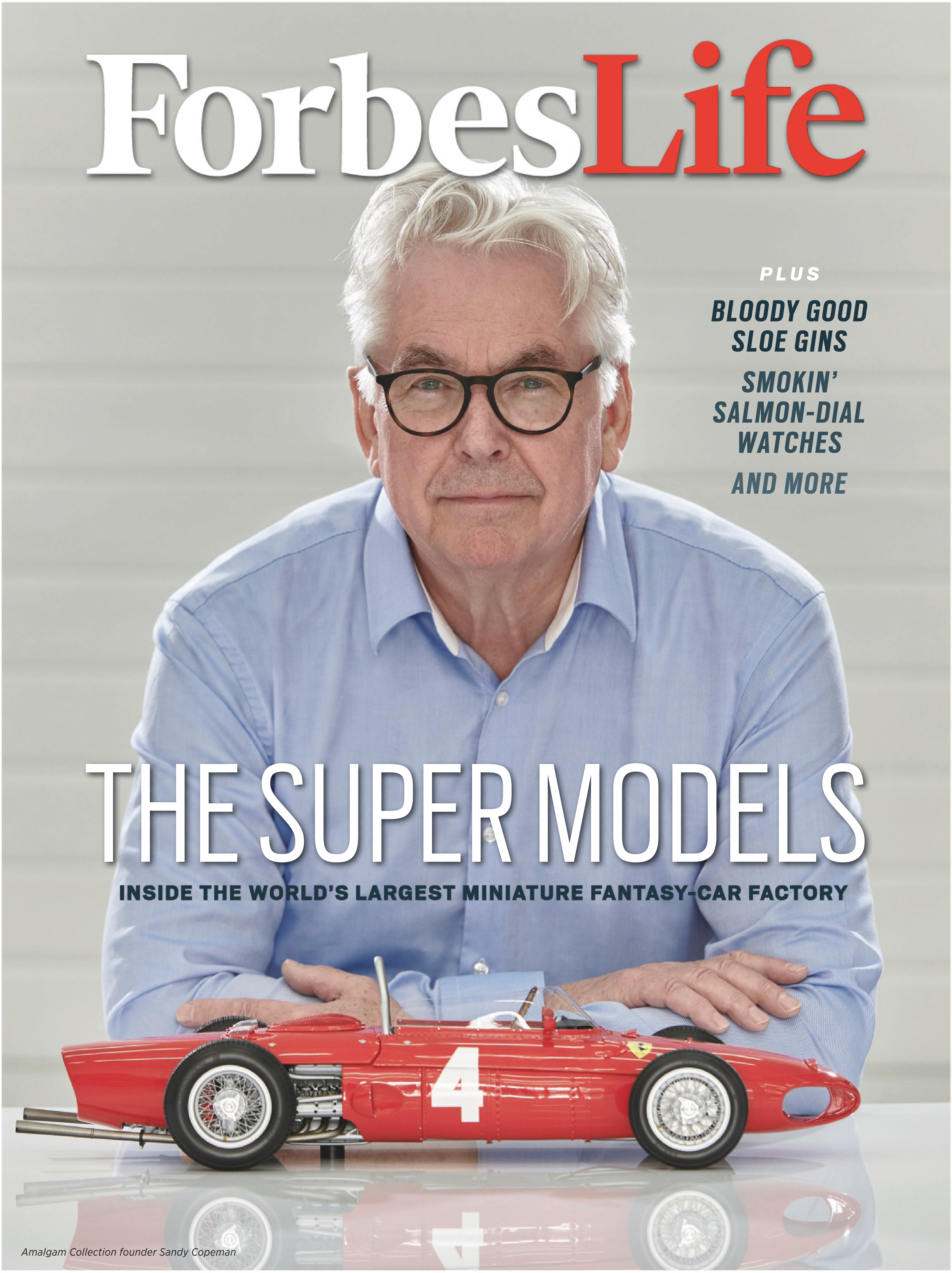
BLOODY GOOD SLOE GINS

SMOKIN' SALMON-DIAL WATCHES

AND MORE

THE SUPER MODELS

INSIDE THE WORLD'S LARGEST MINIATURE FANTASY-CAR FACTORY



Amalgam Collection founder Sandy Copeman

THE EYE

PLYMOUTH SLOE GIN ($32); SIPSMITH SLOE GIN ($40); SPIRIT WORKS SLOE GIN ($40)

THE SLOE LANE

A FEW BLOODY GOOD GINS TO SHAKE UP YOUR COCKTAIL GAME.

For those who appreciate the sweeter side of gin, take it sloe. A beloved winter liqueur in the U.K., sloe gin is made with sloe berries—cousins of the plum—that are steeped in gin along with sugar. The result is a ruby spirit bottled at a much lower proof than, say, a traditional London dry gin—usually 25% to 30% ABV—with a flavor that's at once fruity, tart and bitter, depending on the harvest and blend. While the liqueur can be enjoyed neat or on the rocks, the most famous cocktail is, of course, the Sloe Gin Fizz, but it can also be used to remix a Negroni or a martini. Think of it as ginnovation.

SPIRITS EDITOR: KARLA ALINDAHAO

A SOUND INVESTMENT

MCINTOSH PUTS A NEW SPIN ON THE RECORD PLAYER.

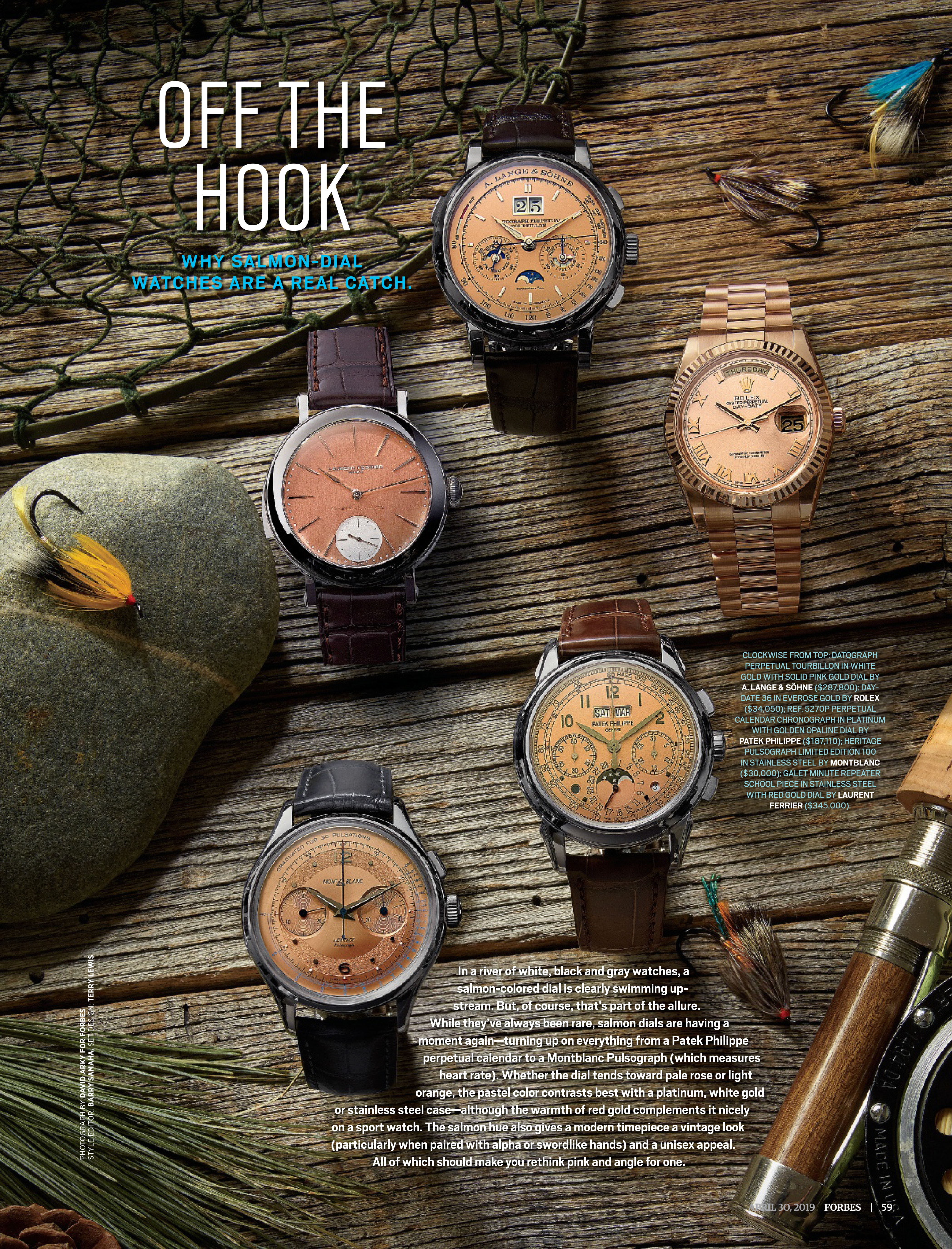
The new McIntosh MTI100 integrated turntable is like a Swiss Army knife for vinyl-loving audiophiles. The familiar-looking black lacquer device plays 33 1/3 and 45 rpm records on a 7-pound platter and comes loaded with a 50-watt Class D amplifier and a vacuum tube preamp as well as digital and analog outputs, a subwoofer output and a Bluetooth receiver. All you need to do is add speakers—or plug into the headphone jack—and drop the needle.

THE MCINTOSH MTI100 ($6,500)

COVER PHOTOGRAPH BY LEVON BISS FOR FORBES

OFF THE HOOK

WHY SALMON-DIAL WATCHES ARE A REAL CATCH.



CLOCKWISE FROM TOP: DATOGRAPH PERPETUAL TOURBILLON IN WHITE GOLD WITH SOLID PINK GOLD DIAL BY **A. LANGE & SÖHNE** ($287,800); DAY-DATE 36 IN EVEROSE GOLD BY **ROLEX** ($34,050); REF. 5270P PERPETUAL CALENDAR CHRONOGRAPH IN PLATINUM WITH GOLDEN OPALINE DIAL BY **PATEK PHILIPPE** ($187,110); HERITAGE PULSOGRAPH LIMITED EDITION 100 IN STAINLESS STEEL BY **MONTBLANC** ($30,000); GALET MINUTE REPEATER SCHOOL PIECE IN STAINLESS STEEL WITH RED GOLD DIAL BY **LAURENT FERRIER** ($345,000).

PHOTOGRAPH BY **DAVID ARKY FOR FORBES**
STYLE EDITOR: **BARRY SAMAHA.** SET DESIGN: **TERRY LEWIS**

In a river of white, black and gray watches, a salmon-colored dial is clearly swimming upstream. But, of course, that's part of the allure. While they've always been rare, salmon dials are having a moment again—turning up on everything from a Patek Philippe perpetual calendar to a Montblanc Pulsograph (which measures heart rate). Whether the dial tends toward pale rose or light orange, the pastel color contrasts best with a platinum, white gold or stainless steel case—although the warmth of red gold complements it nicely on a sport watch. The salmon hue also gives a modern timepiece a vintage look (particularly when paired with alpha or swordlike hands) and a unisex appeal. All of which should make you rethink pink and angle for one.

THE SUPER MODELS

Want a vintage Bugatti, a classic Ferrari or a modern McLaren supercar at a fraction of the cost? Amalgam Collection will build one—at a fraction of the size.

BY CHUCK TANNERT

Sandy Copeman and his team of master craftsmen in Bristol, England, build cars that enthusiasts covet: the 1938 Alfa Romeo 8C 2900 Mille Miglia, 1938 Bugatti Type 57SC Atlantic, 1962 Ferrari 250 GTO 3589GT, 1961 Jaguar E-Type Series 1-3.8 Coupé and 1957 Porsche 356A Speedster, to name a few. Each car is an impeccably detailed, beautifully painted handmade masterpiece—and costs a fraction of what these vintage vehicles and contemporary exotics would sell for at auction or through a dealer.

Then again, they're also one eighth the size. That's because Copeman's company, Amalgam Collection, specializes in building meticulous scale models of vintage and modern automobiles. In fact, without a visual clue to reveal the relative size, it's often hard to tell Amalgam's miniature masterpieces from the real thing. "That's the goal," says the 65-year-old founder. "If you can take a high-resolution photograph and put it in front of somebody, and they have no idea whether they're looking at a model or the real car, then we've done our job."

Some of Amalgam's models even perform like their full-size cousins. For example, the new 1:8 scale McLaren Senna, which costs a little more than $13,000, features headlights, taillights and hazards that light up via remote control. The doors are motorized and can move up and down on command.

TOY WONDER: AMALGAM'S 1:8 MODEL OF THE MCLAREN SENNA COMES WITH A REMOTE CONTROL, WHICH OPERATES THE SUPERCAR'S LIGHTS AND OPENS ITS ELECTRIC DOORS.

Copeman's interest in tinkering developed when he was a teenager. He built a reflecting telescope when he was 14, as well as a couple of electric guitars. One of his greatest passions was modifying and racing mopeds. "I used to strip all the steelwork off them and turn them into lean, mean machines and then race them in my parents' garden in London," he recalls with a chuckle.

After dropping out of school at 17, Copeman became something of a nomad: "I was a young hippie and traveling throughout Europe and North Africa. That's what anyone with a sense of adventure would look to do at the time." He eventually settled in an artists' colony in Somerset, England, called Nettlecombe Studios, which was established by British painter and printmaker John Wolseley. At Nettlecombe, Copeman found his vocation as a model maker after being asked to create scaled buildings and villages for an architecture firm.

He moved to Bristol in the late 1970s, and within a decade he and three of his colleagues had formed Amalgam Modelmakers. "After six years [working for a small model-making company], our skills and confidence had grown to the point where we decided to start our own partnership making architectural models for the likes of Norman Foster and other rising starchitects, as well as industrial designers like James Dyson," Copeman says.

Amalgam began designing model cars for Formula 1 racing teams in 1995 after approaching Jordan Grand Prix, a nascent

F1 constructor. “It was the crystallization of a passion for motorsport that I and several members of our team had, especially for Formula 1,” Copeman says. As a kid he was a fan of Jim Clark, one of the greatest Formula 1 drivers of all time, and was an enthusiastic slot-car racer at age 15. “My passion for 1960s Formula 1—and car design in general—was just waiting to find an outlet,” he says. “We got the opportunity to make a first model under license [the Jordan 196], then got a deal with Williams Formula 1 in 1996 and finally with Ferrari in 1998.”

In 2004, Amalgam split into two entities: Amalgam Modelmakers and Amalgam Fine Model Cars; one team made one-off architectural models and the other produced scores of miniature cars. “I had ambitions to build a brand making the best model cars in the world,” Copeman says. “That involved a degree of risk taking and a mission not shared with my partners.” The two companies remain deeply connected, though. “We operated out of the same building for several years and are still good friends today,” he insists. But Copeman has no financial interest in the original company. “We do share ownership of our original workshop,” he adds.

From 2006 to 2007, Ferrari’s then-president, Luca Cordero di Montezemolo, commissioned Amalgam to make miniatures of current and classic road-going Ferraris. “We started with the 250TR, as opposed to the GTO,” says Copeman. “A Scaglietti car.” It took some time, but Lamborghini, McLaren and other automakers eventually wanted models of their vehicles as well. That’s when business really took off.

AUTO EXOTICA: SANDY COPEMAN IN HIS BRISTOL, ENGLAND, FACTORY WITH 1:8 MODELS OF A PORSCHE 917K, F1 RACE CARS AND OTHER SPORTS CARS. AWAY FROM THE OFFICE, HE'S A MOTORCYCLE BUFF.

LEVON BISS FOR FORBES

Today the company, which Copeman renamed Amalgam Collection in 2016, has revenues around $10 million a year, building more than 500 models a month that range in price from $685 to upwards of $150,000, depending on size and the amount of detail. It employs more than 200 people and has two manufacturing facilities outside of Bristol, in Chang An, China, and Pécs, Hungary.

“We manage the design and tooling of the models in Bristol,” Copeman says, “but most of the models are fabricated in China and Hungary. We are also increasingly making one-offs and doing special projects out of Bristol.”

So how does a model go from concept to finished form? In the case of newer cars, the Amalgam team works from original CAD drawings, obtained from the manufacturers, to produce minutely accurate drawings of each car part. “[By using the CAD data], all the parts fit together and connect together in a good, solid, well-engineered fashion,” Copeman says.

Designs for models of classic cars are formulated from digital scans of the car and hand measurements. “We also work from 600 to 800 photographs,” Copeman says. “We use them to make sure everything is dimensionally correct.”

Once the design is set, it is meticulously scaled down to bring the details to life in miniature. Molds are created for the individual parts, and metal, carbon fiber or rubber is used to create each piece of the puzzle, while some are produced by 3-D printers.

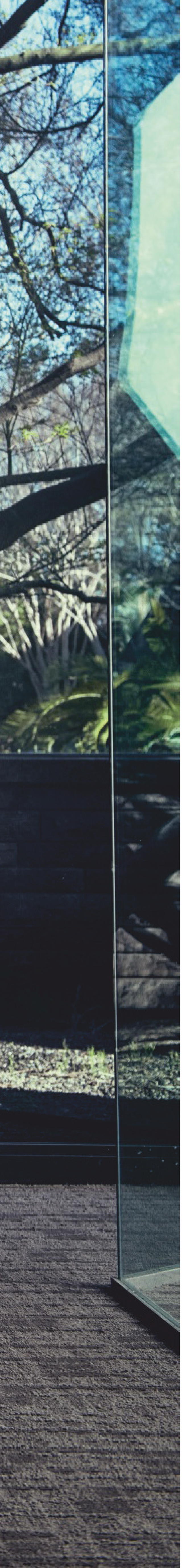
After the parts are cast, they are washed, cleaned and sanded. Then each set of parts goes through a fettling and fitting process to ensure they go together perfectly. Afterward, the models are primed, spray-painted and polished. Decals and printed finishes are applied, then subassemblies such as engines, wheel hubs and suspensions are built, followed by final assembly. “About 90% of the skills we use are very traditional,” Copeman says of the process, most of which is done by hand and which he likens to fine watchmaking. “Ten percent are modern.”

Producing the design molds takes between 2,500 hours (for, say, open-wheel racers) to 4,500 hours for complex classics, and it takes another 250 to 450 hours to make each model. “For example,” Copeman says, “The Ferrari LaFerrari takes about 3,500 hours to develop and another 350 to build.”

Amalgam’s elite clientele still consists of Formula 1 teams, drivers and managers, but it also includes famous collectors. Sylvester Stallone bought a limited edition 1:8-scale Ferrari F1 car from the early-2000s Michael Schumacher era. Ralph Lauren commissioned 17 models of cars from his collection while they were on display at the Musée des Arts Décoratifs in Paris, including a Jaguar D-Type, like the model whose shark fin blazed a triumphant trail at Le Mans in 1955, 1956 and 1957. Swiss watchmaker Richard Mille commissioned several 1:5-scale models of cars from his collection, which contains some of the rarest and most significant vintage race cars, including Bruce McLaren’s first Formula 1 car (the M2B from 1966) and the Ferrari 312B, which won the 1970 Italian Grand Prix and was driven by Mario Andretti.

Surprisingly, Copeman does not collect cars himself. For him it’s all about the personal experience of riding or driving. “I have owned some lesser but interesting vehicles along the way, such as a 1950s-era MG Magnette, and I’ve had some memorable drives, like the 160 mph race up the M1 motorway in a Sunbeam Tiger against a Jaguar E-Type,” he says. “But I’ve owned many more motorcycles than cars.” His everyday ride is a Mercedes CLS Shooting Brake: “It’s a fun drive if you want to push it a bit.” Besides, he can build any car he wants—just by dreaming small. F


You Can Help Turn Things Around
You might think ending extinction means going to the ends of the Earth. But sometimes, saving the world is as easy as showing up. Your support is vital to the San Diego Zoo's mission of protecting animals all over the world. Join us in making a difference—together, we can be heroes for wildlife.
ENDextinction.org
San Diego Zoo Global is involved in conservation projects in more than 70 countries, including for gelada monkeys, African penguins, and lemurs, species you can see in the San Diego Zoo's Conrad Prebys Africa Rocks.
SAN DIEGO ZOO



BLOWING UP THE VENTURE CAPITAL MODEL (AGAIN)

In just a decade, Andreessen Horowitz has backed a bevy of startup blockbusters–Facebook, Instagram, Twitter, Airbnb, Lyft, Skype, Slack–and made just as many Silicon Valley enemies. To stay ahead, it's taking the unusual step of renouncing its venture capital status–and making even bigger, riskier bets.

BY ALEX KONRAD

PHOTOGRAPHS BY ETHAN PINES FOR FORBES

Emerging from the financial crisis in 2009, Marc Andreessen and Ben Horowitz laid out their campaign to take on Silicon Valley. The pitch deck for their first venture capital fund that year promised to find a new generation of "megalomaniacal" founders—ambitious, assertive, singularly focused—who would, in the mold of CEO Steve Jobs, use technology to "put a dent in the universe." In getting behind the likes of Facebook and Twitter, with a war chest that swelled into the billions, they proceeded to do exactly that.

Perched on a couch in his office at Andreessen Horowitz's headquarters in Menlo Park, California, Andreessen, whose Netscape browser and subsequent company IPO were touchstone moments of the digital age, understands that the original word choice doesn't land so well in 2019. His new take: "The 21st century is the century of disagreeableness," he says, sitting down with *Forbes* for his first extended interview in two years. In an era of hyper-connectivity, social media and information overload, he says, those "disagreeables" will challenge the status quo and create billion-dollar companies. Ego is out, anger—or dissidence, at least—is in.

If that's an equally unpleasant prospect, consider Andreessen, who's 47, the perfect

The Founders

MARC ANDREESSEN

BEN HOROWITZ

When Marc Andreessen and Ben Horowitz founded their eponymous firm in 2009, they gave up any salary to help afford a growing team.

The Old Guard

Scott Kupor and Jeff Jordan, two of the firm's longest-running general partners along with Peter Levine, are in charge of fundraising and coaching new GPs. Alex Rampell and Martin Casado joined in 2015 and 2016.

ALEX RAMPELL

PETER LEVINE

MARTIN CASADO

The New Guard

Andreessen Horowitz has a new look today with Connie Chan, Andrew Chen, Angela Strange, David Ulevitch and David George all named general partners since 2018. Chan and Strange were the first internal GP promotions in firm history.

CONNIE CHAN

DAVID GEORGE

ANGELA STRANGE

messenger. From showy check-writing to weaponizing his popular blog and (before Trump) Twitter account to hiring an army of operational experts in a field built on low-key partnerships, he's one of Silicon Valley's poster boys for upending the rules. And it's worked: In one decade, Andreessen Horowitz joined the elite VC gatekeepers of Silicon Valley while generating $10 billion-plus in estimated profits, at least on paper, to its investors. Over the next year or so, expect no less than five of its unicorns—Airbnb, Lyft, PagerDuty, Pinterest and Slack—to go public.

"What's the number one form of differentiation in any industry? Being number one," lectures Andreessen, who—at 6-foot-5 with a shaved dome that his wife, philanthropist Laura Arrillaga-Andreessen, has been known to lovingly call "my egg"—carries himself with a brio to match his words.

***STAYING* NUMBER ONE, HOWEVER, IS EVEN HARDER** than getting there. Optimism that technology will transform the world for the better has soured with each successive Facebook data scandal (Andreessen, an early investor, still sits on Facebook's board). Every revelation of social media's tendency to foster society's worst forces poses a challenge to his and his firm's trademark techno-evangelism. And in the conference rooms of Sand Hill Road, stakes in the next Instagram, Twitter or Skype—three of its best-known early deals—are no longer the upstart VC firm's for the taking. Today there are a record number of rival billion-dollar funds and a newer kid on the block in SoftBank, which, armed with a $100 billion megafund, makes them all—Andreessen Horowitz included—look quaint. And one thing about saying you're going to fix a broken industry—you create plenty of competitors who won't hesitate to capitalize on even a whiff of doubt that you can back up the hype with results.

And so Andreessen and Horowitz, who rank 55th and 73rd, respectively, on this year's Forbes Midas List, intend to be disagreeable themselves. They just finished raising a soon-to-be announced $2 billion fund (bringing total assets under management to nearly $10 billion) to write even bigger checks for portfolio companies and unicorns the firm missed the first time. More aggressively, they tell *Forbes* that they are registering their entire firm—all 150 people—as financial advisors, renouncing Andreessen Horowitz's status as a venture capital firm entirely.

Crypto Specialists

Originally focused on consumer investments, Chris Dixon shifted to the world of crypto in 2018. Former federal prosecutor Katie Haun came on to co-lead the firm's first crypto fund the same year.

Biotech Specialists

Andreessen Horowitz launched its first industry-specific fund in biology in 2015 under Vijay Pande. It doubled down with a larger, second fund in 2017, adding Jorge Conde.

Why? Well, venture capitalists have long traded a lack of Wall Street-style oversight for the promise that they invest mainly in new shares of private companies. It was a tradeoff firms gladly made—until the age of crypto, a type of high-risk investment the SEC says requires more oversight. So be it, says Andreessen Horowitz. By renouncing its venture capital status, it'll be able to go deeper on riskier bets: If the firm wants to put $1 billion into cryptocurrency or tokens, or buy unlimited shares in public companies or from other investors, it can. And in doing so, the thinking goes, it'll again make other firms feel like they have one hand tied behind their back.

"What else are feathers for? They just like to get ruffled," Andreessen says with a smirk. "The thing that stands out is the thing that's different."

FROM THE BEGINNING, Andreessen Horowitz had a simple credo: "We wanted to build the venture capital firm that we always wanted to take money from," Horowitz says. Andreessen, whose Netscape breakthrough landed him on the cover of *Time* by age 24, didn't need the fame. And neither needed the money. Colleagues at Netscape, they then cofounded a company that eventually became Opsware, run by Horowitz, who sold it to HP in 2007 for $1.7 billion.

Before founding their venture firm two years later, the pair dabbled in angel investing, where they gained a rebellious reputation, at least by the khakis-and-button-down standards of the Sand Hill Road crowd. Andreessen helped popularize startup advice through his "pmarca" blog, the spiritual predecessor of his Twitter stream, which became known for its surprise 140-character micro-essays on subjects from economic theory to net neutrality. (He's widely credited with popularizing the term "Tweetstorm.") Horowitz, meanwhile, had a reputation for his ability to cite rap lyrics and his fandom for the relatively rough-and-tumble Oakland Raiders.

To build their VC firm, Andreessen and Horowitz modeled their brand strategy not on the industry's elite but on Larry Ellison's Oracle and its aggressive marketing during the enterprise software wars. They embraced the media, hosted star-studded events and badmouthed traditional venture capital to anyone who would listen. And while they started with small seed checks to companies like Okta (now valued at $9 billion) and Slack ($7 billion), they ignored traditional wisdom and gobbled up shares of companies like Twitter and Facebook when those companies were already valued in the billions. For one investor in their funds, Princeton University's chief investment officer Andrew Golden, it became a running joke how long it would take for other firms to complain about Andreessen Horowitz. "In the early days, it was within two minutes," he says.

Buoyed by prior exits and some scrimping, Andreessen and Horowitz reinvested their money in the business, whose structure was modeled more on a Hollywood talent agency than a traditional venture capital firm. Neither drew a salary for years, and new general partners at the firm took lower salaries than is typical. Instead, much of its fees, the traditional 2% of funds managed that covers all of a firm's expenses, went into a fast-growing services team, including experts in marketing, business development, finance and recruiting. Need to raise another funding round? Andreessen Horowitz specialists would give you "superpowers," helping write your presentation, then coaching you through dozens of dry runs before scheduling the meets. Need a vice president of engineering? The firm's talent team would identify and tap the best search firm, monitor its effectiveness and help choose the best candidate for the job. Human resources problem? Accounting crisis? "If something is going off the rails, you have the 'Batphone,'" says Lea Endres, the CEO of NationBuilder, which makes software for nonprofit and political campaigns.

By renouncing venture capital status, Andreessen Horowitz says it'll go deeper on riskier bets: If the firm wants to put $1 billion into cryptocurrency or buy unlimited amounts of shares in public companies or from other investors, it can.

And at the firm's executive briefing centers at headquarters and in a New York satellite office, Andreessen Horowitz staff played matchmaker, enticing big corporations and government agencies with the prospect of seeing cutting-edge tech, then lining up relevant portfolio startups to present to the visitors. GitHub, the open-source-code repository the firm backed in 2012 before it was acquired by Microsoft for $7.5 billion, found the briefings so lucrative—good for $20 million in new recurring revenue in 2015 and 2016—that it posted a junior staffer to hang around the Andreessen Horowitz office full-time, its sales chief says. Consumer startups like the grocery delivery unicorn Instacart (a 2014 investment that now has a $7.9 billion valuation) scored partnerships with national retailers and food brands. On a recent visit in March, a dozen startups filed through one by one to meet with the Defense Innovation Unit, the branch of the Department of Defense that helps U.S. armed forces find and pay for new technologies. The day before, it was Hachette Book Group. "We've had companies where it's 40% to 60% of their pipeline, and I'm like, whoa, wait, we are not your sales force," says Martin Casado, an enterprise-focused general partner at the firm who sold his Andreessen Horowitz-backed startup, Nicira, for $1.3 billion.

The formula worked. The firm's first and third flagship funds, $300 million and $900 million, respectively, are already expected to return five times their money to investors, sources say. Its $650 million second fund and $1.7 billion fourth fund are expected to return three times their investment capital, good for the top quartile of firms, and are expected to climb. A $1.6 billion fifth fund, from 2016, is too young for estimated returns.

While they may be unwilling to credit Andreessen Horowitz publicly, other firms have clearly followed suit. From bloggers and podcast experts to resident finance officers and security experts, the number of non-investor professionals in the venture industry has swelled in recent years. "The idea of providing services, that feels like a table-stakes item now," says Semil Shah, general partner at venture firm Haystack. "A lot of firms copied that." At Okta, cofounder Frederic Kerrest says he's routinely approached by other firms curious about building their own briefing centers to compete.

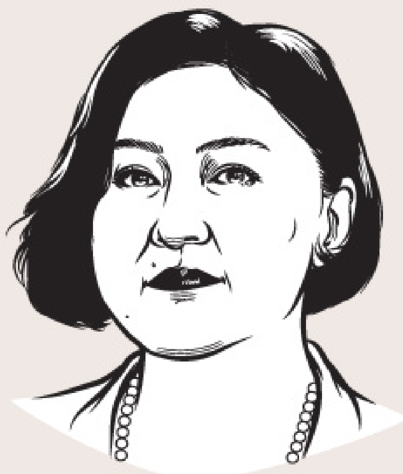
ALL THIS CROWING AND NOSE-THUMBING has made enemies. Other investors never forgot how Andreessen Horowitz claimed the business was broken and it alone had the recipe to fix it. Almost from the beginning, gossip about the firm overpaying for deals was rampant, enough so that when Andreessen and Horowitz set out to raise their third main fund in 2012, the partners had to check every position with their portfolio companies so they could disprove the notion with their investors.

Meanwhile, their failed investments—and there have been high-profile ones, including Clinkle, Jawbone and Fab—and big missteps like Zenefits get magnified. Andreessen Horowitz's well-publicized view, one it still holds, was that what matters is not how many companies you back that fail but how many become massive, outlier successes. Andreessen argues that only 15 deals per year generate all the returns, and he's intent on seeing all the hot deals first.

PORTRAIT ILLUSTRATIONS BY PATRICK WELSH FOR FORBES

THE TOP 100

There's a changing of the guard in the ranks of the 18th annual Midas List, our roll of the world's top 100 venture capitalists. It features a record 12 women, a rising group of Chinese investors and a herd of maturing unicorns propelling the returns of early investors in companies like Airbnb, Uber, Slack and Pinterest.



KATHY XU (XU XIN)

A Capital Idea

Xu's firm, Capital Today, was a year old when she bet on Chinese startup JD.com as its only Series A investor. After the e-commerce site went public in 2015, Xu had a career-making score. Her $18 million check returned $2.9 billion. —*J.D.*

NEERAJ AGRAWAL

Boston's Big Shot

Far from Silicon Valley, Agrawal has racked up a string of hits from his Massachusetts base. In May 2018, his decade-old investment in Glassdoor paid off when the job-ratings site was acquired by Recruit for $1.2 billion. Now he's building a roster of software startups concentrating on areas like design, data science and development. For one, he's reuniting with a winning team: Agrawal is backing Thundra, which spun out of Opsgenie (acquired in September for $295 million). —*A.K.*

RANK Name / **2018 RANK**
FIRM
Notable Deal

1. Neil Shen / **1**
SEQUOIA CHINA
Bytedance

2. Peter Fenton / **7**
BENCHMARK
Elastic

3. Bill Gurley / **2**
BENCHMARK
Uber

4. Jim Goetz / **3**
SEQUOIA
WhatsApp

5. JP Gan / **8**
QIMING VENTURE PARTNERS
BiliBili

6. Kathy Xu (Xu Xin) / **NEW**
CAPITAL TODAY
JD.com

7. Hans Tung / **20**
GGV CAPITAL
Xiaomi

8. Mary Meeker / **6**
BOND CAPITAL
Spotify

9. Neeraj Agrawal / **21**
BATTERY VENTURES
Brightree

10. Eric Paley / **11**
FOUNDER COLLECTIVE
The Trade Desk

11. Xiao Ping Xu / **24**
ZHENFUND
Meicai

12. James Mi / **59**
LIGHTSPEED CHINA PARTNERS
Rong360

13. Scott Shleifer / **34**
TIGER GLOBAL MANAGEMENT
Despegar

14. Carl Gordon / **4**
ORBIMED
Armo Biosciences

15. Rob Hayes / **17**
FIRST ROUND
Uber

Swinging for home runs magnifies whiffs, and Andreessen Horowitz blew the highest-profile Midas-list mover of recent years: Uber. The firm doesn't admit to it now, but several sources with knowledge of the fundraising reveal just how close the firm was to getting a big stake—before letting it slip through its grasp. The until-now mostly untold story: In the fall of 2011, Uber's cofounder Travis Kalanick was raising a red-hot Series B funding round and was keen to have Andreessen Horowitz lead. The firm, Andreessen in particular, was just as hungry to make it happen. By early October, Kalanick was calling other firms to tell them he had a handshake in place with Andreessen and another partner at a value somewhere around $300 million. At the 11th hour, however, the firm blinked. It would still invest, but with a structure that would value Uber at significantly less—$220 million, not counting the investment or an employee option pool, according to an email from Kalanick obtained by *Forbes*.

"They tried to surprise us," Kalanick wrote his investors. "So here we are. The next phase of Uber begins." Kalanick instead turned to Menlo Ventures—which until then was being used as a stalking horse for leverage—and accepted its $290 million price pre-deal.

While Andreessen Horowitz backed Uber rival Lyft in 2013 and has already cashed out some of those shares at a profit, the firm wasn't done with Uber. It participated in merger discussions between the two ride-hailing companies in 2014 and again in 2016, according to sources involved in the talks. If the deal had gone through, it would have given the firm a backdoor route to a piece of Uber. Either way, it's hard to ignore Uber as the one that got away. The ride-hailing company, now valued at $76 billion, is getting ready for an IPO that could be four or fives times larger than Lyft's. Andreessen Horowitz declined to comment on Uber.

"The 21st century is the century of disagreeableness," says Andreessen, who predicts those "disagreeables" will challenge the status quo and create billion-dollar companies.

LEE FIXEL

Crown Juul

Fixel shocked the VC world in March with his decision to leave Tiger Global after putting together a run of hits there, including investments in Indian e-commerce site Flipkart, Spotify, SurveyMonkey and Juul Labs, the e-cigarette maker. —*K.C.*

BILL TRENCHARD

What's Old Is New

Trenchard focuses on founders who blow the cobwebs off "dusty" industries, he says, like freight startup Flexport. Even though he wasn't wowed by Flexport's initial pitch, it's now worth $3.2 billion. —*B.C.*

RAHUL MEHTA

Champion for Champions

Since joining DST Global a decade ago, Mehta, a former investment banker and analyst, has done deals in fintech, e-commerce and enterprise software, putting money into Snap and WhatsApp. Beyond investing, he sits on the U.S. board of Olympic Gold Quest, supporting athletes from his native India to train and qualify for the Olympics. —*S.M.*

RANK Name / 2018 RANK
FIRM
Notable Deal

16. Lee Fixel / 43
TIGER GLOBAL MANAGEMENT
Juul Labs

17. Xiaojun Li / 23
IDG CAPITAL
Pinduoduo

18. Alfred Lin / 32
SEQUOIA
Airbnb

19. Jenny Lee / 74
GGV CAPITAL
NIU

20. Zhen Zhang / NEW
GAORONG CAPITAL
Pinduoduo

21. Garry Tan / NEW
INITIALIZED CAPITAL
Instacart

22. Jeremy Liew / 39
LIGHTSPEED VENTURE PARTNERS
Snap

23. Roelof Botha / 14
SEQUOIA
Square

24. Scott Sandell / 16
NEA
MuleSoft

25. Allen Zhu / 42
GSR VENTURES
Didi Chuxing

26. Bill Trenchard / RETURNEE
FIRST ROUND
Uber

27. Sameer Gandhi / 30
ACCEL
CrowdStrike

28. Brian Singerman / 10
FOUNDERS FUND
Stemcentrx

29. Douglas Leone / 9
SEQUOIA
Medallia

30. Xiang Gao / New
GAORONG CAPITAL
Huya

31. Anton Levy / 33
GENERAL ATLANTIC
Red Ventures

32. Hemant Taneja / 47
GENERAL CATALYST
Stripe

33. Robert Nelsen / 5
ARCH VENTURE PARTNERS
Juno Therapeutics

34. Rahul Mehta / NEW
DST GLOBAL
Robinhood

35. Ravi Mhatre / 46
LIGHTSPEED VENTURE PARTNERS
MuleSoft

36. Aydin Senkut / 53
FELICIS VENTURES
Adyen


OUR PEOPLE
MAKE US #1.
OLD DOMINION
FREIGHT LINE

RANK Name **/2018 RANK**
FIRM
Notable Deal

37. Byron Deeter **/ 15**
BESSEMER VENTURE PARTNERS
Twilio

38. Jan Hammer **/ 100**
INDEX VENTURES
Adyen

39. Josh Kopelman **/ 19**
FIRST ROUND
Appnexus

40. Peter Thiel **/ 67**
FOUNDERS FUND
Airbnb

41. John Lindfors **/ NEW**
DST GLOBAL
Xiaomi

42. Jeffrey Jordan **/ 25**
ANDREESSEN HOROWITZ
Airbnb

43. Erhai Liu **/ 61**
JOY CAPITAL
Luckin Coffee

44. Steven Ji **/ 90**
SEQUOIA CHINA
Ele

45. Salil Deshpande **/ 94**
BAIN CAPITAL VENTURES
Redis Labs

46. Klaus Hommels **/ 66**
LAKESTAR
Spotify

47. Yi Cao **/ 73**
SOURCE CODE CAPITAL
Bytedance

48. Jui Tan **/ NEW**
BLUERUN VENTURES CHINA
Ganji

49. Jeffrey Lieberman **/ 65**
INSIGHT VENTURE PARTNERS
Qualtrics

50. Bryan Roberts **/ 28**
VENROCK
10X Genomics

51. Tony Florence **/ 26**
NEA
Jet.com

52. Bryan Schreier **/ 70**
SEQUOIA
Dropbox

53. Kui Zhou **/ 13**
SEQUOIA CHINA
New Dada

54. Nisa Leung **/ NEW**
QIMING VENTURE PARTNERS
Venus Medtech

55. Marc Andreessen **/ 38**
ANDREESSEN HOROWITZ
Samsara

56. John Doerr **/ 29**
KLEINER PERKINS
Twitter

57. Ann Miura-Ko **/ 55**
FLOODGATE
Lyft

58. Pär-Jörgen "PJ" Pärson **/ NEW**
NORTHZONE
Spotify

Andreessen Horowitz's leadership has taken other raps. It was slow to diversify its management ranks—as recently as last year's Midas List, all ten general partners, the people who actually control investments and write checks, were men—in part because it had a rule that GPs were required to be ex-startup founders and couldn't rise up from the inside. In the past year they've added three women GPs but not before bleeding top talent.

Andreessen himself was caught on the wrong side of a fast-changing cultural climate in Silicon Valley in the months leading up to the election of Donald Trump in 2016, responding chummily by tweet to the now-banned far-right troll Milo Yiannopoulos, and seeming to joke, after India refused a new Facebook service, that the country might have fared better under colonial rule—earning a rare scolding from Mark Zuckerberg. In response, Andreessen became a digital recluse, deleting most of his past tweets. Andreessen says the purge wasn't due to the backlash against his Facebook positions, though "that didn't help"; rather, he blames "the general climate," specifically in politics and culture. He may come back, he says, when things "go back to normal," perhaps in 2020.

SALIL DESHPANDE

Crypto Capitalist

Two trends are reenergizing Deshpande: cryptocurrency, where he started investing last year, and activism. He's recently started "rattling the cages" to urge industry groups to curb what he calls "Amazon's abuse of open source," which may threaten his bets on infrastructure software. He's invested in Chef, Redis Labs and MuleSoft, which was acquired for $6.5 billion by Salesforce last May. *—A.K.*

Both Andreessen and Horowitz have quieted down their bluster in recent years. Andreessen admits that, contrary to what they maintained when they were Young Turks, "venture capital wasn't an industry in crisis," but says it doesn't matter how the firm got to its top-tier position. Horowitz goes further. "I kind of regret it, because I feel like I hurt people's feelings who were perfectly good businesses," he says. "I went too far." As for the firm's hiring rules, which contributed to its failure to add a woman GP, he admits it was hard for him to change something that had been such a core part of the firm's outward-facing identity. "It's a kind of a big thing for especially me to eat crow on," he says. "It took probably longer than it should've to change it, but we changed it."

EARLIER THIS SPRING, A SMALL GROUP of Andreessen Horowitz executives gathers in a bright little conference room at its headquarters for a pitch meeting with a pair of founders from a low-profile but in-demand biotech company. The twist: The VCs are pitching the entrepreneurs, with operating team leaders advertising their own services to the startup, a health diagnostics company still in stealth mode. The entrepreneurs appear skeptical. When they met Andreessen Horowitz two years ago, after it wrote a small check in their seed round, the firm didn't have much to offer bio startups. So for the next hour, they're treated to example after example of how Andreessen Horowitz has added dedicated experts and connections to companies like UnitedHealth and Kaiser Permanente over the past 18 months. "We've found that a biotech company in Silicon Valley is really different from building just a tech company," Shannon Schiltz, the firm's technical talent chief, says.

This reverse pitch is emblematic of the new-version Andreessen Horowitz. Besides turning the typical venture capital process on its head, the firm is investing in biotech, which it once said it would never touch. But scale and the pursuit of challengers to the status quo means pushing into new areas, and the firm has raised $650 million across two funds for the sector. "The brand doesn't carry the weight in bio that it does in the tech community yet," says Jorge Conde, a general partner since 2017. "But we've made a concerted effort and planted the flag." Specialists like Conde, who led strategy for Syros, a public genetics company, and co-founded a genome startup, are now the norm. Partners meet in committees by topic three times a week to evaluate deals, then convene as one firm on Mondays and Fridays to review likely investments.

Which brings us to crypto. Last year the firm raised a $350 million fund in the up-and-down area. But until recently partners Chris Dixon and Katie Haun would meet in private with Horowitz, their fund technically a separate legal entity from the rest of the firm. That meant they had different emails addresses and their own website, because of legal constraints on funds that register as traditional VCs. While Andreessen Horowitz was an early investor in crypto marketplace Coinbase and was one of many firms to catch cryptocurrency fever in 2017, it's one of the few that doubled down even after the price of bitcoin and ether flatlined. SEC regulations consider such investments "high risk" and limit these stakes, as well as secondary purchases and fund or token investments, to no more than 20% of a traditional VC fund.

So Andreessen Horowitz spent the spring embarking on one of its more disagreeable moves so far: The firm renounced its VC exemptions and registered as a financial advisor, with paperwork completed in March. It's a costly, painful move that requires hiring compliance officers, audits for each employee and a ban on its investors talking up the portfolio or fund performance in public—even on its own podcast. The benefit: The firm's partners can share deals freely again, with a real estate expert tag-teaming a deal with a crypto expert on, say, a blockchain startup for home buying, Haun says.

And it'll come in handy when the firm announces a new growth fund—expected to close in the coming weeks, a source says—that will add a fresh $2 billion to $2.5 billion for its newest partner, David George, to invest across the portfolio and in other larger, high-growth companies. Under the new rules, that fund will be able to buy up shares from founders and early investors—or trade public stocks. Along with a fund announced last year that connects African-American leaders to startups, the new growth fund will give Andreessen Horowitz four specialized funds, with more potentially to follow.

That's how the firm plans to keep up in a crowded VC landscape that experts say is bifurcating between specialist seed funds and a handful of giant, all-purpose firms. Traditional firms face more pressure than ever from the top and bottom of the funnel because of more sophisticated angel investor groups and non-VC giants like SoftBank's Vision Fund, says Ilya Strebulaev, a Stanford professor who studies the industry. "Venture capital is in flux," he says. "We should expect a lot of fundamental changes."

Some are inevitable, like the industry's wising up to the Andreessen Horowitz playbook of using services as a deal sweetener. Or the inherent limits to the An-

MIKE VOLPI

Software Specialist

Three IPOs last year put Volpi back on the Midas list: first, software maker Zuora in April, then speaker manufacturer Sonos in August and finally Elastic, another software company, in October. He recently doubled down on investments in software companies Confluent and Kong. *—J.D.*

MICHAEL MORITZ

The Billionaire Is Back

Moritz is proving that missing last year's Midas list was a blip. The longtime Sequoia partner may no longer call the shots at the firm, but the billionaire is bouncing back with investments that include grocery-delivery service Instacart, payments company Klarna and payments processor Stripe. *—A.K.*

RANK Name / 2018 RANK
FIRM
Notable Deal

59. Beth Seidenberg / 62
WESTLAKE VILLAGE BIOPARTNERS
Tesaro

60. Jixun Foo / RETURNEE
GGV CAPITAL
Qunar

61. Steve Anderson / 27
BASELINE VENTURES
Stitch Fix

62. Danny Rimer / RETURNEE
INDEX VENTURES
Farfetch

63. John Vrionis / 99
UNUSUAL VENTURES
Heptio

64. Joe Lonsdale / 22
8VC
Wish

65. Theresia Gouw / 89
ASPECT VENTURES
ForeScout

66. Mike Volpi / RETURNEE
INDEX VENTURES
Elastic

67. Chris Dixon / NEW
ANDREESSEN HOROWITZ
Coinbase

68. Mitch Lasky / 40
BENCHMARK
Discord

69. Michael Moritz / RETURNEE
SEQUOIA
Stripe

70. Shailendra Singh / 37
SEQUOIA INDIA
Go-Jek

71. Frank Rotman / 60
QED INVESTORS
Credit Karma

72. Jeff Crowe / 93
NORWEST VENTURE PARTNERS
Glint

73. Ben Horowitz / 68
ANDREESSEN HOROWITZ
Okta

74. Ryan Sweeney / 45
ACCEL
Qualtrics

75. Joel Cutler / 69
GENERAL CATALYST
Warby Parker

76. Dennis Phelps / 18
IVP
Snap

77. Matt Cohler / 50
BENCHMARK
Instagram

78. Vinod Khosla / 35
KHOSLA VENTURES
Square

79. Andrew Braccia / 51
ACCEL
Slack

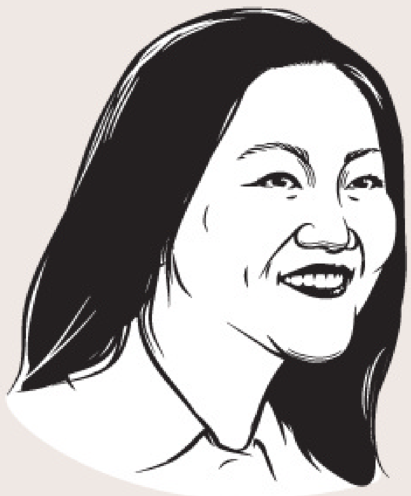
80. Rebecca Lynn / 31
CANVAS VENTURES
Lending Club

dreessen Horowitz model, which will always require large and growing funds to cover expenses. Others are fixable, like mixed report cards from former operating employees. High pay isn't enough for ambitious, younger staff to stick around long when there's little chance of upward mobility, they say. And with veterans of Andreessen and Horowitz's old company, Opsware, still spread throughout the firm, the sense that some employees get special treatment—and are immune to sanction—can sap morale. Meanwhile, the firm's insistence on calling everyone a partner, even its most junior talent or accounting managers, might seem harmless, or an annoyance for others in the industry at worst. But if those titles are limiting the prospects of promotion and career growth, as one former partner notes, they may need to be retired like the firm's old GP rule.

Most risky: Being the best-known VC firm on the block, or the one competitors mock until they copy, won't matter if sweeping changes come for the entire industry. The world continues to wake up to the degree of power and influence big tech companies like Facebook and Google have over society—from livestreaming video of the Christchurch, New Zealand, mass shooter to YouTube videos that have united far-flung white nationalists—and to the likelihood they haven't fully owned up to their responsibilities. Against such changing tides, the historical VC narrative of hypergrowth and Zuckerberg-like ambitions may fall flat.

In a choice that could be equal parts intransigence or naiveté, Andreessen invokes Facebook's CEO as precisely the example of the kind of disagreeable founder who has the resolve to take the necessary, wrenching steps to make things right. "He just put out this memo talking about basically reinventing Facebook around privacy and messaging," Andreessen says in March. "Just close your eyes and imagine a classic guy in a suit doing that."

And though Andreessen says he's too busy running the firm to have any hobbies—he's reminded he has a young son now, too—he gives his own, grander twist to a quote from one of his favorite new TV shows, HBO's *Succession*, to describe the mindset necessary to pull it off: "If you can't ride two elephants at the same time, what are you doing at the circus?" F



ANNA FANG

Spreading Her Bets

As CEO of China-based ZhenFund, Fang is the top boss at an early-stage firm that has backed more than 600 startups. The newcomer is one of a record 12 women on the list in 2019. Her portfolio has several AI companies, such as Mobvoi and Horizon Robotics. Another standout investment: lifestyle and social-media shopping site Xiaohongshu, also known as Red, which said it had more than 200 million users by January 2019. *—A.K.*

MICHAEL DEARING

Returns to Form

Dearing returns after a two-year hiatus thanks to Web security company Signal Sciences, health tech's Grand Rounds Health and PagerDuty, an incident-response company set for an IPO (Dearing's firm owns 5%). *—B.C.*

RANK Name / 2018 RANK
FIRM
Notable Deal

81. Ping Li / 98
ACCEL
Tenable

82. Aileen Lee / 97
COWBOY VENTURES
Dollar Shave Club

83. Sonali De Rycker / 95
ACCEL
Spotify

84. Young Guo / 96
IDG CAPITAL
Farfetch

85. Randy Glein / 85
DFJ GROWTH
Anaplan

86. David Mott / NEW
NEA
Tesaro

87. David Weiden / 58
KHOSLA VENTURES
Okta

88. Asheem Chandna / 92
GREYLOCK PARTNERS
AppDynamics

89. Anna Fang / NEW
ZHENFUND
Xiaohongshu

90. Navin Chaddha / 80
MAYFIELD
Lyft

91. Jules Maltz / 87
IVP
Slack

92. Michael Dearing / RETURNEE
HARRISON METAL
PagerDuty

93. Jeremy Levine / 41
BESSEMER VENTURE PARTNERS
Pinterest

94. Rich Wong / 91
ACCEL
Atlassian

95. Kirsten Green / 77
FORERUNNER VENTURES
Glossier

96. Rob Ward / RETURNEE
MERITECH CAPITAL
Looker

97. Hurst Lin / 64
DCM
Kuaishou

98. Michael Eisenberg / 75
ALEPH
WeWork

99. Scott Raney / RETURNEE
REDPOINT VENTURES
HashiCorp

100. Ted Schlein / 86
KLEINER PERKINS
LifeLock

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List editor: Alex Konrad
Additional reporting: Biz Carson, Kathleen Chaykowski, Jillian D'Onfro, Samar Marwan, Kristin Stoller
Additional data: PitchBook, Dow Jones VentureSource
Methodology: We rank VCs on the number and size of exits and still-private investments in their portfolios, with a premium on bolder and early-stage deals. We count only exits of at least $200 million or private rounds valuing companies at $400 million or more from the last five years.

West Virginia governor Jim Justice hunting turkeys on his farm in Monroe County. In 2015 the Environmental Protection Agency fined him $220,000 for building illegal dams there.

PHOTOGRAPHS BY JAMEL TOPPIN FOR FORBES

THE DEADBEAT BILLIONAIRE

The inside story of how West Virginia's governor, Jim Justice, ducks taxes and slow-pays his bills.

BY CHRISTOPHER HELMAN

James C. Justice II is many things. He is a coal mining billionaire, with an estimated net worth of $1.5 billion. He is the 36th governor of West Virginia. He owns (along with his kids) some 100 companies. He was elected as a Democrat, but switched parties once in office. He is the owner of the Greenbrier, a gaudy 710-room luxury resort near White Sulphur Springs that dates to 1778 and once housed the nuclear fallout shelter of the United States Congress. Justice is 68 years old, 6 foot 8 and weighs 368 pounds. He has a sandwich named after him at the local Arby's, while at Hardees there hangs a handwritten note: "Hardees Gals—Please take care of Big Jim—A great guy—Donald J. Trump."

He is also a man who has a hard time paying the bills.

Since 2016 courts have ordered Justice and his companies to pay more than $10 million to more than a dozen suppliers, workers and government entities. Over the same time, his companies also piled up $13 million-plus in tax liens. He claims to have paid off many of these. Still looming: another $60 million in potential damages in a civil case awaiting final judgment, plus up to $3 million in fines in Kentucky. And then there's mine reclamation. By federal law, when a surface mine closes, the operator has to restore the landscape. Virginia's Department of Mines, Minerals and Energy estimates that Justice's coal companies face $200 million in reclamation liabilities. (Justice claims it will cost closer to $10 million.)

These are sums worth fighting over, even for a billionaire. The entirety of Justice's empire rakes in some $450 million in annual sales (their number), mostly from mines, farms and the Greenbrier. The biggest chunk: the decades-old Bluestone coal mines, which will extract an estimated 2 million tons this year, fetching in the neighborhood of $270 million. It's a low-margin affair: Annual profits to the Justice family are probably on the order of $20 million.

Overhead is low, too. "Hard to believe we run everything with a card table and a bucket of chicken," he says. "It's not like we have layers and layers of managers like a big giant public company. But it's not run haphazardly." In his mind, every asset has to pay for itself. "I'm a believer in the way I try to run things, which is if you have XYZ company and it has an obligation, then XYZ needs to handle that and is not going to run from it."

Even if it takes years to get squared.

Particularly instructive is the case of Kentucky Fuel, one of more than a dozen coal mining companies owned by Justice and his children and run out of Roanoke, Virginia. In 2014, Justice personally signed an agreement with the state of Kentucky promising that he would "unconditionally and irrevocably guarantee" that reclamation work on Kentucky Fuel's mines would be completed by November 2015. In return, Justice negotiated down $4.5 million of civil penalties to just $1.5 million.

Fast-forward to 2019. The work is still not done. Kentucky's Energy and Environment Cabinet (the state's EPA) has asked a judge to snap back the remaining $3 million in fines, plus interest. The agency says it no longer trusts Justice's companies.

It seems it has reason. Kentucky Fuel was also caught mining without a permit in an area where the state had ordered work halted three times: "Kentucky Fuel removed coal as if the Commonwealth's cessation orders did not exist."

Justice says the agency should thank him, not criticize him, for fixing 500 mining violations in Kentucky over the past five years. "The Environment Cabinet has continued to be unappreciative, jealous and vindictive," he says. His son, Jay, points out that many of the reclamation liabilities date back decades, well before Justice owned them: "The regulators allowed the reclamation prior to Justice to get in a catastrophic situation—until along came the billionaire."

Justice companies have filed personal lawsuits against state employees, alleging in one case the "malicious" closure of a Justice-owned mine. The agency says Justice is attempting to "intimidate the Kentucky government into renegotiating" the 2014 deal. So the agency has advised its employees to be careful: "Because the Justice defendants have no apprehensions about filing personal lawsuits based on falsehoods and fabrications, Cabinet employees have been instructed to avoid speaking with the defendants without a Cabinet attorney present." Agency attorneys have expressed awe at the mendacity, arguing in court filings that "few will choose public service if coal billionaires are allowed to intimidate state employees with impunity." Justice says Kentucky "should forever be most appreciative" for the work he's already done.

Old coal mines are not the only liabilities that Justice's companies have in Kentucky. Tim Bates, the attorney for Kentucky's Knott County (pop. 15,000), sued Kentucky Fuel last year, seeking $2 million in back taxes—vital funding for rural schools. After getting no response, a court-appointed receiver will now seek to seize and auction off any Kentucky Fuel assets it can find in the state.

"I could have put them into bankruptcy," he says. "It takes time to fix everything and do it right, and along the way you get people who are throwing rocks at you."

Bates has long since stopped being surprised at the behavior. "I tend to believe that's just his way of doing business," says Bates, who is also an attorney in private practice. "They don't pay, and they force counterparties to get judgments against them."

Months after he was elected, Justice realized that being a Democratic governor wasn't going to be fun during the Trump years. At a Trump rally in August 2017 he announced that he was switching coats and embraced Trumpism. "I love him to death," says Justice of the president. "You know we are a lot alike."

Both are unabashedly populist billionaires who inherited businesses in cutthroat industries and built those companies into larger empires. Like Trump, Justice has a history of not paying vendors. Like Trump, Justice makes excuses for not putting more than a handful of his bewildering array of companies into a blind trust while serving in public office. Like Trump, Justice says his children—son Jay and daughter Jillean—are running the empire.

But, unlike Trump, Justice grew up in coal country. His dad, James Sr., studied aeronautical engineering at Purdue and was an Air Force captain during World War II. He cofounded coal miner Ranger Fuel in the early 1960s and then sold it in 1969 for $70 million (about $485 million in today's money) to Pittston, a Virginia-based mining concern. In 1971, Jim Sr. formed Bluestone in the coal fields of West Virginia's McDowell County. For two decades Bluestone produced 500,000

tons per year of what's known as metallurgical coal, a premium hard coal with high heat content for use in steelmaking. Justice worked for his dad for decades, but he still remembers going into his father's office when he was 19 with a problem. "I said, 'Dad, there's nothing I can do,' and all of a sudden the desk explodes and he grabbed me around my shirt and slammed me down against that desk and said, 'Damn you, there's always something you can do, and you damn well better always remember that.'" When his father died in 1993, Justice took over.

Also like Trump, Justice has complicated Russian connections. In 2008, the average price of metallurgical coal jumped over 50%, and Justice's Bluestone sold 2.8 million tons of it that year. That attracted the attention of Mechel, the Moscow-based mining giant. In 2009, Justice sold Bluestone and its 725 million tons of reserves to Mechel for $436 million in cash, a chunk of preferred stock, plus the assumption of more than $100 million in debt. On top of all that, the Russians were contractually on the hook to buy additional coal from Justice. He found reserves that he said were worth $165 million. Mechel balked, claiming the coal was worth only $25 million.

In 2014, Mechel sued Justice and Weir International, a mining consultancy, for fraud. According to Mechel's complaint, "Justice knowingly and with the intent to defraud and/or negligently made or caused to be made misrepresentations and omissions of material fact."

Justice denies the allegations: "They struggled in not knowing how to run Bluestone the way we would." He countersued and won a court order demanding that Mechel open itself up to an aggressive discovery process. Preferring to wash its hands of the deal, Mechel sold Bluestone back to Justice in 2015 for $5 million, plus the assumption of at least $140 million in liabilities, and each side dropped all claims against the other. Since taking back Bluestone, Justice says, he has "cleaned up $60 million of reclamation liabilities left from the Russians," paid $30 million owed to vendors and $20 million in taxes, and rehired 250 workers.

"I could have put them into bankruptcy, but I would not do that," he says. "It takes time to fix everything and do it right, and along the way you get people who are throwing rocks at you."

Those rock throwers include the Internal Revenue Service. Even when faced with court judgments and tax liens, Justice has shown that he prefers to fight. In June 2017 the IRS, looking to collect more than $1 million in back taxes, issued a levy to Pinnacle Bank, ordering it show the contents of any accounts held in the name of six Justice companies. Bluestone wasn't on the list, but its account was linked to the others. The bank froze $1.4 million in the account, for which Justice unsuccessfully sued Pinnacle. Last year a U.S. district court in Virginia ordered $1.15 million of the cash transferred to the feds, while $250,000 went back to Bluestone.

There's a long history of creditors trying to get their hands on Justice's money—even his own attorneys. Phelps Dunbar, which represented Justice in a 2011 case in Louisiana, sued one of his companies for $400,000 in unpaid fees. The case was settled. Billy Shelton, who represents Kentucky Fuel, had to get a court judgment in 2013 for $85,000. Incredibly, Shelton continues to represent the company.

In December 2017, a U.S. district court in New York issued a judgment for $843,000 against Justice's Southern Coal in favor of National Union Fire Insurance Co. That judgment was transferred to West Virginia, where the U.S. Marshals Service was tasked with seizing assets from Southern Coal accounts at banks that included Wells Fargo and JPMorgan Chase. The marshals found nothing but closed or empty accounts. In January, the court appointed a special commissioner to help get to the bottom of it. Justice tells *Forbes* he plans to settle this one for as little as $150,000.

Another plaintiff, James River Equipment, sued Justice Energy in 2013 (when it was temporarily owned by Mechel) over a $150,000 unpaid invoice. Justice may have inherited the problem, but his foot-dragging and finger-pointing have made it much worse. In 2016, after the Justice family had reacquired the company, U.S. district court judge Irene Berger considered jailing a Justice Energy rep for not showing up at scheduled hearings and sanctioned Justice Energy for contempt of court while also entering a judgment in favor of James River. The judgment and penalties now add up to $1.2 million, which Justice has shown no inclination of paying promptly. Last year Justice's lawyers appealed to the Fourth Circuit Court of Appeals, which upheld Judge Berger's ruling.

She is tired of the hide-and-seek, writing in a December 2018 order: "The defendant's decision to simply ignore court orders, deadlines and obligations precipitated the imposition of the contempt sanction. Continuing to flout the court's directives is not a strategy likely to engender positive results." She ordered Justice Energy to turn over financial records by January 25 and in March engaged the U.S. attorney in Charleston to depose Justice's son, Jay, and two other execs as to where they're keeping the money. Justice blames Russian lawyers for getting him into this mess and says his company has been "wrongly sanctioned."

West Virginia politicians on both sides of the aisle are concerned. Mitch Carmichael, the Republican president of the state Senate, is open-minded about Justice's declared support for businesses and workers alike. Lawsuits "can be legitimate occurrences," he says. "Everybody can have situations." But Justice's behavior forms a pattern: "He's either the unluckiest person or he has a propensity to do these type of things."

"We thought with his success in business he would have forged relationships and parlay that into investments in West

Justice says the Greenbrier was losing $1 million a week when he bought it in 2009 for $20 million: "This place had become sleepy and old."

Virginia," says Corey Palumbo, a Democratic state senator. "He hasn't." A much-hyped $84 billion deal with a Chinese energy company looking to invest in West Virginia natural gas has stalled, a victim of Trump's trade war.

All agree that the state needs to invest more in entrepreneurs, but it's harder to attract them when the face of your state is a deadbeat billionaire. "Business owners and entrepreneurs expect an even playing field when choosing where to locate. They want everyone—the governor included—to be treated equally under the law," says Republican delegate Joshua Higginbotham. There's also a strong sense that Justice is too distracted to be doing a full job for West Virginians. Isaac Sponaugle, a Democratic delegate, has filed a lawsuit meant to force Justice to abide by the state constitution's requirement that the governor "reside" in Charleston, the state's capital. Justice says he doesn't need to live in the governor's mansion when he's perfectly comfortable in his modest house in Lewisburg. "I'm not going to throw the state's money away, and I don't need somebody taking care of my laundry," he says.

"He just won't work," U.S. senator (and former West Virginia governor) Joe Manchin declared in March. "Doesn't show up. You can't run the state from the Greenbrier. That's just not the way it works."

Justice responds that Manchin is a "slick" politician. "He has an axe to grind." Indeed, last year Justice fired Manchin's wife from her job as state secretary for education and the arts.

Justice says he's getting right with all his creditors and that he's owed lots of money as well—like the $70 million he's trying to get out of insurers for 2016 flood damage at the Greenbrier. His son says the companies' reclamation liabilities are "a thimbleful" of what they used to be.

Last August the governor called a press conference in which he appeared with the West Virginia secretary of revenue to declare that his companies had taken care of their state tax obligations. They did not reveal how much was paid, but state records for his biggest companies show a release of liens last summer tied to more than $8 million of unpaid taxes. Justice said that his taxes are settled in West Virginia once and for all. As for his obligations outstanding in other states: "It may take a little while." F

WHILE BITCOIN AND OTHER CRYPTOCURRENCIES SEEM FROZEN IN A BEAR MARKET, CORPORATIONS WORLDWIDE ARE QUIETLY CO-OPTING THE UNDERLYING TECHNOLOGY FOR THEIR OWN PURPOSES.

BLOCKCHAIN GOES TO WORK

BY MICHAEL DEL CASTILLO

On the Jersey side of the Hudson River just across from Manhattan's Financial District, there is a glass-and-steel office tower designed in a severe International Style aesthetic. "DTCC" is emblazoned across the top, but few outside of Wall Street realize that in this building, occupied by the Depository Trust & Clearing Corp., are records for most of the world's securities, representing some $48 trillion in assets—from stocks and bonds to mutual funds and derivatives. In the 1970s, Wall Street created a DTCC predecessor to replace a system that had been powered by young men running around the cavernous alleys of lower Manhattan delivering stock certificates from brokerage house to brokerage house.

DTCC still has paper certificates in its vaults, but records related to the 90 million daily transactions it handles are kept electronically on its servers and backed up in various locations. Thousands of financial institutions and exchanges in 130 countries rely on DTCC for custody, clearing, settlement and other clerical services.

In a few months DTCC will begin the largest live implementation of blockchain, the distributed database technology made popular by the bitcoin cryptocurrency. Records for about 50,000 accounts in DTCC's Trade Information Warehouse, where information on $10 trillion worth of credit derivatives is stored, will move to a customized digital ledger called AxCore.

According to Rob Palatnick, DTCC's chief technology architect, the warehouse already keeps an electronic "golden record" of events such as maturity dates, payment calculations and other activities needed to clear and settle these securities daily. But each participant in a complicated credit derivatives transaction also keeps its own records, which must in turn be reconciled multiple times before the investment matures. By moving those records to the blockchain, visible to all participants in real time, most of those redundancies won't be necessary.

"We're not talking about eliminating humans and firms," Palatnick says. "We're talking about getting rid of layers of databases and translations between those databases."

On the other side of the world, in Taipei, Taiwan, Foxconn, the electronics giant best known as a manufacturer of iPhones, launched a Shanghai startup called Chained Finance with a Chinese peer-to-peer lender. Chained will soon connect Foxconn and its many small suppliers (and their suppliers' suppliers) on an Ethereum-based blockchain that will use its own token and smart contracts (read: automatically executed) to make payments and provide financing in near real time, eliminating a daisy chain of paperwork.

"We view blockchain as the skeleton of our work," says Jack Lee, the founder of Foxconn's venture capital arm, which has invested $40 million in six blockchain startups. "Smart contracts that automatically execute transactions are the muscles, and tokens are the blood."

Welcome to the brave new world of enterprise blockchain, where corporations are embracing the technology underlying cryptocurrencies like bitcoin and using it to speed up business processes, increase transparency and potentially save billions of dollars. At its core, blockchain is simply a distributed database, with an identical copy stored on many computers. That facili-

VIKTOR KOEN FOR FORBES

tates transactions (financial or otherwise) between individuals (or companies) that don't know or trust each other. It's virtually impossible to cheat, since every transaction is recorded in many places and the details of those transactions are visible to everyone. Companies are already using blockchain to track fresh-caught tuna from fishing hooks in the South Pacific to grocery shelves, to speed up insurance claims and to manage medical records. Total corporate and government spending on blockchain should hit $2.9 billion in 2019, an increase of 89% over the previous year, and reach $12.4 billion by 2022, according to the International Data Corp. When PwC surveyed 600 "blockchain-savvy" execs last year, 84% said their companies are involved with blockchain.

To chronicle the rise of so called "enterprise" blockchain, *Forbes* has created its first annual Blockchain 50 list of big companies that are putting the technology to work in meaningful ways. While blockchain's first application, cryptocurrency, is struggling to achieve mainstream adoption, these companies are committing manpower and capital to build the future on top of shared databases.

Just as corporate America co-opted counterculture vibes for marketing, businesses are fast incorporating a technology that was designed to eliminate them.

The version of a blockchain future these companies are building is, for the most part, far different from what the founders and early adopters of blockchain had envisioned. While many cryptocurrency idealists fantasize about a global, public network of individuals connected directly and democratically, without middlemen, these companies—many of which are middlemen themselves like DTCC—are building private networks they will use to profit from centralized management.

Not surprisingly, financial firms—from Allianz to Visa and JPMorgan Chase—dominate the list. But Blockchain 50 companies run the gamut of industries, including energy firm BP, retailer Walmart and media company Comcast.

Because of the lingering bad taste left by bitcoin drug bazaars like Silk Road and the 2017 digital currency bubble, most companies emphasize the distinction between crypto and blockchain, shunning the former and embracing the latter. In some ways the members of the Blockchain 50 represent a bridge between the old and new worlds. Just as internal computer networks were adopted by companies long before the internet took off, these firms are starting by adopting distributed ledger technology at a small scale.

"The era of blockchain tourism has ended," says Bridget van Kralingen, an SVP at IBM Global Industries. "We've really seen blockchain move from being overshadowed by cryptocurrency to focus on real business problems and complex processes."

In 2009, when Satoshi Nakamoto, bitcoin's pseudonymous creator, activated his network, its blockchain was the underlying accounting system that let anyone with bitcoin transfer money without the need of a middleman. Transactions are processed in blocks—just a fancy word for a hunk of data—about every ten minutes, each containing a compressed version of the previous block, linking them together into a chain. Instead of relying on a bank or another middleman to keep track of when a bitcoin leaves one location and arrives at another, the thousands of computers on the bitcoin network do the work and in exchange for their efforts are paid in bitcoin.

For most companies this presented a potential problem. While identities aren't required to use the bitcoin blockchain, the transactions themselves are tied to addresses that are publicly available, meaning that with a bit of work many of these addresses can be tied to actual people or companies. Thus enterprises like Coca-Cola and JPMorgan Chase, accustomed to maintaining competitive advantages based on proprietary processes and control, were initially skeptical of cryptocurrency.

Businesses also need some control over their data. "The entire corporate world has been fashioned around who has responsibility over a particular part of the business flow," says David Treat, the global head of Accenture's Financial Services Blockchain practice. "There can be no gaps, because that is unacceptable for a multibillion-dollar company. You cannot have a gap, or you are subject to huge security breaches and social contract breaches."

Perhaps no firm has had a greater influence on the growing corporate use of blockchain technology than Digital Asset Holdings, a New York-based startup that hired the former JPMorgan Chase banker Blythe Masters as its CEO in early 2015. Under Masters, Digital Asset began making acquisitions and almost immediately purchased a small company that was in the process of building an "invitation only," or permissioned, blockchain. Then in late 2015 Digital Asset donated the code for its "open ledger" project to the Linux Foundation, which supports commercial open-source software projects, including the Linux operating system.

The project was called Hyperledger, and thanks in part to Masters' connections, its backers read like a who's who of finance and technology. Thirty companies are listed as founders, including ABN AMRO, Accenture, Cisco, CME Group, IBM, Intel, JPMorgan Chase, NEC, State Street, VMware and Wells Fargo. Hyperledger immediately established itself as the gold standard for corporate blockchain projects.

What happened next might be considered the Big Bang moment of enterprise blockchain. In early 2016, IBM donated 44,000 lines of code to the project, which formed the core of a new block-

chain with faster speeds and increased privacy. No fewer than half of the members of the Forbes Blockchain 50 are now using that blockchain, known as Hyperledger Fabric.

"We've been very focused on making sure that not only is the blockchain technology standard but that the documents and data are standard," says Marie Wieck, IBM Blockchain's general manager. "This standardization allows [the companies] to not spend their time comparing differences and validity in the documents."

Shortly after the launch of Hyperledger, which is a nonprofit venture, a New York fintech called R3 raised $107 million from the likes of ING, Barclays and UBS to create a for-profit enterprise blockchain platform called Corda Enterprise.

As the commercial potential of co-opting blockchain technology became more apparent, many cryptocurrency startups began to rethink their models.

For example, San Francisco's Ripple, originally called OpenCoin and conceived of as yet another alternative monetary system, expanded its focus in late 2015 from the cryptocurrency (called ripple and trading as XRP) to building software for large banks. A bitcoin startup called Counterparty spawned another company, Symbiont, in March 2015, which coded a proprietary blockchain that's now being used by Vanguard for sharing stock index data. In February 2017, ConsenSys, a Brooklyn-based collection of crypto companies controlled by one of Ethereum's founders, helped launch the Enterprise Ethereum Alliance.

Just as corporate America co-opted counterculture vibes for its marketing and advertising ("Think Different," "Don't Be Evil"), its most forward-thinking businesses are fast incorporating a technology that was designed in large part to eliminate them.

In insurance, for example, MetLife's mobile app Vitana bundles insurance with a test for gestational diabetes that uses a blockchain to record data and verify and pay claims. In recent testing in Singapore, where one in five expectant mothers develops gestational diabetes, a practitioner simply enters a positive test result into a patient's electronic medical record and in a matter of seconds MetLife's smart contract deposits an insurance payment into that patient's bank account to cover the medical expenses associated with the condition. No paperwork or claim filing necessary.

Similarly, Germany's Allianz, working with EY, tested moving certain captive insurance claims processes—often involving many emails, attachments and phone calls across multiple times zones—to a private blockchain. The time required to process a claim fell from weeks to hours.

The French bank BNP Paribas, which has lent money to commodities traders since the 19th century, is considering using a ledger platform called Voltron to process letters of credit for traders. Northern Trust has begun administering private equity funds using Hyperledger Fabric. Broadridge Financial has been running pilots testing multiple distributed ledgers for its dominant proxy voting and shareholder communications business.

"In real time, you know who owns the stock, who's entitled to vote and how it's tied to the universally-agreed-upon shareholder meeting agenda," says Michael Tae, Broadridge's head of strategy.

In the perpetually fraught food business, which regularly endures disasters ranging from E. coli outbreaks to a worker being cooked alive, companies like Nestlé and Bumble Bee Foods are turning to blockchain to secure their supply chains and reduce paperwork.

Golden State Foods, a big McDonald's supplier that makes more than 400,000 hamburgers per hour, tracks the location and temperature of its patties with devices like radio-frequency ID tags and Hyperledger Fabric. The system can immediately alert GSF to conditions that might lead to spoilage. At the same time, it can optimize inventory levels by tracking how much meat is in a truck or in a restaurant's freezer, in real time.

At this year's SXSW conference in Austin, Texas, Bumble Bee unveiled an SAP-built supply-chain blockchain offering complete transparency to its customers. Soon you will no longer have to take Bumble Bee's word for it when its assures you that the 12-ounce package of yellowfin tuna you just bought was caught by individual fishermen in the South Pacific and not by a factory ship. The fishing crews, tuna processors and packers are now entering their own data in real time on Bumble Bee's distributed ledger. By summer, Bumble Bee will be sharing that information with retailers and customers who take the time to check.

From a public relations standpoint alone, Bumble Bee's SAP blockchain is likely to bear dividends. In 2017 Greenpeace ranked

One group that is getting rich from the enterprise blockchain gold rush: consultants. Deloitte, PwC, KPMG, EY and Tata are raking in the fees.

Bumble Bee 17th out of 20 tuna brands for its sustainability practices, accusing it of "greenwashing" a host of bad behaviors with environmentally friendly marketing.

"Food safety and sustainably sourced product has become an overwhelmingly important topic in our industry," says Tony Costa, the CIO at Bumble Bee. "Leveraging the latest technology enables us to open it up to more of a public perspective, if you will. So we get out of the business of managing data. We're relying on a relationship."

In the healthcare business, an estimated 20 cents of every dollar—some $700 billion a year—is wasted because of inefficiencies. Ciox, a little-known company based in Alpharetta, Georgia, that manages medical-records exchanges for 60% of the hospitals in the U.S., is considering developing a private blockchain that healthcare providers could use—for a fee paid to Ciox—to exchange data. Blockchain 50 enterprises like Ciox and the media giant Comcast, which is toying with using blockchain to micro-target television advertisements, plan to use the privacy features of blockchain to profit from their customers' data while protecting their identities.

Despite the surge in corporations working on blockchain projects, the technology is still new, and relatively few have generated significant revenues or savings.

The one group that is getting rich from the current enterprise blockchain gold rush: consultants. Deloitte, PwC, KPMG, EY and Tata Consultancy Services are deploying small armies to preach the virtues of blockchain to the C-suite and charging huge fees to help companies implement the technology. (We excluded consultants from the Blockchain 50 because they played a key role in helping us create the list.) Deloitte, for example, has 1,400 full-time blockchain employees. India's Tata has 1,000 staffers, 600 of them full-time, in its blockchain unit. Tech firms, including Oracle, SAP and Amazon, are also staking out their turf.

Part technology firm, part consultant, IBM may be the biggest and most successful enterprise blockchain company of all. Besides creating Hyperledger Fabric, the company has 1,500 staffers—mostly engineers—devoted to the new technology and reports that its IBM Blockchain powers 500 client projects.

IBM Food Trust, for example, counts Walmart, Kroger, Nestlé and Carrefour, the French grocer, among its 50-plus members. IBM is also behind TrustChain, a consortium of companies in the supply chain for diamonds and jewelry, including Rio Tinto Diamonds, Asahi Refining and Helzberg Diamonds. Health Utility Network, another Big Blue group, counts three of the five largest U.S. health insurers—Aetna, Cigna and Anthem—as members.

"The power of any blockchain network is in its participants and its members," says IBM's Wieck. It matters little whether those members are crypto-idealists or global corporations. F

FORBES

BLOCKCHAIN 50

EDITED BY MATT SCHIFRIN

REPORTED BY MICHAEL DEL CASTILLO, JEFF KAUFLIN, SARAH HANSEN, KRISTIN STOLLER, ALEX KNAPP, JONATHAN PONCIANO, AMY FELDMAN, KARSTEN STRAUSS, LAUREN DEBTER, RACHEL WOLFSON AND DARRYN POLLACK.

Cryptocurrencies may be in the depths of winter, but it's early spring for new business applications using the technology underlying bitcoin. Our new list features 50 big companies—with minimum revenues or valuations of $1 billion and U.S. operations—that are leading the way in adapting decentralized ledgers to their operating needs. From eliminating paperwork to monitoring hamburger patties and speeding up insurance payments, the antiestablishment software is being welcomed in the executive suite.

ALLIANZ SE

MUNICH

The insurance giant has been testing blockchain for a variety of products. For example, a joint venture that sells flight-delay insurance has used a smart contract that initiates a claim as soon as a flight is delayed by a set period of time. The customer gets a notification on his smartphone, enters his bank account details and payment is made.

Blockchain platforms: Hyperledger Fabric, Corda

Key leader: Robert Crozier, head of Allianz's Global Blockchain Centre of Competence

AMAZON

SEATTLE

Amazon Web Services offers blockchain tools to help companies that want to use distributed ledger technology but don't want to develop it themselves. It's a clever way to maintain its dominance in cloud computing, Amazon's most profitable business line, with a 2018 operating profit of $7.3 billion. Cloud clients using its tools include Change Healthcare, which helps manage payments among hospitals, insurers and patients; Guardian Life Insurance; HR software provider Workday; and securities clearinghouse DTCC.

Blockchain platforms: Hyperledger Fabric, Ethereum (later in 2019)

Key leader: Rahul Pathak, general manager of Amazon Managed Blockchain at AWS

ANHEUSER-BUSCH INBEV

LEUVEN, BELGIUM

The brewing giant is involved in a pilot program in the San Francisco Bay Area where consumers upload their driver's license information to a blockchain and can then buy beer at a vending machine simply by scanning their phone. In Africa, the world's fastest-growing beer market, AB InBev has a partnership with BanQu that uses blockchain to provide pricing info and payments to farmers lacking bank accounts. That could make it possible for the company to work faster, and with more farmers, to ramp up its African operations.

Blockchain platforms: Ethereum, Corda

Key leader: Tassilo Festetics, VP of global solutions

ANT FINANCIAL

HANGZHOU, CHINA

Fintech power Ant Financial has developed a proprietary blockchain that is used, among other things, to keep tabs on the products sold on a marketplace run by Alibaba, a part owner of Ant. For example, customers can trace a diamond's sourcing back to a trading center in Antwerp and see grading, cutting and polishing records. Separately, in June 2018, Ant's payment app, Alipay (with a billion-plus users worldwide), launched a blockchain-based service offering money transfers directly between people in Hong Kong and the Philippines that can be completed in just seconds.

Blockchain platforms: Ant Blockchain

Key leader: Geoff Jiang, VP of Ant Financial

BBVA

BILBAO, SPAIN

Last November, Spain's second-largest bank announced its first blockchain-based syndicated loan, a $170 million deal for Red Eléctrica Corporación, Spain's electrical grid operator. With nearly $5 trillion in loans being syndicated worldwide each year, the transparency, security and efficiency of blockchain could make a big difference.

Blockchain platforms: Hyperledger Fabric, Corda, public Ethereum

Key leader: **Carlos Kuchkovsky,** CTO, new digital business

BITFURY

AMSTERDAM

While $500 million (revenues) Bitfury is still best known for selling hardware for bitcoin mining, it is now also building blockchain services for enterprise customers. In 2017, it launched the Exonum blockchain, designed specifically to make it easier for enterprises to use the bitcoin blockchain. One early customer, the Republic of Georgia, is using Exonum to record and transfer land ownership.

Blockchain platforms: Exonum, Bitcoin

Key leadership: **Valery Vavilov,** CEO and cofounder

BNP PARIBAS

PARIS

When Rio Tinto sells iron ore to Cargill, the food giant doesn't pay right away; instead it presents a bank's letter of credit. BNP Paribas is trying to move letters of credit from paper to a secure distributed ledger. In November 2018 Paribas worked with HSBC Singapore to complete the first fully digitized letter-of-credit transaction. Commodities finance dates back to 4,000 B.C. Sumer, and old-line banks like France's BNP Paribas dominate. Maintaining a digital edge in this business is a matter of survival.

Blockchain platforms: Corda, Hyperledger Fabric, Ethereum

Key leader: **Jacques Levet,** head of transaction banking for Europe, Middle East and Africa

BP PLC

LONDON

Like BNP Paribas, BP is investing in blockchain technology to improve the efficiency of commodities trade finance. It's a founding member of Vakt, a blockchain platform that aims to digitize parts of energy trading that remain slow, such as contracts and invoicing. So far, BP has invested more than $20 million in blockchain projects.

Blockchain platforms: Ethereum, Cardano, Quorum

Key leader: **Julian Gray,** technology director, Digital Innovation Organization

BROADRIDGE

NEW YORK CITY

This little-known ADP spinoff controls 80% of the U.S. proxy-voting and shareholder-communications business. Broadridge has a team working to move its core proxy-voting services to a distributed ledger, allowing stockholders to cast their own votes on corporate resolutions and directors in real time—without going through the custodial banks that hold the shares. Broadridge is an investor, alongside banks such as BNP and Citi, in Digital Asset Holdings, which played a key role in the development of private blockchain ledgers.

Blockchain platforms: Hyperledger Fabric, DAML, Quorum

Key leader: **Michael Tae,** head of strategy

BUMBLE BEE FOODS

SAN DIEGO

Thanks to help from developers at SAP, Bumble Bee is using a blockchain to provide complete transparency to its tuna supply chain all the way from the pole-and-line-catch fishermen sailing the South Pacific to grocery stores in the United States. Given current concerns about food safety and sustainability, instilling confidence in its albacore product is paramount. Moreover, the entire tuna industry has been targeted by environmental activists for killing dolphins. The company that can demonstrate provenance of its catch could demand a premium price.

Blockchain platform: Multichain

Key leader: **Tony Costa,** CIO

CARGILL

WAYZATA, MINNESOTA

The agricultural giant that popularized high-fructose corn syrup began testing Intel's Hyperledger Sawtooth before Thanksgiving 2017 to track turkeys through its supply chain as they made their way from farm to supermarket. Cargill has committed a team of engineers to work with Intel and enterprise blockchain startup Bitwise to help build Hyperledger Grid, which will track food back to its source—a crucial step in this day of food-contamination scares. By getting in on the ground floor with this Grid, Cargill could be in a position to sell its expertise to other suppliers.

Blockchain platforms: Hyperledger Sawtooth, Hyperledger Grid

Key leader: **Keith Narr,** VP, Cargill Digital Labs

CIOX HEALTH

ALPHARETTA, GA

As the biggest manager of medical records in the U.S. (its software is used to securely transfer records between healthcare providers), Ciox figures the blockchain could cut paperwork redundancies, reduce medical mistakes and provide it a new source of subscription income. It has established a team to evaluate which blockchain platform to build on.

Blockchain platform: Ethereum

Key leader: **Florian Quarre,** chief digital officer

"We could do fully decentralized authentication if we wanted to. I think the real question is, do you really want that? . . . People would be able to not have an intermediary, but you'd also have more cases of abuse and the recourse would be much harder."

—MARK ZUCKERBERG

CITIGROUP

NEW YORK CITY

The bank has invested in a half-dozen startups (Digital Asset Holdings, Axoni, SETL, Cobalt DL, R3 and Symbiont) developing blockchains and distributed ledgers for applications such as securities settlement, credit derivative swaps and insurance payments. Last year, Citi partnered with Barclays and software infrastructure provider CLS to launch LedgerConnect, an app store where companies can shop for blockchain tools.

Blockchain platform: Ethereum

Key leader: **Puneet Singhvi,** managing director

COINBASE

SAN FRANCISCO

With more than 20 million users and a valuation of $8 billion, Coinbase is the dominant U.S. cryptocurrency exchange. It offers custody, wallet services and both retail and institutional trading platforms. The blue chip

TONY HEALY FOR FORBES

FINANCE TECHNOLOGY INSURANCE TRANSPORTATION MEDIA RETAIL HEALTHCARE FOOD ENERGY

"This isn't just a Walmart initiative, this is other retailers. . . . This is competitors. What blockchain gives is a system of trust. . . . Because even though you're my competitor, we can't ask the same small farmer to use multiple systems. That's not going to work. I can be assured that that data is not going to be changed in that what Walmart can see, Kroger doesn't."

—GINNI ROMETTY

services and both retail and institutional trading platforms. The blue chip among crypto-first financial firms is poised to become even more dominant when institutional usage of blockchain grows.

Blockchain platforms: Bitcoin, Ethereum, XRP, Lumen

Key leader: **Brian Armstrong,** CEO; his Coinbase holdings make him a billionaire

COMCAST

PHILADELPHIA

Comcast owns MState, a venture capital firm that has invested in at least seven enterprise blockchain startups, including Blockdaemon, which builds software to help enterprises build applications that use Bitcoin and Ethereum and comply with current regulations (for example, from the SEC or protecting healthcare privacy). Last December, Comcast partnered with competitors Viacom and Spectrum Reach to launch Blockgraph, which aims to allow advertisers to precisely target ads to viewers, without disclosing viewers' personal information to those advertisers.

Blockchain platforms: Bitcoin, Ethereum, Hyperledger Fabric, Quorum

Key leader: **Gil Beyda,** managing director, Comcast Ventures

CVS HEALTH

WOONSOCKET, RI

New CVS subsidiary Aetna is a member of IBM's Health Utility Network, a group (including Cigna and Anthem) working to create a distributed ledger of information available to patients, providers and insurers. As its first project, the network plans to publish tamperproof, unforgeable medical credentials so patients can check out their doctors. Other projects being considered would combine data from different insurers to make it easier to share information between doctors and insurers and prevent prescriptions that conflict, with the aim of improving care while cutting costs.

Blockchain platforms: IBM Blockchain, Hyperledger Indy, Hyperledger Sawtooth

Key leader: **Claus Torp Jensen,** CTO of both CVS and Aetna

THE DEPOSITORY TRUST & CLEARING CORPORATION

JERSEY CITY

A warehouse of sorts that provides custody, clearing and settlement for $1.85 quadrillion in transactions per year, DTCC is planning to move its $10 trillion-a-year credits derivatives tracking operation to a customized blockchain. If the new system, scheduled to launch by the end of the year, is successful, it could eliminate massive record redundancies and prove that centralized middlemen have a place in a decentralized ledger world.

Blockchain platform: Axcore

Key leader: **Rob Palatnick,** chief technology architect

FACEBOOK

MENLO PARK, CA

In January 2018, CEO Mark Zuckerberg disclosed in his annual statement that the social media giant was studying cryptocurrency's potential. In May of that year he moved former PayPal president and Coinbase board member David Marcus from his position as vice president of messaging to head up a secretive team exploring blockchain and its applications. This past February, Zuckerberg told Harvard law professor Jonathan Zittrain he was interested in letting users log in to websites with blockchain-based identities instead of Facebook Connect—a change that could have big implications for the way Facebook monetizes its users' info.

Blockchain platforms: Unknown

Key leaders: **David Marcus,** blockchain lead

FIDELITY

BOSTON

The 73-year-old fund giant began mining bitcoin in 2015 as a way to learn about digital assets. This year, it launched a custody service for institutional investors who want to store bitcoin securely. It's also building a trading platform that allows a large block of crypto to be purchased by executing orders across multiple exchanges. About 100 Fidelity employees are now devoted to digital assets. Having originally missed the ETF explosion, Fidelity will be at the forefront if crypto-assets go mainstream.

Blockchain platforms: Bitcoin, Ethereum

Key leader: **Tom Jessop,** president, Fidelity Digital Assets

FOXCONN

TAIPEI, TAIWAN

The giant Chinese manufacturer has pilot projects under way that use blockchain to streamline supply chain transactions and provide working capital to suppliers. Separately, it is developing a blockchain-enabled smartphone that would make it easier for consumers to spend digital coins.

Blockchain platform: Ethereum

Key leader: **Jack Lee,** founding managing partner of venture arm HCM Capital

GOLDEN STATE FOODS

IRVINE, CA

This restaurant supplier is participating in IBM's Food Trust, a consortium of companies aiming to track food along the entire supply chain. In one early application, Golden State is giving all the companies involved in its burger business—from meat processors to shippers to restaurants—access to streaming data about the temperature at which the beef is kept. In addition to improving food safety, such projects could reduce both paperwork and food spoilage, which is estimated to cost $7 billion annually in North America alone, before it reaches the consumer.

Blockchain platform: IBM Blockchain

Key Executives: **Bob Wolpert,** chief strategy and innovation officer

GOOGLE

MOUNTAIN VIEW, CA

The search giant has made numerous investments in blockchain, including Veem, a payments startup that lets enterprises instantly send and receive payments in different currencies, using bitcoin as an intermediary holding. Meanwhile, it has created a suite of tools that make it easier to search (and analyze) cryptocurrency transactions—in other words, to Google public blockchains.

Blockchain platforms: Bitcoin, Ethereum, Bitcoin Cash, Ethereum Classic, Litecoin, Zcash, Dogecoin, Dash

Key leader: **Allen Day,** science advocate

HPE

SAN JOSE, CA

The $31 billion (revenue) enterprise tech spin-

TONY HEALY FOR FORBES

off from Hewlett-Packard hopes to make a splash with its blockchain services. It already counts more than a dozen customers, including car-part manufacturer Continental, which will use HPE's tech to track a vehicle's location and a driver's license and insurance. That could be useful as more Americans move from owning a car to renting one by the hour or month.

Blockchain platforms: Corda, Ethereum, Quorum, Sia, Hyperledger Fabric

Key leader: Raphael Davison, worldwide director of blockchain

HTC

TAOYUAN, TAIWAN

The company recently released Exodus 1, a new smartphone that provides crypto-owners a safer way (built in to the phone's hardware) to store and recover lost bitcoin, litecoin and ethereum, as well as the ability to easily trade cryptocurrencies. The phone also has a special Web browser designed for sites built on the blockchain. With its dismal smartphone market share, HTC's new phone may be a Hail Mary pass.

Blockchain platforms: Bitcoin, Ethereum

Key leader: Phil Chen, decentralized chief officer

IBM

ARMONK, NY

Blockchain's early advocate is working to commercialize the technology through its enterprise-grade version of Hyperledger Fabric, called IBM Blockchain. Other IBM launches include World Wire, a foreign exchange platform seeking to replace interbank messaging platform Swift, and TradeLens, a shipping supply chain service codeveloped with shipping giant Maersk. IBM has already filed for more than 100 blockchain patents. With its proprietary blockchain connecting companies in at least 85 networks, IBM is a clear enterprise winner.

Blockchain platforms: IBM Blockchain, Stellar, Hyperledger Burrow, Sovrin

Key leader: Bridget van Kralingen, SVP, global industry platforms and blockchain

ING

AMSTERDAM

The Dutch banking giant has launched eight pilots since the creation of its dedicated blockchain team in 2016. In January 2018, ING and Credit Suisse executed the first legally enforceable euro securities swap using R3's blockchain. The bank has also invested in several blockchain ventures, including Komgo, which plans to use the Ethereum blockchain to streamline a wide range of transactions.

Blockchain platforms: Corda, Quorum, Hyperledger Fabric, Hyperledger Indy

Key leader: Mariana Gomez de la Villa, program director of distributed ledger technology

INTEL

SANTA CLARA, CA

Like IBM, Intel is one of the bigger corporate forces pushing blockchain into the enterprise market. Its open-source Hyperledger Sawtooth platform lets companies build their own blockchains. Users include Cargill, T-Mobile and the Tel Aviv Stock Exchange. Still, IBM is way ahead.

Blockchain platforms: Corda, Ethereum, Hyperledger Fabric, Hyperledger Sawtooth

Key leader: Michael Reed, director, blockchain program

JPMORGAN CHASE

NEW YORK CITY

The nation's largest bank is one of the creators of Quorum, a restricted version of the Ethereum blockchain built especially for enterprises looking to move tasks performed by back-office middlemen to the distributed ledger. It recently announced JPM Coin, an early-stage project to enable real-time institution-to-institution payments.

Blockchain platform: Quorum

Key leader: Christine Moy, blockchain lead

MAERSK

COPENHAGEN

Transactions for shipping goods from one port to another still rely on reams of paperwork, as they did centuries ago. Last year, IBM and Maersk, one of the world's largest shippers, announced plans to create TradeLens, a global blockchain for shippers. So far, 100 organizations, including ports, freight forwarders, sea and land carriers, and customs agencies, have signed up to use the platform.

Blockchain platforms: IBM Blockchain, Corda

Key leader: Michael J. White, head of TradeLens

MASTERCARD

PURCHASE, NY

The credit card behemoth has applied for 80 blockchain-related patents. Sixteen have been granted, including one for linking cryptocurrencies to traditional bank accounts and another for increasing the privacy of blockchains. Mastercard rarely comments on its blockchain ambitions, but it recently announced it's working with Amazon and Accenture to build more transparent supply chains where, for example, someone buying a pair of jeans could see where they were made and tip the creator through Mastercard's payment rails. More significantly, if Mastercard can tie its massive, high-speed payments network to blockchain-based payments, it can open a new revenue stream and solve a problem that plagues most blockchain technology: processing times are still slow.

Blockchain platform: Its own platform, built from scratch.

Key leader: Ken Moore, EVP and head of Mastercard Labs

METLIFE

NEW YORK CITY

Through MetLife's incubator, LumenLab, the insurer has developed a mobile app called Vitana, that is using ethereum's smart contracts to automatically pay claims in certain circumstances.

Blockchain platform: InsureChain built on Ethereum

Key leader: Zia Zaman, CIO of MetLife Asia

MICROSOFT

REDMOND, WA

Last year, Microsoft's cloud unit Azure launched Azure Blockchain Workbench, a tool for developing blockchain apps. Many templates are available for free, but if an organization builds or runs an app or network on Azure, Microsoft charges for the underlying cloud services. Blockchain Workbench customers include Insurwave, Webjet, Xbox, Bühler, Interswitch, 3M and Nasdaq.

Blockchain platforms: Ethereum, Parity, Quorum, Corda, Hyperledger Fabric

Key leader: Mark Russinovich, CTO of Microsoft Azure

TONY HEALY FOR FORBES

"Bitcoin is ingenious, and blockchain is important, but bitcoin has no unique value at all. It doesn't produce anything. You can stare at it all day and no little bitcoins come out or anything like that. It's a delusion, basically." **—WARREN BUFFETT**

FINANCE | TECHNOLOGY | INSURANCE | TRANSPORTATION | MEDIA | RETAIL | HEALTHCARE | FOOD | ENERGY

NASDAQ

NEW YORK CITY

Distributed ledgers could theoretically eliminate the need for centralized exchanges, but Nasdaq has hedged its bets by immersing itself in the new industry. For example, it has sold its market-surveillance software to seven crypto exchanges and a blockchain eVoting product to the South African central securities depository. Nasdaq has also brought together eight Swedish companies to develop a blockchain to replace the current paper-driven trading process in the Swedish mutual fund market.

Blockchain platforms: Symbiont, Corda, Hyperledger Fabric

Key leader: **Johan Toll,** head of digital assets, market technology

NESTLE

VEVEY, SWITZERLAND

Over the last two years the $92 billion (sales) consumer goods giant has been testing blockchain technology in more than ten projects. Its most promising is with IBM Food Trust, where it is using blockchain to track the provenance of food ingredients in a handful of products, including Gerber baby food. That service is expected to be available in Europe later this year. Food-borne illnesses cost the U.S. $55 billion a year and can cripple a brand. Blockchain food tracking could reduce that cost and be a selling point for brands that participate.

Blockchain platform: IBM Blockchain

Key leader: **Benjamin Dubois,** manager of digital transformation

"I probably shouldn't say any more about cryptocurrency. But it's not the same as gold or fiat currencies. Those are supported by law, police, courts. They're not replicable, and there are strictures on them. Blockchain, on the other hand, is real. We're testing it and will use it for a whole lot of things."

—JAMIE DIMON

NORTHERN TRUST

CHICAGO

The big asset manager ($1.1 trillion) is using Hyperledger Fabric to handle the administration of private equity fund events, including initial sales and liquidations of fund investments. Northern Trust is also helping hedge funds track their crypto investments and is working with the Australian Securities Exchange on a blockchain-based equities clearing, settlement and custody platform. Last year, it helped the World Bank execute a $79 million bond issue via the Ethereum blockchain.

Blockchain platforms: Hyperledger Fabric, Ethereum

Key leader: **Justin Chapman,** head of market advocacy and research

ORACLE

REDWOOD SHORES, CA

The database and cloud company is offering "business-ready" blockchain software in an effort to keep customers of its non-blockchain products from defecting to upstarts and rivals like Google and Microsoft. One of Oracle's customers, China Distance Education Holdings, is sharing student educational records and professional certifications across institutions to help employers and recruiters verify that credentials aren't fraudulent.

Blockchain platform: Oracle Blockchain Platform

Key leader: **Frank Xiong,** group vice president, Blockchain Development Platform

OVERSTOCK

MIDVALE, UT

The online discount store became the first major retailer to accept bitcoin in 2014. Founder and CEO Patrick Byrne, a libertarian with a Ph.D. in philosophy, is so convinced that blockchain will change the world that he is trying to get out of the retail business altogether and is already remaking Overstock into something of a crypto-obsessed company. Most notably, he has used $200 million in Overstock's cash to fund Medici Ventures, a subsidiary which has invested in 19 blockchain companies.

Blockchain platforms: Bitcoin, Ethereum, RVN, Florin

Key leader: **Patrick Byrne,** founder and CEO of Overstock

PNC

PITTSBURGH

The bank is using Ripple's XRP blockchain-based software to process international payments. It is also the only bank involved with IBM's Health Utility Network, which is attempting to speed insurance company payments to health providers.

Blockchain platforms: Hyperledger Fabric, DAML, Corda, Ripple

Key leader: **J. Christopher Ward,** EVP and head of Treasury product management

RIPPLE

SAN FRANCISCO

This startup aims to disrupt Swift, the messaging system the worlds' banks use to transfer an estimated $6 trillion a day, with RippleNet, with aims to be cheaper, faster and more transparent. While it already has 200 customers for its service, Ripple funds operations (including 300 employees) by selling about $100 million a quarter of its own cryptocurrency, XRP. (XRP's total market cap now stands at $13 billion, down from its $146.5 billion all-time high in 2018.) RippleNet customers include big names such as Santander, American Express and PNC.

Blockchain platform: XRP Ledger

Key leader: **Brad Garlinghouse,** CEO

SAMSUNG

SEOUL

Samsung is using its Nexledger blockchain platform to overhaul how its battery-manufacturing subsidiary manages contracts and the execution of those contracts. For Korean consumers it has developed a smartphone app that uses the blockchain to verify the identity of the phone's owner to 15 of the nation's banks. That eliminates the inconvenience of Korea's 20-year-old identity verification system, which can require a tedious signup process for each bank.

Blockchain platforms: Nexledger, Ethereum

Key leader: **Jeanie Hong,** SVP and head of Blockchain Center

SANTANDER

MADRID

The Spanish banking giant made headlines last year when it allowed its investors to vote at its annual meeting via the blockchain. A year ago, Santander launched mobile app One Pay FX, a foreign exchange service using RippleNet, that enables individuals to transfer money to other individuals in a foreign country in less than a day.

Blockchain platforms: RippleNet, Hyperledger Fabric

Key leader: **María de la Concepción de Monteverde,** director of the Blockchain Center of Excellence

SAP SE

WALLDORF, GERMANY

SAP has developed its own cloud-based blockchain toolkit, Leonardo, to keep clients from moving to Oracle or IBM as they transition to distributed

TONY HEALY FOR FORBES

ledger technology. It's also selling project development as a service—most notably, it built Bumble Bee Foods' new blockchain, designed to trace the origin of tuna from fisherman to processor to consumer.

Blockchain platform: Hyperledger Fabric, MultiChain, Quorum

Key leader: Raimund Gross, chief innovation strategist, Blockchain

SEAGATE TECHNOLOGY

CUPERTINO, CA

Data-storage company Seagate Technology is working with IBM on a proof-of-concept blockchain aimed at tracking products through their distribution and life—in large part to ensure that fake hard drives aren't returned to Seagate's warehouses, where they could be resold by accident. Counterfeiting of electronics is a $100 billion problem, and Seagate hard drives are a frequent target for fraud.

Blockchain platform: Hyperledger Fabric

Key leader: Manuel Offenberg, managing technologist and data security research lead

SIEMENS

MUNICH

In Park Slope, Brooklyn, some residents with Siemens solar panels had more energy than they could use on sunny days. The Brooklyn Microgrid project, run off a private blockchain, allows those with excess power to sell energy to their neighbors. The German giant has a lot of skin in this game, with $28 billion a year in revenues from things like energy turbines and applications managing smart grids. Grid technology has been decentralizing and democratizing power generation; blockchain can accelerate that process.

Blockchain platforms: Ethereum, Hyperledger Fabric, Corda

Key leader: Bernd Rosauer, head of research, Technology Field IT Platforms

SIGNATURE BANK

NEW YORK CITY

Signature was the first FDIC-insured bank to develop a blockchain-based digital payments platform. SignetTM allows the bank's commercial clients to send free, secure payments to other commercial clients of the bank at any time of day with no transaction limits, in as little as five seconds. It uses a token, the signet, backed by U.S. dollars. American PowerNet, a Signature Bank client, recently chose SignetTM to make real-time payments to renewable energy providers.

Blockchain platform: A private, Ethereum-based blockchain

Key leader: Frank Santora, senior vice president and director of digital asset solutions

STATE FARM

BLOOMINGTON, IL

The insurer has devoted 11 members of its Research, Experiment & Deploy (RED) Labs in Bloomington to developing a blockchain that could speed up the now painfully slow process by which insurers pay claims to policyholders and then seek partial reimbursement from other insurers involved with the claim. State Farm is working with RiskBlock Alliance on an application that could speed up this claims dance.

Blockchain platforms: Hyperledger Fabric, Corda, Quorum

Key leader: Mike Fields, innovation executive at State Farm RED Labs

UBS

ZURICH

The Swiss bank's most ambitious project so far is Utility Settlement Coin (USC), which would allow central banks to use digital cash instead of their own currencies to move money to each other. It's a bold play—if central bankers start using crypto for big transfers with each other, it could make them more willing to move their own national currencies onto a blockchain. UBS' partners in USC include BNY Mellon, Deutsche Bank and Santander.

Blockchain platforms: Hyperledger Fabric, Ethereum, Quorum, Corda

Key leader: Sam Chadwick, head of blockchain

VISA

SAN FRANCISCO

The credit card network has filed for 50 blockchain patents, ranging from a real-time payments settlement system to technology related to crypto trading. This year, Visa is launching B2B Connect, which uses blockchain to help banks around the world process cross-border, business-to-business payments. With $18 trillion in such B2B payments being made a year, gaining even a small chunk of this business would be a nice addition to Visa's consumer-payment dominance.

Blockchain platform: Hyperledger Fabric

Key leader: Kevin Phalen, global head of business solutions

VMWARE

PALO ALTO, CA

The cloud-infrastructure company will soon release a suite of blockchain software products called VMware Blockchain, developed in partnership with Deloitte and Dell. The first product will be one that allows data to be transferred securely. Next up is a service that verifies transactions on the blockchain.

Blockchain platforms: Project Concord, a new blockchain, which supports multiple frameworks such as Ethereum

Key leader: Mike DiPetrillo, senior director, Blockchain

WALMART

BENTONVILLE, AR

The world's largest retailer (by sales) has filed for about 50 blockchain patents (for everything from tracking shipments to operating drones) and wants to use the blockchain to quickly pinpoint the culprit in future food-safety scares. In 2016 it partnered with Big Blue to create IBM Food Trust, now being tested by more than 50 companies. Today Walmart can track 25 products, including strawberries, yogurt and chicken, from five suppliers (and counting). In September 2018, it said it would begin requiring all of its lettuce and spinach suppliers to log their shipments on the blockchain.

Blockchain platform: Hyperledger Fabric

Key leader: Karl Bedwell, senior director, Global Business Services & Technology

"I stopped viewing large corporations over the last few years as kind of singular evil behemoths. . . . As far as where big companies can fit in, I do think that they have a role, and I do think the smart ones that take the first step and are willing to kind of play with the technology rather than against it can survive and even benefit from the whole process."

—VITALIK BUTERIN

TONY HEALY FOR FORBES

FINANCE TECHNOLOGY INSURANCE TRANSPORTATION MEDIA RETAIL HEALTHCARE FOOD ENERGY

BARGAIN BIN

HARRY FELLOWS FOR FORBES

BILLIONAIRE

How do you beat Amazon at retail? Sell cheap. Be opportunistic. Micromanage the stores. And stay off the internet!

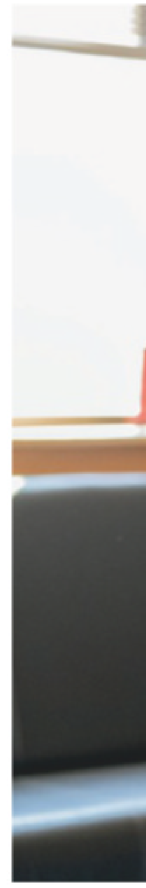
BY ABRAM BROWN

The sheriff's deputy arrives early, assuming his position before 9 a.m. He stands silently, in a dark uniform beneath a bulletproof vest, and waits, sipping a small cup of thin coffee. As time rolls on, it becomes apparent he isn't much needed here, stationed in a big, glassy store alongside a highway in Sterling, Virginia, by Washington's Dulles International Airport.

Sometimes when an Ollie's Bargain Outlet opens, the crowd can get large—particularly if Ollie's arranges for a Nascar star or MLB player to visit—and law enforcement is needed to help manage the situation. By contrast, everyone on this wintery March day is well behaved, not a race-car driver or slugger in sight, leaving the

Mark Butler at the Ollie's in Harrisburg, Pennsylvania. Corporate headquarters is directly behind the store.

deputy to contemplate the gigantic bin of plush, chicken-size Peeps (price: 99 cents), shelves of Farberware cookware sets ($39.99) and pallet of four-quart bags of Earthgro potting soil (also 99 cents).



The CEO, chairman, president and cofounder of Ollie's is Mark Butler, a slightly built man with a big mustache and graying hair silvering over to white. When he walks in around 10, he is almost indistinguishable from his customers. Butler, 60, has attended every one of Ollie's first 104 openings, but it's harder to get to them these days with Ollie's rolling out almost 40 a year. "Looks good," he says, a group of lieutenants gathering around him. "Parking lot is very, very full." Something is off, though. "Turn the music down a bit." The Kinks can be heard, clearly, through the store's public-address system. "What station do we have on?" Soon the tunes get softer and more modern. ("Something like the radio bothers the daylights out of me," he admits.)

Moving through the store, Butler notes what's selling. "This is hot," he says, examining a dwindling supply of Chefman air fryers. The display of Hatchimals—Furby-like creatures in an egg, the hit toy of Christmas 2016—earns similar praise: "Hot." And he is pleased with the weighted blankets (a super-heavy comforter meant to keep sleepers from rolling around) near the front door. "This is hot—with three Ts." *Hottt.* "We can't keep it in stock. They'll be gone in a few hours."

But where is—

"Joy Mangano?" he asks. No, the QVC queen (and titular entrepreneur of the 2015 film *Joy,* starring Jennifer Lawrence) is not supposed to be at Ollie's. The store should, however, have a full supply of Mangano-branded clothing hangers. They should be in later that week, he's told. Butler suspects they'll sell quite well. "The hangers—hot."

Ollie's is very possibly the only company in America whose brick-and-mortar stores are not just surviving but thriving. Butler focuses exclusively on traditional retailing, selling not a thing online. Read that again: nothing sold online. Nonetheless, Ollie's sales have doubled in four years. It moves more than $1 billion a year of low-priced goods from its large (30,000 square feet or so), no-frills stores like the one in Sterling. Profits are at a high, nearly $130 million.

Most other retailers seem headed in the other direction. The internet now accounts for 10% of American shopping—up from below 4% less than a decade ago—and e-commerce topped $130 billion in the fourth quarter of 2018, a 12% increase from a year ago. Meanwhile, companies announced 3,400 store closures last year, with plans to shutter a record 155 million square feet of shops. Those numbers will skyrocket in 2019: Retailers announced 4,300 store closures in just the first nine weeks of the year.

Ollie's is the exception to the rule. Not only is it opening new locations, its stock is on a tear. Even after a recent sell-off, shares in Ollie's have quintupled since its IPO in 2015. This handily beats the performance from the rest of retail (the SPDR S&P Retail ETF has actually lost 12%), the broader stock market (the S&P 500 has gained 34%) and even high-flying Amazon (up nearly 290%). Ollie's shares now trade at 34 times earnings. No one has benefited more from the run-up in Ollie's stock than Butler himself, who has an estimated $1 billion fortune, nearly all from his approximate 15% stake in the company. "A lot of the incoming calls [from clients] this year have been, 'How did I miss Ollie's?'" says Judah Frommer, an analyst at Credit Suisse.

Talk about success will have to wait, though, because right now Butler needs to take a call about flooring. "Sorry, one of my merchants needs me," he says, seating himself at a patio-furniture set. Ollie's purchases most of its products as closeouts, meaning a manufacturer has excess inventory of something that a traditional retailer, like Target or Walmart, doesn't want any longer, and it will sell it to Ollie's cheap. Ollie's targets a 40% gross margin, and as long as it can turn a profit, it's not too fussy about what it sells. Now one of Butler's merchants has a line on a new supply of floor tiles. "Glue or grout?" Butler asks. His eyebrows go up. The tiles are hard to install, meant more for professional contractors or Home Depot shoppers than for the Ollie's customer, who tends to be lower-middle class or poorer and likely doesn't have the

Opposite, clockwise: An Ollie's in Lancaster, Pennsylvania, inside a former children's store; Ollie Rosenberg and a customer; Mark Butler and an Ollie's mascot celebrate the 2015 IPO. Above: Butler inside his office in Harrisburg, Pennsylvania.

time or money to become a home-remodeling enthusiast. Moreover, Butler is not sure what he'd price the tiles at. He gives his merchant the name of someone he met "at a dinner in Hong Kong," who may have advice on whether they should take the tiles.

Thirty-six years ago, Butler skipped college to start the company in Harrisburg, Pennsylvania, with three much-older cofounders, including the eponymous Ollie Rosenberg. Yet Butler, the only living founder, has lost none of his enthusiasm for managing even the smallest details of his business. "We are working on a big Sharper Image deal," he says. "The packaging is changing," so Sharper Image will be motivated to move the remaining inventory with the old packaging. Butler rattles off what he expects. "Drones, radio-controlled cars, headphones, *Christmas electronics,*" he says, beaming with Christmas Day excitement.

A customer pulls up to the register with a shopping cart loaded with toys. Butler strolls over. The haul includes several *Call of Duty*-branded sets from Mega Construx, a Lego competitor. "Now that I know I've got a hot item, I'll call my merchant." He dials and issues a clear instruction: "See if we can get some more."

A few months from now, Ollie's will open another store farther north, in Olean, New York, a small town positioned on the eastern edge of the Rust Belt. Olean is an ideal spot for Ollie's. It is over an hour drive from the nearest metro, Buffalo. The median income is about $40,000, 34% less than the national average. There is one public high school and one middle school; the mayor is an ex-police officer. The new Ollie's will be in a former Kmart, a 5-minute drive from a still-operating Walmart and across the parking lot from Aldi, a discount grocer. Most important, "everybody knows the road that it's on," Butler says. True enough, West State Street is probably the community's busiest thoroughfare. "We're selling a product for a price people will travel to get to."

Ollie's says its prices are "up to 70% off" what customers can pay elsewhere. Or, as Butler puts it, an "extreme value." Brad Thomas, a KeyBanc analyst, recently put those claims to a test, comparing the prices of 32 items from Ollie's with their prices on Amazon. He found that one, *The Beloved Christmas Quilt,* a paperback, was more than 70% less. Eight were 60% to 67% off, and Ollie's on average was 42% cheaper. In another shopping trip, Thomas took his 4-year-old son to Ollie's, promising the boy any item he wanted if he behaved himself while Thomas conducted research at the store. They walked out with a Star Wars children's suitcase with Stormtroopers and the "Darth Vader-ish looking character" from the latest movies on it. "It was a bargain. I think the suitcase cost $12," Thomas says. "He loves that suitcase still."

Ollie's couldn't exist without big brands like Star Wars. Or Clorox, Hefty, Wrangler, Fruit of the Loom, Philips, Farberware, Bissell and Yankee Candle, to name a few from a recent Ollie's circular. (It still advertises almost entirely through newspaper flyers, distributing 30 million of them 21 times a year.) Ollie's would attract far fewer customers if it sold poorly made products from little-known companies. "Brands at drastically reduced prices—that's what we live for," Butler says.

Every Ollie's generally features the same types of things: household supplies like soap, furniture, food, books, toys and electronics. Beyond that it's a total guess as to precisely what each Ollie's will have. "We might have a deal on a Garth Brooks five-CD anthology set one week, Scotts lawn fertilizer the next. It's whatever we can get our hands on." Shopping there has always been, well, "a bargain hunt. A treasure hunt," Butler says. "This is the insulating factor that I tell all the investors: It's virtually impossible to duplicate my shopping experience online." Besides that, manufacturers have never been keen to sell their closeouts on the Web. "A lot of vendors," Thomas says, "would prefer that it's not advertised all over the internet," drawing customers away from the full-priced stuff.

An average Ollie's does about $130 in sales per square foot, lower than Target (roughly $300), Walmart ($430) and even dollar-store levels ($200). These numbers support the idea that Ollie's is, indeed, less expensive. Yet Ollie's is more profitable. Its operating margin exceeds 13%, beating out Walmart (4.1%), Target (6%) and Dollar General (8.6%). Those retailers want to keep the same items in stock, accepting slimmer margins as a tradeoff for consistency. Ollie's, on the other hand, embraces inconsistency—and the

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Ollie's and the Others

While Ollie's Bargain Outlet doesn't produce the most sales per square foot, it is enviably profitable, and investors can't get enough.

[1]Stock performance for all companies from date of Ollie's IPO.

higher margins that accompany it. It passes on lower-margin goods because its customers know better than to expect the same Colgate toothpaste every time or that Ollie's will bend to seasonality as much as a Walmart.

That's why a few days before Valentine's Day, Butler, dressed comfortably in a too-big cardigan and white button-down shirt, is passing through rows of Halloween candy as he winds through his Harrisburg location. "Fully in date, nothing wrong with it," he says, looking over the bags of chocolate. "Maybe it has ghouls and whatever." The cartoon M&M characters on the packages stare back with mock Jamie Lee Curtis screams. The ghouls "don't bother me," he says, adding a simple explanation. "Good gross margin."

Thirty minutes from Harrisburg is a small strip of land in the middle of the Susquehanna River. It is roughly 470 acres, a diminutive place with a disproportionate amount of infamy.

Around 4 a.m. on March 28, 1979, a relief valve at the nuclear power plant there on Three Mile Island malfunctioned, causing a partial meltdown. Authorities eventually contained the catastrophe without any health consequences for the public or the plant's workers, but the incident terrified America and ended the country's love affair with nuclear power.

It also put a chill on real estate projects in the area—bad news for a young Mark Butler, who was a manager at a small chain of lumber stores owned by a local man named Mort Bernstein. No one wanted to build "next to a nuclear reactor that almost blew up," Butler recalls. The broader U.S. economy didn't help. In the early '80s, the country was in its worst economic downturn since the Great Depression. Around 1981, Bernstein closed the stores.

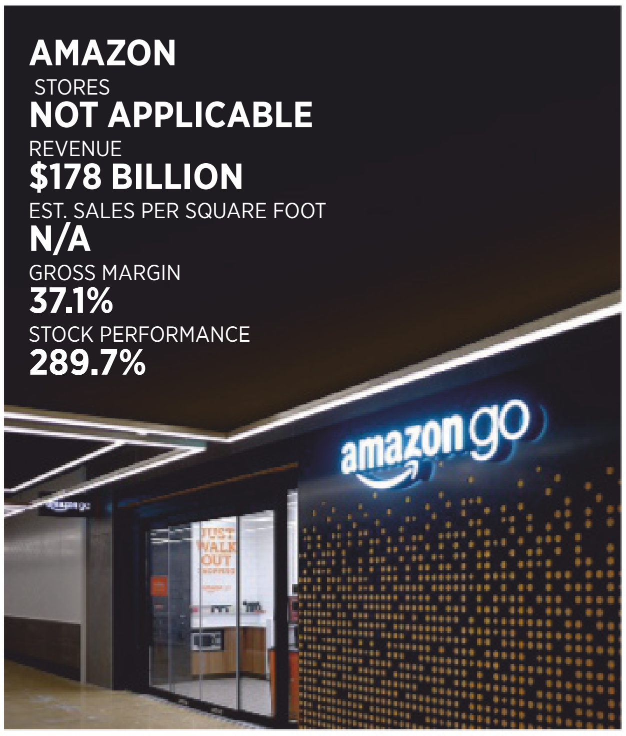
While working for Bernstein, Butler had met Harry Coverman, whose building-supplies company had collapsed, too. Maybe the trio could go into business together? Bernstein, a Boston native, knew about a successful closeout retailer in Massachusetts called Building #19. The three figured they could swipe the model—down to the warehouse-style stores—and replicate it in central Pennsylvania. One problem: None of them had any money.

Bernstein suggested bringing in Ollie Rosenberg, a local commercial real estate investor. In the end, Rosenberg would contribute several things. He arranged a $300,000 loan (about $780,000 in today's terms) from the local Cumberland County National Bank and would also lend his name and appearance to their new business. Put frankly, he looked a lot like Albert Einstein, and a caricature of Rosenberg became the company logo. On July 29, 1982, the first Ollie's opened in Mechanicsburg, just across the Susquehanna from Harrisburg. A second one followed in October in Harrisburg and a third in York three years later.

Around the time that Ollie's was creeping out of Pennsylvania into Maryland, Coverman and Rosenberg died, in 1993 at age 74 and in 1996 at 75, respectively. Bernstein, then in his late 60s, was the one setting the tempo at Ollie's, and having already experienced his share of business failures, he saw no reason to risk a lot on overexpansion. "He wanted to make sure he was growing properly and slowly," Butler says. More bluntly, "he wasn't at a point in his life when he wanted to take a chance."

But Butler wanted to. And he got his opportunity when Bernstein, ill with heart disease and cancer, turned over the CEO role to him in 2003 and looked for a way to cash out. That year Dollar Tree and SKM, a small private equity firm in Stamford, Connecticut, acquired 70% of Ollie's, valuing it at roughly $65 million. "We were trying to find situations where we thought we could triple our money," says David Oddi, then a SKM partner. "We felt like with 27 stores across several states that Mark had already demonstrated that the concept resonated with consumers

SAUL LOEB-AFP-GETTY IMAGES; JOHN GREIM-GETTY IMAGES; NTERIM ARCHIVES-GETTY IMAGES; EMILE WAMSTEKER-BLOOMBERG



across multiple markets."

Butler would do better than triple SKM's money. To expand Ollie's, he hired a chief operating officer and a chief financial officer to help manage the growth. "It used to be just him and Mort doing everything," says John Swygert, who was that initial CFO and is now COO. "They did every piece of the puzzle." Some keys parts badly needed modernizing. Its price tags, for instance, had only the item's price—no bar code to allow Ollie's to track sales.

Cash flow wasn't a worry. Every Ollie's store has been profitable within a year of opening. Under Bernstein, who died in 2004, the cash was largely taken out of the company as compensation for him and Butler rather than reinvested into the business. Butler reversed that and soon was increasing the store count by 15% or so a year, keeping at it through the Great Recession. ("Mark has a saying that 'Everyone loves a bargain,' " Swygert says. "But during the recession, everyone needed a bargain.") When SKM sold its stake to another PE company, New York-based CCMP, in 2012, the deal valued Ollie's at around $700 million.

Three years later, with almost 200 stores and $640 million in revenue, Ollie's went public. It ended its first week of trading with a market capitalization of $1.2 billion. In a little more than ten years, it had risen in value approximately 18-fold.

Partly because of his duties as CEO of a public company, Butler increasingly finds himself in New York. He likes to take the Amtrak train from Harrisburg to Philadelphia to Penn Station in Manhattan and from there prefers to ride the subway. "I just take the C [line] or the E down" to SoHo, where he keeps an apartment.

Butler enjoys the theater and has invested in Broadway shows, including *The Addams Family* musical. Not long ago, he watched and enjoyed *King Kong*. ("It's a tragedy. It's a love story.") He also recently saw *The Boys in the Band* ("Great first half but slows down in the second"), a revival of a play that was remarkable when it debuted in 1968 for its honest portrayal of gay men, and *Dear Evan Hansen* ("A little dark for me"), a hit musical that examines teenage anxiety and suicide.

But Butler's chief interest outside of Ollie's is sports. He golfs to a 16 handicap. ("I'm better at drinking beer.") He chairs the foundation started by baseball Hall of Famer Cal Ripken, which builds sports facilities for children in impoverished areas. He and Ripken are friends. "If you need an answer, you just look to Mark and say, 'Mark, what is that over there?' 'What's that cost?' And he knows it," Ripken says. Since 2015, Butler has also been the majority owner of the Double-A Harrisburg Senators baseball team, an affiliate of the Washington Nationals.

The Senators serve a useful dual function. "It's been great for my business," Butler says. "If I'm arguing with a guy over a quarter"—that is, 25 cents more per good than Butler wants to pay—"once he finds out I own the team he just wants to talk about baseball." (Some of the Nationals' biggest stars have appeared in the Senators' lineup in recent years. "Bryce Harper played for me. Stephen Strasburg played for me.") When the conversation turns to sports, "he stops fighting me over a quarter."

Butler's mind is never off Ollie's, and he wants to make that point clear. "Let me tell you how my personality works," he says, his voice dropping to a sharp tone. "I don't need my picture in *Forbes* … I'm not doing this so that I get personal recognition. I'm doing this in hopes that a manufacturer is going to be reading this and wants to sell me a deal. I'm hoping you don't print that, but I'm being honest with you. I don't need the recognition. I know it's a great story, but I need to be able to turn it into something in business." F

To merchants who have accepted Visa and Mastercard at any time from January 1, 2004 to January 25, 2019: Notice of a class action settlement of approximately $5.54-6.24 Billion.

Si desea leer este aviso en español, llámenos o visite nuestro sitio web, www.PaymentCardSettlement.com.

Notice of a class action settlement authorized by the U.S. District Court, Eastern District of New York.

This notice is authorized by the Court to inform you about an agreement to settle a class action lawsuit that may affect you. The lawsuit claims that Visa and Mastercard, separately, and together with certain banks, violated antitrust laws and caused merchants to pay excessive fees for accepting Visa and Mastercard credit and debit cards, including by:

- Agreeing to set, apply, and enforce rules about merchant fees (called *default interchange fees*);
- Limiting what merchants could do to encourage their customers to use other forms of payment; and
- Continuing that conduct after Visa and Mastercard changed their corporate structures.

The defendants say they have done nothing wrong. They say that their business practices are legal and the result of competition, and have benefitted merchants and consumers. The Court has not decided who is right because the parties agreed to a settlement. The Court has given preliminary approval to this settlement.

The Settlement

Under the settlement, Visa, Mastercard, and the bank defendants have agreed to provide approximately $6.24 billion in class settlement funds. Those funds are subject to a deduction to account for certain merchants that exclude themselves from the Rule 23(b)(3) Settlement Class, but in no event will the deduction be greater than $700 million. The net class settlement fund will be used to pay valid claims of merchants that accepted Visa or Mastercard credit or debit cards at any time between January 1, 2004 and January 25, 2019.

This settlement creates the following Rule 23(b)(3) Settlement Class: All persons, businesses, and other entities that have accepted any Visa-Branded Cards and/or Mastercard-Branded Cards in the United States at any time from January 1, 2004 to January 25, 2019, except that the Rule 23(b)(3) Settlement Class shall not include (a) the Dismissed Plaintiffs, (b) the United States government, (c) the named Defendants in this Action or their directors, officers, or members of their families, or (d) financial institutions that have issued Visa-Branded Cards or Mastercard-Branded Cards or acquired Visa-Branded Card transactions or Mastercard-Branded Card transactions at any time from January 1, 2004 to January 25, 2019. The Dismissed Plaintiffs are plaintiffs that previously settled and dismissed their own lawsuit against a Defendant, and entities related to those plaintiffs. If you are uncertain about whether you may be a Dismissed Plaintiff, you should call 1-800-625-6440 or visit www.PaymentCardSettlement.com for more information.

What Merchants will get from the Settlement

Every merchant in the Rule 23(b)(3) Settlement Class that does not exclude itself from the class by the deadline described below and files a valid claim will get money from the class settlement fund. The value of each claim will be based on the actual or estimated interchange fees attributable to the merchant's Mastercard and Visa payment card transactions from January 1, 2004 to January 25, 2019. *Pro rata* payments to merchants who file valid claims for a portion of the class settlement fund will be based on:

- The amount in the class settlement fund after the deductions described below,
- The deduction to account for certain merchants who exclude themselves from the class,
- Deductions for the cost of settlement administration and notice, applicable taxes on the settlement fund and any other related tax expenses, money awarded to the Rule 23(b)(3) Class Plaintiffs for their service on behalf of the Class, and attorneys' fees and expenses, all as approved by the Court, and
- The total dollar value of all valid claims filed.

<u>Attorneys' fees and expenses and service awards for the Rule 23(b)(3) Class Plaintiffs</u>: For work done through final approval of the settlement by the district court, Rule 23(b)(3) Class Counsel will ask the Court for attorneys' fees in an amount that is a reasonable proportion of the class settlement fund, not to exceed 10% of the class settlement fund, to compensate all of the lawyers and their law firms that have worked on the class case. For additional work to administer the settlement, distribute the funds, and litigate any appeals, Rule 23(b)(3) Class Counsel may seek reimbursement at their normal hourly rates. Rule 23(b)(3) Class Counsel will also request (i) an award of their litigation expenses (not including the administrative costs of settlement or notice), not to exceed $40 million and (ii) up to $250,000 per each of the eight Rule 23(b)(3) Class Plaintiffs in service awards for their efforts on behalf of the Rule 23(b)(3) Settlement Class.

How to Ask for Payment

To receive payment, merchants must fill out a claim form. If the Court finally approves the settlement, and you do not exclude yourself from the Rule 23(b)(3) Settlement Class, you will receive a claim form in the mail or by email. Or you may ask for one at: www.PaymentCardSettlement.com, or call: 1-800-625-6440.

Legal Rights and Options

Merchants who are included in this lawsuit have the legal rights and options explained below. You may:

- **File a claim to ask for payment.** Once you receive a claim form, you can submit it via mail or email, or may file it online at www.PaymentCardSettlement.com.
- **Exclude yourself** from the Rule 23(b)(3) Settlement Class. If you exclude yourself, you can individually sue the Defendants on your own at your own expense, if you want to. If you exclude yourself, you will not get any money from this settlement. If you are a merchant and wish to exclude yourself, you must make a written request, place it in an envelope, and mail it with postage prepaid and postmarked no later than **July 23, 2019**, or send it by overnight delivery shown as sent by **July 23, 2019**, to Class Administrator, Payment Card Interchange Fee Settlement, P.O. Box 2530, Portland, OR 97208-2530. Your written request must be signed by a person authorized to do so and provide all of the following information: (1) the words "In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation," (2) your full name, address, telephone number, and taxpayer identification number, (3) the merchant that wishes to be excluded from the

Rule 23(b)(3) Settlement Class, and what position or authority you have to exclude the merchant, and (4) the business names, brand names, "doing business as" names, taxpayer identification number(s), and addresses of any stores or sales locations whose sales the merchant desires to be excluded. You also are requested to provide for each such business or brand name, if reasonably available: the legal name of any parent (if applicable), dates Visa or Mastercard card acceptance began (if after January 1, 2004) and ended (if prior to January 25, 2019), names of all banks that acquired the Visa or Mastercard card transactions, and acquiring merchant ID(s).

- **Object to the settlement.** The deadline to object is **July 23, 2019**. To learn how to object, visit www.PaymentCardSettlement.com or call 1-800-625-6440. Note: If you exclude yourself from the Rule 23(b)(3) Settlement Class you cannot object to the settlement.

For more information about these rights and options, visit: www.PaymentCardSettlement.com.

If the Court Approves the Final Settlement

Members of the Rule 23(b)(3) Settlement Class who do not exclude themselves by the deadline will be bound by the terms of this settlement, including the release of claims against the released parties provided in the settlement agreement, whether or not the members file a claim for payment.

The settlement will resolve and release claims by class members for monetary compensation or injunctive relief against Visa, Mastercard, or other defendants. The release bars the following claims:

- Claims based on conduct and rules that were alleged or raised in the litigation, or that could have been alleged or raised in the litigation relating to its subject matter. This includes any claims based on interchange fees, network fees, merchant discount fees, no-surcharge rules, no-discounting rules, honor-all-cards rules, and certain other conduct and rules. These claims are released if they already have accrued or accrue in the future up to five years following the court's approval of the settlement and the resolution of all appeals.
- Claims based on rules in the future that are substantially similar to – i.e., do not change substantively the nature of – the above-mentioned rules as they existed as of preliminary approval of the settlement. These claims based on future substantially similar rules are released if they accrue up to five years following the court's approval of the settlement and the resolution of all appeals.

The settlement's resolution and release of these claims is intended to be consistent with and no broader than federal law on the identical factual predicate doctrine.

The release does *not* extinguish the following claims:

- Claims based on conduct or rules that could not have been alleged or raised in the litigation.
- Claims based on future rules that are not substantially similar to rules that were or could have been alleged or raised in the litigation.
- Any claims that accrue more than five years after the court's approval of the settlement and the resolution of any appeals.

The release also will have the effect of extinguishing all similar or overlapping claims in any other actions, including but not limited to the claims asserted in a California state court class action brought on behalf of California citizen merchants and captioned *Nuts for Candy v. Visa, Inc., et al.*, No. 17-01482 (San Mateo County Superior Court). Pursuant to an agreement between the parties in *Nuts for Candy*, subject to and upon final approval of the settlement of the Rule 23(b)(3) Settlement Class, the plaintiff in *Nuts for Candy* will request that the California state court dismiss the *Nuts for Candy* action. Plaintiff's counsel in *Nuts for Candy* may seek an award in *Nuts for Candy* of attorneys' fees not to exceed $6,226,640.00 and expenses not to exceed $493,697.56. Any fees or expenses awarded in *Nuts for Candy* will be separately funded and will not reduce the settlement funds available to members of the Rule 23(b)(3) Settlement Class.

The release **does not** bar the injunctive relief claims or the declaratory relief claims that are a predicate for the injunctive relief claims asserted in the pending proposed Rule 23(b)(2) class action captioned *Barry's Cut Rate Stores, Inc., et. al. v. Visa, Inc., et al.*, MDL No. 1720, Docket No. 05-md-01720-MKB-JO ("*Barry's*"). Injunctive relief claims are claims to prohibit or require certain conduct. They do not include claims for payment of money, such as damages, restitution, or disgorgement. As to all such claims for declaratory or injunctive relief in *Barry's*, merchants will retain all rights pursuant to Rule 23 of the Federal Rules of Civil Procedure which they have as a named representative plaintiff or absent class member in *Barry's*, except that merchants remaining in the Rule 23(b)(3) Settlement Class **will release** their right to initiate a new and separate action for the period up to five (5) years following the court's approval of the settlement and the exhaustion of appeals.

The release also does not bar certain claims asserted in the class action captioned *B&R Supermarket, Inc., et al. v. Visa, Inc., et al.*, No. 17-CV-02738 (E.D.N.Y.), or claims based on certain standard commercial disputes arising in the ordinary course of business.

For more information on the release, see the full mailed Notice to Rule 23(b)(3) Settlement Class Members and the settlement agreement at: www.PaymentCardSettlement.com.

The Court Hearing about this Settlement

On **November 7, 2019**, there will be a Court hearing to decide whether to approve the proposed settlement. The hearing also will address the Rule 23(b)(3) Class Counsel's requests for attorneys' fees and expenses, and awards for the Rule 23(b)(3) Class Plaintiffs for their representation of merchants in MDL 1720, which culminated in the settlement agreement. The hearing will take place at:

United States District Court for the
Eastern District of New York
225 Cadman Plaza
Brooklyn, NY 11201

You do not have to go to the Court hearing or hire an attorney. But you can if you want to, at your own cost. The Court has appointed the law firms of Robins Kaplan LLP, Berger Montague PC, and Robbins Geller Rudman & Dowd LLP as Rule 23(b)(3) Class Counsel to represent the Rule 23(b)(3) Settlement Class.

Questions?

For more information about this case (*In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation*, MDL 1720), you may:

Call toll-free: 1-800-625-6440
Visit: www.PaymentCardSettlement.com
Write to the Class Administrator:
Payment Card Interchange Fee Settlement
P.O. Box 2530
Portland, OR 97208-2530
Email: info@PaymentCardSettlement.com

Please check www.PaymentCardSettlement.com for any updates relating to the settlement or the settlement approval process.

Tor Hagen on the deck of the *Viking Jupiter* cruise ship as it sails between Ravenna, Italy, and Athens.

PHOTOGRAPHED BY JAMEL TOPPIN FOR FORBES

VIKING SAGA

In his 76 years, Norwegian billionaire Tor Hagen worked his way from McKinsey consultant to cruise line CEO, got fired, lost millions, survived cancer, then built a titanic business by reimagining the ideal European vacation.

BY LAUREN DEBTER

As the sparkling blue waters and red-roofed towns of Croatia drift by, Torstein Hagen makes his way through the minimalist, Scandinavian-style lobby of the *Viking Jupiter* cruise ship, explaining what makes Viking's voyages successful. The secret is in what the ships don't have. There are no casinos, no kids, no umbrella drinks, no formal nights, no waterslides and absolutely no butlers. Hagen has been in the cruise industry long enough to know what he doesn't like.

And then, within minutes, Hagen lets on to something else he doesn't like: not being in charge. This is what inspired him to start Viking Cruises: He was running an ocean cruise line and putting the final touches on a buyout that would have left him with the chief executive's job and an ownership stake, when out of the blue another buyer upstaged him and sent him packing. He spent the next ten years trying unsuccessfully to regain control. So, at age 54, he created a similar company.

"This was as close as I could come to getting it back," Hagen says as he settles into his favorite spot on the ship, a leather couch in the first-floor lobby, where you can find him in the evenings with a gin and tonic, listening to live classical music and gazing up at artwork by Edvard Munch.

He got his old glory back and then some. What he has now are 78 ships and 9,000 employees generating $1.6 billion in net revenue. The company is worth $3.4 billion after the most recent private equity injection. He owns three fourths of it.

"We are reinventing ocean cruises," Hagen says with a twinkle in his eye. While the Norwegian-born entrepreneur is known primarily for making European river cruises popular among Americans, the small river ships were just stepping-stones to getting back onto the high seas.

All these years Hagen has been playing the long game. He watched as the big ocean cruise lines raced to supersize their ships and fill them with rock-climbing walls, go-karts, bowling alleys and multilevel shopping malls so passengers would never have to leave. He took notes and bided his time.

Meanwhile, he bought four small river ships and created the "thinking man's cruise," with lectures, opera and cooking demonstrations, while deriding other cruises as the "drinking man's cruise." Then he leveraged his brand and passenger base to go big. Since 2015, he has introduced six 930-passenger ocean ships.

"Everybody said you won't be able to finance the ships, build the ships, crew the ships or fill the ships," Hagen recalls. Even his family was against the risky and expensive undertaking of moving into ocean voyages. He was motivated to prove them wrong. Last year the 9,000 staterooms in the Viking fleet were 98% occupied, with almost half the business coming from ocean ships.

Viking's river and ocean cruises focus intensely on the destination, whether it's Prague, Kotor in Montenegro or Scotland's Shetland Islands. Passengers file into port every day to partake in home visits with local families, private performances or after-hours museum tours. (The most popular excursion: a tour of Highclere Castle, home of *Downton Abbey*.) At night they sample local cuisine or sit in on lectures about the history of the region.

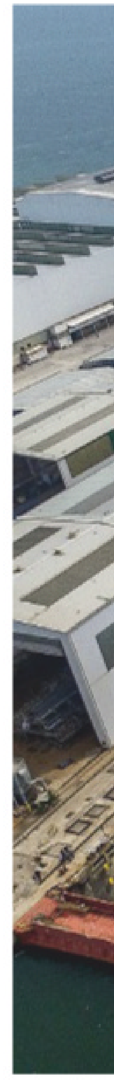
Hagen, 76, caters to a certain crowd: wealthy, well-educated and over 55. "I can do my market research by looking in the mirror," he jokes. Whereas you might nab a competitor's Caribbean cruise for $399 a head, Viking's cruises start at $1,899 (for seven nights) and often sell out a year in advance. The Viking price includes Wi-Fi, beer and wine with meals, and one shore excursion a day.

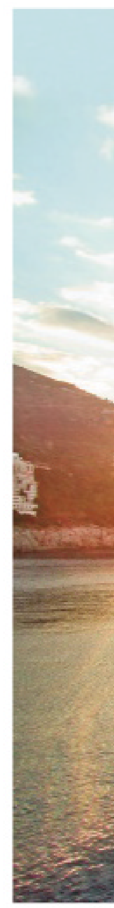
Hagen can hardly keep up with the demand. He is borrowing cash furiously (the company's debt is $2.5 billion) to build more ships and has also raised equity capital from the Canadian pension board and the U.S. private equity firm TPG.

"I must say—perseverance is pretty important," says Hagen, who started Viking at the same age at which his father died and three years after he was diagnosed with prostate cancer. "We have come far. Nobody would have given us the chance to do what we did when we started."

Hagen was born in the Oslo suburb of Nittedal, where he lived in a red house and skied to school during winters. His father worked as an accountant, and at age 14 Hagen followed in his footsteps and got an accounting job at a woodworking factory. He earned a degree in physics at the Norwegian Institute of Technology and then went to America for his M.B.A. at Harvard.

Clockwise from top: A Viking vessel under construction at a Fincantieri shipyard in Italy; the *Viking Sky* sails near Dubrovnik, Croatia; a Viking river ship navigates the Main in Aschaffenburg, Germany.





After Harvard came consulting at McKinsey, where he helped Holland America Line narrowly avoid bankruptcy after oil prices spiked. His advice: Sell the profitable cargo business and use the proceeds to build up the struggling cruise line. It was the right call. In 1989 Holland's cruise business was acquired by Ted Arison's Carnival for $625 million.

"It is one thing to be a consultant. It is another thing to have your hand on the wheel," Hagen says. At age 33, brimming with confidence, he pitched a plan to a struggling Norwegian shipping company called Bergen Line and was hired as its chief executive. He hacked his way to profitability, fir-

ing so many workers and selling so many ships that the company's headquarters shrank from five floors to one.

In 1980, Hagen took over as chief executive of one of the company's subsidiaries, the Royal Viking Line. His plan there was more cutting but of a different sort: He added a new middle section to the ships to make them longer, bumping passenger count from 525 to 740. That reduced the break-even occupancy from 93% to 63%.

In 1984 he put together a $240 million management buyout with the help of the private equity firm J.H. Whitney. The deal was almost final when he heard on television that a competitor, Knut Kloster, had come out of nowhere to purchase the company. Hagen blames a J.H. Whitney partner for being too busy at the opening ceremony of the 1984 Summer Olympics in Los Angeles to send the last $5 million to the sellers.

Hagen watched as Royal Viking fell on hard times. In 1994 he agreed to help shore up its finances in exchange for the opportunity to buy the company. He lined up $300 million selling junk bonds in the U.S. and was ready to close the deal when Royal Viking's owner decided not to sell.

Later that year Hagen tried to persuade one of the big cruise lines to buy the sickly company's outstanding bonds, seize control and install him as chief executive. That didn't happen either. Eventually Royal Viking's ships were sold off and rebranded, leaving the Norse seafaring name for the taking.

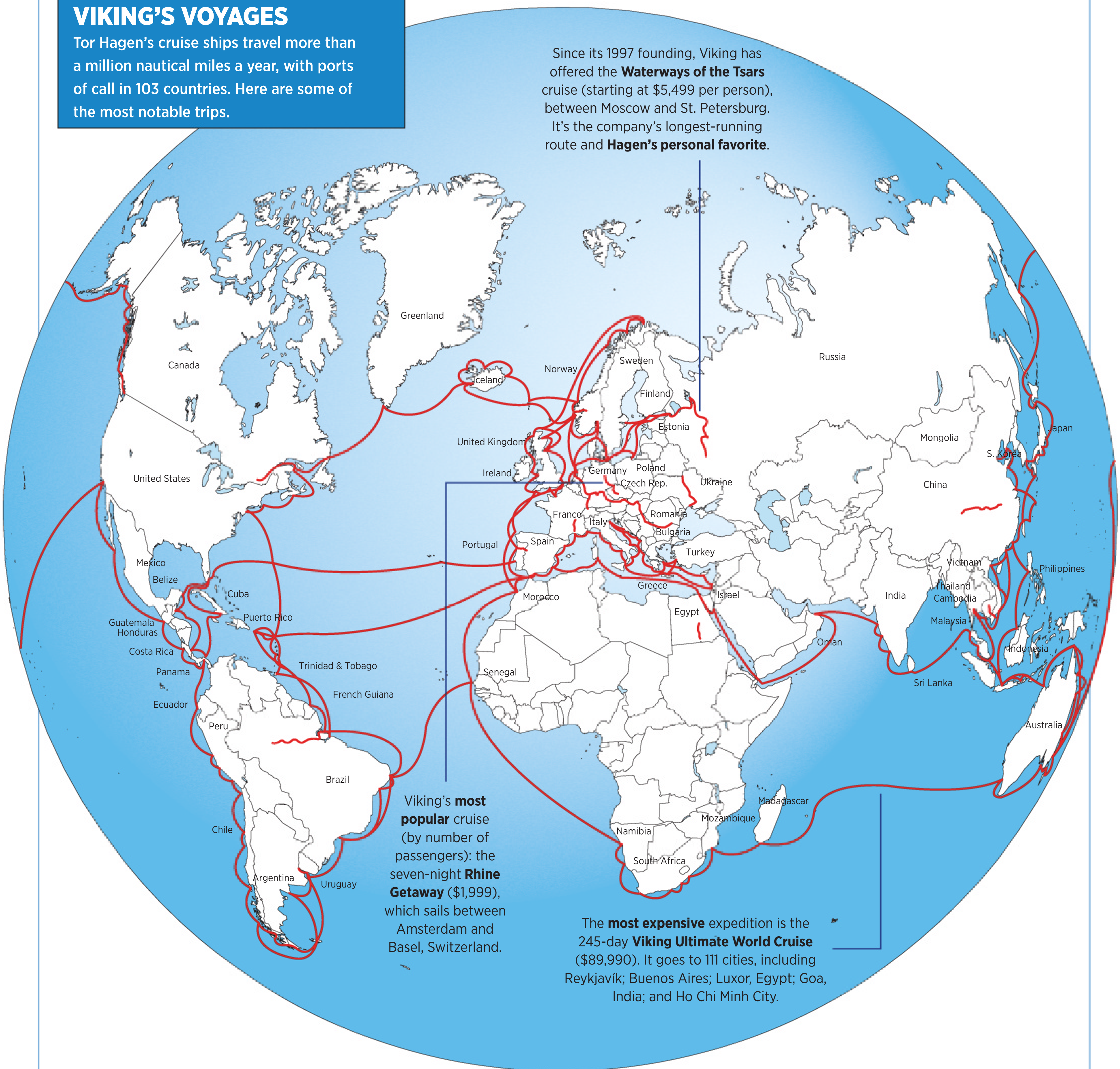
In the meantime Hagen was engaged in another adventure. He and several other investors spent $157 million to accumulate a 27% stake in Royal Nedlloyd, a Dutch shipping firm. They attempted a Carl Icahn-style takeover. A bitter, multiyear showdown ensued. Hagen, who used borrowed money to buy shares, was nearly done in by a margin call. He scraped together his remaining assets and put them into stocks like Gazprom, where they grew into $5.5 million. In 1997, with that money, plus $2.5 million from two friends, Hagen had enough to buy four river ships from two Russian oligarchs. It wasn't ocean cruises, but it was what he could afford. The timing was right: In 1992 a canal had been completed in Germany that opened up 2,200 miles of waterway and linked 15 countries. "River cruising was ready to rock and roll," says George "Skip" Muns, a former Royal Caribbean exec who worked at Viking from 2000 to 2008.

For the first decade of its existence Viking was on the edge. The September 11 terrorist attack hurt leisure bookings enough for Hagen to ask Carnival CEO Micky Arison for a $20 million loan, but lawyers squabbled over the details and the loan never happened. The 2008 financial crisis pushed Hagen to the wall. Desperate, he agreed to sell a majority stake to the Dutch private equity firm Waterland at a reported valuation of $130 million. But negotiations dragged on. Five months later, business had recovered enough that Hagen was able to back out. He also bought out his minority shareholders.

What saved Viking? Hagen's marketing skills. He flooded the mailboxes of prosperous middle-aged and older Americans with brochures. A river cruise, he told them, is the new way to see Europe, where you only have to unpack once. While many cruise companies were reluctant to do so much direct mail for fear of alienating the travel agents who sold the vast majority of tickets, Hagen forged ahead. He wanted to be able to create demand at a moment's notice. "We see a

VIKING'S VOYAGES

Tor Hagen's cruise ships travel more than a million nautical miles a year, with ports of call in 103 countries. Here are some of the most notable trips.



hole in booking somewhere and we rifle shoot there," Hagen says. Since 2000 Viking has spent $1.5 billion on marketing, assembling a database of 37 million households. "Our clients can't go a week without getting something in the mail from them," says Harvey Rosenkrantz, a travel agent in San Diego.

In 2012 Viking started running commercials on *Downton Abbey*. Reliving his ship-stretching days at Royal Viking, he ordered up new vessels that would accommodate 190 people, rather than the usual 164. Loans backed by the German government helped pay for 57 river ships.

Tor Hagen has obsessed over making every part of Viking's cruise experience senior-friendly. The bath products have large, readable fonts, and the remote control features a few large buttons to make it easy to use.

"Tor has that Viking blood. He invested heavily in building river cruises—frankly before the market was clear and through periods of cyclical weakness—and created the absolute market leader," says Paul Hackwell, a partner with TPG, which first invested in Viking in 2016 and owns 11% of the company.

Hagen's view of this: "I love risk. I really do."

One Saturday in London in 2012, Hagen was having lunch with his friend Manfredi Lefebvre d'Ovidio, the CEO of Silversea Cruises, explaining how he was intent on making a return to ocean voyages. Lefebvre, who was born in Rome, suggested the Italian shipbuilder Fincantieri. Three days later, eight men from the shipyard showed up in Viking's Basel office. Hagen was short on cash. Fincantieri was desperate for business. Italian taxpayers backstopped the financing, which covered 96% of the cost of the ships, at $340 million each.

Fincantieri is now booked for the next seven years. Among its orders: six more ocean ships from Hagen, with an option for four more. He wants 20 ocean ships before he is done.

Capital is now flooding into the ocean-cruise business. In 2014, Norwegian shelled out $3 billion for Regent and Oceania. In 2015, Genting bought Crystal for $550 million. In 2018, Royal Caribbean signed a deal to buy a two-thirds stake in Silversea Cruises for $1 billion, which CEO Richard Fain heralded as "an answer to a prayer" that addressed "a gap in our portfolio." Ritz Carlton is also launching a cruise line.

Hagen already has the biggest line at the luxury end of the spectrum, and his fleet is the newest. While all the lines compete on what is included for the price, Hagen has set himself apart. Most high-end lines describe their guests as VIPs who will be pampered and plied with champagne and caviar by white-gloved butlers, but that type of treatment makes Hagen uncomfortable. (He once had a butler pushed on him at London's upscale Savoy hotel and found the experience extremely awkward.) No, Hagen's main goal is to make his ships comfortable.

Aboard the *Viking Jupiter*, he demonstrates how easy it is to identify and open the shampoo and conditioner bottles. He recalls with frustration the Hermès bath products he once came across at a luxe Monte Carlo hotel, which featured illegible gold lettering and were impossible to open without using your teeth. Then he moves into the bedroom and picks up the remote control for the TV, which has just nine jumbo buttons. "This is my design. No teenager is required to operate it," says Hagen, who's wearing his favorite black blazer, worn brown loafers and specially made jogging pants that have the pleats and cuffs sewn on so they look like dress pants.

Viking's database is paying off. Two thirds of the passengers on the company's ocean cruises are previous river cruise passengers. Hagen sees room for 100 riverboats in the Viking fleet. He has two expedition ships under construction, which will likely navigate to remote regions like Vietnam and Antarctica. He has been trying for several years to get his ships on the Mississippi River—a nearly century-old law known as the Jones Act requires ships transporting goods or people between U.S. ports to be owned by American citizens—and says he is optimistic it will happen sooner or later. He's expanding his fleet of European river ships staffed with Mandarin-speaking staff for Chinese tourists.

Hagen plans to be at the helm for a long time, and his daughter is an executive vice president. While he has received acquisition offers (he won't say from whom), he says he has never been tempted to sell. Can you blame him? He lost a cruise line once. This one is for keeps. F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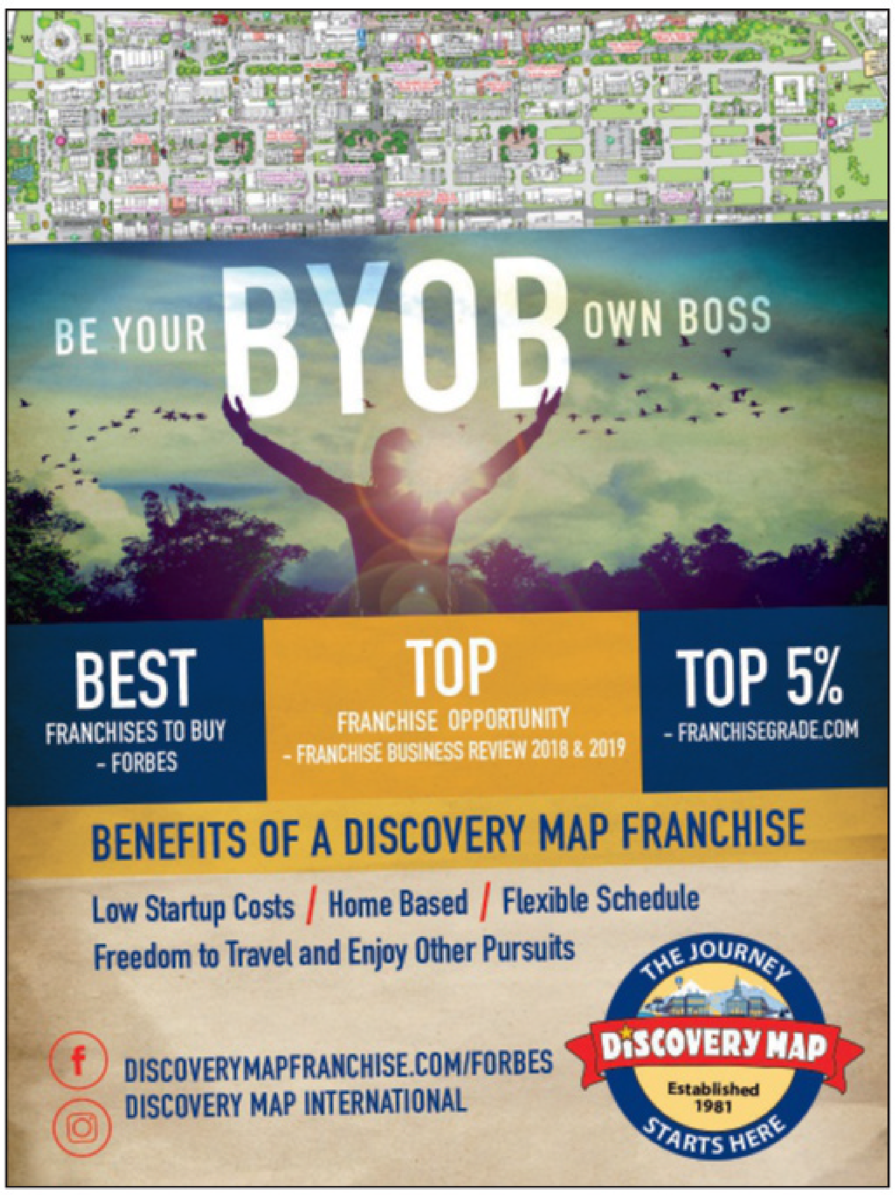
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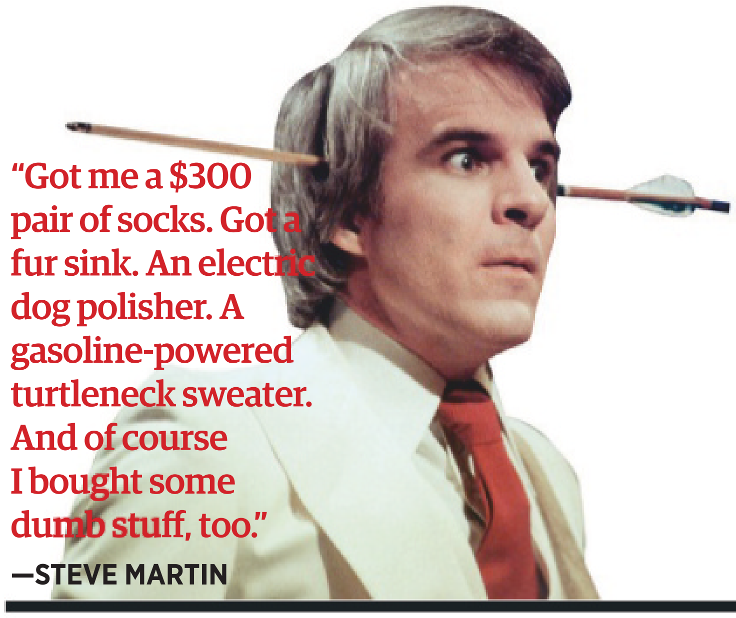
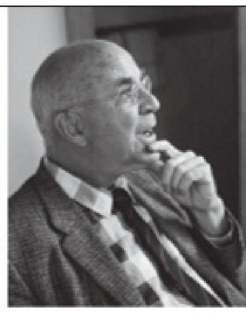
THOUGHTS ON

Cashing In



"Got me a $300 pair of socks. Got a fur sink. An electric dog polisher. A gasoline-powered turtleneck sweater. And of course I bought some dumb stuff, too."

—STEVE MARTIN

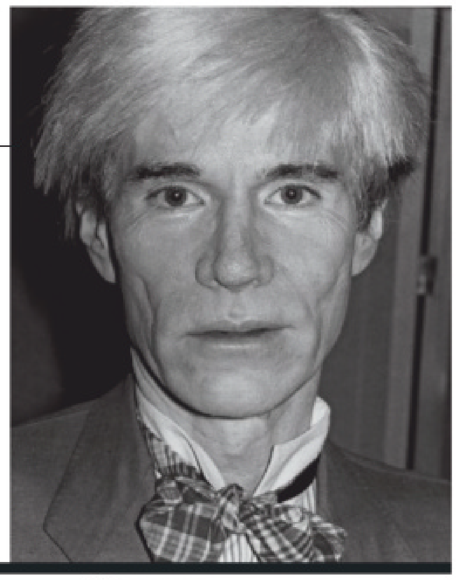


"I don't know what it is, but I've got a kind of feel for the big money."

—JOHN DOS PASSOS

"BEING GOOD IN BUSINESS IS THE MOST FASCINATING KIND OF ART."

—ANDY WARHOL



"There is nothing man will not attempt when great enterprises hold out the promise of great rewards."

—TITUS LIVIUS

"The man who does more than he is paid for will soon be paid for more than he does."

—NAPOLEON HILL

"MONEY, IT TURNED OUT, WAS EXACTLY LIKE SEX—YOU THOUGHT OF NOTHING ELSE IF YOU DIDN'T HAVE IT, AND THOUGHT OF OTHER THINGS IF YOU DID."

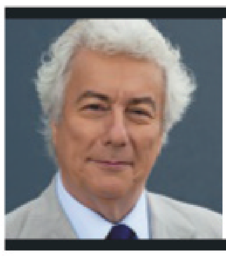
—JAMES BALDWIN

"There are few things in this world more reassuring than an unhappy lottery winner."

—TONY PARSONS

"Yeah, I smell like the vault, I used to sell dope. I did play the block, now I play on boats."

—50 CENT

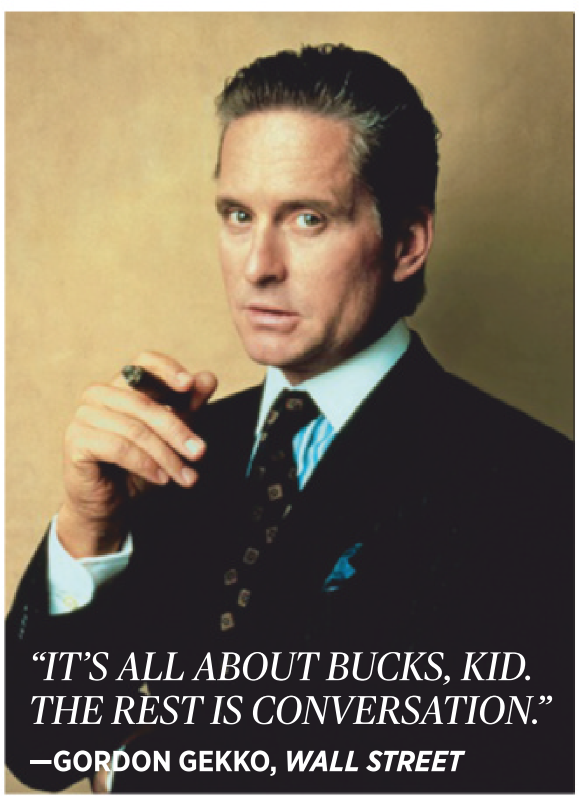


"HARD WORK SHOULD BE REWARDED BY GOOD FOOD."

—KEN FOLLETT

"IT IS THE JOB OF THE MARKET TO TURN THE BASE MATERIAL OF OUR EMOTIONS INTO GOLD."

—ANDREI CODRESCU



"IT'S ALL ABOUT BUCKS, KID. THE REST IS CONVERSATION."

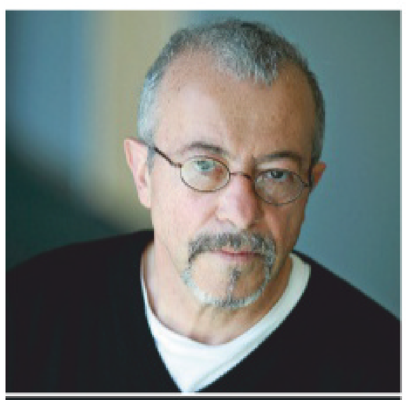
—GORDON GEKKO, *WALL STREET*

"Professionalism is important. Professionalism means that you get paid."

—ERICA JONG

"THERE ARE FEW WAYS IN WHICH A MAN CAN BE MORE INNOCENTLY EMPLOYED THAN IN GETTING MONEY."

—SAMUEL JOHNSON



"HE WILL MAKE YOUR RIGHTEOUS REWARD SHINE LIKE THE DAWN, YOUR VINDICATION LIKE THE NOONDAY SUN."

—PSALM 37:6

FINAL THOUGHT

"If you want to enjoy the second half of your life, keep your nose to the grindstone in the first half of your life."

—B.C. FORBES

SOURCES: NOBODY KNOWS MY NAME, BY JAMES BALDWIN; THE PILLARS OF THE EARTH, BY KEN FOLLETT; THE LIFE OF SAMUEL JOHNSON, BY JAMES BOSWELL; THE BIG MONEY, BY JOHN DOS PASSOS; THE HISTORY OF ROME, BOOK IV, BY TITUS LIVIUS; ZOMBIFICATION: STORIES FROM NATIONAL PUBLIC RADIO, BY ANDREI CODRESCU.

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