



## U.S. NEWS

## Trump's Hard Line on Trade Often Mellows

By JOSH ZUMBRUN

WASHINGTON—As President Donald Trump considers new tariffs on imported vehicles and pursues a deal with China to avoid a trade war, economists and business leaders see a pattern emerging in the White House's efforts to renegotiate many trade relationships: Open aggressively, then settle for incremental concessions.

The Trump administration has accused U.S. trading partners of taking advantage of an open U.S. economy. Mr. Trump has demanded partners—China, Mexico, Canada, the EU and others—rewrite trade relationships in ways that are more equitable to the U.S.

His opening gambits are strong, calling existing deals “terrible” or a “rape of our country” and threatening dire consequences should trading partners fail to respond. Then the administration often settles for much less.

It might be a negotiating tactic—make strong demands to win future concessions—or else the administration lacks plans to follow through. Either way, the development has become clear to a growing number of observers.

“The pattern has been: A lot of sound and fury, threats to withdraw from agreements and negotiate the best ever deal, and then in reality something a lot less,” said Matthew Goodman, senior adviser for Asian economics at the Center for Strategic and International Studies.

## EU Officials to Press U.S. on Tariffs

BRUSSELS—The European Union's top trade official will meet U.S. counterparts in Paris on Wednesday, according to EU officials, in a last-ditch effort to secure waivers from steel and aluminum tariffs and to engage Washington on efforts to tackle China's market-distorting policies.

European Trade Commissioner Cecilia Malmstrom will press U.S. Commerce Secretary Wilbur Ross for exemptions just ahead of a Friday deadline, when President Donald Trump's tempo-

rary waivers to the 28-member bloc expire.

Ms. Malmstrom will also meet with U.S. Trade Representative Robert Lighthizer on Wednesday, and the officials will join their Japanese counterpart, Hiroshige Seko, Thursday to advance a joint push targeting unfair practices.

European officials have been scrambling to address Mr. Trump's demands amid deepening policy differences on issues ranging from trade to foreign policy and defense. Brussels and Washington have made little headway in talks since early March over Mr. Trump's steel and aluminum tariffs.

—Emre Peker

With the administration considering imposing 25% tariffs on global car imports from around the world, observers are watching to see if the pattern continues, resulting in less-stringent duties.

The administration has gained real concessions in some cases with its approach. It is well on its way toward sealing an agreement with China to buy more U.S. commodities, from soybeans to natural gas. It has car companies shifting their supply chains to put greater emphasis on producing in North America and the U.S. It has put quotas and restrictions on steel and other imports that will protect U.S. producers from dumping and other unfair trade practices.

“They deserve credit for saying they're going to change the status quo, and taking a step toward it on a real issue,” said Derek Scissors, a China scholar and critic at the American Enterprise Institute, who has consulted with the Trump administration on trade. “But they seem to have just abandoned it.”

The administration has defended its trade actions as more aggressive than those taken by any of its predecessors. The director of Mr. Trump's National Economic Council, Lawrence Kudlow, has said the administration is “making terrific progress on a topic that everyone knows is very difficult.”

Four key trade episodes have seen this cycle play out:

## Intellectual Property

The U.S. Trade Representative in March concluded an investigation into China's intellectual-property practices, finding the country perpetrated widespread abuses. A list of \$50 billion in Chinese goods was identified for tariffs.

Businesses have long complained that Beijing forces them to transfer their technology and intellectual property to Chinese partners in exchange for market access.

A joint statement earlier this month to suspend threatened tariffs with China included un-specific commitments to buy more energy and agriculture products, but no apparent concessions from the Chinese on intellectual-property abuses.

## South Korea Trade

Mr. Trump threatened to pull out of the trade deal with South Korea, known as Korus, calling it a “one-way street.” and said that “we're getting destroyed in Korea.” In March, the administration and Seoul reached a new deal, with concessions many analysts saw as modest.

For example, a quota allowing the U.S. to import more cars that meet U.S. safety rules, but not necessarily Korean ones, was doubled to 50,000 a year from 25,000 a year. But U.S. car makers weren't reaching the existing quota. The deal also prolonged tariffs on South Korea's imported trucks, but major Korean auto makers haven't en-

tered the U.S. market with imported trucks. An initial goal of reducing South Korea's tariffs on agricultural products was abandoned.

## Steel and Aluminum

The global tariffs of 25% on steel and 10% on aluminum came as a shock to financial markets and sent commodity prices soaring when announced. But later in March, the U.S. granted most countries exemptions from the tariffs going into effect while negotiations continued. In April, the U.S. extended again for many major trading partners, including the European Union, Canada and Mexico.

The latest extension expires at the end of May, and the tariffs could still go into effect.

## Nafta Negotiations

The U.S. has made multiple threats to withdraw from the negotiations over the North American Free Trade Agreement, only to back down.

A new deal may include new chapters on energy trade and digital trade. Mexico may agree to proposals that end up requiring somewhat more auto parts to be made in the U.S. But it is unclear if negotiators are headed toward a Nafta that fundamentally changes anything about trade between U.S., Mexico and Canada.

◆ Chinese, Russian state firms look to fill a void in Iran.... A6

## ECONOMIC CALENDAR

**WEDNESDAY:** Brazil's first-quarter gross domestic product figures could show signs of a slowdown in a fragile recovery from two years of deep recession. Some analysts have cut their full-year growth forecasts to as low as 2%, from 3%.

**THURSDAY:** China releases the official gauge of factory activity for May (release time is Wednesday night in the U.S.). Economists expect the manufacturing purchasing managers index to hold steady at 51.4 in May. Production likely remained robust, but new orders probably have been disrupted by ongoing trade tensions between China and the U.S., they say.

The European Central Bank is expected to receive some encouraging news with the release of inflation figures for May. Economists expect to see a rise in the annual rate of inflation to 1.6%, from 1.2% in April, moving the metric closer to the ECB's target of just under 2%. Rising energy prices are likely to have pushed the rate higher, but a measure of core inflation that excludes that factor is expected to record a more modest increase, to 1% from 0.7% in April.

**FRIDAY:** The U.S. Labor Department publishes the May jobs report. In April, the unemployment rate fell to 3.9%, as the economy added a weaker-than-expected 164,000 jobs. Economists estimate the unemployment rate stabilized at 3.9% in May, with about 188,000 jobs likely added in the month.

## Beachgoers Take Cover as Subtropical Storm Alberto Rumbles Inland



FLOOD THREAT: Subtropical Storm Alberto roiled the waves at Okaloosa Island in Fort Walton Beach, Fla., and across the Gulf Coast Monday.

## TECH

Continued from Page One

and track digital payments, gave the company founders an incentive to go public: supervoting shares, typically a second class of stock held by insiders that has 10 votes per share. The move was aimed in part to assure the founders, brothers Patrick and John Collison, that they would keep significant control of the company they established in 2010 if it went public, people familiar with the matter said.

Many of Stripe's investors say the founders have earned the right to control the company because it has performed so well. It was valued at \$9 billion in its last fundraising round. Until March, when Stripe added its first independent director, the Collison brothers' only fellow director was Michael Moritz, a partner at Sequoia Capital, one of the company's earliest investors. Stripe and Sequoia representatives declined to comment.

Glenn Kelman, the longtime chief executive of online real-estate brokerage Redfin Corp. that went public last July, said that in the run-up to the IPO he was pushed to be more disciplined with expenses by two big investors who traditionally buy public-company stock but also back later-stage private companies.

“There is a new world of VCs who really can't perform their governance functions on boards because they want to preserve their relationship with you,” Mr. Kelman said of the venture-capital industry.

Star founders of private com-

panies often get to pick their own investors, but as public-company CEOs they can't. Supervoting shares give founders more power to elect directors and approve other items up for shareholder vote and protect them from investors who may have different priorities.

Last year, 67% of U.S. venture-backed tech companies that staged IPOs had supervoting shares for insiders, according to Dealogic, up from 13% in 2010. The proportion of nontech U.S. venture-backed IPOs with supervoting shares stood at 10% to 15% every year over that period.

Empowering a founder has risks. Uber Technologies Inc. co-founder and former CEO Travis Kalanick built a ride-hailing juggernaut valued at \$68 billion with a pugnacious leadership style, but that approachulti-

mately contributed to a series of scandals. His supervoting shares and de facto control of the board made it more difficult for investors to push him out.

They did so last year, and then abolished supervoting rights and adopted a “one share, one vote” policy ahead of a planned 2019 IPO, something Mr. Kalanick ultimately voted in favor of.

Spotify Technology SA's shareholders issued special “beneficiary certificates” to its founders in February, in part because co-founder and Chief Executive Daniel Ek wanted to maintain control of the music-streaming service, a person familiar with the arrangement said. The certificates boosted Mr. Ek's and his co-founder's voting control to a combined 80.5%, double their economic

ownership. Spotify listed its shares in April. A Spotify spokesman declined to comment.

Snap Inc., whose two co-founders control about 90% of its voting power, sold shares with no voting rights in its 2017 IPO, meaning public-market investors don't have any say on corporate matters.

Evan Spiegel, co-founder and CEO of the Snapchat parent, received a \$625 million stock package that vested with the IPO as an incentive to get it done, people familiar with the deal said.

Drew Houston, co-founder and CEO of online-storage company Dropbox Inc., in December got a stock package worth potentially \$590 million partly tied to his company's March IPO, offering documents show. The stock vests based on Dropbox's

share price, among other milestones, and he can earn the full amount only if shares reach \$90, triple their current value. Mr. Houston already holds nearly \$3 billion shares.

Bankers and lawyers who work on IPO deals say there is little precedent for big stock packages offered to founders ahead of public offerings, a reflection of venture-capital firms' decreasing leverage. Snap and Dropbox representatives declined to comment.

Some star founders may even be emboldened to overstep boardroom norms. WeWork Cos. co-founder and CEO Adam Neumann, who has 65% voting control, is one of two members of his board's compensation committee, along with longtime company investor Benchmark, according to WeWork's recent

bond-offering documents. Public companies usually aren't allowed to have their executives on compensation committees to avoid conflicts.

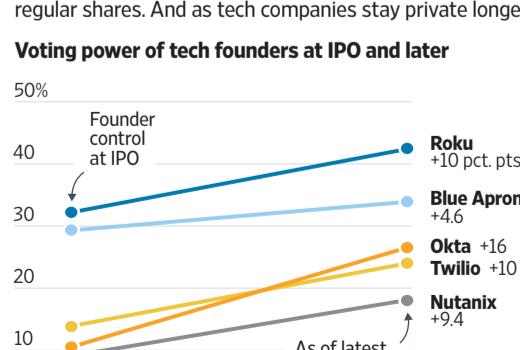
A WeWork spokesman said Mr. Neumann takes \$1 a year in salary and hasn't received stock compensation since he has been on the committee. He declined to comment on whether Mr. Neumann recuses himself from committee discussions of his pay.

—Eliot Brown contributed to this article.

## Inboard

Tech founders can gain more power when others sell supervoting shares that then convert into regular shares. And as tech companies stay private longer, insiders stay on their board longer.

## Voting power of tech founders at IPO and later



Note: To go public, companies must have majority independent boards. Controlled companies, where a single entity has more than 50% of votes, are exempt from board independence requirement. \*Figures represent the median for the 20 highest-valued U.S. private tech companies vs. similarly valued public tech companies founded after 2001. Sources: SEC filings; Dealogic (board makeup)

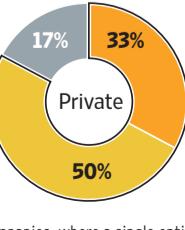
## Member makeup on private vs. public boards\*

## INSIDERS

■ Founders, executives

■ Investors

## OUTSIDERS



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## GOT A TIP FOR US

## U.S. NEWS

# Philadelphia Tent Camps Set to Close

City works to get people to shelters and programs before clearing out tunnels

BY JON KAMP

**PHILADELPHIA**—Beneath a freight railway north of downtown, about 200 people congregate in tents and atop mattresses in four dank tunnels. Many openly inject opioids into their hands, arms and necks.

The drug use spills out into the city's row-house-filled Kensington neighborhood. On a recent day, a gaunt man rocked in place on a nearby street, a syringe gripped sideways in his mouth, as three children walk by. Residents frequently find used syringes and say streets have become toilets.

Many neighborhood residents said their patience is frayed, even as they sympathize with people caught in the grip of addiction. The city, citing health and safety hazards, plans to begin closing some of the encampments Wednesday morning. Signs went up on April 30 giving people a month to clear out.

"The drug traffic around here is traumatizing," said Gillian Esquivel, a 30-year-old

woman who helped found a neighborhood association.

The tent camps line broad sidewalks running through tunnels under the railroad tracks. Police will clear out two of them this week—along Kensington Avenue and Tulip Street—leaving two more for now.

Less than a week before the eviction date, one couple at the Tulip Street camp prepared to move into an overnight shelter. They hoped for stability and jobs, the man said. Another man worried he would soon be living in a weedy field nearby.

A wiry man known as Ghost, who has lived in the Tulip Street tunnel for several months, said he planned to help campers move before the city takes their things. He believes people need more opportunities to find jobs and housing, and said forcing them from the tunnels will just cause them to settle somewhere nearby. "And then they'll have us move from there," he said.

City officials want to avoid this, especially after drawing criticism that the four encampments are byproducts of the city's work to close a long-standing drug market last summer. That one was more hidden, in a nearby freight-railway gulch, while the newer camps have thrust more drug



Citing health and safety hazards, Philadelphia plans to clear out two encampments this week, including one along Tulip Street.

activity into public view.

The city rejects the notion that it shifted the problem from one site to another. It provided substantial outreach last year, and the new encampments have a largely new population, said Liz Hersh, Philadelphia's director of homeless services.

The site the city closed was more of a drug market and shooting gallery than a camping ground, she noted.

The new camps are symptoms of Philadelphia's crushing problem with drugs such as heroin and fentanyl, which the city blames on decades of heavy opioid prescribing in

Pennsylvania and beyond, plus the city's reputation for some of the purest, cheapest heroin on the East Coast. Throughout Philadelphia, drug overdoses killed 1,217 people last year, a 34% climb from 2016.

Homeless encampments have become common sights around the U.S., with numbers exploding in the last decade due to rising housing costs and stagnant wages, according to the National Law Center on Homelessness & Poverty. The nonprofit counted 274 media reports of unique encampments nationwide in 2016.

Philadelphia's encampments

are tethered firmly to the city's drug problem.

Drawing on lessons from other cities, Philadelphia's plan includes intensive outreach to get people into shelters and treatment before the police move in, the city said.

The city's most recent data, from May 18, show nearly 100 people from the two tunnels have accepted some kind of service, a health department spokeswoman said.

Hector, a 29-year-old, said he recently lived in the Kensington tunnel. Sober for the past month, he now lives and serves hot meals at a recovery club-

house around the corner. He expects many people will migrate deeper into the neighborhood when the city clears the tunnels.

People living in nearby homes shared these concerns. They spoke warmly of their community and of concern for people in dire conditions but said the drug problem is boiling over.

"I don't think it's what's healthy for the people. I don't think it's healthy for our community," said Brian White, who lives in a row house with his wife and 2-year-old son near the Tulip Street camp.



Lava flowed near a house earlier this month near Pahoa during eruptions of the Kilauea volcano in Hawaii; many neighborhoods in danger were developed years ago with knowledge of the threat.

# Homes Were Built Despite Documented Lava Threat

BY JIM CARLTON

When Rob Holcombe and his husband bought a studio on Hawaii's Big Island in 2015, they knew it was in an active volcano zone.

But the Berkeley, Calif., couple had fallen in love with the place and gambled that molten lava would stay away from the forested getaway overlooking the Pacific that Mr. Holcombe describes as a "Garden of Eden."

"We figured we could get insurance, and it was worth the risk," said the 52-year-old computer programmer. The couple did get insurance, but it won't cover much lava damage.

Their second home is one of hundreds threatened by renewed eruption at Hawaii's Kilauea volcano, which has already destroyed more than 80 houses and other structures, threatened a geothermal power plant and forced the evacuation of hundreds of residents since May 3.

The properties are in subdivisions built decades ago as part of an ambitious development push by local officials, despite geologic maps at the time that showed the areas were in hazard zones for lava.

An impetus for the development was providing a new revenue source after Hawaii became a state in 1959, said Mary Begier, a realtor in Hilo. At the time, the remote lots weren't intended to hold homes because they lacked ba-

sic infrastructure, she said.

Over time, thousands of homes sprung up as the area, known as lower Puna, became one of the most affordable places to live in the Aloha State. A three-bedroom home there costs as little as \$200,000, or about half the \$400,000 median home price on Hawaii's largest island.

"It's easy to say in hindsight we shouldn't have done that," Ms. Begier said, referring to the development. "But where would those families be if we had not done that?"

Gavan Daws, a Honolulu-based historian, said develop-

*The lower Puna area became one of the state's most affordable places.*

ers early on played down the volcanic risk.

"Would you offer land for sale and tell the people there is a volcano and stress the word 'active'?" asked Mr. Daws, who co-wrote the 1985 book "Land and Power in Hawaii: The Democratic Years," which chronicles how land projects in the 1950s and '60s turned lava fields below the world's most active volcano into subdivisions with thousands of homes.

Daryn Arai, deputy planning director for Hawaii County,

said many of the subdivisions in question were created in the 1960s before the county came out with detailed lava-flow hazard maps a decade later.

"So I can only assume that these subdivisions were permitted based on the limited information available at that time," Mr. Arai said.

Lono Lyman, who served as county planning director in the 1980s and manages 4,500 acres of family-owned land in the eruption zone, said shortsightedness on the part of local developers helped drive the development.

"People wanted to make a buck, and it was cheap land being sold," said the 70-year-old Mr. Lyman. "They saw an opportunity."

Even some builders say developers never should have built homes in the lava fields.

"It was a real lush, green forest, but I don't think they should have built a subdivision there because there was a lava flow underneath," said Mark Ferreira, a general contractor in Hilo. "They should have known better."

Though precise risk-assessment maps didn't come out until the 1970s, the hazards were well known: Federal officials say lava-flow hazard maps were available for the Kilauea area since the 1940s, and the volcano had erupted at least a dozen times in the century before land sales began in earnest during the 1960s.

# Probes, Cyberattack Distract Atlanta as It Pitches Amazon

BY CAMERON MCWHIRTER

**ATLANTA**—As this growing city looks to lure **Amazon.com** Inc. and other corporate giants to the region, its new mayor has found her efforts stymied by scandals from the previous administration and the aftereffects of a crippling cyberattack on city operations.

Mayor Keisha Lance Bottoms, who took office in January, is dealing with various investigations related to her predecessor, Kasim Reed.

In March, a ransomware attack shut down most government operations for days and erased an undetermined amount of data. The city refused to pay the \$50,000 ransom. It now has put up at least \$5 million for experts to try to retrieve data and prevent or limit further attacks.

The bad publicity comes as Ms. Bottoms is trying to attract Amazon, which is considering Atlanta as a base for its second headquarters, along with 19 other finalist cities. Winning Amazon's bid, with its promise of up to 50,000

high-paying jobs, would transform the already growing city.

"I really wouldn't want to be in her shoes now, that's for sure," said Gina Pagnotta-Murphy, president of the Professional Association of City Employees, a large city union.

Ms. Bottoms is making the right initial moves to cope with the problems, City Council President Felicia Moore said.

Ms. Bottoms's spokesman, Michael Smith, said the probes and cyberattack have drawn attention away from the new administration's work to lure more businesses, mitigate the effects of gentrification on low-income homeowners and improve public transportation.

This spring, the City Council asked Atlanta's audit and ethics commissions to investigate published allegations that Mr. Reed paid out bonuses to his staff without Council approval. The probe is ongoing, and some officials have returned the money. Moreover, Ms. Bottoms hired outside lawyers to review the bonuses, Mr. Smith said.

A spokesman for Mr. Reed said the former mayor didn't

need City Council approval for the bonuses and they were paid out legally.

Most city departments are now operational after the March cyberattack, Mr. Smith said. Files on some computers were lost, however, and investigators are trying to figure out what they can retrieve, he said. One possibly lost file is a memo that the Reed administration said it gave legal grounds for the bonuses. The cyberattack has hampered the search for the memo—if it ever existed," Mr. Smith said.

In March, a federal grand jury indicted Mitzi Bickers, a former city human services director, on charges of bribery, money laundering, obstruction and tax fraud. Prosecutors accused her of steering lucrative contracts to two men in exchange for more than \$2 million in bribes. Ms. Bickers pleaded not guilty.

Ms. Bottoms said her staff is reviewing policies and best practices of other cities to improve transparency and accountability. "What has been broken must be fixed, and we will repair the trust," she said.

# Yemeni Child, Cited in Court Review Of Travel Ban, Gains Entry to U.S.

A disabled Yemeni girl, whose exclusion from the U.S. was questioned by Supreme Court justices reviewing the Trump administration's travel ban, arrived Saturday in New York for resettlement.

By Jess Bravin in Washington, D.C., and Saleh Al-Batati in Khartoum, Sudan

After denying her application in January, the U.S. Embassy in Djibouti reversed course and issued visas Wednesday allowing 10-year-old Shaema Alomari and her family to immigrate to the U.S., her father, Nageeb Alomari, said in a phone interview.

Shaema was born with cerebral palsy, a disorder that leaves her unable to walk, talk or feed herself, Mr. Alomari said.

"She cannot take care of herself. Her mother cleans her, changes her clothes and does all things Shaema needs," said Mr. Alomari, who is a naturalized U.S. citizen. Another of his three daughters also holds U.S. citizenship, while his wife, Asma, and other two children don't.

The travel ban, signed by

President Donald Trump in

September after courts blocked two previous versions, bars entry to the U.S. by citizens of five Muslim-majority nations—Iran, Libya, Somalia, Syria and Yemen—as well as North Koreans and some individuals associated with the government of Venezuela.

The Justice Department has said the ban is necessary because the affected governments have been unable to provide the U.S. with adequate information about their nationals who may present security risks.

Challenges to the ban, led

by the state of Hawaii and now being heard in the Supreme Court, contend it is based on religious prejudice, tracing back to Mr. Trump's campaign pledge to effect "a total and complete shutdown of Muslims entering the United States."

In defense of the ban, the Justice Department has noted it provides exceptions for individuals with compelling reasons to enter the U.S., among them "an infant, a young child or adoptee [or] an individual needing urgent medical care."

At oral arguments before the Supreme Court in April, several justices suggested their view of the ban could hinge on whether the waiver provisions were faithfully implemented. They focused on Shaema's case, which had been highlighted in a friend-of-the-court brief filed in March, where she was identified as "S."

A State Department spokesman declined to comment on Shaema's case, citing privacy laws.

"Thanks to the Supreme Court that mentioned Shaema and helped me get the waiver," Mr. Alomari said.

The court's ruling on the travel ban is expected in June.

Nageeb Alomari and Shaema, his daughter, arrived in New York City on Saturday.

ANWAR ALOMARI

ANWAR ALOMARI

## U.S. NEWS

# For Trump, Challenges From China Multiply

**CAPITAL JOURNAL**

By Gerald F. Seib

The most important international problem confronting the Trump administration isn't in North Korea or Iran. Instead, it lies in the rapidly

multiplying challenges posed by China.

Events of recent days have underscored that a global tug of war between the U.S. and China is now fully on. Indeed, it has become the dominant feature on the global landscape, and figures to stay that way for a long while.

In short, welcome to the future.

The newest challenges from China are military ones. The Pentagon last week disinvited China from participating in military exercises in the Pacific to protest the way the Chinese have broken their promise not to militarize the disputed Spratly Islands. Those islands lie some 500 miles from the Chinese mainland, nicely illustrating how China is extending its reach.

As if to underscore its unhappiness, the U.S. over the weekend sent two warships into waters near another set of disputed South China Sea islands, the Paracels, where the Chinese also have been flexing their military muscles.

In response, China said it had dispatched its own warships to challenge the U.S. vessels—or, as the Chinese put it in a statement, “to drive them away.”

**O**ther challenges are diplomatic. It appears China was at least partly responsible for the more belligerent tone North

Korea struck last week in the run-up to a planned summit meeting between North Korean leader Kim Jong Un and President Donald Trump.

North Korea's attitude became noticeably more blustery after Mr. Kim met with Chinese President Xi Jinping. It's a reasonable guess that the Chinese leader warned his young and highly dependent North Korean counterpart against moving too far or too fast in deal-making with the U.S.

The resulting North Korean bluster prompted Mr. Trump to cancel the summit meeting, briefly. The summit now appears to be back on track, but the Chinese have made their point: They aren't to be left on the sidelines when the U.S. deals with their southern neighbor and supplicant. They will demand a seat at the table.

Thus, if the Trump-Kim summit produces a new round of follow-on diplomacy, look for it to take the form of four-sided talks involving the U.S., North Ko-

rea, South Korea—and China.

Many China-related challenges are economic. In the wake of Mr. Trump's decision to abandon the nuclear deal with Iran, the Chinese are maneuvering to take advantage of business opportunities that now may arise as the Trump administration pressures European firms to back away from Iran or face new economic sanctions imposed by the U.S.

Already, two big Chinese state-owned energy companies are positioning themselves to take over big oil and natural-gas deals being negotiated by European companies. In the wake of the U.S. withdrawal from the nuclear deal, Iran may well be tempted to turn to the East rather than the West for economic development. China will be there to oblige.

Atop all those challenges lies the most obvious one, the rising trade tensions between Washington and Beijing. The trade skirmishes are still unfolding, and their outcome

uncertain, but the Chinese so far appear to be maneuvering through them nicely. The Trump administration threatened tariffs on Chinese goods but has backed off imposing them in exchange for promises for more access to Chinese markets.

Similarly the administration threatened crippling sanctions on Chinese telecom giant ZTE for violating trade sanctions on North Korea and Iran, but has backed away from them as well, in anticipation of a broader trade deal.

The upshot is that the U.S. likely will get some additional access to Chinese markets, and American auto makers will end up with lower tariffs standing in the way of car sales there. But the Chinese have resisted pressure to cut their trade surplus with the U.S. in half and have done little to make structural changes in a system that advantages Chinese companies and compels American firms to surrender intellectual property.

In sum, the tensions between the U.S. and China are coming into sharper relief every day. They are nowhere close to breaking into open hostilities, and areas of cooperation exist alongside the competition. U.S. officials say the Chinese continue to do more than ever before to clamp down on economic activity along their border with North Korea, adding pressure on Pyongyang to come to an agreement to curb its nuclear program.

**T**hus, American officials say they are bracing for a long-term pattern in which China will cooperate in areas where interests intersect, while testing the U.S. in other areas.

Here's the broader challenge: Unlike the Soviet Union during the Cold War, China isn't simply seeking to gain advantage under existing international rules. It seeks to create a new, alternate model. That's a recipe for long-term tension.

# Porn Star's Lawyer Complicates Cohen Probe

A lawyer for former adult-film star Stephanie Clifford has frustrated efforts by federal prosecutors to obtain information about a hush-money deal

By Joe Palazzolo,  
Michael Rothfeld  
and Nicole Hong

involving President Donald Trump's personal lawyer, according to people familiar with the matter.

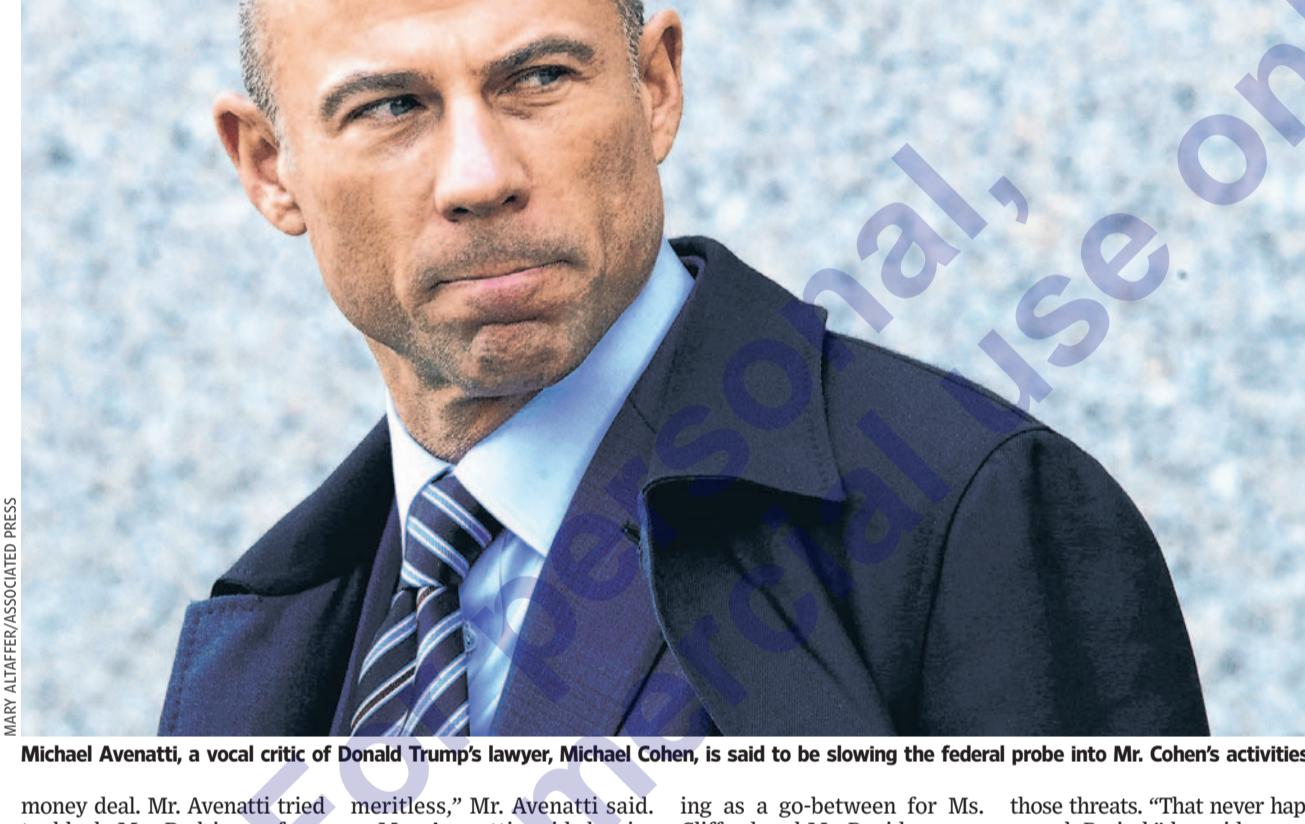
In public, Michael Avenatti, Ms. Clifford's current attorney, has been among the most vocal critics of Michael Cohen, the lawyer who paid her \$130,000 in October 2016 to sign a non-disclosure agreement about an alleged 2006 sexual encounter with Mr. Trump.

But behind the scenes, Mr. Avenatti has slowed prosecutors' efforts to discuss the non-disclosure agreement with Ms. Clifford's former lawyer, these people say. Mr. Avenatti also demanded to review documents investigators subpoenaed from Ms. Clifford's former manager, they said.

Mr. Cohen is under criminal investigation for possible campaign-finance violations and bank fraud related to the payment to Ms. Clifford, known professionally as Stormy Daniels, and other business dealings, according to other people familiar with the probe. He has denied wrongdoing and hasn't been charged with any crime. Mr. Trump has denied having sex with Ms. Clifford.

Mr. Avenatti hasn't yet acted on multiple requests from federal prosecutors in Manhattan for Ms. Clifford to waive the attorney-client privilege that prevents her former lawyer from discussing their communications about the nondisclosure deal, the people familiar with the matter said. In April, Mr. Avenatti, acting in his capacity as Ms. Clifford's current lawyer, sent a cease-and-desist letter to her former lawyer, Keith Davidson, ordering him not to disclose any communications related to her, one of those people said.

Mr. Avenatti made similar demands of Ms. Clifford's former manager, Gina Rodriguez, who helped engineer the hush-



Michael Avenatti, a vocal critic of Donald Trump's lawyer, Michael Cohen, is said to be slowing the federal probe into Mr. Cohen's activities.

money deal. Mr. Avenatti tried to block Ms. Rodriguez from providing her communications with Ms. Clifford to federal prosecutors until he had reviewed them, other people familiar with the matter said.

Mr. Avenatti has told federal prosecutors he is trying to get Ms. Clifford to agree to waive her attorney-client privilege, but prosecutors have come to believe he is stringing them along, the people familiar with the matter said. The delays in responding to their requests to waive privilege aren't seen as highly damaging to the probe but have frustrated investigators, they said.

On Monday, Mr. Avenatti said he and Ms. Clifford have “cooperated fully” with prosecutors. He said he and Ms. Clifford are still determining whether to waive privilege and “ironing out the details,” including reviewing documents he has sought from Mr. Davidson.

“We have already started producing documents to the government so any suggestion we are not cooperating is

meritless,” Mr. Avenatti said.

Mr. Avenatti said he instructed Mr. Davidson to stop communicating about Ms. Clifford, accusing him of “conspiring behind her back with Mr. Cohen.” Mr. Davidson has denied allegations that he worked with Mr. Cohen against his former client's interests.

As Ms. Clifford's former lawyer, Mr. Davidson has information that could be important to the investigation, because he spoke to Mr. Cohen extensively while negotiating the nondisclosure agreement during Mr. Trump's campaign.

Ms. Rodriguez also worked closely with Ms. Clifford on the deal. Through her lawyer, she has turned over to prosecutors her text messages and emails with Ms. Clifford since 2016 in response to a subpoena, over Mr. Avenatti's objections, other people said.

Mr. Avenatti said in an emailed statement that Ms. Rodriguez's communications with Ms. Clifford are protected by attorney-client privilege because Ms. Rodriguez was act-

ing as a go-between for Ms. Clifford and Mr. Davidson.

Mr. Avenatti said he had a right to review the documents and had threatened to sue Ms. Rodriguez if she refused to provide him with those communications for review.

“We never told her not to provide documents to the government nor did we tell her not to cooperate,” Mr. Avenatti said.

**Mr. Avenatti hasn't acted on requests for Ms. Clifford to waive lawyer-client privilege.**

Mr. Avenatti also has threatened to sue Ms. Rodriguez to enforce a 2016 nondisclosure agreement between the manager and Ms. Clifford that prevents Ms. Rodriguez from speaking publicly about her work for Ms. Clifford, people familiar with the matter said.

Mr. Avenatti denied making

those threats. “That never happened. Period,” he said.

Ms. Clifford has recently said she agreed to the \$130,000 deal with Mr. Cohen in 2016 because she feared for her family's safety. That fear, she said, was based on a threat she received from an unidentified man who told her to “leave Trump alone” when a magazine nearly published her story several years earlier.

During Mr. Trump's campaign, “the story was coming out again,” Ms. Clifford has said, so she agreed to the deal rather than subject herself and her family to possible danger.

But in the communications sought by prosecutors, Ms. Clifford didn't mention fearing for her safety before making the deal with Mr. Cohen, people familiar with the situation say. Rather, she was trying actively to sell her story to various outlets, these people say.

Mr. Avenatti called that account “patently false,” and said Ms. Clifford spoke of the threat to many people before executing the hush agreement.

# Virginia Lawmaker Won't Seek Re-Election

BY KRISTINA PETERSON

WASHINGTON—Rep. Tom Garrett (R., Va.) said Monday he was struggling with alcoholism and wouldn't run for re-election this fall.

“There's one area where I haven't been honest,” Mr. Garrett, a first-term member of Congress, said in an emotional video statement Monday announcing his decision to retire. “Any person, Republican, Democrat or independent, who's known me for any period of time and has any integrity, knows two things: I am a good man and I am an alcoholic,” he said.

The announcement ended a period of speculation surrounding the political fate of Mr. Garrett, 46 years old and a member of the House Freedom Caucus, a group of the House's most conservative Republicans.

The lawmaker had said last week in a Facebook livestream that he planned to run again in November, rejecting reports he was expected to retire.

Mr. Garrett faced a competitive race for re-election in November against Democratic nominee Leslie Cockburn, a former journalist and the mother of actress Olivia Wilde. Ms. Cockburn had significantly outraised Mr. Garrett in a district that President Donald Trump won in 2016 with 53% of the vote.

“This must be a very difficult time for him, his family and staff,” Ms. Cockburn said on Twitter Monday. “It is important that he has recognized his alcohol addiction and I wish him well.”

The Republican Party of Virginia said on Twitter Monday that the Fifth District Committee would immediately begin the process of choosing a replacement nominee.

Before being elected to the House, Mr. Garrett served in the Virginia state senate and in the U.S. Army.

# Border Agent's Deadly Shooting of a Woman Draws Scrutiny

BY ALICIA A. CALDWELL

The shooting death of a Guatemalan woman by a U.S. Border Patrol agent near the Mexican border in Texas is drawing scrutiny from immigration advocates who have long criticized how such incidents are investigated.

The woman, identified by the Guatemalan government as Claudia Patricia Gómez González, 19 years old, was shot last Wednesday after a Border Patrol agent responded to a report of illegal activity in a culvert in Rio Bravo, Texas, and said he was rushed by a group of suspected illegal border crossers, the agency said in a statement Friday.

In an earlier statement, Border Patrol officials said an initial report indicated the agent fired after “he came un-

der attack by multiple subjects using blunt objects.”

A nearby resident who posted a Facebook video of the aftermath of the shooting Wednesday said on the recording that Ms. Gómez had been shot in the head.

“You killed her! Why did you kill her?” the woman on the recording shouted to border agents, who didn't appear to respond. The woman also told others in the area that the agent “shot her in the head because she was running.”

The U.S. Border Patrol didn't comment beyond its statements.

The shooting comes amid President Donald Trump's emphasis on stiffening security along the Mexican border, from his proposed border wall to his plan to deploy National Guard troops and hire more

than 5,000 additional Border Patrol agents.

At the same time, arrests of people crossing the border illegally remain at lows last seen in the early 1970s.

Last month, a federal jury in Arizona acquitted a different border agent of second-degree murder in the 2012 shooting death of a teenager in Nogales, Mexico. Federal prosecutors have decided to retry the agent on lesser charges after the jury couldn't reach a verdict.

The case against that border agent, Lonnie Swartz, is a rare prosecution of a border agent in a shooting incident, a record that immigration and civil-rights advocates have decried. Those groups, including the American Civil Liberties Union and the Southern Border Communities Coalition, re-

newed calls after last week's incident for greater oversight and transparency into Border Patrol investigations.

The Border Patrol has previously come under fire for its use-of-force policies and in-

vestigations into shooting incidents. During the Obama administration, the agency revamped its force policies.

From October through March, the Border Patrol, including agents along the Cana-

dian border and in coastal sectors, reported 235 use-of-force instances, including nine times when agents fired a gun.

In an updated statement Friday, the agency said the agent, identified only as a 15-year veteran, encountered a group of suspected illegal border crossers and ordered them to the ground but they “instead rushed him.” The agent fired one shot, the agency said, hitting Ms. Gómez.

Others in the group ran after the agent fired, and three people were later arrested. Two men are seen in the Facebook video being walked from what appears to be a vacant lot near the shooting scene.

The agent has been placed on paid administrative leave.

The Federal Bureau of Investigation and the Texas Rangers are investigating.



Dominga Vicente, a relative of Claudia Patricia Gómez González, showed a photo of her in Guatemala City last week.

ESTEBAN BIBA/EPA/SHUTTERSTOCK

# AN OPEN LETTER TO STARBUCKS CUSTOMERS

FROM EXECUTIVE CHAIRMAN HOWARD SCHULTZ

This afternoon Starbucks will close more than 8,000 stores and begin a new chapter in our history.

In 1983 I took my first trip to Italy. As I walked the streets of Milan, I saw cafés and espresso bars on every street. When I ventured inside I experienced something powerful: a sense of community and human connection.

I returned home determined to create a similar experience in America—a new “third place” between home and work—and build a different kind of company. I wanted our stores to be comfortable, safe spaces where everyone had the opportunity to enjoy a coffee, sit, read, write, host a meeting, date, debate, discuss or just relax.

Today 100 million customers enter Starbucks® stores each week. In an ever-changing society, we still aspire to be a place where everyone feels welcome.

Sometimes, however, we fall short, disappointing ourselves and all of you.

Recently, a Starbucks manager in Philadelphia called the police a few minutes after two black men arrived at a store and sat waiting for a friend. They had not yet purchased anything when the police were called. After police arrived they arrested the two men. The situation was reprehensible and does not represent our company’s mission and enduring values.

After investigating what happened, we determined that insufficient support and training, a company policy that defined customers as paying patrons—versus anyone who enters a store—and bias led to the decision to call the police. Our CEO, Kevin Johnson, met with the two men to express our deepest apologies, reconcile and commit to ongoing actions to reaffirm our guiding principles.

The incident has prompted us to reflect more deeply on all forms of bias, the role of our stores in communities and our responsibility to ensure that nothing like this happens again at Starbucks. The reflection has led to a long-term commitment to reform systemwide policies, while elevating inclusion and equity in all we do.

Today we take another step to ensure we live up to our mission:

## FOR SEVERAL HOURS THIS AFTERNOON, STARBUCKS WILL CLOSE STORES AND OFFICES TO DISCUSS HOW TO MAKE STARBUCKS A PLACE WHERE ALL PEOPLE FEEL WELCOME.

What will we be doing? More than 175,000 Starbucks partners (that’s what we call our employees) will be sharing life experiences, hearing from others, listening to experts, reflecting on the realities of bias in our society and talking about how all of us create public spaces where everyone feels like they belong—because they do. This conversation will continue at our company and become part of how we train all of our partners.

Discussing racism and discrimination is not easy, and various people have helped us create a learning experience that we hope will be educational, participatory and make us a better company. We want this to be an open and honest conversation starting with our partners. We will also make the curriculum available to the public.

To our Starbucks partners: I want to thank you for your participation today and for the wonderful work you do every day to make Starbucks a third place for millions of customers.

To our customers: I want to thank you for your patience and support as we renew our promise to make Starbucks what I envisioned it could be nearly 40 years ago—an inclusive gathering place for all.

We’ll see you tomorrow.

With deep respect,





## WORLD NEWS

# China, Russia Firms Aim to Fill Iran Void

**State companies seek deals as European counterparts pull out amid U.S. sanctions**

By BOENOT FAUCON

TEHRAN—Chinese and Russian state-backed companies are maneuvering to profit from European firms leaving Iran, threatening the Trump administration's bid to raise economic pressure on Tehran.

China Petroleum & Chemical Corp., or Sinopec, a giant Chinese-state oil company, sent a delegation to Tehran this month to complete a \$3 billion deal to further develop a giant Iranian oil field for which Royal Dutch Shell PLC was negotiating until it decided in March the sanctions risk was too great, Iranian and Western oil executives said. That deal, to develop the Yadavaran oil field, would be potentially the biggest foreign investment in a decade.

China National Petroleum Corp., another state-owned giant, has an option for the \$1 billion investment pledged by

Total for a natural-gas development in Iran that the French company is considering leaving because of U.S. sanctions, CNPC and Iran officials say. CNPC is Total's partner in the project.

Russia has viewed Iran more cautiously as a business partner, but its companies have worked to build ties there. Russia is selling oil-drilling equipment to Iranian energy companies that don't have access to Western technology.

Russia's biggest state oil company, PAO Rosneft, last year agreed to work on "strategic" deals valued at \$30 billion in Iran, though their status is unclear.

European executives who tried to make inroads in Iran since the Obama administration struck the nuclear deal in 2015 are now concerned Beijing and Moscow will seize an insurmountable advantage in a large, growing market.

"What would be not good neither for the U.S., nor for Europe, is if that at the end only Russia and China can do business in Iran," said Patrick Pouyanne, chief executive of French energy company Total SA, after



Iran's foreign minister met his Chinese counterpart in Beijing in May.

Many Russian and Chinese companies don't have as extensive connections with the U.S. financial system as do European firms, allowing many of them able to work there with less fear of retribution. The EU is working with Iran to find ways for European businesses to keep working there, though the U.S. has threatened sanctions.

Russia and China had supported the United Nations sanctions imposed on Iran in 2010 through the U.S., the U.K. and France. Their participation is partially credited with helping to bring Iran to the bargaining table to enact a nuclear deal that Russia and China also signed.

This time, Russia and China say they don't support U.S. efforts to squeeze Tehran harder and are analyzing how to do business there.

Iran had already been shifting its economic and political focus toward Russia and China since President Donald Trump's election. Beijing was the first destination of Iranian Foreign Minister Javad Zarif after Mr. Trump said he was exiting the nuclear pact.

The U.S. has shrugged off Russian and Chinese business help for Iran. The U.S. has made it clear it will pursue Chinese companies with U.S. connections if they violate its restrictions on Iran. The Justice Department is investigating whether Huawei Technologies Co. breached the Iran policy.

In siding with Iran over the U.S., Russia and China risk opening another front in a burgeoning series of disputes with Mr. Trump over disputes spanning the Ukrainian conflict to steel tariffs.

But the lack of European competition is an enticing prospect. Russia sees Iran as another platform for the expansion of its oil industry into the Middle East and as a natural if sometimes awkward ally against the West.

Roozbeh Aliajadi, partner at New York-based Global Growth Advisors, which advises Chinese and other foreign companies entering Iran, called U.S. sanctions on Iran "a huge gift to China."

—Sarah Kent in London and James Marson in Moscow contributed to this article.

## KOREA

*Continued from Page One*  
grew over the long U.S. holiday weekend, as time ran short to prepare for a meeting, originally scheduled for June 12 in Singapore.

A former U.S. ambassador to Seoul, Sung Kim, met Monday with senior North Korean official Choe Son Hui at the inter-Korean demilitarized zone to discuss the agenda of a prospective summit.

Separate teams from the U.S. and North Korea also arrived in Singapore on Monday ahead of preparatory meetings there this week. The delegations are respectively led by Joe Hagin, a White House deputy chief of staff, and Kim Chang Son, a close aide to the North Korean dictator, a person familiar with the matter said.

Also Monday, Japanese Prime Minister Shinzo Abe spoke to Mr. Trump by phone for about half an hour and agreed to meet before any U.S.-North Korea summit. "We agreed to cooperate on the basis of a common policy so that the U.S.-North Korea summit is meaningful," Mr. Abe said.

Just a few days ago the chances of a summit seemed to have collapsed.

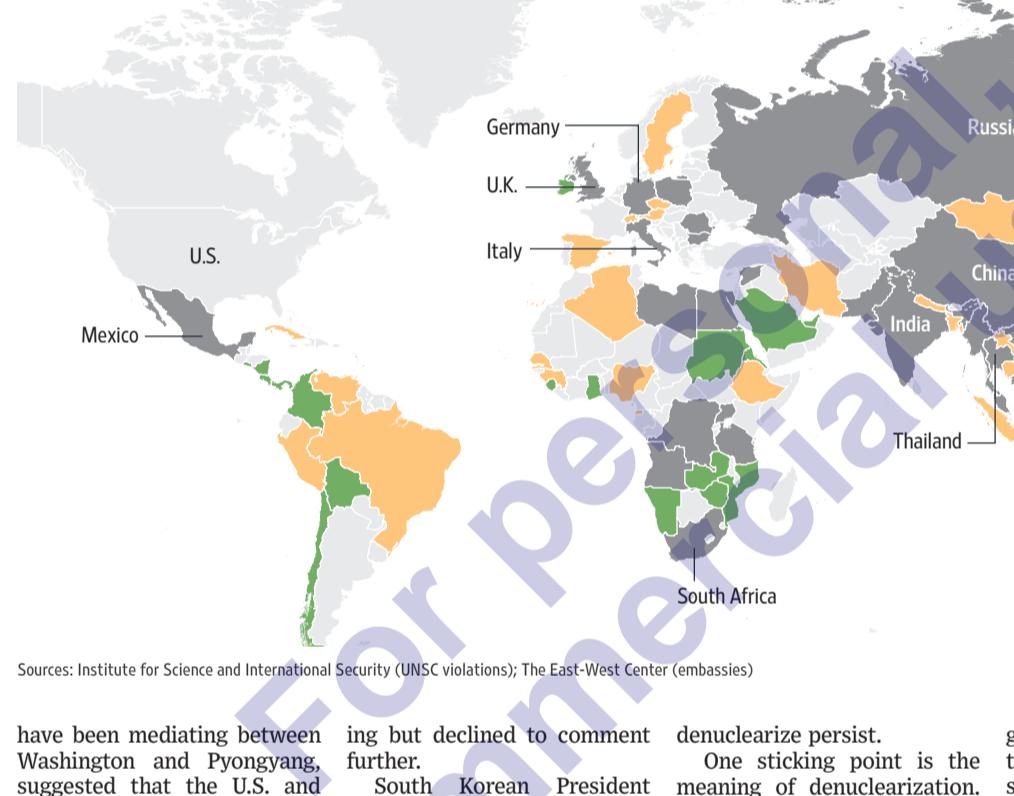
Mr. Trump said Thursday that he would withdraw from the summit with Mr. Kim, citing "open hostility" from North Korea.

Then a hastily arranged meeting of the North and South Korean leaders over the weekend, and a conciliatory statement from Mr. Trump, appeared to put the summit back on course.

Although details of this week's talks remain unclear, South Korean officials, who

### Cash Pipelines

North Korea maintains embassies in dozens of countries around the world, where analysts and officials say Pyongyang's agents are helping funnel foreign currency from illicit operations back to the country.



have been mediating between Washington and Pyongyang, suggested that the U.S. and North Korea were trying to address a fundamental disagreement over denuclearization.

"At the end, there are two things that will become the agenda of the summit," said a senior Seoul official. The U.S. is seeking assurances that North Korea will dismantle its nuclear arms in a verifiable manner, while Pyongyang is seeking U.S. promises to keep the Kim regime intact, post-denuclearization, he said.

A spokesman for the U.S. Embassy in Seoul said talks with North Korea are proceeding.

ing but declined to comment further.

South Korean President Moon Jae-in, who met Mr. Kim over the weekend, said Sunday that the North Korean leader remained devoted to "complete denuclearization" but noted that Pyongyang needed U.S. guarantees of regime survival as part of any deal.

In a commentary in state media Monday, North Korea expressed a "steadfast will" to help build a "nuclear-free, peaceful world" and hailed its dismantling last week of its nuclear test site.

Still, long-held concerns about Mr. Kim's willingness to

denuclearize persist.

One sticking point is the meaning of denuclearization. The U.S. has been pushing for "complete, verifiable and irreversible denuclearization"—something Mr. Kim won't accept, according to the North's highest-level defector in two decades. Instead, he said, Pyongyang would push for a watered-down denuclearization that would safeguard the regime's survival.

The North reacted angrily in recent weeks to a suggestion from U.S. national security adviser John Bolton that the "Libya model," under which dictator Moammar Gadhafi

gave up his nuclear program in the early 2000s in exchange for sanctions relief, might serve as a blueprint for North Korea. The Libyan leader was overthrown and killed several years later.

There is a good chance that North Korea and the U.S. won't be able to agree on what denuclearization means, said Cho Young-key, a senior researcher at the Hansun Foundation, a think tank in Seoul. North Korea believes in "sufficient" denuclearization, while the U.S. wants "complete," noted Mr. Cho, who is conservative. Still, he thought the Singapore summit between Messrs. Trump

and Kim would go ahead.

North Korea is also seeking relief from economic sanctions that have crippled its economy.

The U.S. and the United Nations have made considerable strides in cutting off North Korea's foreign revenue over the last couple of years, including getting the country's biggest benefactor, China, to dramatically reduce trade and finance flows.

Mr. Kim indicated this year that he wants to focus on economic development, and Mr. Trump has held out promises of prosperity.

—Ian Tally contributed to this article.

# Myanmar Targets Other Groups After Ousting Rohingya

BY JON EMONT AND MYO MOYO

Myanmar's military, fresh off a bloody campaign that drove most of the country's Muslim Rohingya minority into neighboring Bangladesh, has launched a new offensive against the armed forces of an ethnic group along the northern border with China using helicopter gunships, jet fighters and heavy artillery.

The campaign against the Kachin, a mostly Christian minority in Myanmar's remote northern mountains, reflects an accelerated effort to pummel recalcitrant militias that refuse to sign on to a national cease-fire agreement. Myanmar's government and military seeks to secure with various minorities in the Southeast Asian country, most of whom live near its borders.

The U.S. and China have both called for an immediate end to the conflict in the north, where the pattern of engagements indicates that Myanmar's military is trying to cut off the main Kachin and related ethnic armed group from the jade and amber mines it uses for funding.

The current fighting against



People participated in a peace march under rainy skies in Myitkyina, Kachin state, on Monday.

the Kachin and allied groups could mark the end of a roughly five-year period in which the military preferred negotiations to all-out offensives against rebel groups, which generally desire greater autonomy.

Some of the military units deployed to the northern state of Kachin are among those accused by human-rights groups of committing atrocities against

the Rohingya in western Myanmar, including the 33rd Light Infantry Division. However, unlike the Rohingya, who didn't have a well-equipped fighting force, the Kachin field a battle-hardened militia of around 10,000 fighters who have used guerrilla tactics for decades and are some of the national military's toughest opponents.

The military restricts access

for journalists and international monitors to violence-affected areas of Kachin state, making a full accounting of the latest outbreak in fighting difficult. There are no comprehensive casualty counts. But conversations with residents displaced to other parts of the state, aid groups on the ground and local political actors reveal a sharp increase in fighting and an ac-

celerating humanitarian crisis.

Civilians have been caught in the crossfire, with thousands fleeing into the jungle, sometimes on the back of elephants, and smaller numbers escaping over the border to China. The International Committee of the Red Cross, which is providing food and supplies to civilians, estimates that 7,500 Kachin residents have been displaced since the beginning of April.

Last week, Lt. Gen. Tazay Kyaw, Myanmar's top military commander in the state, told media the fighting had been instigated by rebels and denied reports that government troops had directed fire at villages.

Nat Tu Mai, a Kachin who helps run a camp in the state

for those displaced by the violence, said the 1,300 people who have arrived there since fighting broke out in late April are in poor health and suffering from diarrhea. The military began conducting frequent airstrikes in his area in late April, he said, causing villagers to abandon their farms and flee.

Rebels boast on Facebook of killing commanders of elite Myanmar military units but say they have struggled to hold fixed positions. The reports cannot be verified.

"Gradually, we are losing ground because we don't have capacity against the artillery or airstrikes," said Daung Kar, a spokesman for the Kachin Independence Organization, whose armed wing is fighting the military.

The fighting is part of the Myanmar military's general offensive against key militias in the Northern Alliance, a coalition of ethnic militias in northern Myanmar that includes the Kachin rebels and the Ta'ang Liberation Army, a militia representing the ethnic Palaung in Shan state, east of Kachin state.

"The military has simply become more aggressive," said Richard Weir, a researcher for Human Rights Watch.

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## WORLD NEWS

# Duque Wins Colombia Vote

Conservative senator to face Gustavo Petro, a former rebel, in runoff set for June 17

BY JUAN FORERO

BOGOTÁ, Colombia—Ivan Duque, a 41-year-old protégé of former President Alvaro Uribe, took the most votes Sunday in the first round of presidential elections by pledging to bring order and improve a sluggish economy while strongly opposing neighboring Venezuela's authoritarian government.

Colombians gave Mr. Duque 7.5 million votes, or 39% of the total among a field of five main candidates who offered starkly different proposals for modernizing a country that, until recently, was locked in a half-century-long guerrilla conflict. It wasn't enough, though, to give him the more than 50% needed to win outright.

Now, Mr. Duque will face off in a June 17 runoff against the candidate who finished second in the voting, Gustavo Petro, a former Bogotá mayor and ex-guerrilla from the long-defunct M-19 movement of the 1970s and '80s. He took 4.8 million votes, or 25% of the total. A third-place finisher, Sergio Fajardo, a former mayor of Medellín, finished a close third.

Sunday's outcome means that voters will choose between two sharply different politicians to lead a resource-rich nation that is a U.S. ally in the war on drugs and a bulwark of stability in Latin America that shares a border with chaotic Venezuela.

A U.S.-educated lawyer who worked at the Inter-American Development Bank in Washington, Mr. Duque wants to slash regulations and taxes while rewriting parts of a 2016 peace pact that ended a conflict with the FARC rebel group. Mr. Petro was an ally of Venezuela's late strongman,



Colombians gave Ivan Duque 39% of the total among a field of five main presidential candidates.

Hugo Chávez, and proposes raising taxes on corporations while improving the lot of the poor through state assistance programs. He supports the peace pact.

Campaigning for the second round promises to be complex, with candidates from the far extremes of the political spectrum fighting for a large centrist bloc of voters—many of whom supported Mr. Fajardo—while not alienating their bases, said Sandra Borda, a political scientist at Jorge Tadeo Lozano University.

She said Mr. Petro will face the uphill battle against his rival, who will generate fear about a leftist president in a country aghast at the ruin wrought by the Socialists ruling Venezuela.

"That's still selling well with people," Ms. Borda said. "The more they generate fear,

the more possible that the people will vote against Petro." A poll conducted for the weekly Semana magazine earlier this month showed that Mr. Duque would easily win the second round against Mr. Petro with 53.5% of the vote.

Many of those who support Mr. Duque do so because of the man behind him, Mr. Uribe.

Juan Romero, 35, a Bogotá businessman, said he loves the former president, who in his eight years in power weakened the rebels and stabilized a country hit hard by rebel violence and a foundering economy. He believes Mr. Duque would be a good steward.

"He's a young guy with good ideas on the economy, and is the best prepared of all the candidates," he said. "He doesn't have [political] experience, but he has a party that supports him and a strong

force behind him."

Whoever wins will succeed President Juan Manuel Santos, who won a Nobel Peace Prize for the accord with the rebels but is constitutionally barred from a third term.

His government also made real advances by building roads and airports, reducing poverty and leading Colombia into the Organization for Economic Cooperation and Development, a club for rich nations.

But Colombians were frustrated over a slow-growing economy and corruption scandals, giving momentum to politicians on the right and left.

Polls show that nearly three of four respondents disapprove of Mr. Santos's handling of the peace pact and management of the country.

—Daniela Blandón Ramírez and John Otis in Bogotá contributed to this article.

# Brazil Sees Steep Costs Tied to Strike

BY LUCIANA MAGALHÃES AND PAULO TREVISANI

SÃO PAULO—Brazil's government said concessions to end a crippling truckers strike will have a high cost for taxpayers even as the country's businesses and consumers struggle with shortages of fuel, food, medicines and other vital goods.

The government on Sunday said it would cut taxes on diesel fuel, freeze the price 60 days and let them change once every month afterward, and compensate state-controlled oil company Petrobras Brasileiro SA, or Petrobras, and its private-sector competitors, among other concessions.

The measures will cost about 9.5 billion reais (\$2.6 billion) through the end of the year, Finance Minister Eduardo Guardia said on Monday at a press conference. Police and the military have had to escort tanker trucks delivering fuel to filling stations and other suppliers to ensure that essential services, such as public transportation and garbage collection, can continue.

On Sunday, President Michel Temer announced a new set of concessions after measures announced on Thursday failed to placate truckers.

The announcement followed hours of meetings with union leaders, who then asked union members to end the blockades.

But by Monday afternoon, there were still 557 blockades around the country, according to Mr. Temer's chief of staff, Eliseu Padilha, who in a televised press conference said a return to normal conditions was taking longer than expected.

Industry groups have estimated losses to the economy surpassing 10 billion reais. Economists are also reviewing their estimates for the country's growth and the budget deficit.

—Jeffrey T. Lewis contributed to this article.



Customers crowded a fuel station in Rio de Janeiro on Monday.

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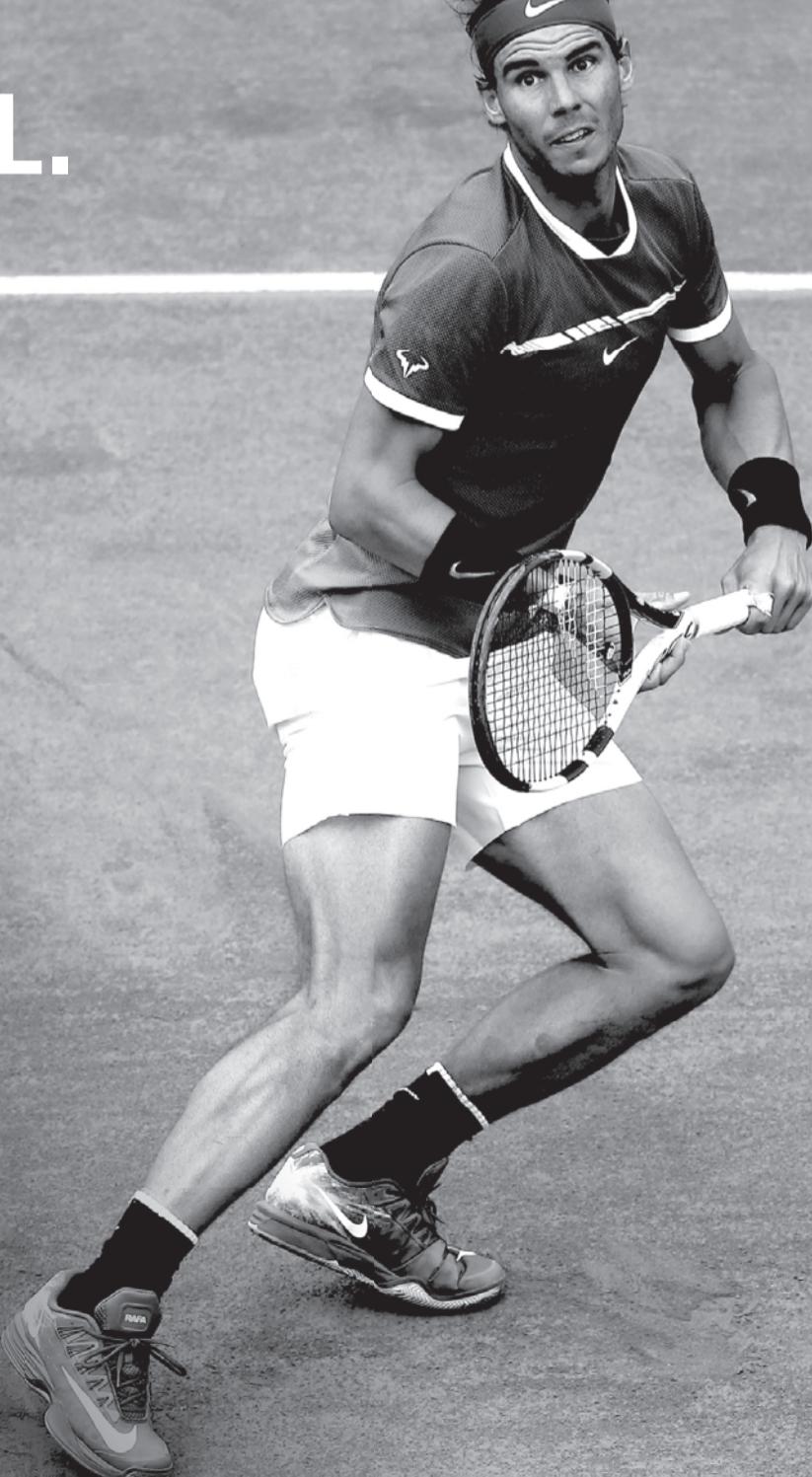
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## WORLD NEWS

# Deadly Farmland Fight Shakes Nigeria

BY JOE PARKINSON  
AND GBENGA AKINGBULE

Trump raised the issue of Christian killings in this month's White House meeting with Mr. Buhari.

AYA MBALOM, Nigeria—  
Bridget Ambua was gathering for Mass with residents of this farming community in April when gunmen surrounded their grass-roofed church and opened fire, leaving two priests and 17 worshipers dead within minutes.

"They killed as many men as they could," the 65-year old grandmother said, including three of her relatives. "A young boy pointed his weapon at me. I still can't comprehend why he didn't pull the trigger."

The massacre at Aya Mbalom village—the latest clash in what has become the deadliest conflict to roil Africa's most-populous nation—comes after a year of attacks and reprisals that have left more than 1,500 people dead and pushed more than half a million from their homes across Nigeria's most-fertile farming regions.

**The clashes could foreshadow broader resource wars across West Africa.**

The clashes are the result of a battle over dwindling supplies of farmland between mainly Christian farming communities and mainly Muslim herdsmen who have for centuries lived in relative harmony.

Fighting has intensified in recent months after the government passed new laws to halt grazing in a bid to stop the deadly clashes and raise agricultural output.

Officials fear the conflict could intensify ahead of elections next year that are considered a referendum on how President Muhammadu Buhari has addressed violence in the country, including the war against the government being waged by Islamist insurgency Boko Haram. President Donald



**A woman cooks at the Daudu camp for internally displaced persons in Benue state, which has been racked by sectarian conflict.**

such Sokoto, Katsina, Bauchi and Kano, as much as 75% of land is becoming desert, according to the International Crisis Group, forcing herders further south, often heavily armed. There they have met settled farmers who are harvesting more land as the pressure to feed a population estimated to swell to 400 million by 2050, from an estimated 186 million.

Diplomats in the capital Abuja said the land conflict could be politically toxic for the government.

"This is extremely serious—it could make or break the elections. Buhari himself is at risk," a senior Western official said. "He has been so late to address these issues."

For now, the crisis is reverberating across Nigeria's fertile states.

Benue Gov. Samuel Ortom warns that the sectarian dynamic of attacks on churches risked moving the conflict into dangerous new territory.

"Islamic State, Boko Haram

or Fulani mercenaries, they are all working toward achieving one agenda—which is invading and taking over our land," he said.

Fulani groups said the killings are the work of marginal criminal elements and warn that Mr. Ortom's rhetoric is evidence of prejudice.

Last Tuesday, Benue's farming community buried the two dead priests in an emotionally charged ceremony attended by 20 bishops and thousands including Vice President Yemi Osinbajo. He urged the community to forgive, promising that the government would apprehend the culprits and rebuild damaged communities.

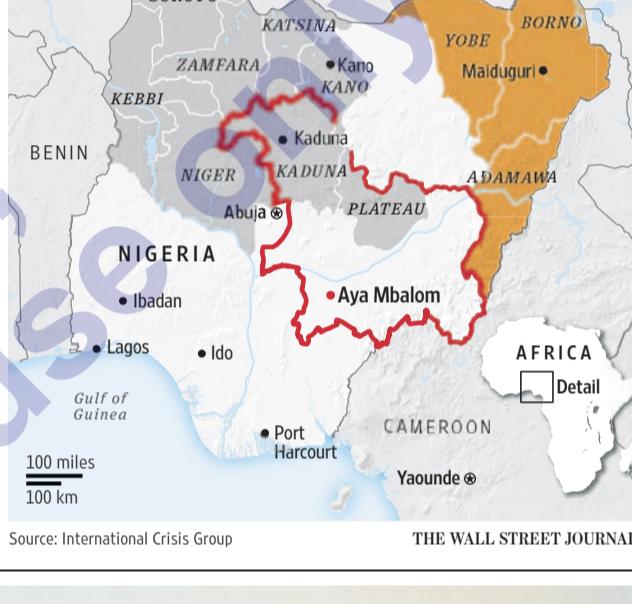
Iornongu Geoffrey, the 63-year-old pastor administering the slain priests' dioceses, echoed the community's anger.

"These priests were killed in their complete dressing. These people knew what they were doing," he said. "The government has to give us arms so we can have courage."

## A Growing Conflict

The combination of increasingly dried out pasture land, banditry in the northwest and the threat of Boko Haram in the northeast has pushed many of Nigeria's cattle herders south, where conflicts with farming communities have risen.

■ States with highest incidences of cattle rustling and banditry  
■ States most adversely impacted by the Boko Haram insurgency  
□ Area with the highest incidences of casualties from herder-farmer violence



Source: International Crisis Group

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## WORLD NEWS

# Vote Suggests a Weakened Church

Ireland's acceptance of abortion rights puts Poland, Europe's last big holdout, in spotlight

BY DREW HINSHAW  
AND FRANCIS X. ROCCA

WARSAW, Poland—Ireland's vote on Friday to legalize abortion echoed through another Roman Catholic-majority country in Europe, but one where the procedure is broadly illegal and the subject of a continuing battle.

"Ireland could be a pattern for Poland," said Rozalia Kielmans-Ratynska, a legal analyst at the antiabortion Ordo Iuris Institute. "We think that now there will be pressure on Poland also to go the same direction."

The Irish referendum—in which 66% of voters chose to allow parliament to legalize abortion—underscored the decadeslong decline of the Catholic church as a political force in that nation.

It also accentuated a mirror image in Poland, the last major nation in Europe whose Catholic Church still dominates politics, society, and culture. The only outstanding question on abortion in Poland is whether its Catholic and conservative government will succeed in tightening already strict laws regulating the procedure. Polish law prohibits abortion except in cases where the pregnancy results from a crime—such as rape or incest—threatens the health of the mother, or where the fetus suffers severe and irreversible impairment.

Bishops have pressed the ruling Law and Justice Party to introduce a law that would remove the allowance for fetuses with severe health problems such as Down syndrome. The party has introduced such proposals several times, but has sent them back for parliamentary review, after facing widespread protests by Poles who favor abortion rights.



At a March protest in Poland against new abortion curbs, one woman's sign said, 'You know better than me what's good for me?'

"The debate is frozen," said Liliana Religa, communications coordinator for The Federation for Women and Family Planning, an abortion-rights group in Warsaw. "The Ireland referendum was a great relief and source of happiness for us. We hope that Poland will follow the same path."

The divergent paths of Ireland and Poland show the bifurcating direction of the Catholic church in Europe, as its clergy on the Continent seek to ride turbulent tides of secularism, nationalism, and the shifting focus of the Church itself. Under Pope Francis, the Vatican has recen-

tered some of its emphasis on the faster growing populations of the developing world, in Latin America, Asia or Africa.

The pope has also encouraged his clergy to play down culture-war issues of sexual and medical ethics in favor of calls for social and economic

justice. He made no public statement in the run-up to the Irish referendum.

Countries like Ireland and Poland are left to choose their own paths as they seek to fill pews in countries where populations are stagnating and young people are emigrating to wealthier, but more secular states like the U.K.

In Ireland, church sex-abuse scandals and secular liberalism have chipped away at both the Catholic church and the nationalism it once held arms with. In the run up to Friday's referendum, clergy conceded that their criticism of the vote was unlikely to change its outcome—and might further inflame opinion against it.

In Poland, however, nationalism is on the upswing. Polish voters sense that Europe is headed down a separate, more secular path, and the ruling Law and Justice party campaigns on this, portraying it

self as a defender of threatened moral values.

That has reinforced the political position of the church. The popular state-owned news broadcaster, Telewizja Polska, unambiguously backs the culturally conservative views of local bishops. Its recent coverage of the Irish vote referred to "the once Catholic Ireland."

Local clergy and the local government have both rebuffed Pope Francis's call to accept Muslim refugees.

Poland was once among the easiest places in Europe to get access to an abortion. Under Communism, ferries brought women from Sweden and Denmark for the procedure. "It was quite simple," said Ewa Dąbrowska-Szulc, an abortion-rights activist in Poland. "You could go to the doctor or to the gynecologist in a state-owned hospital, and you didn't pay anything."

That changed at the end of

the Cold War, when the Catholic church emerged as a widely-trusted voice endowed with moral authority. A 1993 law turned Poland into one of the most antiabortion nations in Europe. Tens of thousands continue to cross the border, to clinics in Germany and Slovakia with Polish staff on hand to manage the exodus, or fake pills ordered on the internet.

A poll last week found 56% of Poles would like to keep the abortion law as it is, 9% wished to tighten it and 29% wanted to loosen it, the Polish opinion polling organization IBRIS found. In January, liberal and centrist parties introduced a proposal to allow abortion up to the 12th week of pregnancy.

Thirty-nine liberal and centrist members of parliament helped to vote it down.

—Natalia Ojewska  
in Warsaw  
contributed this article.

# Spanish Premier Faces Vote On Fate

BY JEANNETTE NEUMANN

MADRID—Spanish lawmakers are set to decide on Friday whether to oust Prime Minister Mariano Rajoy and replace his center-right government with one led by the center-left Socialist Party, a confidence vote that has injected a dose of uncertainty into Spanish politics and spooked some investors.

Spanish lawmakers will debate Mr. Rajoy's future on Thursday in Madrid and then vote on Friday to remove or keep in power his minority government, the president of Spain's parliament said on Monday.

Spain's main opposition party, the center-left Socialist Party, called the confidence vote last week after a Spanish court ruled that Mr. Rajoy's Popular Party financially benefited from an illegal kickback scheme. The court also sent former top Popular Party officials to jail for their roles in the scheme.

While opposition lawmakers are united in their outrage over the corruption case against the Popular Party, they are divided on whether to unseat Mr. Rajoy now, presenting major hurdles for the Socialist Party's bid to garner enough votes against the premier.

The prospect of a sudden and unexpected change in Spain's government caught many investors unaware on Friday, sending Spanish stocks sharply down and bond yields up, and also drawing comparisons to the political turmoil in Italy, as authorities there struggle to form a government. But on Monday, investors jitters had abated somewhat as it became clearer that the competing interests of Spain's opposition parties present a challenge to remove Mr. Rajoy.



President Sergio Mattarella, left, asked former IMF official Carlo Cottarelli to try to form a government.

## ITALY

*Continued from Page One*

the 5 Star and League parties had picked as their economy minister, an especially delicate role given Italy's precarious public finances and weak banks. Mr. Savona, a former Bank of Italy official, has sharply criticized the euro and likened Berlin's dominant role in setting eurozone economic policy to wartime aggression by Nazi Germany. The president said he feared a new government with Mr. Savona as economy minister could endanger Italy's membership in the single currency.

On Monday, as the two anti-establishment parties protested his decision, Mr. Mattarella picked Carlo Cottarelli, an International Monetary Fund veteran, as prime minister-designate, and asked him to try to form a new government. The move stirred accusations that the president had usurped the popular will expressed in March parliamentary elections. The 5 Star and League together won about half of all votes cast.

Mr. Cottarelli, who headed the IMF's fiscal affairs department, has vigorously defended Italy's membership in the euro and led an effort to help bring Italy's public finances in line through large cuts in public spending and waste.

Even if Mr. Cottarelli is able to form a new government, the prime minister-designate is unlikely to win a vote of confidence in parliament. Instead, he will likely

lead a caretaker government only until fresh elections are called, which could occur in September.

The leaders of both the 5 Star and the League left little doubt that they would conduct an electoral campaign railing against the strictures of the common currency. That could make the vote a de facto referendum on Italy's membership in the euro.

"It won't be an election," said Matteo Salvini, the 45-year-old firebrand head of the League on Sunday. "It will be a referendum between Italy and those on the outside who want us to be a servile, enslaved nation on our knees."

*The 5 Star and League parties accused the president of usurping the popular will.*

financial markets are again confiscating democracy. What is happening in Italy is a coup d'état, a hold-up of the Italian people by illegitimate institutions." In a statement, her party said that Italy is a victim of "financial fascism."

A full-blown return to runs on Italian debt that threatened the survival of the eurozone in 2011 and 2012 isn't visible so far. Yields on Italian 10-year bonds jumped to 2.63% Monday as prices of the bonds fell. That is the highest since late 2013, although far from the peak of more than 7% in late 2011. The euro weakened on the Italian news, while shares on the Milan stock exchange fell 2.1%.

The popularity of the 5 Star and League parties reflects the fact that Italian voters—like many in southern Europe—still blame European institutions, Germany and financial markets for the country's downturn in the past decade.

The European Central Bank, bowing to German pressure, demanded tight budgets and painful reforms from Italy as the price for a massive bond-buying program that convinced investors that runs on fragile eurozone countries won't be repeated.

But continued economic pain in Italy, despite a broad recovery in Europe, has sowed doubts about the euro. The Italian economy is 5% smaller per capita than it was in 2001, the only EU country, other than Greece, to have shrunk over that period, according to think tank Promotor. Across the EU, per capita GDP rose 18%. Youth unemployment is slightly more than 30%.

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European officials on Monday expressed concern about the developments.

"We hope that Italy will have a stable, pro-European government soon," said Michael Roth, Germany's minister for European affairs.

However, the combative stance of Italy's populists drew cheers from their brethren elsewhere in the region, signaling the pan-European importance the Italian impasse is assuming.

Marine Le Pen, leader of France's hard-right National Front and an ally of the League, said on Twitter that "the European Union and the

## WORLD NEWS

## WORLD WATCH

# Pressure Builds on Turkish Press

Dogged by crackdown on media and facing long prison sentences, editors stay on the job

BY DAVID GAUTHIER-VILLARS

ISTANBUL—Editor in Chief Murat Sabuncu and 13 colleagues at the Turkish daily Cumhuriyet are back at work in time to cover national elections in June, after as long as 17 months in jail and terrorism convictions that could send some of them back to prison for years.

But emergency rule, a media crackdown and an antigovernment reputation that has scared away advertisers have left their newspaper, a rare independent voice in Turkey, operating on a shoestring.

"We're doing the office cleaning ourselves," said Bulent Mumay, who runs the online team.

Since authorities imposed emergency rule in the wake of a failed coup in 2016, the nation's media landscape has been largely refashioned to serve President Recep Tayyip Erdogan's ambition to secure a new mandate.

If he prevails in the ballot, Mr. Erdogan will take on vastly expanded presidential powers that voters narrowly approved in a constitutional referendum last year and that come into force after the election.

Authorities have closed dozens of media outlets on accusations that they supported coup plotters or Kurdish separatists. Almost all remaining national newspapers and television channels have been acquired by industrial tycoons loyal to Mr. Erdogan and support government policies. The post-coup crackdown has also targeted elements of the military, the judiciary and universities.

"Over the past two years, through successive states of emergency, the space for dissent in Turkey has shrunk considerably," Zeid Ra'ad Al Hussein, the United Nations



President Recep Tayyip Erdogan, seen at a rally in Ankara last Thursday, is aiming to gain expansive new powers in June's election.

human-rights chief, said on May 9. "It is difficult to imagine how credible elections can be held in an environment where dissenting views and challenges to the ruling party are penalized so severely."

The government says reporters aren't being prosecuted for their journalistic work, but for supporting terrorist groups.

The 14 Cumhuriyet staffers were convicted of supporting terrorism by a Turkish court in April but have been released on bail pending appeal. They say the charge that they supported terrorists was a groundless attempt to muzzle them.

The newspaper and other rare domestic independents such as online news websites T24 and Diken have preserved their autonomy by keeping tight control on ownership. But they say they are being financially asphyxiated because advertisers are staying away for fear of alienating the government.

Mr. Erdogan said he would recognize results of the presidential and parliamentary balloting set for June 24.

Modern Turkey has a history of attacks on the press, a past that is on display in the corridors of Cumhuriyet, which was founded in the early 1920s in the same breath as the republic.

"I've been detained so many times that I know most of Istanbul's jailhouses," said Aydin Engin, a 77-year-old columnist at Cumhuriyet, who filled in as editor in chief during Mr. Sabuncu's 16 months in pre-trial custody.

Turkish authorities have also recently targeted foreign media. Last year, a Turkish court sentenced Wall Street Journal reporter Ayla Albayrak to two years and one month in prison, declaring her guilty of engaging in terrorist propaganda through one of her Journal articles from 2015. Journal Editor in Chief

Gerard Baker called it "an unfounded criminal charge and wildly inappropriate conviction." Ms. Albayrak, who resides outside Turkey, has appealed.

Nowadays, pressure on independent Turkish media comes in a variety of forms.

At Diken, the online news site, Editor in Chief Erdal Guven keeps track of stories that have been blocked by BTK, Turkey's telecommunications watchdog, often following complaints filed by the government. The government often says such restrictions are necessary to support their fight against terrorism or combat alleged defamation.

For the Cumhuriyet staff, trouble began at 6 a.m. on the last day of October 2016, when police raided the houses of several reporters and almost all the top management.

The newspaper's chief executive, Akin Atalay, was in Germany that week. He returned

to Turkey and was eventually arrested. "They tried to tarnish my reputation, saying I had fled Turkey," Mr. Atalay said. "I couldn't accept that."

He was sentenced to more than eight years in prison; Mr. Sabuncu to 7½ years. They will have to serve time if they lose in appeal.

Since returning to work, the two men said they have been focused on securing new sources of revenue. They are counting on donations from foreign institutions and on the launch of an English-language version of the newspaper.

Around noon, Mr. Sabuncu was discussing the wording of a headline for a sensitive story with a colleague when a group of about 40 schoolchildren accompanied by their teachers swarmed the management floor.

Asked about the purpose of the visit, an 8-year-old boy said: "We're coming to learn how you make a newspaper."

QATAR

## Shops Ordered to Remove Saudi Goods

Qatar directed shopkeepers to clear their stores of contraband goods from Saudi Arabia and other neighboring countries, the latest salvo in the economic battle among former Middle East allies that shows no signs of easing.

The directive on Saturday came ahead of the June 5 anniversary of Saudi Arabia, Egypt, Bahrain and the United Arab Emirates severing diplomatic and business ties with Qatar, accusing the tiny but wealthy emirate of promoting extremism in the region and cozying up to Iran. Denying the charges, Qatar has said Riyadh and Abu Dhabi are trying to interfere with its sovereignty.

Qatari officials said the directive wasn't an escalation of the diplomatic rift. They said it was aimed at consumer safety because Saudi Arabia, the United Arab Emirates, Bahrain and Egypt had already banned sending exports to Qatar. Therefore, any products from those countries remaining on store shelves had been illegally trafficked into Qatar through third parties, evading customs inspections, Qatari officials said.

—Nicolas Parasie

FRANCE

## Migrant Is Honored For Rescuing Child

President Emmanuel Macron lauded as a hero a migrant from Mali who scaled an apartment building to save a child dangling from a balcony, and rewarded his bravery with an offer of French citizenship and a job as a firefighter.

"Bravo," Mr. Macron said to 22-year-old Mamoudou Gassama during a meeting in the presidential Elysee Palace.

Mr. Gassama climbed five stories up the apartment building, moving from balcony to balcony, and whisked a 4-year-old boy to safety on Saturday night as a crowd below screamed. His actions went viral on social media.

—Associated Press

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## IN DEPTH

## CBS

*Continued from Page One*

All this is unfolding more than two years into a corporate power struggle that has featured as many twists as a daytime soap opera. The feud has taken surprising turns in recent days, with CBS's board voting to strip Ms. Redstone and her family of the voting control they have held for nearly two decades, and the Redstones' holding company amending CBS's bylaws in an attempt to nullify that action.

A Delaware judge is now considering who should prevail. No matter what happens in the legal fight, the relationship between Ms. Redstone and Mr. Moonves—until recently characterized by friendly lunches and public statements of support—has likely been irrevocably soured.

Tensions have flared over a number of issues, people close to the situation say, including Mr. Moonves's contention that Ms. Redstone, who is vice chairman of both Viacom and CBS, has encroached on his autonomy since assuming power in the empire from her ailing father, Sumner Redstone, in 2016. CBS alleges she has tried to intimidate board directors, pressured Mr. Moonves over his contract and prevented CBS from exploring other merger partners besides Viacom, the parent of MTV, Comedy Central, Nickelodeon and Paramount Pictures.

Ms. Redstone, whose family holding company National Amusements Inc. owns nearly 80% of the voting stock in both CBS and Viacom, denies those allegations. She believes CBS's board, which has seen little turnover in the past decade, has grown too cozy with Mr. Moonves, who receives one of the largest pay packages in the industry. She is seeking to add to the board former Time Warner Inc. CEO Richard Parsons to help lead her quest for new directors, according to people familiar with the matter.

## Sidelined

The fight has effectively kept CBS and Viacom on the sidelines as other media players pursued mergers to position themselves for the rise of streaming video and the decline of the traditional TV business.

Walt Disney Co. agreed to buy most of 21st Century Fox, and Comcast Corp. is now considering playing interloper in that deal. Discovery Communications Inc. last year bought HGTV-parent Scripps Networks Interactive Inc. And AT&T Inc. is trying to acquire Time Warner. The government sued to block that deal and the court's decision is expected soon.

Last year, Verizon Communications Inc. Chief Executive Lowell McAdams approached Ms. Redstone multiple times about CBS, including at the Allen & Co. business conference in Sun Valley and then through mutual friend Robert Kraft, owner of the New England Patriots, people familiar with the talks say.

Ms. Redstone said she would consider a Verizon offer only after a CBS-Viacom merger, the people say.

Other telecom, cable and technology firms have approached CBS and Ms. Redstone about possible deals, people familiar with the situ-



**Left:** Les Moonves with actress Lynda Carter, center, at the Hollywood Walk of Fame. **Right:** Shari Redstone with rapper Snoop Dogg at a Viacom event.



tion say. One person familiar with National Amusements' position says the company hasn't been made aware of any approaches beyond the informal one from Verizon.

Mr. Moonves, 68 years old, is the consummate Hollywood insider.

With a sharp eye for talent and scripts, Mr. Moonves rose to head of Warner Bros. TV, which became the most prolific producer of network shows. In 1994, he was tapped to turn around a moribund CBS prime-time lineup and was named chief executive in 2006.

Viacom, then led by Mr. Redstone, acquired CBS in 2000 and spun it off again in 2006 because he believed its slower-growing broadcast assets were a drag on the company. Instead, Viacom's cable networks and movie studio have struggled, while CBS became the most-watched network and began to expand its distribution revenue and build online assets.

## Family business

Ms. Redstone, 64, started her professional life as a lawyer. After a decade as stay-at-home mother raising her three children, she joined the family business in 1993, signing on as an executive at the theater chain that the family had used as a vehicle to take over Viacom a few years before.

After her parents divorced in 2002, she emerged as her father's clear successor. The trust set up after the divorce stated that Ms. Redstone would become chairman of Viacom so long as she was still on the company's board when her father died or was deemed incapacitated. But control of the company would pass not to her, but to seven trustees, including her and then Viacom Chief Executive Philippe Dauman.

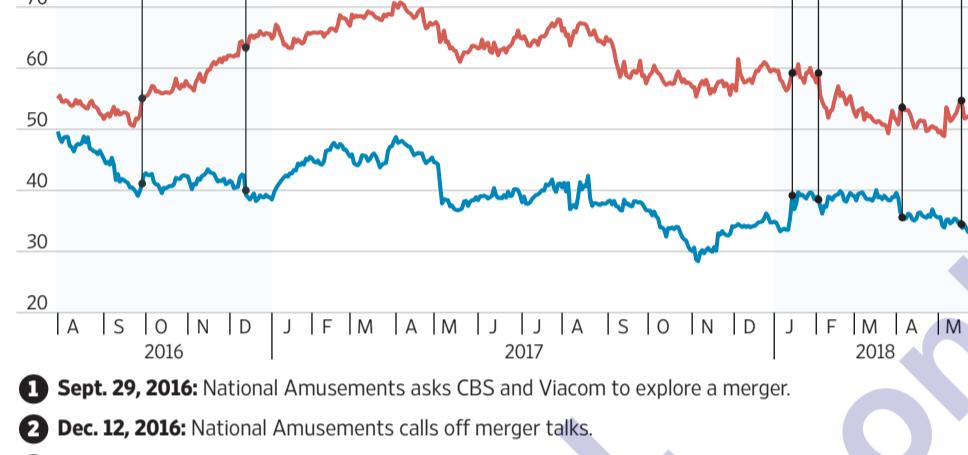
Executives at Viacom and CBS were wary of her influence. When Ms. Redstone tried to attend operational meetings, Viacom's then chief operating officer asked her to stop.

After Mr. Moonves rose at CBS, he, too, was initially wary. In 2007, when a rainstorm broke out at the Super Bowl and Ms. Redstone and her family sought shelter in CBS's sky box, Mr. Moonves gave the employee who let them in an earful, according to people familiar with the incident.

In the ensuing years, Ms. Redstone and her father fought over everything from his outside investments to the

## Merger Melodrama

The on-and-off prospect of a merger with embattled media company Viacom Inc. has weighed on CBS Corp.'s shares.



**1** Sept. 29, 2016: National Amusements asks CBS and Viacom to explore a merger.

**2** Dec. 12, 2016: National Amusements calls off merger talks.

**3** Jan. 12, 2018: Reports that Shari Redstone wants to revive merger talks between CBS and Viacom.

**4** Feb. 1, 2018: CBS and Viacom form special committees to explore a merger.

**5** April 3, 2018: CBS submits below-market bid for Viacom.

**6** May 14, 2018: CBS sues the Redstones and National Amusements.

Note: Prices for both companies' stocks are for class A shares

Source: FactSet (stock prices)

THE WALL STREET JOURNAL.

future of the theater business, according to people who know the family. She became estranged, while Mr. Dauman's star rose.

That was bad news not just for Ms. Redstone but for Mr. Moonves, who wasn't eager to report to Mr. Dauman after the old mogul was gone. So Mr. Moonves and Ms. Redstone forged an alliance, which led him to tip her off to a plot that could have pushed her out of the family empire.

In 2014, Mr. Redstone and three members of the board of National Amusements, including Mr. Dauman and CBS director David Andelman, worked out a plan to have Mr. Redstone buy his daughter out of her 20% stake in National Amusements.

When Mr. Moonves learned about it, he alerted Ms. Redstone, who negotiated so fiercely that she and her father weren't able to come to an agreement, according to people familiar with the matter.

Mr. Redstone's health declined, and a former female companion whom he had ejected from his Los Angeles mansion sued in 2015, challenging his mental capacity. The case was dismissed, but disclosures about his health led him to step down from the chairmanship in 2016.

At CBS, Ms. Redstone and Mr. Moonves choreographed a smooth transition of power. He offered her the chairmanship, she declined and gave it

to him instead, and he praised her "business acumen."

At Viacom, it was a different story. Ms. Redstone cast the lone dissenting vote against Mr. Dauman's ascent to chairman, and then prevailed in a power struggle that left her effectively in charge at National Amusements.

That is when she began pushing for Viacom and CBS to recombine, something some Wall Street analysts argued made sense to achieve greater scale in distribution and advertising.

## CBS's board voted to strip Ms. Redstone and her family of voting control.

Mr. Moonves was reluctant, and their alliance began to unravel. The day after National Amusements asked CBS and Viacom to explore a merger in the fall of 2016, his lawyers sent National Amusements a list of demands designed to ensure he would have full operational control over any combined company.

In December 2016, National Amusements nixed the merger talks. Ms. Redstone began to assert herself more at CBS. By mid-2017, she had installed her father's lawyer, Robert Klieger, on the CBS board and nominated Mr. Parsons, the former

CBS's first offer for Viacom

came in April. The terms took Ms. Redstone and Viacom aback. Not only did they feel the price was too low, there was no role in the combined company for Robert Bakish, the Viacom chief executive who Ms. Redstone saw as a potential successor to Mr. Moonves. Mr. Moonves's longtime chief operating officer, Joe Ianniello, was positioned as the eventual successor.

By late April, the two sides had agreed on a compromise price, assuming that the management and governance issues could be worked out, according to people familiar with the matter.

## CBS challenges

Over a weekend in May, a special committee of the CBS board met and determined that a merger wasn't in the best interests of CBS shareholders. Independent directors, invoking a provision in the company's charter, began to plan a board meeting to strip Ms. Redstone of her voting control by issuing a dividend that would dilute National Amusements' voting stake down to about 20%, according to court documents.

On May 14, before Ms. Redstone caught wind of the plan, CBS filed a lawsuit attempting to block her from removing any board members before the CBS board could vote on the dilution measure.

National Amusements retaliated by changing CBS's bylaws to require a supermajority of directors to approve such a measure.

CBS went ahead with the vote even though it was under legal challenge. All 11 directors unaffiliated with the Redstones supported the move to strip them of control, a stunning show of no confidence.

CBS has begun challenging Ms. Redstone's power another way: questioning her legitimacy as her father's successor.

In the court filing, CBS pointed to continuing litigation between Ms. Redstone, her father and two women who were his companions. The women allege they were ousted from his life as part of a plot by Ms. Redstone to take control of her father's empire.

CBS said that, "if proven," the allegations "would render Ms. Redstone's effective control of NAI (and CBS) inoperative."

Mr. Klieger, the lawyer for the Redstones, has called the women's claims "fanciful."

—Dana Mattioli and Andrew Beaton contributed to this article.

## BANKS

*Continued from Page One*

day festivals and quick-fire question-and-answer sessions on social media, and producing games, cartoons and videos. Some forays go better than others.

Norway's central bank scored an unlikely viral hit last year with a comedy rap music video to promote a series of cod-themed banknotes, featuring "DJ Codfather" and a cameo by the bank's governor, Øystein Olsen. "The cod is coming now," Mr. Olsen says, peering through binoculars from his office window.

Russia's central-bank governor Elvira Nabiullina went one step further in December, breaking into song in a slick music video that also featured a dabbing babushka.

New Zealand's new central-bank governor, Adrian Orr, spoke in sign language and

Maori—the language of the indigenous Polynesian people—at his inaugural news conference in May. New Zealand has around 150,000 Maori speakers, and around 9,000 deaf people, out of a population of around 5 million. The central bank also published an illustrated "Monetary policy statement in pictures," whose simple images include a hot-air balloon tagged "inflation" held down by a crate of "imports."

"I love the pictures," Mr. Orr told reporters, though he conceded he hopes to upgrade their quality. "These are all we could get immediately off one of our kid's icons actually," he said.

Central banks distribute banknotes, regulate the value of the national currency and often act as a lender of last resort to banks. By adjusting short-term borrowing costs, central bankers can boost growth and employment or control inflation.

Until recently they preferred to obscure their intentions; secrecy helped to avoid interfer-

ence from politicians, whose short-term horizons might cause them to pressure central banks to support economic growth at the expense of higher inflation, which can hurt the economy over time.

Central bankers once mocked openness and clarity. "Never ex-

plain, never apologize," was the mantra of Montagu Norman, who ran the Bank of England during the 1920s and '30s and often adopted a false identity when traveling. In 1982, when Denmark's central bank changed a decades-old strategy for managing the exchange rate, it

didn't publish a press release or mention the decision in its annual report.

Until 1994 the U.S. Federal Reserve did not tell the public when it changed policy. Experts had to infer its actions from market movements.

That has changed as central banks won independence to set policy free from government interference and, more recently, launched large and complex stimulus policies, such as printing large amounts of money to buy government debt. Central bankers worry they could lose those new powers without public support.

Today's central bank governors mingle breezily with common folk.

Germany's Bundesbank put on bouncy castles, balloon artists, food carts and a band to lure locals last summer to its Frankfurt headquarters, a slab of raw, gray concrete in the Brutalist style.

A slinky gold character dressed as a Euro coin leaped

around and posed for photos. The switch toward unscripted events isn't always seamless. The language used by central bankers is often incomprehensible, and jokes can fall flat. That's a problem when trillions of dollars of investments are at stake.

When Australia's former central-bank governor, Glenn Stevens, said at a business luncheon in 2013 that officials had "deliberated for a very long time" before leaving policy rates unchanged, investors took it as a signal to sell the Australian dollar, pushing the currency to a 34-month low against the U.S. dollar. The bank later clarified that the comment was supposed to be funny.

The Bank of England's Mr. Haldane admits the schoolgirl who challenged him had a point.

"That was a pretty good question actually. Why am I here?" he says. "Trying to hold the attention of fifty 13-year-olds for an hour, that's a tough gig, right? They don't care."

**Left:** Norway's Central bank promotes cod-themed banknotes with a rap video featuring a brief appearance by the bank's governor.

**Right:** Norway's Central bank promotes cod-themed banknotes with a rap video featuring a brief appearance by the bank's governor.

**Left:** Norway's Central bank promotes cod-themed banknotes with a rap video featuring a brief appearance by the bank's governor.

**Right:** Norway's Central bank promotes cod-themed banknotes with a rap video featuring a brief appearance by the bank's governor.

# GREATER NEW YORK

## Tax Increases Meet Resistance in Trenton

Legislators balk at New Jersey governor's proposed higher levies on sales, top earners

BY KATE KING

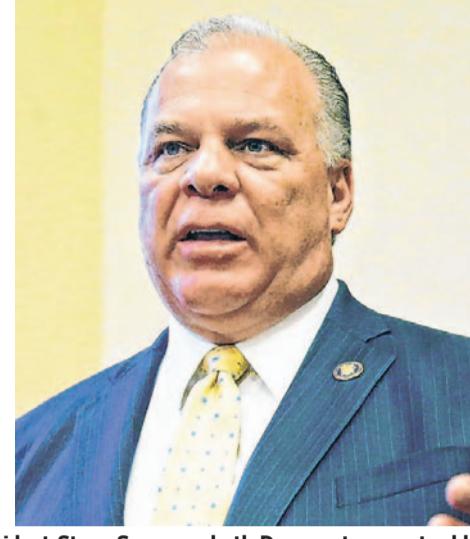
New Jersey's new Democratic governor is finding that, even with his party in full control of Trenton, raising taxes in one of the country's highest-taxed states is no day at the beach.

Gov. Phil Murphy, who took office in January, has proposed a \$37.4 billion budget. He wants to raise \$1.7 billion in new taxes and other revenue to pay for public schools, public-employee pensions and other priorities.

But some of his fellow Democrats, who control the state legislature, have balked at the governor's proposals to raise the state's sales tax and impose a millionaire's tax.

State Senate President Steve Sweeney has been particularly vocal.

"Everyone in Trenton is aware of the tax problems that we have here and that the state's in a financial crisis," Mr. Sweeney said in an inter-



New Jersey Gov. Phil Murphy, left, and Senate President Steve Sweeney, both Democrats, are at odds.

nues," Ms. Muoio said during testimony before lawmakers.

Mr. Murphy has proposed raising the state sales tax to 7% from 6.625%, which his administration estimates would generate about \$597 million in new revenue. He also wants to impose a 10.75% state tax on income over \$1 million, which his administration projects would bring in an additional \$774 million in revenue for the state. The current top income-tax rate in New Jersey is 8.97% for income topping \$500,000.

Mr. Sweeney previously voted for a millionaire's tax, but said he changed his mind after the federal tax law was passed in December. The law capped previously unlimited annual state and local tax deductions at \$10,000 for individual and married filers. Mr. Sweeney said he is concerned an additional millionaire's tax could drive people out of the state.

"I think that people that have the ability to leave are leaving," he said.

Instead of a tax on millionaires, Mr. Sweeney wants to raise the state's top corporate income tax to 12% from 9%, but only on businesses earning more than \$1 million annually.

### Shutdown of 2017 Looms Large as Deadline Nears

New Jersey's constitution requires the governor and legislature to agree on a balanced budget before July 1. Failure to reach an agreement would result in a government shutdown.

The government shut down last summer when former Republican Gov. Chris Christie refused to sign the state budget unless lawmakers approved legislation giving the state more oversight over New Jersey's largest insurer.

Mr. Christie was widely criticized after he was photographed with family and friends on a state beach that was closed to the public during the shutdown.

Lawmakers this year introduced a bill that would require the government to keep state parks, beaches and forests open for seven days in the event of a government shutdown. The legislation is pending in committee.

## Two Killed in City During the Long Holiday Weekend

BY JOSH BARBANEL

Two men were fatally shot over the Memorial Day weekend—a period marking the unofficial start of summer and the increased violence that often comes with it, the New York Police Department reported.

As of Monday afternoon, one man was gunned down in front of a South Bronx housing project and another was killed in a neighborhood of small homes in the Ozone Park section of Queens, police said.

Though the crime rate has been falling for years in New York City and is lower than most other large U.S. cities, homicides typically surge on Memorial Day and Labor Day weekends, which bookend the summer season.

A Wall Street Journal analysis of individual homicide-complaint data in New York City shows that between 2011 and 2017 there have been 37% more homicides on Memorial Day weekend than other four-day weekend periods.

For Labor Day, there were 78% more homicides than on

other ordinary four-day weekends. Last year, though, incidents were down sharply on Labor Day weekend after police provided enhanced security at the annual J'Ouvert celebration in Brooklyn on Labor Day.

The parade celebrates the emancipation of slaves on the Caribbean Island of Trinidad, and there had been a history of crime near the festival.

Last year there were three homicides from Saturday to Monday of Labor Day weekend, down from eight in 2016, and the lowest in years.

It is too soon to say what the 2018 holiday crime statistics will show. Rain and cool weather this week might keep activity low, the NYPD said.

At around midnight on Friday, Cheyenne Carter, a man in his early 20s was standing in front of a red brick tower in the Patterson Houses public-housing development in the Bronx's Mott Haven neighborhood when a volley of shots rang out, police said. He was hit in the head and body, and pronounced dead at a hospital. Two men ran off, including one in a gray sweatshirt, police said.

On Monday morning, a 27-year-old man was shot in the neck and killed on a tree-lined block of 104th Street, the NYPD said. A few blocks away, another man crashed a car into a parked vehicle, and was found with a gunshot wound to his hand. A third man suffered a gunshot wound to his back, police said. The NYPD is investigating a connection between the men.

The weekend's victims also include a woman standing outside a nightclub in Brooklyn on Friday who was shot in the abdomen and in the rear from the occupants of a passing vehicle.

Police said she is expected to survive. The occupants of the vehicle were later arrested, they added.

## World War I Soldiers Get Their Due on the Intrepid



**MEMORIAL DAY TRIBUTE:** April and Edward Ellington, children of Duke Ellington, sang with the 369th Experience in a concert honoring World War I soldiers of the New York Army National Guard's 369th U.S. Infantry Regiment, better known as the Harlem Hellfighters.

## Many Win Their Admission Appeals

BY LESLIE BRODY

About a third of New York City fifth-graders who appeal their middle-school admission decisions are successful and win seats at the public schools they prefer, Education Department data show.

The department lets students unhappy with their April acceptance letters file appeals, and expects to announce those results in early June.

Suspense runs high. Last spring, about 8,600 fifth-graders appealed their offers for the fall of 2017—almost 12% of applicants, according to department data. About 2,800 of them, or 33%, won their appeals and nabbed a spot at one of their choices.

About 500 students who appealed never enrolled: Many switched to private schools,

charters or options outside the city.

Under New York City's complex system, fifth-graders rank schools they want to attend, and schools rank students they want to enroll, often based on their academic records and other criteria, such as interviews or auditions. The department makes matches.

In appeals, students can ask again for their initial choices or new ones.

Nicola DiMaria, an 11-year-old in Brooklyn's Carroll Gardens, broke into tears when she was matched last year to a school she had never toured.

"All my friends were getting their first or second choice and saying, 'I got into the school of my dreams!'" she said.

Her mother, Ana Larios, said she was upset to discover that Nicola's assigned school

in District 15 had a metal detector at the door and staff she found unimpressive when they visited. They appealed, and were thrilled Nicola was accepted at her original first pick, Boerum Hill School for International Studies.

**Results of middle-school admissions challenges are expected in early June.**

Department officials said students are matched to schools during appeals through the same criteria as initial applications, and get spots that open up when accepted students change plans.

This high-anxiety process is tied to a choice system that is under increasing scrutiny. Critics of sorting children by academic records say it often ends up segregating them by family income, race and prior access to strong elementary schools. Meanwhile, parents who support the choice system say high-performing, selective options keep them in public education.

The city's new chancellor, Richard Carranza, surprised many parents last week by questioning the whole rationale for screening students she knew, appeals failed.

Please see page A12B

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## GREATER NEW YORK

# Ice Cream—Hold the Cream

By CHARLES PASSY

Apparently, New Yorkers are more than willing to forgo the cream in their ice cream.

A number of local retailers and manufacturers that specialize in the summertime frozen favorite are offering vegan versions of it, saying that interest is growing among consumers for such a dairy-free, plant-based alternative.

Van Leeuwen Artisan Ice Cream, a 10-year-old New York company that operates stores throughout the city, offers at least 10 vegan flavors on its menu of 25-plus choices overall. Among the current favorites is Pink Lemonade, a lemon-flavored vegan treat with a swirl of red currant jam.

The company, which opened new locations in Nolita and the Upper West Side over the past month, credits rising demand to the fact the vegan diet is going more mainstream. But it also notes that customers who aren't strictly vegan will still order vegan flavors for their distinctive taste and texture.

The vegan ice cream, made with a base that includes cashew milk, is "not trying to be like ice cream," said Ben Van Leeuwen, one of the company's founders. "It's a different product."

In any case, companies that



**Van Leeuwen Artisan Ice Cream** is one of a number of New York shops selling vegan ice cream.

sell vegan frozen treats are finding their way in New York and beyond. U.S. sales of plant-based ice-cream products increased by about 26%, to \$166 million in 2017 from the year before, according to a study by market researcher Nielsen that was conducted on behalf of the Plant Based Foods Association. The association says that many popular ice-cream brands, from Häagen-Dazs to Halo Top, now carry vegan flavors.

Another local ice-cream company that is making a

name for itself on the vegan front: Ample Hills Creamery. It has just a single vegan flavor, Oh Fudge!, but the chocolaty offering has proved so popular that the company even hosted a class at its location in Brooklyn's Gowanus neighborhood on how to make it.

The flavor, which is made with a base of coconut cream, "is so rich, so decadent" that it often surprises customers, said Brian Smith, the company's co-founder.

"People don't associate those things with the word

'vegan,'" he said. Mr. Smith added that Ample Hills has at least two more vegan flavors in development.

Still, most companies that make vegan ice cream said it involves a lot of trial and error, since finding the right substitute for dairy products as the base is never easy.

While alternatives such as cashew milk and coconut cream can work, ice-cream makers note that they impart flavors of their own. By contrast, dairy cream is something of a blank slate, they say.

## GREATER NEW YORK WATCH

## NEW JERSEY

**Woman, 69, Fends Off Robber, Police Say**

A 69-year-old woman fought off a man who tried to rob her in front of her home over the weekend, authorities said.

Bayonne police said the woman was standing outside at about 7 p.m. on Sunday when the man crossed the street and demanded her purse.

Police said the woman refused and the man tried to take

it "by forcibly pulling on the strap," but the woman kicked the would-be robber multiple times.

Police said the man fell to the ground and then ran off without the purse.

—Associated Press

## FIRE ISLAND

**Tests Conducted on Decomposed Whale**

Marine experts say a humpback whale that washed up on

Fire Island appears to have been hit by a boat, but a pathologist will conduct more tests to determine what caused the animal's death. Results may not come for several months.

The Atlantic Marine Conservation Society conducted a necropsy on Monday of the 33-foot-long female whale. Her heavily decomposed body was found Sunday on the barrier island off Long Island's southern shore.

—Associated Press

## CONNECTICUT

**Search Continues For Two Kayakers**

Rescuers on Monday kept searching for two kayakers who were reporting missing the day before in the Long Island Sound off Avery Point in Groton.

Spencer Mugford, 21 years old, and Sophia McKenna, 20, were last seen on social media at 2 a.m. Sunday morning.

—Associated Press

## SCHOOLS

*Continued from page A12A*

this way, though he didn't announce any changes.

"Why are we screening kids in a public school system?" he asked. "That's, to me, antithetical to what I think we all want for our kids."

Fifth-graders who appealed roughly reflected the demographics of the system overall. About 15% of those appealing last year were white, 19% were Asian, 21% were black and 37% were Hispanic, according to city data. About 72% qualified for subsidized lunch.

High achievers on state tests were least likely to appeal: Only 13% of those who appealed earned the top test scores, or Level 4 on state exams. That is probably because they are more successful at getting into the selective schools they want, educators said.

"Everyone wants to go to the same middle schools," said Robin Aronow, an admissions consultant with School Search NYC. "Inevitably there are kids who don't get in, some of whom are just as qualified as anyone else."

As parents and educators debate changing admissions systems to integrate public schools in parts of the city, some say the number of appeals will rise, especially if strong students lose access to sought-after spots.

In District 3, for example, covering the Upper West Side and parts of Harlem, 88% of students with Level 4 scores got into their favorite middle-school choices for last fall, compared with 55% of low scorers, or Level 1. When students appealed and didn't end up enrolling in schools run by the department, they were most frequently hoping for high-achieving options in great demand—Mott Hall II, the Computer School, Booker T. Washington and West End Secondary School.

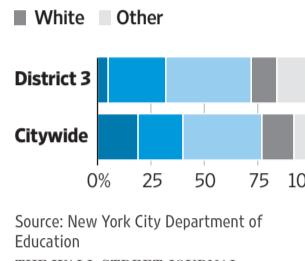
Students who failed state tests were especially likely to appeal their placements. Only 6% of those who appealed in District 3 had top test scores of Level 4.

To diversify schools in District 3, and make access to popular schools more equitable, the department has proposed setting aside 25% of seats in each middle school for struggling students. To decide who would get priority, it has suggested using various combinations of low test scores, course grades and poverty measures.

Many District 3 parents have balked at these scenarios, saying talented students would unfairly lose access to desirable schools and might be sent to classrooms with few children who passed state tests. Many parents say they want more integration, but that this plan lacks money for

**Second Chances**

Fifth-graders who appealed New York City's public middle school offer for fall 2017 entry



Source: New York City Department of Education  
THE WALL STREET JOURNAL.

remedial help for children below grade level who would be assigned to high-performing schools, among other concerns. And many say the real problem is there are simply too few options with sufficient resources.

"The problem is the Department of Education hasn't provided enough quality schools," said Debra Plafker, a District 3 parent and education consultant. "Parents are jostling for too few good seats."

A department spokesman countered that. "We have high-quality middle-school programs all across the city, and are investing in every school as we build a pathway to success for all students," said Doug Cohen in an email. "We'll continue working closely with students and families throughout the appeals process to help them find a program that best fits their needs."

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# LIFE & ARTS



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## MUSIC

# Guns N' Roses Tours Without 'Mr. Invisible'

BY NEIL SHAH

**AT THE HEIGHT** of Guns N' Roses' fame, rhythm guitarist Izzy Stradlin cut such an understated figure that lead singer Axl Rose referred to him as "Mr. Invisible."

More than 25 years later, the band is back together for "Not in This Lifetime..." a multiyear, globe-spanning reunion tour which, according to Billboard, is the highest-grossing in history. But it is missing Mr. Stradlin, whose songwriting contributed to hits like "Sweet Child O' Mine" and "Patience."

"He wrote half the stuff," said Rick Nielsen, guitarist for rock band Cheap Trick. "It was Izzy's f-ing band," said former Guns N' Roses manager Alan Niven, who later worked directly for Mr. Stradlin. In his 2011 autobiography, Guns N' Roses bassist Duff McKagan wrote that "Izzy was probably the most significant force" in the group.

Mr. Stradlin, now 56 years old and living in Ojai, Calif., left Guns N' Roses in 1991. By some measures, he has kept much busier than his former band, quietly releasing nine studio albums between 1999 and 2010. (Guns N' Roses released one over the same period.)

His low profile and absence from a reunion tour for a group he helped found, however, mystify his fans and associates. The band he formed after Guns N' Roses, the Ju Ju Hounds, broke up after one album, and his solo efforts have flown under the radar, in part because he doesn't tour.

The current GNR tour has been a great success for the guys. My nonparticipation was simply not be-

ing able to reach a happy middle ground through the negotiation process," Mr. Stradlin said in an email. "That's life, sometimes things don't work out." He didn't respond to further inquiries.

Fernando Lebeis, manager for Guns N' Roses, declined to comment on the tour negotiations but said "Izzy is a dear friend."

Mr. Stradlin, born Jeff Isbell, began his music career in 1980, when he moved from Lafayette, Ind., to Los Angeles. He joined punk and metal bands, delivered the L.A. Weekly and used heroin, according to people who worked with him and his own accounts. Guns N' Roses formed in 1985.

The band's 1987 album, "Appetite for Destruction," which featured Mr. Stradlin's songwriting and raw, loose guitar-playing, sold 8 million copies in the U.S. by 1989, according to the Recording Industry Association of America. It is set for reissue in June.

Mr. Stradlin's addiction worsened as the band's popularity soared, according to former colleagues. After he was arrested for urinating in the galley of a plane, Mr. Stradlin gave up drinking and drugs on Dec. 15, 1989, he said in a 2006 interview with digital-music distributor TuneCore.

Guns N' Roses finished its double album "Use Your Illusion" and went on tour in 1991. Mr. Stradlin, attempting to stay sober, distanced himself from his rowdy bandmates, according to former colleagues. But he continued to be frustrated by their behavior, including Mr. Rose's late appearances at concerts, the colleagues said. Mr. Stradlin quit on or around Sept. 9, 1991, a week before

**Above, Guns N' Roses members** Slash, Duff McKagan, Axl Rose, Izzy Stradlin and Steven Adler in 1985; **Mr. Stradlin (right and below) and the Ju Ju Hounds, Jimmy Ashurst, Rick Richards and Charlie Quintana**



the release of "Use Your Illusion," according to documents reviewed by The Wall Street Journal.

His departure was announced Nov. 7. "It was such a major change," Guns N' Roses guitaristSlash wrote in his memoir.

Mr. Stradlin reconnected with old friends in Lafayette. Soon after, he formed a new band, enlisting bassist Jimmy Ashurst, and signed a two-album deal with Guns N' Roses' label, Geffen Records.

Joined by drummer Charlie Quintana and guitarist Rick Richards, Mr. Stradlin in 1992 released "Izzy Stradlin and the Ju Ju Hounds." "Shuffle It All," its biggest single, reached No. 6 on Billboard's rock chart that year.



Touring wasn't easy for Mr. Stradlin. A well-known addiction specialist, Bob Timmins, was hired to help him, says Steve White, Mr. Stradlin's former road manager. "He was still fighting off the addiction," Mr. White said.

Mr. Timmins died in 2008. A spokesman for his foundation declined to comment on his work with Mr. Stradlin.

Mr. Stradlin's bandmates tried to respect his sobriety. When Mr. Quintana drank during a 1992 recording session, he put his wine in a coffee cup, Mr. Quintana said in a 2016 interview. "He wanted a healthy band." (Mr. Quintana died in March.)

The Ju Ju Hounds broke up in 1994 while recording its second album. Mr. Stradlin wanted to get away from the pressures of the music business, current and former colleagues said, but they also cited friction between Mr. Stradlin and

Mr. Ashurst over drugs. Mr. Ashurst said he later became addicted to heroin, but not during his time with the Ju Ju Hounds.

He released his second Geffen album, "117," in 1998, with Mr. Richards, Mr. McKagan and former Reverend Horton Heat drummer Taz Bentley.

For later albums, Mr. Stradlin released them through distributors like TuneCore. He has little interest in promotional activities, bandmates say. "It's just basically 11 records that nobody knows about," Mr. Bentley said.

These days, Mr. Stradlin wakes up early, mountain-bikes, surfs and travels with his longtime girlfriend, Mr. Richards said. "He likes to be untethered."

According to a 1992 interview in Musician magazine, Mr. Stradlin said getting a dog helped to "keep my perspective, see life through a dog's eyes. You're doing all right if you've got food, a place to sleep and someone to pet you."

## WHAT'S YOUR WORKOUT? | By Jen Murphy

# PING PONG HELPS A SENIOR BOUNCE BACK



REBECCA GREENFIELD FOR THE WALL STREET JOURNAL  
Carol Klenfner found a social circle and a workout at a New York ping pong club.

**A CELEBRITY-BACKED** ping pong bar isn't where you would expect seniors to hang out. But Carol Klenfner, 73, is a regular at Spin, the New York City table-tennis club founded by actress Susan Sarandon.

In 2009, after a 35-year marriage and 45 years working in an office, Ms. Klenfner found herself alone. She had just lost her ailing husband and was unexpectedly laid off from her job at a public-relations firm.

Forced to downsize to a more affordable rental apartment in Manhattan, she started to feel depressed. "It was like solitary confinement," she says. "I needed to get out of the house."

In 2014, Ms. Klenfner watched a PBS documentary about seniors playing competitive table tennis. It brought back childhood memories of playing ping pong with her brother and inspired her to check out Spin. She says the clubby, so-

cial atmosphere reminded her of her days handling tour publicity for bands such as the Eagles and the Rolling Stones. After a few visits she tried out for a women's table-tennis league.

Ms. Klenfner often finds herself serving to women decades younger. Tired of losing, she hired a coach in 2016. "As a woman of a certain age, I needed someone with the patience of a saint," she jokes. She often surprises opponents with her quick footwork and ability to cover the table. But she lacked confidence. "My coach taught me how to read the ball—different spins and bounces—and that took away some of my self-doubt," she says.

In addition to league tournaments, Ms. Klenfner has competed in two U.S. National Table Tennis Championships in Las Vegas and the 2017 National Senior Games in Birmingham, Ala. She will compete

in the Empire State Senior Games in Cortland, N.Y. on June 16.

"I've really fallen in love with the sport," she says. "You forget everything on the table, including your age."

### The Workout

Ms. Klenfner does freelance public relations work from home, allowing her the flexibility to attend Spin up to five times a week. Twice a week she works with her coach, Matthew Khan, to improve her forehand and backhand strokes, backspin, chop, block, serve and form. After 20 to 30 minutes of drills, they play three or four rounds and work on strategy. "I play much smarter now," she says. "I now know when to not go for the kill and when to let the opponent make a mistake."

Before working with Mr. Khan, Please see WORKOUT page A14

## LIFE &amp; ARTS

WORK &amp; FAMILY | By Sue Shellenbarger

## Fix That Dead-End Conversation

**CARL LAMELL** had just sat down for dinner at a fundraising event when he realized he was in trouble.

He was seated next to the wife of an employee at the nonprofit agency he headed, and "as soon as she started talking, she asked for a raise for her husband," says Mr. LaMell, of Chicago. He tried to gently shift gears, telling her, "This isn't where I want to discuss this," but she continued to complain about how hard her husband worked. Trapped, Mr. LaMell listened politely for the rest of the meal.

Getting stuck in a dead-end conversation at a networking event, conference or meeting is a common dilemma. You can't just walk away if you're talking with a colleague, prospective client or other important contact. Yet exchanges that bog down in complaining, arguing or one-sided monologues can waste time and turn social events into a chore.

But you can sometimes turn around what feels like a brutal conversation you can't walk away from.

When Achim Nowak gets stuck listening to chronic complainers, he asks them to suggest a solution. To someone griping that performance reviews are tiresome and don't yield any useful feedback, consider asking what changes she would make to improve them, says Mr. Nowak, an executive coach and author who has worked with managers at Dover Corp., Owens Corning and other companies.

Another strategy is narrowing the lens to focus on specifics, says Mr. Nowak, who is based in Hollywood, Fla. If you're listening to someone grumble about poor customer service at banks these days, ask which services in particular the person misses most. You might learn something about his



life or work.

Engagement doesn't always work. When Ivan Misner meets someone who complains nonstop about his job or employer, he asks, "Well, what's going well for you right now?" If they continue on their rant, then they're a lost cause. They're happy in their hole and they don't want a ladder," says Dr. Misner, author of "Networking Like a Pro" and founder of BNI.com, a Charlotte, N.C., networking organization. He gives them a polite goodbye.

If your conversation partner gets caught up in boasting or reciting a litany of achievements, consider trying to jar him out of his rut by complimenting him and volunteering some information about yourself, says Judith E. Glaser, author of "Conversational Intelligence." This might satisfy his

You can sometimes turn around what feels like a brutal conversation you can't walk away from.

need for attention and free him to move on.

Or interrupt the pattern with a comment about yourself, such as, "We have so much in common," says Ms. Glaser, a New York communications coach who worked with executives at American Express, Citibank and other companies. "If they keep pulling the conversation back to themselves, they are unfortunately a hard-core narcissist."

If a conversation gets mired in a

divisive issue, one exit route is to hold up a hand and announce, "You know what? We're not having this discussion right now," says Susan RoAne, a Greenbrae, Calif., author and speaker.

The fear and anxiety people feel in conversational disputes can eclipse their ability to listen or hear what the other person is saying, Ms. Glaser says. When emotions run high, it's often best to interrupt the pattern so everyone can calm down, then refocus on trying to understand each other's views without judging them, she says.

Mr. LaMell approached a speaker at a conference years ago after criticizing her during the meeting. The woman, a state official who oversaw funding for the nonprofit agency he ran, saw him coming. Recognizing the tension

between them, she told him they could either go out for a drink together to talk over their divergent views, or never speak to each other again, Mr. LaMell recalls her saying. He replied, "I prefer the drink, and I'll buy," he says. After a calm conversation over drinks, they began to understand and trust each other, and they've been friendly ever since, he says.

Patrick Herning of Los Angeles hates getting bogged down in gossip. "When a conversation is going a bit south, a bit catty, and it's about a mutual acquaintance or friend, I just say, 'That's interesting. They just seem to have the nicest things to say about you,'" says Mr. Herning, CEO and co-founder of 11 Honore, a plus-size women's clothing e-commerce site. Even if it isn't true, "you're shifting the energy" in a positive direction, he says.

The most enjoyable route around a dispute is to find humor in it. J. Kelly Hoey hesitated when a networking acquaintance messaged her on Twitter, saying he was coming to the city and asking to meet for a drink. Ms. Hoey, who expresses her liberal political views on social media, knew the man held diametrically opposite views and wondered how their meeting would go.

But he turned out to be warm and empathetic, and instead of arguing, "we sat there and laughed," says Ms. Hoey, a speaker and author of "Build Your Dream Network." In the process, they found common ground—in their mutual dislike of social-media trolls and shared belief that all posters should be treated with respect.

Disagreements "don't have to be a zero-sum game," Ms. Hoey says. Sometimes, everybody wins.

## Here's How to Salvage a Problematic Talk:

- Re-direct a chronic complainer by asking the person to suggest solutions.
- If you find yourself repeating the same points, take a deep breath and listen more without judging.
- If your conversation partner goes on the defensive, back off and ask thoughtful questions.
- If a colleague starts gossiping
- If the other person starts

rants about local problems, ask how issues in your town compare with other communities.

- If a colleague complains that your employer's policy updates cause more work, invite the person to consider the opposite: What would happen if the policies weren't ever updated?
- Hold up a hand and call a halt if a divisive conversation gets out of control.

## WORKOUT

*Continued from page A13*  
she used to play in a straight stance and rely on her upper body strength. Mr. Khan taught her how to maintain an athletic stance and rotate from her waist to generate more power. "I'm in a squat nearly the entire match," she says. Twice a week she plays from two to three hours with a group of friends. The women's league has 16 members ranging in age from mid 20s to early 70s and plays on weekends for four hours. "Not only is my fitness level at a personal high and my reflexes noticeably faster, I have a whole new social network that's led to new friends of all ages, new clients and a book club," she says.

Once a week, for the last nine years, she has worked with a personal trainer. "I get inspired watching 'American Ninja Warrior,'" she says, referring to the TV series where contestants compete in obstacle courses. "I realized I couldn't hang from a bar for any length of time." After working on lat strength, she can now hang for one minute three times throughout a workout session.

Her proudest achievement: She practiced every morning for six years before she could do push-ups without the support of her knees. "I try to do 20 while I watch 'Morning Joe,'" she says. Ms. Klenfner had back surgery in 2009. She says weekly sessions at True Pilates help keep back pain at bay.

**The Diet**  
Ms. Klenfner eats the same breakfast every day: a mix of

steel-cut and Scottish oats topped with a poached egg and seasoned with sea salt. She adds a splash of Pellegrino to her morning iced coffee. Lunch is a salad topped with a protein like chickpeas or egg and dressed with lemon juice and olive oil. "I'm a New Yorker, so I eat out a lot," she says. She snacks on cashews. When she wants to splurge she goes to a good bakery. "I won't waste my calories on a mediocre pastry," she says. Ms. Klenfner sticks to water before matches but says will have a drink socially afterward. "Playing itself gives me a high," she says.

**The Gear & Cost**  
She likes Butterfly brand table tennis shoes (\$130) for their stability and shock absorption. "It's like the Nike of table tennis," she says. She spent \$650 on her Eneslow custom orthotics.

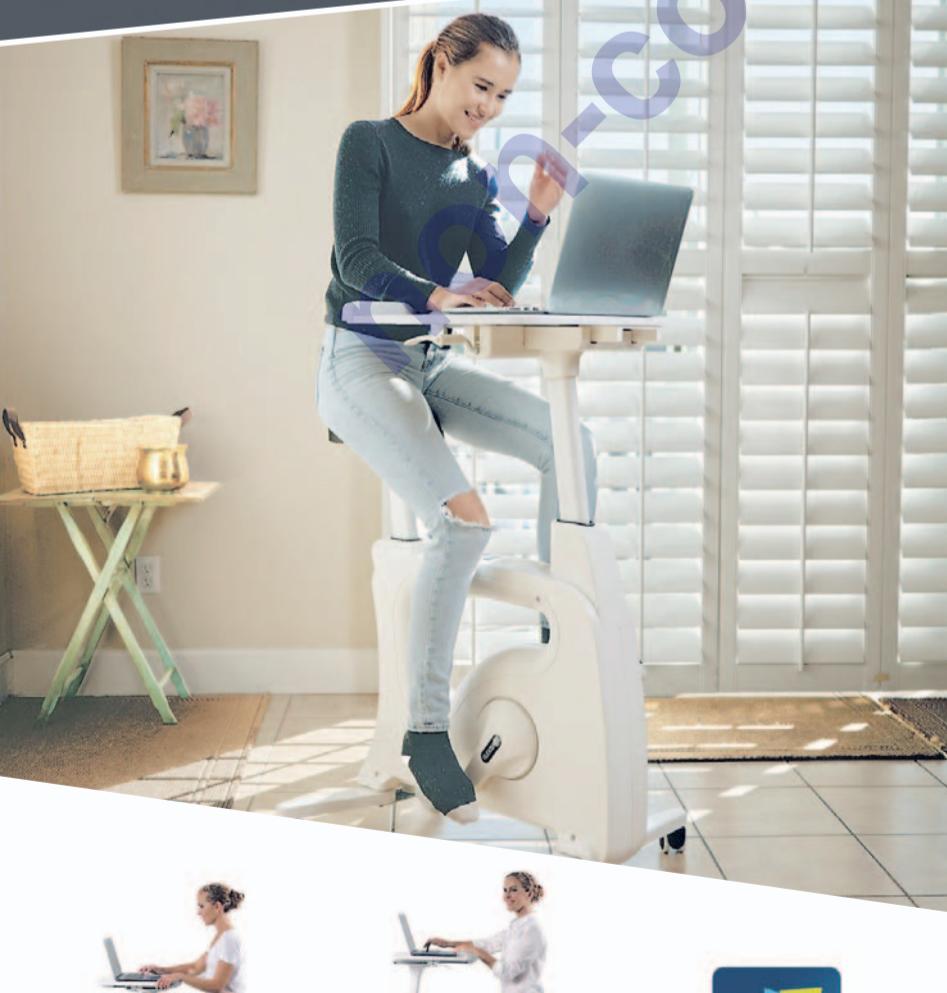
**The Playlist**  
"I pick up a lot of new music at Spin," she says. "I like the soundtrack from 'Black Panther' and Pharrell [Williams]."

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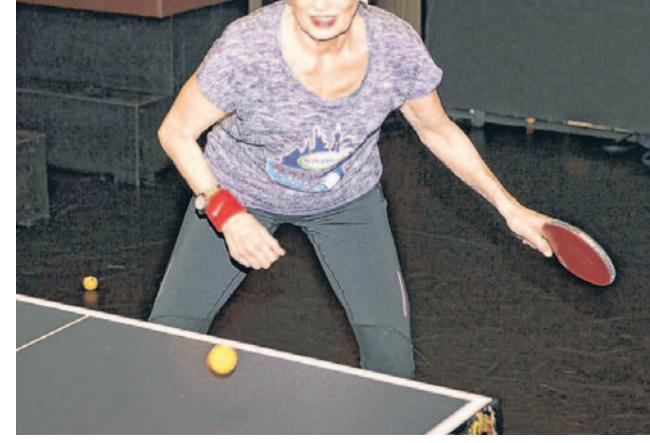
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Ms. Klenfner played ping pong as a child. Since rediscovering the sport in 2016 she's gone on to compete at a national level.

## LIFE &amp; ARTS



'Tall Green Bloom Urn' (2012), designed by Michael Eden, above; part of the 'Saturated' exhibition, left

## ART REVIEW

# Vibrant From Any Angle

BY JUDITH H. DOBRZYNSKI

**New York** 'COLOR is my day-long obsession, joy and torment,' Monet once lamented, while Georgia O'Keeffe noted, 'I found I could say things with colors that I couldn't say in any other way—things that I had no words for.' Decades later, Steve Jobs sounded a different note, saying, regarding Apple's candy-colored iMacs, 'For most consumers, color is more important than megahertz, gigabytes, and other gibberish associated with buying a typical PC.'

Such is the poetry and the power of color. Color pervades our lives, and yet we probably think little about its many facets, which also include theory, history, utility and mystery.

All of those aspects are on view at the Cooper Hewitt, Smithsonian Design Museum, in 'Saturated: The Allure and Science of Color,' which explores how we perceive and use color. As visitors climb a staircase to the exhibit—which is drawn from printed materials that belong to the Smithsonian Libraries and design objects that belong to the Cooper Hewitt—they should grasp with a glance the first principle,



that color is simply light in different wave lengths, via 'Peony' (2014), designed by Karel Martens. As light cast by the chandelier above changes shades, so too does the appearance of this wall hanging, with colors shifting in intensity. Digitally printed, 'Peony' consists of thousands of multicolored pixels, imprinted with differing designs and arranged by an algorithm to form the flower.

'Saturated' then takes visitors through 'seven phases of color'—a reference to the seven hues Aristotle cited in his color spectrum in the fourth century B.C.—in sections like 'Creating Color' and 'Color and Form.'

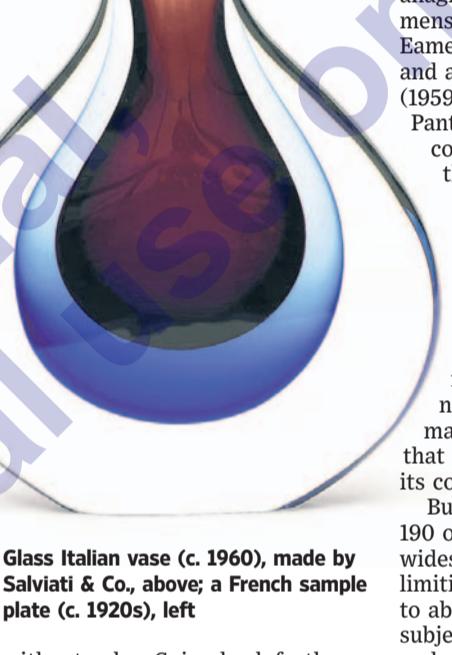
Aristotle, who linked his theory of color harmony to musical harmony, isn't the only notable making an appearance in the show. Nearly two millennia later, Isaac Newton took inspiration from Aristotle when he devised a seven-hue spectrum, citing red, orange, yellow, green, blue, indigo and violet as the colors that are gleaned from the refraction of white light. That is represented here by his groundbreaking 1704 book, 'Opticks, or, A Treatise of the Reflections, Refractions, Inflexions and Colours of Light.'

Goethe would later challenge

Newton, writing his own book, 'Theory of Colors' (1810), after studying the physiological effects of color. Before and after, chemists, entomologists, physicists, ornithologists, paint manufacturers and designers tried, in the museum's parlance, to 'Capture Color'—including Moses Harris (1731-1785), who created an early color wheel to help naturalists identify insects, and game-maker Milton Bradley, who pioneered his own color wheel.

Attempts to organize, describe and measure color continue today, especially as standardization has grown in importance in global commerce. Color's mysterious properties, like iridescence, fluorescence and optical illusions, are still being explored and exploited. As Josef Albers wrote in his seminal book, 'Interaction of Color' (1963)—a copy of which is on view—"In order to use color effectively it is necessary to recognize that color deceives continually." The exhibition offers such examples as a Tiffany Peacock Vase (c. 1901) and a 19th-century Indian fabric woven with beetle wing casings for iridescence, as well as 21st-century Nike running shoes in fluorescent green.

Elsewhere, posters, textiles, decorative arts and furniture illustrate the themes. Try to imagine a legible New York City subway map



Glass Italian vase (c. 1960), made by Salviati & Co., above; a French sample plate (c. 1920s), left

without color. Going back further, the 1874 book 'Statistical Analysis of the United States Based on the Results of the Ninth Census 1870' could never have communicated its extensive data successfully without employing color in infographics. Designers use color even when they don't have to—consider how Oxo color-coded its measuring spoons to make them more user-friendly and how AT&T deployed pastels, like pink, to popularize its

Princess phones. Among the newest developments is the clear glass 'Shimmer Table' (2014), designed by Patricia Urquiola and made by Glas Italia. It seems, at various times, to be purple, yellow, blue—all the colors in the spectrum—and it casts colorful shadows, too, depending on the angle of the light source and the vantage point of the viewer. No pigment is involved; its special glossy finish, enabled by nanotechnology, refracts light, like a prism.

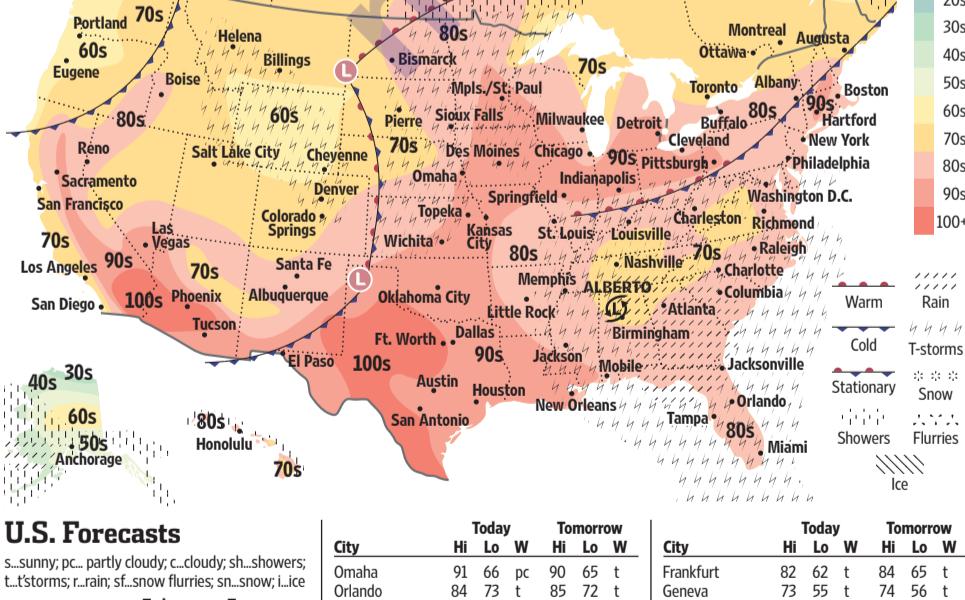
"Saturated" is an enlightening exhibition. Curators Jennifer Cohlman Bracchi and Susan Brown try hard to make it engaging, too. There's an out-of-register floral wallpaper (2015) which, when viewed through red and blue anaglyph glasses, appears three-dimensional. There's a fiberglass Eames rocking chair (c. 1948-50) and a Panton heart cone chair (1959) by Danish designer Verner Panton (1926-1998), alongside the color wheels developed for their manufacture. There's a 1968 Joffrey Ballet poster in bright yellow and blue that seems to suggest movement. There's a station for Peclers-Paris, the famed trend forecasting company, with bottles of dye, swatches of fabric and a copy of its biennial "Color Trends Book" for manufacturers and designers that visitors may peruse, touching its color patches and tassels.

But this short history of color in 190 objects is hampered by the widespread museum practice of limiting the length of labels, here to about 50 words. Hard-to-convey subjects like this—relating color and music, for example—require more, and there's no catalog to consult, either. What a pity.

**Saturated: The Allure and Science of Color**  
Cooper Hewitt, Smithsonian Design Museum, through Jan. 13, 2019

*Ms. Dobrzynski writes about culture for many publications and blogs at [www.artsjournal.com/reacleararts](http://www.artsjournal.com/reacleararts).*

## Weather



## U.S. Forecasts

s.sunny; pc., partly cloudy; c., cloudy; sh., showers;

t., tstorms; r., rain; sf., snow flurries; sn., snow; l., ice

Today Tomorrow

Hi Lo W Hi Lo W

City Anchorage Atlanta Austin Baltimore Boise Boston Burlington Charlotte Chicago Cleveland Dallas Denver Detroit Honolulu Houston Indianapolis Kansas City Las Vegas Little Rock Los Angeles Miami Milwaukee Minneapolis Nashville New Orleans New York City Oklahoma City

55 44 pc 55 45 c 80 71 r 98 74 s 82 52 s 81 56 pc 78 52 s 83 71 t 87 66 s 89 70 s 97 59 t 83 68 t 82 52 s 76 53 c 80 74 s 97 73 s 82 52 s 69 54 s 78 52 s 83 61 s 83 71 t 87 66 s 75 66 r 89 70 s 84 69 t 97 59 s 80 74 pc 90 68 s 88 69 t 98 77 s 100 74 pc 77 60 pc 83 74 t 80 67 pc 90 71 pc 82 70 t 80 68 pc 88 69 t 84 68 s 101 74 pc 104 79 pc 90 76 t 87 60 s 92 63 s 86 65 s 85 65 t 79 61 t 85 61 t 84 68 s 85 65 s 104 79 pc 89 78 t 87 67 t 75 53 s 65 51 r 94 81 t 95 79 t 76 66 pc 73 65 r 79 61 s 80 63 c 63 47 c 63 46 pc 81 59 s 84 60 pc 95 66 pc 75 60 pc 90 68 s 92 73 t 63 49 pc 63 52 s

## International

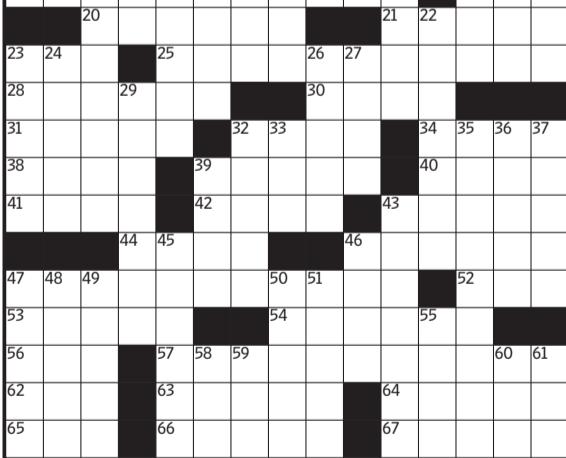
Today Tomorrow

Hi Lo W Hi Lo W

City Amsterdam Athens Baghdad Bangkok Beijing Berlin Brussels Buenos Aires Dubai Edinburgh

80 62 t 75 61 t 84 68 s 85 65 s 104 79 pc 108 79 s 90 76 t 87 60 s 86 65 s 86 65 s 79 61 t 78 61 t 75 67 t 98 77 s 102 87 s 66 52 pc 66 51 pc 66 52 pc 66 51 pc 63 49 pc 63 52 s

## The WSJ Daily Crossword | Edited by Mike Shenk



## CHOPPING SPREE | By Ethan Erickson

Across	32	53
1 Lunchbox closure	They may be weighed against pros	Sprang
6 Gradient	Cafeteria aid	Talk idly
11 Night spot	Speckled horse	Back, on a battleship
14 Music's Lena	Choppers	Choppers
15 Gives a hoot	On this spot	Last letter
16 In the style of	Daily rise and fall	Make blank
17 Choppers	(crook's cry)	It's ___!
19 Baltimore newspaper	Pioneering automaker Ransom	Slip up
20 Wolfish activity	Classroom fixtures	Reached a peak, with "out"
21 Stage comment	High-end camera	Disagreeable
23 Choppers	Racing's Earnhardt	Down
25 Choppers	Thick juice	Tea in China
28 Thick juice	Leisurely	Smoked salmon
30 Leisurely	Synthetic fabric	Like some warships
31 Synthetic fabric	Zurich	Lennon's love

► Solve this puzzle online and discuss it at [WSJ.com/Puzzles](http://WSJ.com/Puzzles).

## Previous Puzzle's Solution

BEAT	IDOL	GOOG
BORSO	NOTE	EBAY
BRAVE	ESTHER	STORM
CATHODE	RAY	DER
AMINETE	TSO	ERE
TEEM	RUG	RAVEL
ANGELUS	SINAMERICA	LIANE
LIANE	UVAMATT	ATM
ATM	ADD	ELOTOE
NYE	PARK	RANGERS
RANDI	PEEE	MARINERS
MASTER	EBRO	ITEM
REUP	WASP	CAPS

The contest answer is AT BATS. As suggested by 69-Across, looking at the baseball CAPS of the five Major League Baseball teams in the theme entries (Braves, Rays, Angels, Rangers, Mariners) yields A-T-B-A-T-S.

## SPORTS

## HOCKEY

# Best Time to Pull a Goalie

BY MICHAEL SALFINO

If the Vegas Golden Knights or the Washington Capitals find themselves trailing late in the third period during the Stanley Cup Finals, all eyes will be on the bench. With the clock ticking down, it will be up to Vegas coach Gerard Gallant or Capitals coach Barry Trotz to decide when to pull their goalie for an extra skater.

It turns out, both Gallant and Trotz should consider being quicker with the trigger.

A recent paper by New York University math professor Aaron Brown and ARQ Capital Management's Clifford Asness found that the odds favor pulling a goalie down one goal with about 5:40 left in the game. Their model's inputs included probability of scoring with the goalie on the ice, with the extra attacker, goal differential and time remaining.

Of course, it's an aggressive strategy that will unlikely be deployed in these Stanley Cup Finals. A Wall Street Journal analysis of NFL play calling in 2016 showed that—despite a legion of mathematicians, economists and win probability models urging coaches to take more chances—most still reach for the conventional choice.

The same is true in hockey. In the past three seasons, every NHL playoff team scoring with an empty net with more than two minutes remaining on the clock have been down multiple goals, according to Stats LLC.

In the study, Brown and Asness write, "Coaches are not actually rewarded for winning. They are rewarded for being perceived as good coaches. Obviously, the two are closely related but not exactly the same thing. Essentially winning ugly is undervalued versus losing elegantly; and losing ugly can be career suicide."

Pulling a goalie is the ultimate act of desperation but with the Stanley Cup on the line, teams should consider a formula that actually makes winning more likely.



Vegas goalie Marc-André Fleury

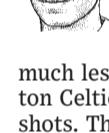


LeBron James and the Cleveland Cavaliers advanced to the NBA Finals after beating the Boston Celtics in Game 7 of the Eastern Conference Finals on Sunday.

ADAM GLANZMAN/GETTY IMAGES

NBA | By Jason Gay

# LeBron James Can't Do It by Himself



**Boston**  
The game was, well, a stinker. Even when it was close, it was coddish, not even in the realm of mediocre,

much less a masterpiece. The Boston Celtics hit just 34% of their shots. The box says Cleveland hit 45%, but that number sounds charitable. Don't let anyone glam up the retelling of Game 7 of the 2018 NBA Eastern Conference Finals: no one is sending the highlights to the Hall of Fame.

Except maybe his highlights: LeBron James's. He played all 48 minutes Sunday, like he didn't have a choice, because he didn't, really. He scored 35 points, added 15 rebounds and 9 assists—nice numbers, but not his best game of the series, maybe not even his third or fourth-best. Outside of James, this Cavaliers team isn't very good, and the home crowd in Boston, in the thrall of their own overachieving club, smelled an era's end. James had customary moments of brilliance, but this was mostly a heavy lift. At times, it was like watching a man try to lug a cord of wood up a flight of stairs.

He did it, not by himself, but pretty close. At 33, in his 15th professional season, LeBron James, the best basketball player in the world, is taking another team to

the NBA Finals. It will be his eighth straight trip, and ninth overall.

It's crazy, that fact alone. I'll leave the wrestling matches over LeBron vs. Jordan and LeBron vs. Bill Russell and LeBron vs. Kareem or Wilt or Anyone to the noisy talk shows and comments sections. I don't need an answer. I'm just happy to have seen him play. And I bet—even if you resisted at first—you feel that way about LeBron James, too.

"People have to understand, he's playing at a different level," said the Celtic veteran Al Horford.

These were not the Bird-McHale Celtics, to be sure. They weren't even the Kyrie Irving-Gordon Hayward Celtics, having lost their top two stars to season-ending injuries. These leftover Celtics were young (Jayson Tatum—holy mackerel) and understaffed and they found a terrible night to lose their touch (18% shooting from the 3-point line, yikes). But in the end, the difference was Cleveland had James, and Boston did not.

"He's unbelievable," Boston's coach, Brad Stevens, said after the game. James's own coach, Tyronn Lue, said James's performance was reminiscent of his Game 7 against Golden State in the 2016 Finals.

When Cleveland finished this one, 87-79, there were hugs on the court, and then the Cavs rushed

into a corridor below the arena for a brief ceremony with the conference championship trophy. James hugged Lue, and then there was an eruption as his teammate, Kevin Love—who missed Game 7 with the after-effects of a concussion—joined the celebration. Then ESPN's camera turned on, Lue started talking, and I lost track of James's whereabouts. There were all his ragtag teammates, some sweaty from playing, a lot of them not, bouncing up and down with their fresh new hats on national TV. But where was LeBron?

He was sitting on the floor, as it turned out. Exhausted. Fully cooked. Was he being a little dramatic? Sure. James, a millennial virtuoso of social media signaling, seldom makes a move without a message. He recently sat courtside at a Cavs shoot around bearing a copy of Paulo Coelho's searcher parable "The Alchemist"; he arrived for his postgame news conference Sunday with a hat that read THERE IS NO MAGIC PILL.

I have zero doubt he was wiped. This year felt like six seasons in one, James said. First he lost his No. 2, Irving, in a contentious trade to Boston, and then, after lackluster start, the Cleveland roster that began the 2017-18 campaign was gutted for the sparest of spare parts. I don't know if you've ever had to win a Game 7 on the

road alongside Jordan Clarkson and Larry Nance Jr. They seem like nice enough guys, but...

And yet James can pull it off. J.R. Smith—is there better evidence of James's impact than the fact that J.R. Smith, an impish streak shooter who got suspended in March for throwing a bowl of soup at an assistant coach, is on his way to his fourth consecutive NBA Finals?

James compared the Cavs' year to a roller coaster followed by roller coasters—"It's been Cedar Point," he said, an Ohio kid giving a knowing nod to the Sandusky, Ohio, coaster cathedral.

They will play the Warriors or Rockets. It doesn't matter. The Cavaliers will be underdogs regardless of which Western Conference power wins Monday's Game 7 in Houston.

As midnight arrived, James sounded too tired to take on the question of how Cleveland stands a chance against either. He knows how quickly story lines shift in sports today, how fast "Wow, LeBron has done it again" will cruelly change to "Jeez, LeBron's lost another Finals" if the Cavs wither in June. There is no magic pill for that. All LeBron James can promise is to compete. Whether it's a beautiful night of basketball, or something far short, it's a privilege to watch him work.

## FRENCH OPEN

# RAFAEL NADAL IS MORE EFFICIENT THAN EVER

BY TOM PERROTTA

Paris

Last month, after he won a clay tournament in Barcelona for the 11th time in his career, Rafael Nadal bit his trophy and mugged for the camera, a routine he does after every title. Later on, he jumped in a pool with some of the tournament's ball boys and ball girls. And then Nadal did the unthinkable, something he never used to do: He didn't play tennis for three days.

Nadal has long been known as the sport's workaholic. Since he became a pro, in his teens, Nadal played for hours each day in practice and in his matches, which were often grueling. Thanks in part to his work ethic, Nadal could outlast everyone, even Roger Federer, and win much like a boxer who lands blows throughout the fight, making his opponent eventually succumb.

"Before, if he stopped for more than one day it looked like he was doing something wrong," said Francisco Roig, one of Nadal's coaches. "Three days looks normal but for him, it's a lot. He under-

stands that he needs more quality than quantity."

Welcome the new Nadal at Roland Garros: more efficient and well-rounded than ever before.

A healthy Nadal, soon to be 32 years old, may not be the best Nadal ever, but he's certainly the most complete. His forehand is like it once was, hit deep in the court with a lot of topspin and pace. His backhand, once efficient, has turned into a weapon. Nadal hits backhands with far more depth than he used to, and sharper angles. And at the net, Nadal's overheads and volleys are impeccable. He doesn't move forward until he knows his opponent is playing defense, and then he slams winners or hits drop shots at precise angles.

"Barring injury, no, I do not believe that anyone can beat Rafa," said Jim Courier, a two-time French Open champion and now a commentator for Tennis Channel. "Anyone beating Rafa that can't overpower him, take the racket out of his hand, best-of-five sets, that's really hard to do."

Overpowering is indeed the key, as Nadal's first French Open oppo-

nent, Simone Bolelli from Italy, attempted on Monday. Yet despite the attack with crushed forehands and backhands, Nadal won the first two sets, 6-4, 6-3. He was down a break of serve in the second set, then won five games in a row. Nadal trailed another break, at 0-3, in the third set when play

was suspended because of rain. If Nadal loses a set in this match, it would be the first he has lost here since 2015.

Over the past few years, Nadal has worked on every aspect of his game. The last year has been especially effective. Take, for instance, Nadal's second serve, which he is

hitting harder on average than he did last year. And then there's his backhand, the shot that at various times Nadal used merely to stay in the point, until he could hit a forehand. Nadal goes for much more now, using his backhand to make his opponents run wide and open up the court.

"It's tougher to play him physically because he's moving you much more than before," Roig said. "He's opening the court unbelievably with the backhand."

For much of his career, Nadal has been seen as a one-dimensional player. But his physical look—with thick legs and muscular arms—and his forceful swings mask his versatility. And he sometimes creates his own unique style. Nadal stands farther back from the baseline than anyone in tennis. The move seems counterintuitive and risky on slice serves out wide, but somehow it works for Nadal, who gets more time—and still hits with depth—than he would if he stood closer. Roig doesn't approve.

"But if it works, what can you say?" Roig said. "He's a different player, a different talent, a special ability, and powerful."



GONZALO FUENTES/REUTERS

Rafael Nadal is seeking to win his 11th career French Open title.

## OPINION

## Bring Home Our Hostages

MAIN STREET  
By William McGurn

When Joshua Holt touched down on U.S. soil this past weekend, it was a good day for America. Mr. Holt had been rotting away in a Cuban prison since 2016 on trumped-up weapons charges. He had been imprisoned after traveling to Venezuela to marry a woman who is now his wife and who had also been jailed.

The good news is that the Holts are free. The better news is their story isn't the only one with a happy ending, something President Trump alluded to while welcoming the couple to the Oval Office Saturday night.

## The world is safer when foreign powers know not to mess with Americans abroad.

"So we've had 17 prisoners released during the Trump administration," the president said. "Most people don't know that. You remember Aya [Hajazi], an Egyptian-American aid worker]. We called the president of Egypt, and he released her. She was there for a long time—three years. And the previous administration was unable to get her out. A fantastic young woman. And she was released."

"As you know, in North Korea, we just had a very great success. We have three wonderful people—Americans—

that were released just recently. And they're now home, safe with their families.

"And you," he continued, addressing Mr. Holt, "were a tough one, I have to tell you. That was a tough situation. But we've had 17 released, and we're very proud of that record. Very proud. And we have others coming."

The most comforting news of all? The Holts' release was accompanied by an official White House announcement confirming that U.S. policy toward Venezuela hasn't been relaxed. To the contrary, the statement from the office of the press secretary calls on Nicolás Maduro's regime to hold "free, fair and transparent elections" while denouncing as "illegitimate" the sham May 20 balloting that gave the dictator another term in office. The statement further demands that Venezuela release all political prisoners, which presumably would include five American Citgo executives who were arrested last November and are still being held hostage.

The president's focus on freeing Americans unjustly imprisoned in foreign jails is welcome. The predicament of such prisoners was sadly brought home to the American people when Otto Warmbier, a college student from Cincinnati, died shortly after being returned last year by North Korea, where he'd been badly abused. Warmbier's death reminds us that securing the release of citizens abroad isn't an act of charity but a fundamental imperative of a healthy American security policy.

The 17 who have been brought home include a former Central Intelligence



Joshua Holt in the Oval Office.

Agency agent arrested and detained in Portugal for the operation that captured radical Egyptian cleric Hassan Mustafa Osama Nasr. The list also includes three University of California, Los Angeles basketball players who were arrested and detained for stealing sunglasses in China. Also among the 17 are the three Korean-Americans who were released at the beginning of May during a visit to Pyongyang by Secretary of State Mike Pompeo.

The Obama administration brought home Americans as well, including some from Iran. But that triumph was tarnished by the de facto ransom payments and the unconscionable decision to allow Tehran to remain silent on what happened to retired FBI agent Robert Levinson, who disappeared in Iran in 2007 while on a job for the CIA. Likewise for Mr. Obama's decision to swap five senior Taliban terrorists held at Guantanamo Bay for the U.S. Army deserter Bowe Bergdahl.

Unless there are back deals that no one knows about here,

the Trump administration has managed to bring home the 17 Americans the president cited without these little surrenders. The principle the Trump administration is enforcing is a sound one, perhaps best expressed by Lord Palmerston, a 19th-century British foreign secretary, with regard to his own citizens:

"As the Roman, in days of old, held himself free from indignity, when he could say *Civis Romanus sum* [I am a Roman citizen]; so also a British subject, in whatever land he may be, shall feel confident that the watchful eye and the strong arm of England, will protect him against injustice and wrong."

Americans once traveled the world with a similar assurance, but respect for U.S. citizenship isn't what it used to be.

On May 10 Mr. Trump announced that he will appoint Robert O'Brien to serve as his special envoy for hostage affairs. The office is critical, if only because it provides an institutional check on the natural tendency of time and other vital national interests to make the plight of individual Americans held overseas seem small and secondary by comparison.

Today millions of U.S. citizens live and travel abroad, often in circumstances that make them highly vulnerable targets. The government can't protect everyone from mistreatment. But the whole word is a safer place when that lonely American languishing in some foreign prison cell has a president whose policy makes clear: We've got your back.

*Write to mcgurn@wsj.com.*

markets in search of higher yields. That money is coming home now, and from Turkey to Argentina there are warning signs of financial crises. Meanwhile, the prospect of trade wars has the potential to disrupt global supply chains, slow investment, and create more uncertainty in the financial system. The political turmoil in Italy suggests that another round of European monetary instability may be on the way. And geopolitical unrest—from Korea to Syria, from Yemen to Ukraine and possibly to Venezuela—could easily interact with economic turmoil to produce large and unpleasant surprises in financial markets.

It is one thing to unleash the power of creative chaos to help the U.S. negotiate better deals. But a good chef needs to know when to turn the heat down. The basis of Mr. Trump's rising popularity and the GOP's slowly improving midterm prospects is the strong domestic economy. International financial and political turmoil is the biggest threat to this achievement. The Trump administration needs to ensure that its diplomatic strategy supports its economic goals rather than endangering them.

There is another lesson in "The Art of the Deal" to which Mr. Trump may need to return: "Sometimes—not often, but sometimes—less is more."

we—may find that this approach carries some unexpected risks.

The president's chaotic negotiating style seeks to pressure opponents to settle by creating uncertainty while concealing his own intentions. This aligns with his political style, which aims to keep the public enthralled through drama and suspense. He also believes in flooding the zone. While other presidents might avoid simultaneous fights with Europe over the Paris

## 'The Art of the Deal'

proves he's far from erratic. Still, he could turn down the heat.

climate accord, steel and auto tariffs, and Iran policy, Mr. Trump believes that the more issues are in play, the better chance he has of making good deals.

Perhaps. But the steady increase in U.S.-generated tensions and uncertainties over trade and security could also produce bad or even catastrophic outcomes as they interact with the economic and political risks that have been steadily accumulating across the globe.

A decade of ultralow interest rates in the developed world sent hundreds of billions of dollars into emerging

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## BOOKSHELF | By James Grant

## A New Deal For Gold

## American Default

By Sebastian Edwards  
(Princeton, 252 pages, \$29.95)

A question interrupted a government lawyer as he made his radical argument before the Supreme Court. "In other words," posed a voice from the bench, "can Congress act to make the dime a dollar?" Although the government, even then, was more adept at turning a dollar into a dime, the lawyer replied in the affirmative.

That exchange took place in 1935, in the midst of the famous cases concerning the government's power to repudiate contracts known as "gold clauses." Sebastian Edwards's "American Default: The Untold Story of FDR, the Supreme Court, and the Battle Over Gold" is the history of that mighty legal, moral, political and monetary controversy, the effects of which are with us still.

At the turn of the 20th century, middle-aged creditors could still recall Lincoln's Civil War greenbacks—paper dollars that the government printed without reference to gold.

Everyone remembered William Jennings Bryan's plea to substitute cheap and plentiful silver dollars for relatively scarce and dear gold ones. ("You shall not crucify mankind upon a cross of gold," the Commoner roared.)

Rejecting Bryan in the 1896 presidential election (William McKinley was the winner), the voters likewise rejected silver and inflation. By 1900, the gold standard was written into the statute books. By 1907, the gorgeous new Saint-Gaudens \$20 gold piece was passing from hand to hand.

Still, the capitalists wanted contractual assurances that the gold standard was fixed and settled for all time. Gold clauses—which stipulated the borrower's obligation to make payment in gold coin of "present weight and fineness" or its equivalent dollar value—answered the need.

The Great Depression reinserted the gold dollar into American politics. Running for president in 1932, Franklin D. Roosevelt vowed never to devalue it. Installed in office in 1933, he proceeded to do just that. He abrogated the gold standard, nationalized (with compensation) the people's gold and, later, revalued the dollar to advance a purely domestic policy agenda. Like Bryan, Roosevelt demanded inflation.

Once a fixed measure—a certain weight of metal—the dollar would now become an adjustable one, the president said. The government could rejigger its purchasing power to advance the public interest. In 1933, Roosevelt judged that what the public most needed was rising prices. The desperate American farmer cried out for them. The quack economist George F. Warren, who had the president's ear, contended that a higher gold price would unfailingly deliver higher commodity prices.

Or not quite unfailingly: The existence of billions of dollars of gold bonds—bonds payable in dollars of the old gold value—threatened the Warren system. If you cheapened the dollar with respect to gold, you forced the people on the wrong end of the gold-clause contracts to pay many more dollars to settle their debts. As the dollar depreciated to \$35 an ounce (i.e., the

## Could the government, whose policies had thrown debtors into crisis, save them by tearing up private contracts? FDR thought so.

gold price rose to \$35 an ounce), debtors did the scary arithmetic. Any who had borrowed \$10,000 at the customary gold value (\$20.67 an ounce) owed close to \$17,000 at the new one (\$35). In those days, not many had an extra \$7,000.

Then as now, the federal government possessed the power to "coin money" and "regulate the value thereof," but nothing in Article I, Section 8, of the Constitution blessed the retroactive governmental rewrite of private contracts. Nor was the Roosevelt administration exactly a disinterested party in this affair, as the government itself owed \$20 billion in gold-clause debt.

Not for the last time, America chose up sides over a mercurial, technically ill-informed president with a flair for improvisational decision making. On the right, bondholders invoked the sanctity of contract. On the left, debtors raised the specter of mass bankruptcy: If the gold-clause contracts were allowed to stand, who could afford to pay? So aggrieved parties challenged the government's decision to raise one class, the debtors, over another, the creditors. Plaintiffs and defendants repaired to Washington, D.C., to have their day before the Supreme Court.

The nine old men upheld the U.S. government—with a catch. The government itself, they ruled, though it could abrogate gold clauses in private contracts, had no right to repudiate its own promise to pay in gold. Justice James Clark McReynolds, in his dissenting view of the private-contract portion of the decision, issued a jeremiad: "Shame and humiliation are upon us now. Moral and financial chaos may be confidently expected."

Financial chaos did not immediately descend. Bond prices would have fallen if creditors had feared for the integrity of the dollar. They rose instead.

"American Default" has its strengths—the author knowledgeably compares the 20th-century American default to Argentina's 2002 abrogation of its dollar-denominated debt—but proofreading isn't one of them. In these pocked pages, a treatise is a "treaty," a fallacy is "spacious," the sum \$250,000 is redundantly rendered "\$250,000 dollars," the words "what this circumstances exactly were" somehow pass muster, and there is this: "Milton Friedman and Anna Schwartz and Allan Meltzer, among other." Maybe it was the bots' day off at the publishing house.

Herbert Hoover comes across here, as he usually does, as a kind of monetary primitive, but his rueful words may yet prove prophetic. "So long as 'managed currency' lasts," he said after the gold-clause cases were decided, "the purchasing power of the dollar lies at the whim of political government. Politics are bound to be in every government-managed currency. You can never make the American dollar ring true on the counters of the world nor on the counters of our savings banks so long as there is the alloy of politics in it."

Gold is objective value. Paper is politically mutable. Hoover, the old mining engineer, knew something.

Mr. Grant, the editor of *Grant's Interest Rate Observer*, is the author of a biography of Walter Bagehot, to be published next year.

## My Advice to Grads: Start Mopping

By Tyler Bonin

Every commencement season, thousands of graduates are treated to something I call "standard keynote language." Everyone can recognize these tiny, easily digestible nuggets of wisdom: "Don't be afraid to take risks," or "Be courageous." And the classic: "Follow your passion." This is sound, albeit clichéd, advice. What would I recommend? "Mop your way to success."

From Mr. Trump's point of view, this back-and-forth has

hated mopping, which required going into the haven of filth that was the public bathroom. I had plenty of practice in this area as a former Marine Corps private, so I always volunteered for the job.

## Doing work that feels beneath you always pays off in the end.

My managers noticed. They named me employee of the month and promoted me to management for the holiday rush—a small success that a sense of entitlement is a burden. People who believe themselves above something, or entitled to something more because of past achievements, will find that new opportunities slip away.

I volunteered for the necessary task, signaling my work ethic and dedication to the organization. I simply wanted to do my job as best as possible. Perhaps I didn't realize it at the time, but I was emulating senior Marines who would roll up their sleeves and get dirty when the job required it.

I have met countless others who tell similar stories. A successful consultant told me that after graduating from a top-tier university, he spent a year piecing together tedious part-time jobs while volunteering at startups—only to prove himself. As competitive as the U.S. economy is, efforts like this are only becoming more common.

This may seem unfair considering the hurdles young graduates face today. Older generations didn't have to deal with the dehumanization of

the hiring process through automated résumé-parsing software. And the levels of experience required for entry-level jobs seem only to increase. The generations that pushed for college education for all never struggled with these obstacles. It's an unfair but natural product of the evolving economy.

Certainly there is a time to be bold, but there is also a time for humility. A task once considered beneath you could actually be the key to your success. Do the job nobody wants, because, believe it or not, somebody appreciates it. Volunteer to learn and to provide value to others. Find a dream job by first doing the rote tasks in that field, without complaint. Pick up a mop.

Mr. Bonin teaches high-school economics and history in Raleigh, N.C.

## OPINION

## REVIEW &amp; OUTLOOK

## Moon Over Singapore

The Donald Trump-Kim Jong Un summit appears to be back on, and that's due in large part to the persistence of South Korean President Moon Jae-in. After President Trump called off the meeting last Thursday, Mr. Moon rushed to meet Kim at the demilitarized zone and secure what he said was another commitment from Kim to "complete denuclearization of the Korean Peninsula." Preparations for the June 12 summit have resumed, and now Seoul says the South Korean leader might join the meeting in Singapore.

Yet Mr. Moon gave the same assurances about the North's denuclearization promises a couple of months ago only to have the North tell a different story as the summit approached. The North didn't answer U.S. phone calls and its emissaries didn't even show up for a pre-summit meeting in Singapore. Is Mr. Moon selling the same bill of goods now?

A telling moment came Sunday when reporters asked the South Korean leader whether Kim would agree to complete, verifiable and irreversible denuclearization, which are Mr. Trump's oft-stated terms. According to the Chosun Ilbo newspaper, Mr. Moon dodged the question, saying that the success of the summit would depend on the negotiating details.

Mr. Moon claims to be the mediator between the White House and Pyongyang, but it isn't clear he's representing the U.S. position. Instead he is pressing the U.S. to give benefits to North Korea in return for mere steps toward denuclearization. He has adopted the North's position that the negotiations should agree to "phased and synchronous measures," meaning the North gets benefits in exchange for incremental steps such as allowing inspectors to visit nuclear sites.

If Mr. Trump falls into this trap, the North will never give up its nuclear arms. Such talks would lead inevitably to lifting sanctions in return for promises and half-measures. The U.S.

tried this approach in the 1990s and again in the 2000s. Each time the Kim family regime violated the deal and continued to build its nuclear and missile programs.

Mr. Moon believes he can tame Kim with aid and that the North will never use nuclear weapons against its fellow Koreans. China is on board since such a deal would

preserve the North as a buffer state and ease U.S. sanctions on Chinese companies that do business with the North.

For the U.S. and Japan, however, Kim's nuclear-tipped missiles are an existential threat. He is on the verge of mastering the technology to mount warheads on the intercontinental missile he has successfully tested in the past year. The campaign of United Nations and U.S. sanctions was designed to inflict enough economic pain that North Korea would agree to give up its nuclear weapons completely. Mr. Trump weakened that leverage by agreeing to a summit at Mr. Moon's behest before the sanctions have had a chance to work.

Mr. Trump spent the weekend saying preparations for the summit are going well, and on Monday the Administration decided not to impose new sanctions. We understand the desire for pre-summit mood music, but the policy question is whether Mr. Trump has adopted Mr. Moon's appeasement policy as the best that can be achieved. A deal that limits but doesn't remove Kim's nuclear threat would have profound consequences for national security as well as the wider cause of nonproliferation. The U.S. would need to bolster its missile defenses extensively—and fast.

Mr. Moon has seen how Mr. Trump can be cajoled with flattery—he floated the Nobel Peace Prize—and the U.S. President clearly wants the showcase of a summit. But summity is a process to get to a result in the U.S. national interest. That process and result can't be subcontracted to a Korean President with priorities other than American security.

## A Miserly 15,000 More Visas

**M**emorial Day kicked off the summer vacation season with its high demand for seasonal workers amid a nationwide labor shortage. But you wouldn't know it from last week's miserly decision by the Department of Homeland Security to hand out a mere 15,000 extra H-2B visas this summer.

The popular H-2B program allows businesses to hire foreign guest-workers for busy seasons, and the law caps the number at 66,000 divided between summer and winter. But amid the tight labor market, and a 3.9% jobless rate, Congress gave the Administration authority to issue as many as 69,000 more visas this summer to meet employer needs.

"The limitations on H-2B visas were originally meant to protect American workers, but when we enter a situation where the program unintentionally harms American businesses it needs to be reformed," Secretary of Homeland Security Kirstjen Nielsen said in a statement last week.

Yes, but then why so stingy with more visas? The 15,000 won't come close to meeting the de-

mands across the country from resorts, fisheries, landscapers and restaurants, among many other industries.

Ms. Nielsen has been a target—unfair in our view—of President Trump's wrath on border security, so perhaps she doesn't want to get hit again by vocal immigration critics for issuing more visas.

Restrictionists on the political right claim they merely oppose illegal immigration, but in the current economy they are betraying their hostility to any immigration. They claim more foreign crab pickers or busboys will displace Americans when employers can't come close to finding enough Americans for the work. Perhaps Ms. Nielsen should consult President Trump's sons, since the Trump Organization is a regular user of H-2B visas.

The recent Institute for Supply Management semiannual survey found that 64.4% of nonmanufacturing employers and 77.9% of manufacturers report difficulty hiring workers for open jobs. Mr. Trump says he wants the economy to grow by 4% or more, but it won't happen if employers can't find enough workers.

## Italy's New Threat to the Euro

**I**talian President Sergio Mattarella rejected the populist right-left coalition's attempt to form a government on Sunday, explaining that it threatened Italy's participation in the euro. Brussels may be relieved for now, but this rejection of the recent election result may stoke even more populist ire in the euro-zone's third-largest economy.

It's hard to imagine a more highhanded elite dismissal of public opinion than Mr. Mattarella's diktat. Italy's President is the head of state who must be at least 50 years old and is typically an elder statesman. He is chosen by an electoral college composed of the Parliament and some 58 special electors from around the country. Mr. Mattarella is a former judge who was elected in 2015 on the fourth ballot with 665 votes. A populist he isn't.

Yet he chose to reject a government formed by the two top vote-getters in the recent parliamentary election, the right-of-center League and the left-wing 5 Star Movement. His justification is that the unwieldy coalition chose the 81-year-old euroskeptic economist Paolo Savona as economy minister. Mr. Mattarella fears that Mr. Savona is plotting to exit the currency zone after taking office, which would pose a systemic threat to the European financial system and global economy.

But Mr. Savona can't simply dictate that Italy leave the euro. The League and 5 Star have long been euroskeptic parties but they moderated their views during the recent campaign and it's doubtful they would have done as well if they had advocated leaving the euro. Any effort to leave the common currency would require a national referendum to gain popular support, and the costs of exit would be front and center. Polls show a majority of Italians still support the euro, perhaps because many recall life under a frequently depreciating lira that reduced their living standards.

Italy has €2 trillion (\$2.3 trillion) in public debt, at 132% of GDP the highest in the developed

**The rejection of a populist coalition may stoke more populism.**

world after Japan and Greece. A euro exit would provoke a stampede of capital out of Italy, and the country's already weak banks would probably fail.

Italy isn't tiny Greece, and the economic shock waves of an Italexit would send Europe into recession and perhaps the U.S. too. The rising political risks sent the euro down again Monday to a six-month low, and Italy's 10-year bond yield spiked to 2.63%, the highest since 2013.

But the left-right coalition government was always going to be precarious, not least because the parties' competing economic agendas are incompatible. The League wants a pro-growth flat tax, and 5 Star wants an anti-growth social-spending blowout. Mr. Mattarella would have been wiser to let the government fall of its internal contradictions.

The President has now handed the populists more evidence that the elites don't trust the Italian people. Mr. Mattarella has asked former International Monetary Fund official Carlo Cottarelli to form a government, but he's unlikely to win a parliamentary vote of confidence. The likeliest way forward is another election, probably in the autumn, and the populists will now make elitist contempt for democracy the center of their argument.

Five Star leader Luigi Di Maio called Sunday for Mr. Mattarella's impeachment, while the League's Matteo Salvini is whipping up nationalist sentiment against Brussels and Germany's euro-dominance. "It won't be an election," said the 45-year-old Mr. Salvini. "It will be a referendum between Italy and those on the outside who want us to be a servile, enslaved nation on our knees." The League has won several regional elections since the March parliamentary vote, and polls show rising popular support for both parties.

The left-right coalition was a risk but one the Italian people chose to take. The political result after this latest display of elitist disdain may be worse for Italy and the euro.

## South Korea's President doesn't share U.S. goals on North Korea.

## OPINION

## LETTERS TO THE EDITOR

## On the FBI's Informant Who Wasn't a Spy

Regarding your editorial "The Informant Who Wasn't Spying" (May 21): A foreign national spending money to influence a federal election can be a crime, and if a U.S. citizen coordinates, conspires or assists in that spending, that could be a crime, too. If the FBI had reason to believe any such activity was going on, its job was to find out.

That is not engaging in partisan politics.

JOHN STERLING  
Asheville, N.C.

rotten at its administrative-state core.

RON ALLEN  
Columbia, Md.

Can you imagine the military detecting incoming Russian missiles only to let them hit their targets in order to have "legal proof" of Russian aggression? Of course not. Yet we are supposed to believe the FBI had evidence that the Russians were in the process of installing a Manchurian candidate, Donald Trump, to the presidency and did nothing to stop it? A responsible FBI (and Obama administration) would have done whatever was necessary to stop the Russians before the election, rather than collecting evidence to use after it. The fact they didn't leads one to believe they really didn't have any evidence against Donald Trump; they just needed a hook to use in order to surveil his campaign, hoping they would find some dirt they could leak before the election to ensure he lost.

GREG WOODS  
Rio Rancho, N.M.

After Watergate, many folks went to jail.

ROGER A. KEATS  
Dripping Springs, Texas

Your editorial asks if intel from an FBI source made its way to the Obama White House. Am I the only one who wants to know if it was passed on to the Clinton campaign?

WILLIAM D. EISENHOWER  
Beaumont, Calif.

## Congress Must Help Labor Down on the Farm

You are correct in your editorial "Exporting Jobs Instead of Food" (May 18) that "immigration restrictionists are detached from the reality of the American farm economy." But the Goodlatte bill is not "Potemkin H-2A reform." The guest-worker provisions enjoy broad support from a broad cross-section of agriculture. The proposal would reduce bureaucratic delays for farmers, reduce costs for recruitment and other items, and open the program to dairy farmers and others. It would also provide a longer visa term and take the program out of the Labor Department and place it under the Agriculture Department. Those are all positive changes.

The Farm Bureau does not support a cap on the number of visas. We also want to see existing workers treated more generously. But the Goodlatte visa cap of 410,000 is larger than the Senate "Gang of

Eight" immigration bill from five years ago that had a far more onerous cap of 123,000. Furthermore, the visa cap would not include existing, undocumented workers who come forward to participate in the new H-2C program.

The House is one step in the legislative process. While there are key issues not adequately addressed in the Goodlatte bill, those imperfections can be addressed in the Senate, and the Farm Bureau intends to do that. But we need that opportunity. If nothing advances, we are left with the status quo. That is simply unacceptable.

Farmers need a solution today. They need the House to act, then the Senate. They need a solution that lands on the president's desk.

ZIPPY DUVALL  
President  
American Farm Bureau Federation  
Washington

## Workers Aren't as Mobile as They Used to Be

Regarding Tunku Varadarajan's "The Weekend Interview with Glenn Hubbard: A Conservative Economics of Dignity" (May 19): Mobility isn't what it used to be because the more people are downwardly mobile economically, the more they depend on their social safety net of family, friends, church and community. It not only provides help when needed, it is often the primary way of finding a new job. That invaluable safety net is lost moving to another city, and it takes years, at best, to replace it. And what if the new city suffers the same decline as the one left behind? Selling a house means that major asset is gone, perhaps unlikely to be replaced. Uprooting everything based on word-of-mouth isn't an attractive proposition.

Also, middle- and working-class Americans can't afford to park dependent loved ones in expensive facilities—they have to provide them

shelter as well. As a home-visiting nurse, I have personally seen how having a loving family close by provides for people in so many ways, practical and emotional, that no government program can ever hope to do. Moving often means leaving those loved ones behind and unprovided for.

People are not just economic cogs in a machine. I suspect that most Americans were never as "mobile" as remembered. Only economists who live in well-heeled bubbles seem not to understand these issues.

ELIZABETH MULGREW  
Upper Darby, Pa.

The decline in worker mobility may be, at least in part, another unintended consequence of government policies that artificially inflate homeownership.

When a local economy (such as Youngstown, Ohio) declines due to major employers struggling or closing, residential real-estate values fall. Workers find themselves trapped in housing (which is usually the family's only significant asset) that cannot be monetized. They feel they can't relocate, even if there are jobs available elsewhere.

PAUL WESSEL  
Bethlehem, Pa.

## Pepper ... And Salt

THE WALL STREET JOURNAL



"I need you to convert my ramblings into compelling words and numbers."

Letters intended for publication should be addressed to: The Editor, 1211 Avenue of the Americas, New York, NY 10036, or emailed to [wsj.ltrs@wsj.com](mailto:wsj.ltrs@wsj.com). Please include your city and state. All letters are subject to editing, and unpublished letters can be neither acknowledged nor returned.

JIM SORENSEN  
Allentown, Pa.

## OPINION

# The EU's Gift to Cybercriminals

By Brian E. Finch  
And Steven P. Farmer

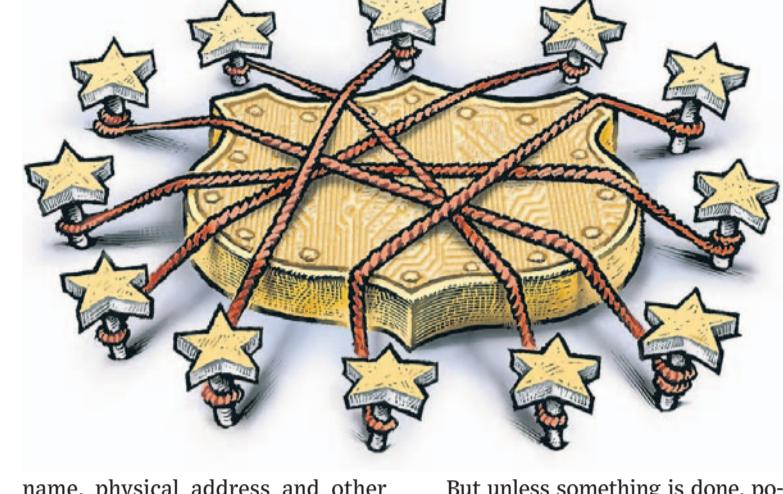
**T**he torrent of news stories about cyberattacks and data breaches never seems to slow, but law-enforcement agencies have tallied some significant victories against online criminals. Websites spewing Islamic State propaganda have been sidelined, thanks to joint efforts by American and European authorities. So have sites on the "dark web" selling illegal drugs, hacking for hire, and other unsavory items and services.

Unfortunately, this good work will now be significantly hindered as the European Union begins to enforce its General Data Protection Regulation. As written, the GDPR will restrict the types of data that companies can share—even, perhaps inadvertently, with law enforcement.

**Europe's new privacy rule, called the GDPR, already is thwarting security researchers and police.**

The GDPR is intended to safeguard EU residents' privacy online. To that end, it effectively puts a wide range of "personal data" under cryptographic lock and key. The fundamental problem is that the regulation explicitly covers the kinds of information critical to law enforcement, such as data that could help investigators track down hackers and the devices they use to cause mayhem online.

Take something as basic as the



PHIL FOSTER

name, physical address and other contact information of the owner for a given website or domain name. Right now those details generally are publicly available in what is called the Whois database, which is maintained by the Internet Corporation for Assigned Names and Numbers, or Icann. Police rely on these kinds of innocuous facts as they work to shut down dangerous websites and find people who host or launch malware.

But the GDPR is being interpreted such that Whois data may not be shared without the owner's consent. As you'd imagine, hackers will decline the opportunity to release data that links them to their crimes. As WSJ Pro Cybersecurity reported May 10: "The problem only surfaced relatively recently as domain name registrars took legal advice about ... whether sharing the WHOIS data constituted a breach of GDPR. While an exemption would rectify the situation, experts are not confident of a last minute fix."

But unless something is done, police will be robbed of ready access to vital data, drastically impeding their efforts to identify and shut down illicit activity. Icann has proposed allowing law-enforcement officials to regain access to the information after they go through a lengthy accreditation program. But even that unwieldy plan is facing objections, including criticism from EU regulators that it would inadequately protect data guarded by the GDPR. As a result, the Whois database is likely to go dark for some time.

Though the GDPR is a product of the European Union, it was deliberately written to cover companies all around the globe. In short, the regulation applies to any business that has a physical presence in the EU or that maintains small morsels of information about EU residents by aiming a website at them or monitoring them. Failure to follow the GDPR's strict data-privacy tenets can invoke eye-watering fines: up to

4% of the company's global revenue or €20 million, whichever is higher.

No government has ever before sought to impose such a sweeping privacy control, perhaps because of the obviously deleterious effects on law enforcement. Already, the GDPR is bearing dangerous fruit. One of the world's leading cybersecurity journalists, Brian Krebs, wrote last month that European-based security companies have become "reluctant to share" internet-address information that could help identify cyber-criminals. Previously, security researchers had readily collaborated, but Mr. Krebs worried about a "chilling effect" from the GDPR.

American officials and cybersecurity experts have been raising alarms, with little result. Commerce Secretary Wilbur Ross wrote to EU officials in early April, saying that under the GDPR America's ability to combat cybercrime "could be seriously harmed." He asked for "temporary forbearance from GDPR enforcement on the processing of WHOIS information."

Everyone values privacy. But the regulatory rubric the EU has created will make it harder than ever to catch computer hackers and other online criminals. Governments worldwide should be urgently pressing the EU to change this disastrous aspect of the regulation. Absent serious pressure, real reform will probably still come—but only after America and other nations are hit by a tidal wave of GDPR-enabled cybercrime.

*Messrs. Finch and Farmer are cybersecurity and privacy attorneys in the Washington and London offices, respectively, of Pillsbury Winthrop Shaw Pittman LLP.*

## A Chance To Overcome ObamaCare

By Michael Cannon

**A**lex Azar will soon make his most consequential decision as health and human services secretary. President Trump has asked HHS to expand health-insurance protections in a way that could make coverage more affordable and improve the outlook for ObamaCare's risk pools. Whether Mr. Azar will oblige is uncertain. Some officials don't understand that Mr. Trump's request would expand consumer protections, or mistakenly believe HHS lacks the authority to grant it.

The need for action is clear, as ObamaCare premiums keep skyrocketing. Rate hikes as high as 91% will hit many consumers just before Election Day. Maryland insurance commissioner Al Redmer warns ObamaCare is in "a death spiral."

### HHS may soon restore consumer protections for short-term plans.

So-called short-term health plans, exempt from ObamaCare's extensive regulations, are providing relief. Such plans often cost 70% less, offer a broader choice of providers, and free consumers to enroll anytime and purchase only the coverage they need.

But there's a downside. When enrollees fall ill, either their premiums spike or they lose coverage, leaving an expensive ObamaCare plan as the only alternative. Markets solved that problem decades ago via "renewal guarantees," which allow enrollees who get sick to keep paying the same premiums as healthy enrollees.

In 2016, in an effort to force people into ObamaCare plans, the Obama HHS shortened the maximum duration for short-term plans from a year to three months and banned renewal guarantees. The National Association of Insurance Commissioners complained this reduced consumer protections and exposed the sick to greater risk, including the risk of having no coverage. Enrollment in short-term plans fell below 100,000 in 2017, from nearly 150,000 in 2015.

Last October Mr. Trump asked HHS to reverse the Obama rule. HHS proposed in February to allow 12-month terms and renewal guarantees. Earlier this month, it announced that a final rule could be put forth as early as June 1.

The benefits are clear. HHS's non-partisan chief actuary estimates 12-month terms would provide year-round coverage for an average \$342 a month, vs. \$619 for ObamaCare plans, and thereby reduce the number of uninsured Americans by 200,000. Even greater benefits, which the actuary ignored, would come from allowing renewal guarantees.

Prohibiting renewal guarantees hurts ObamaCare's risk pools by forcing enrollees who develop expensive illnesses to switch to ObamaCare plans. Allowing renewal guarantees would improve ObamaCare's risk pools by giving expensive patients an affordable, secure alternative—just as renewal guarantees kept expensive patients out of state-run high-risk pools before ObamaCare. The cost of a renewal guarantee would average roughly \$86 a month, bringing the total premium for the average short-term plan to \$428—still 30% less than the average ObamaCare plan.

It gets better. If Mr. Azar does as Mr. Trump suggests, consumers could purchase health-insurance protection for 90% less than the cost of the average ObamaCare plan. In 2009 regulators in 25 states approved the sale of renewal guarantees as a stand-alone product. For one-fifth the cost of a health plan, consumers buy the right to enroll in that plan whenever they want, at a healthy-person premium rate. Allowing renewal guarantees could therefore reduce the average cost of insurance protection to a mere \$86 a month—keeping even more expensive patients, including those who leave employer-sponsored plans, out of ObamaCare's risk pools.

Allowing these consumer protections is within HHS's authority. For two decades presidents and Congresses of both parties accepted 12-month contract terms as a reasonable interpretation of federal law. The law authorizes HHS to do no more than set a maximum contract duration. It does not authorize HHS to restrict renewal guarantees, nor to prohibit consumers from purchasing the consecutive short-term plans a renewal guarantee would govern.

Mr. Azar's greatest test will not be whether he saves the government a few billion dollars on prescription drugs. It will be whether he seizes this opportunity to foster something better than government-run health care.

Mr. Cannon is director of health policy studies at the Cato Institute.

## I'm in Prison for Practicing Politics

By Rod Blagojevich

**T**he rule of law is under assault in America. It is being perverted and abused by the people sworn to enforce and uphold it. Some in the Justice Department and Federal Bureau of Investigation are abusing their power to criminalize the routine practices of politics and government.

I learned the hard way what happens when an investigation comes up empty after the government has invested time, resources and manpower. When they can't prove a crime, they create one. Did you know that an elected official asking for a campaign contribution is the same as a dirty cop asking a motorist for a cash bribe to tear up a speeding ticket? I never did. Yet that's what a federal prosecutor told the jury during my second trial on bribery and extortion charges in 2011.

Fundraising is a routine and necessary part of America's political system. You can't compete in politics, and you can't govern from a

position of strength, if you are perceived as weak. Building and maintaining a healthy war chest helps lead to success. For most people in the political arena, the fundraising part of the job is no fun. I liken it to exercise. It hurts but it makes you healthy and strong.

### Under the legal arguments the prosecutors used to convict me, all fundraising can be viewed as bribery.

The jury in my case was instructed to infer a quid pro quo even though no favors were offered or exchanged. The prosecutor told the jurors that if they felt I'd had a belief, expectation or hope that I might receive a campaign contribution because of actions I took as governor, they had to convict me. It didn't matter that no evidence existed that explicit promises had been made.

Let me be clear: I never accepted gifts, vacations, clothes, jewelry or flights on fancy jets in exchange for my political influence. Whenever I went to a Chicago Cubs game, I paid for my own tickets. Yet here I am in my sixth year of a 14-year prison sentence for the routine practice of attempting to raise campaign funds while governor.

So today from prison, I am warning all candidates and elected officials to watch out. This new, lesser standard used against me to infer a quid pro quo can now be used against you, too. And the U.S. Supreme Court's failure to take up this issue means the lesser standard has been accepted as law. The justices' denial last month of my appeal request is catastrophic for me, and it will in all likelihood prove calamitous to some of you. Politically motivated prosecutors can now interfere with and undo free and fair elections.

As the 2018 campaign heats up, my advice to those running for elective office is to cease and desist from any further fundraising. Stop

now before it is too late. Wait until the law is clarified and the line clearly drawn. Otherwise you are playing a dangerous game of chance. Overzealous and ambitious prosecutors know they can rise to higher office by coming after you.

Two years ago, former Virginia Gov. Bob McDonnell had his corruption conviction reversed by the Supreme Court in an 8-0 vote. During oral arguments, Justice Stephen Breyer warned about federal prosecutors bringing criminal charges against government officials for what he described as "routine practices" such as fundraising. "To give that kind of power to a criminal prosecutor, who is virtually uncontrollable, is dangerous to the separation of powers," Justice Breyer said.

It doesn't matter which side of the political spectrum you come from. Every officeholder who raises money is potentially at risk. Those who value freedom and love our country had better wake up.

*Mr. Blagojevich was governor of Illinois, 2003-09.*

## The Far Left and Right Run Riot on Greek Streets

By Yannis Palaiologos

**A**thens

Greece's long economic crisis may technically be over, as the country is on course to exit its third bailout in August. But the decade-long depression leaves in its wake a society seething with resentment and divided on the causes of the catastrophe. The Greek political system is ill-equipped to deal with this fallout—which includes various shades of political violence.

Earlier this month Mayor Yannis Boutaris of Thessaloniki, Greece's second-largest city, was attacked and beaten during a ceremony to commemorate the massacre of Pontic Greeks by Turkish forces during World War I. Mr. Boutaris, 75, has drawn the ire of far-right groups for years over his social liberalism and insistent push for better relations with Turkey and the former Yugoslav Republic of

Macedonia. Two days after the attack, anarchists stormed Greece's top administrative court, smashing window panes and tossing paint on the walls. The incidents are symptoms of a wider trend in the country: the inability of the state to defend the rule of law as various groups challenge its monopoly on force.

In the early years of the bailout era, Greece was beset by violent mass demonstrations. Several members of Parliament and other officials were waylaid in public for not standing up to the demands of the country's creditors. Syriza, at the time a small hard-left opposition party, often rationalized these incidents as the product of the legitimate indignation of the people. In some cases, the party's local cadres and student members led the way. Meantime, the far-right group Golden Dawn grew more influential and attempted to impose its dominance on the streets, attacking and

even killing immigrants and left-wing activists.

These violent episodes dropped off

after Syriza became the official opposition in June 2012, and Golden Dawn's leadership were indicted as members of a criminal organization in 2013. But in the past two years, ex-

### As radical groups become increasingly violent, the government seems unable to do much but shrug.

tremists on both ends of the political spectrum have been at it again.

An anarchist group called Rubicon has been showcasing its brand of "activism" against tax offices, courts and even Parliament. In Exarcheia, the downtown Athens hotbed of left-wing radicalism, residents complain that police will not respond to calls about burglaries or other crimes, fearful of a showdown with the anarchists. Various far-left groups have vandalized university buildings, city buses and ticket-stamping machines on the Athens metro—with almost no response from the government.

At the other end, the far right has become increasingly assertive as the Golden Dawn trial has stalled. Anger about the concessions the government is making to resolve a name dispute with the former Yugoslav Republic of Macedonia. Politicians who advocate a solution on the name issue, which will include the term "Macedonia" in the internationally recognized designation of Greece's neighbor, are lambasted as traitors. ("Macedonia" is also a northern Greek region, with a long, proud history.) Many Greeks took to social media to openly celebrate the attack on Mr. Boutaris.

These developments only make the country's political polarization worse. In the face of huge economic challenges and an ever more aggressive Turkey, the two main political parties are unable to reach an understanding on the most basic issues. The political atmosphere has been poisoned by the Novartis probe, a bribery case based on the testimony of three protected witnesses (and seemingly nothing else) implicating 10 former top officials, including two prime ministers, from the center-right New Democracy and the socialist Pasok parties. The opposition parties consider the case a blatant effort by the now-governing Syriza to eliminate its chief political opponents and win the next election.

Mainstream politicians are unable to present a united front against the growing challenge posed by the far left and the far right. Meanwhile, the Macedonian issue and the political machinations surrounding Greek soccer—fans of Thessaloniki-based PAOK feel they have been unfairly denied this year's championship title—have intensified the long-simmering tension between the country's north and south.

Greece has suffered greatly in the past century because of its inability to come together at critical moments—from the National Schism during World War I, through the civil war that followed the end of Nazi occupation, to the consistent failure of the top political parties to reach minimal consensus on how to deal with the recent economic crisis. The virus of division seems extremely resilient—and its host increasingly weakened in its ability to put its agents in their place.

*Mr. Palaiologos is a journalist at the Kathimerini newspaper and author of "The Thirteenth Labour of Hercules" (Portobello Books, 2014).*

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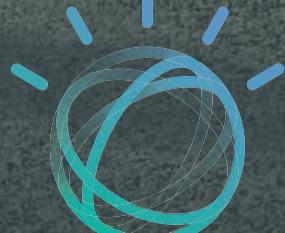
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# BUSINESS & FINANCE

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THE WALL STREET JOURNAL.

Tuesday, May 29, 2018 | B1

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## Rate Rises Spur a Shift in Bonds

By BEN EISEN AND MATT WIRZ

Companies are making a mad dash to save money in the debt markets now that rising short-term interest rates are increasing their borrowing costs.

One place that is increasingly apparent is the market for corporate loans, where companies that can are tying their floating-rate debt payments to benchmarks that are rising at a slower pace.

The rejiggering among companies comes as rates have climbed this year, spurred by increases from the Federal Reserve, expectations for a

pickup in inflation and an increase in government debt sales to fund last year's tax-cut package.

The rate at which banks lend to each other for three months has been rising much more quickly than the rate at which they lend for one month, pushing the gap in April between the two to its widest since 2009. The three-month U.S. dollar London interbank offered rate has climbed 0.62 percentage point this year to 2.32%, while the one-month counterpart has climbed a comparably meager 0.41 point to 1.98%.

Accordingly, more than half of junk-rated corporate loans recently had interest payments tied to one-month Libor, up

loans. The share of loans tied to three-month Libor has been dwindling.

Among those to tie their debt to one-month Libor is U.S. Silica Holdings Inc., a specialized minerals firm. The company recently completed a \$1.3 billion loan to finance an acquisition and expects to link it to one-month Libor when it picks the benchmark at the end of the month. Doing that rather than linking to three-month Libor would save the company \$4.7 million in interest expenses over the 12-month period that begins in June, assuming rates don't

change over that stretch.

"The finance group is always looking to save money wherever we can and this is a great opportunity to do that," said Don Merrill, chief financial officer at U.S. Silica.

Rising rates are creating a new dynamic for companies. Libor is linked to trillions of dollars in loans and other types of floating-rate debt, making the rise in short-term rates just as important a challenge for companies as this year's widely watched climb in the 10-year Treasury note yield, which is now hovering

Please see SHORT page B2

### 0.62

Percentage-point increase in the three-month Libor rate this year

from less than one-quarter at the beginning of 2016, according to data tracked by Wells Fargo on about \$500 billion of

### Oil Giants

U.S. oil production has surged, but Saudi Arabia still holds greater sway in moving global prices.

#### Crude-oil production



Sources: IEA (Saudi); EIA (U.S.)

THE WALL STREET JOURNAL.

## Saudis Reclaim Clout in Oil Market

By ALISON SIDER  
AND GEORGI KANTCHEV

The U.S. is producing more oil than ever, but when it comes to pulling the strings of the market, Saudi Arabia is still king.

Oil is flowing from shale fields at a record pace, propelling U.S. output to roughly double in a decade. That remarkable growth had led some observers to pronounce the U.S. the new swing producer in the market—a mantle long held by Saudi Arabia.

Yet with prices rising to their highest levels since 2014, the kingdom still holds the power to single-handedly respond much more quickly than hundreds of private companies spread from Texas to North Dakota.

In the latest sign of Saudi Arabia's sway, Energy Minister Khalid al-Falih said Friday that the Organization of the Petroleum Exporting Countries and its allies are likely to open the taps to address rising prices after their production-cutting pact and threats to supplies from Venezuela and Iran helped push global oil prices to \$80 a barrel this month.

That news sent Brent prices falling nearly 3%, while U.S. crude prices promptly shed 4%—the biggest one-day percentage drop since July. On Monday, Brent continued falling, losing 1.5% to \$75.30 a barrel.

Saudi Arabia's clout stems from an abundance of spare capacity. The kingdom is capable of producing as much as 12 million barrels a day, though it has kept its output much lower due to the OPEC deal. Its ability to open or close those taps almost overnight enables Riyadh to influence price movements more than any other producer.

U.S. shale companies are Please see OIL page B2



Stores called kiranas are ubiquitous in the country. Often family-run, they are packed with merchandise and enjoy profit margins much higher than modern chains.

## Retail Goliaths Meet Their Match in India

Tiny mom-and-pop stores slay big chains with low costs, speedy delivery, personal relationships

By ERIC BELLMAN  
AND VIBHUTI AGARWAL

NOIDA, India—Amazon.com Inc. and Walmart Inc. are betting billions on India, but their mightiest rival might be a ubiquitous local champ: the mom-and-pop store.

Tiny stores known as *kiranas* dot every Indian street and village. Usually family-run, these microbusinesses range from street vendors selling vegetables to shops the size of a one-car garage. They pay low wages and have little or no rent, which helps keep costs down. And since they cater largely to

neighborhood populations, many offer instant delivery, interest-free credit and other personalized services that the global giants are unable or unwilling to provide.

"The kirana store has better economics than a supermarket," said Rajiv Lal, a professor of retailing at Harvard University. "There is no way to beat them."

Big retail chains, both homegrown and international, have tried for years—and often failed—to find a profitable niche in India, a massive market with 1.3 billion people and rising incomes. France's Carrefour has come and gone. Germany's Metro has

only 25 stores. Walmart, until its recent \$16 billion deal to buy a controlling stake in India's largest e-commerce company, Flipkart Group, had its plans for the country on the back burner.

India's biggest conglomerates, among them the Tata, Birla and Reliance groups, have launched their own retail chains but haven't made much of a dent in dominance by the mom-and-pop stores. Small retailers control close to 90% of the country's more than \$700 billion retail market, according to Indian retail consultancy Technopak.

"The real challenge for e-commerce or for brick-and-

mortars or any retailer is how do you match those cost structures," said Raj Jain, former president of Walmart India.

Unlike in the U.S.—where big-box retailers have used their heft to get wholesale discounts, offer lower prices and squeeze out smaller players—little stores in India often have the cost edge. Despite paying higher wholesale prices for their goods, their cost structure is much lower than modern retail chains, giving them higher profit margins, according to a survey of stores in India by Boston Consulting Group.

A 2016 report estimated that small stores' costs of

rent, labor and other operating expenses totaled as low as 7% of sales. The same costs at modern supermarkets in India tended to be more than 15%.

Shops such as Amit Jindal's Maa Bhagwati Store, in the booming New Delhi suburb of Noida, demonstrate the challenge big retailers face. Mr. Jindal's store is only 240 square feet, but he packs it with more than 1,000 different products, stacked on shelves that reach the ceiling. There are bags of rice and wheat in the corner, a drinks cooler out front, a refrigerated glass display case filled with chocolate.

Please see INDIA page B6

## Latest 'Star Wars' Film Gets Soft Start

By BEN FRITZ

"Star Wars" has come down to earth.

"Solo: A Star Wars Story" opened to an estimated \$103 million in the U.S. and Canada over the long Memorial Day weekend, substantially less than any other movie in the franchise since Walt Disney Co. relaunched it in 2015.

Its soft start raises important questions about the health of one of Disney's most valuable brands, on which the entertainment giant is wagering much, including coming movies, a streaming television series and costly new theme-park areas under construction in Florida and California. Disney paid \$4 billion in 2012 for Lucasfilm Ltd., Please see MOVIES page B5

### INSIDE



FIAT TAKES OUT GROWTH PLAN ON TEST TRACK

THE WEEK AHEAD, B2

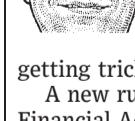


CHINA CLOSE TO APPROVING QUALCOMM DEAL

TRADE, B3

HEARD ON THE STREET | By Charley Grant

## Health-Care Stocks Not Easy to Diagnose



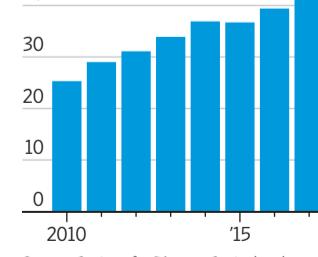
Assessing the financial health of some publicly traded health-care stocks is getting trickier.

A new rule enacted by the Financial Accounting Standards Board this year means that companies no longer need to include an estimate of uncollectible debt on their income statements as a deduction from gross revenue as well as a reduction to accounts receivable on the balance sheet.

The numbers can be substantial. For instance, physician-staffing firm Envision Healthcare reported net revenue of \$2.1 billion for the first quarter. A year ago, the group reported gross sales of about \$2.9 billion, less a provision of \$977 million for uncollectible debt, for net sales of about \$1.9 billion.

### Out of Pocket

Share of privately insured patients under 65 with a high-deductible health plan



Source: Centers for Disease Control and Prevention  
THE WALL STREET JOURNAL.

Other companies, such as hospital operator HCA Healthcare, now report their valuation allowance in financial-statement footnotes instead of on the actual statements.

The new accounting rule applies to all publicly traded

companies in the U.S., but it is of particular importance to hospitals and companies that contract with them.

That is because uncollectible debt is a fact of life for the industry. Uninsured or underinsured hospital or emergency-room patients can face large bills for their services.

That business reality isn't likely to change soon.

Nearly 44% of people under 65 with private insurance had a high-deductible health plan in 2017, according to data from the Centers for Disease Control and Prevention. At the start of the decade, that figure was closer to 25%.

And while the change to accounting rules doesn't affect what companies ultimately report as sales or cash flow, these valuation reserves have provided investors with useful information.

Generally accepted accounting principles give com-

panies wide discretion in estimating what share of bills they will be able to collect, since it is impossible to know when a customer will pay a bill until it happens. As such, a valuation allowance that grows more quickly than gross revenue might mean that a company's underlying sales are stronger than net revenue suggests.

It also could mean that a vendor is expecting a weaker economic environment in the future.

On the other hand, a valuation allowance that grows more slowly than gross sales might mean that a company is using more aggressive estimates to meet earnings projections. Its sales growth might not be sustainable.

Those are important questions for an investor when deciding whether to own a stock.

Now, investors will have a tougher time getting a straight answer.

## INDEX TO BUSINESSES

These indexes cite notable references to most parent companies and businesspeople in today's edition. Articles on regional page inserts aren't cited in these indexes.

**A - B**

Aira Tech	R4
Alphabet	R2
Amazon.com	A3,B1,B4
Apple	B4,R4
ArcelorMittal	B10
Asahi Group Holdings	B3
AT&T	A12
Baidu	B3
Banco BPM	B9
Bank of Montreal	B9
Bank of Nova Scotia	B9
Birla	B1
Blue Origin	B4
BPER Banca	B9

**C - D - E**

Canadian Imp. Bank	B9
Canadian Pacific Rail	B3
Care.coach	R6
Carrefour	B1
Catalia Health	R6
CBS	A1
Centerline Biomedical	R2
Centrexion Thera	R6
Cevian Capital	B10
Change Healthcare	R14
ChemImage	R2
China Energy Res	B8
CK Hutchison	B4
Coca-Cola	B3
Coinbase	B9
Comcast	A12,R2
Continental Res.	B2
Discovery Comm.	A12
Easy Day	B6
EchoPixel	R2
Elliott Management	B10
ENSO Group	B4

**H - I - J**

Fiat Chrysler	B2
FinecoBank Intesa	B9
Flexion Therapeutics	R6
Flipkart Group	B1
Francisco Partners	B4
Gamida Cell	R4
Google	R4

**K - L**

Kaiser Permanente	R9
Kirin Holdings	B3
Lucasfilm	B1
Maa Bhagwati Store	B1
Magenta Thera	R4
Medtronic	R2
Metro	B1
Microsoft	R2,R4
MultiPlan	R4
National Amuse	A12
Nektar Therapeutics	R6
Noble Group	B8
Nohla Therapeutics	R4
WeWork	A2
Xiaomi	B4

**M - N**

Tata Group	B1
Tata Steel	B10
Thyssenkrupp	B10
Time Warner	A12,B5
Toronto-Dominion	B9
TransEnterix	R2
UniCredit	B9
Unione di Banche	B9
UnitedHealth Group	R14
U.S. Silica Holdings	B1

**V - W - X**

Verb Surgical	R2
Verint Systems	B4
Verizon Comm	A12
Viacom	A1
Volkswagen	B10
Walmar	B1
Walt Disney	A12,B1,B5
WeWork	A2
Xiaomi	B4

## INDEX TO PEOPLE

**A - B**

Hobson, Melody	B6
Hochberg, Marc	R6
Houston, Drew	A2
Hueneckens, Scott	R2
Hulio, Shalev	B4

**I - J - K**

Ianniello, Joe	A12
Ifill, Sherrilyn	B6
Jain, Raj	B1
Jindal, Amit	B1
Kanuganti, Kanuganti	R4

**L - M - O**

Kaye, Jeffrey	R8
Ketter, Stefan	B2
Kim, Tami	B6
Kirschner, Lisa	B10
Kleger, Robert	A12
Kraft, Robert	A12

**P - Q - R**

Lal, Rajiv	B1
Lavie, Omri	B4
Lee, Stephanie	R4
Lewis, Ari	B9
Lewis, Ariane	R13
Lippman, Andrew	R14
Liu He	B3
Manley, Mike	B2
Marchionne, Sergio	B2
Mason Pope	R13
Mataric, Maja	R6
May, Mike	R4
McAdams, Lowell	A12
McGhee, Heather	B6
Meiland, Franka	R8
Merrill, Don	B1
Milstein, Arnold	R10
Williams, Rossann	B6
Williams, Stormee	R9
Orell, Martin	R8
Orlitzky, Heinrich	B10

**S - T - U**

Sauermann, Henry	R8
Scadden, David	R4
Scherwitzl, Raoul	R7
Schneider, Bryan	R14
Schultz, Howard	B6
Seavey, Kendra	R6
Shaw, Bronwen	R4
Shrem, Charlie	B9
Singer, Paul	B10
Singla, Neil	R6
Skuler, Dor	R6
Spiegel, Evan	A2
Staats, Peter	R6
Treado, Patrick	R2
Trotter, Tracy	R10
Utsunomiya, Akari	B3

**V - W - Y**

Verburg, Ken	R6
Wang, Victor	R6
Wang Xiaohui	B5
Weihenmayer, Erik	R4
Wester, Harald	B2
Williams, Rossann	B6
Williams, Stormee	R9
Yeung, Serena	R10

world-wide and cause transportation companies' costs to soar. Or it can offer relief by releasing more crude.

Saudi Arabia has adapted to the rise of shale by partnering with Russia.

The world's two biggest exporters have only rarely cooperated, often viewing each other as rivals. But after prices fell to less than \$30 a barrel in 2016, OPEC clinched a deal with Russia and other producers to cut around 2% of global output.

Even some U.S. oil executives who had belittled OPEC's role in stabilizing prices have come around. Harold Hamm, chief executive of **Continental Resources** Inc., said in 2016 "we and other producers have made OPEC policy less relevant to the world's energy

markets." But earlier this month, he credited OPEC's production cuts with helping work down the glut that had weighed on the market.

Since the price shocks of the 1970s, the U.S. has leaned on the Saudis, trying to coax them to use their influence to keep prices stable—with mixed results.

Former U.S. Energy Secretary Bill Richardson said he used to fly all over the world to meet with Saudi Arabia's then-Oil Minister Ali al-Naimi to try to sway him to adjust production up or down to balance the market. In 2000, Mr. Richardson lobbied oil ministers for a production increase after prices more than doubled in a year.

Back then, Mr. Naimi was the "benevolent dictator" of

the oil market. "The Saudis controlled OPEC and they controlled oil prices," he said in an interview.

Saudi Arabia has rejected the status of a swing producer, but it has often acted like one. Then, in 2014, OPEC surprised the market by declining to cut output and halt sliding prices. Some analysts interpreted the move as the Saudis trying to squeeze U.S. shale out of the market, before OPEC reversed course when it agreed in late 2016 to cut production.

Analysts said the move was a sign that OPEC had "blinked" after failing to fend off shale. Some estimated it was too late for the cartel to regain relevance after retreating from the market for so long and that resilient U.S. producers were ready to

pounce on any increase in prices and cut nascent rallies short.

But nearly a year and a half after it took effect, OPEC's production deal has helped fuel a more-than-30% rise in

**Saudi Arabia has rejected the status of a swing producer, but it often acts like one.**

prices, allowing the group, and particularly its de facto leader, to reassert itself.

While U.S. producers have ramped up quickly, growing pains in the shale patch have raised questions about

whether they can take the reins of the market.

"The U.S. secretary of energy can't just give the signal and regulate output the way Saudi leaders can," said Daniel Yergin, vice chairman of IHS Markit.

With higher crude prices now threatening to boost inflation and trip up a global economic upswing, pressure had been building on the kingdom to pull back.

Four Democratic senators called on President Donald Trump in a letter last week to "leverage your personal relationship with Saudi Crown Prince Mohammed bin Salman to urge Saudi Arabia to use their swing capacity to increase world oil supplies" ahead of summer driving season.

## SHORT

### Uneven Rise

## BUSINESS NEWS

# China Set To Clear Qualcomm NXP Deal

BY YOKO KUBOTA AND LINGLING WEI

Chinese authorities are set to approve **Qualcomm** Inc.'s planned \$44 billion acquisition of Netherlands-based **NXP Semiconductors** NV in the next few days, according to people familiar with the matter, in what would be another significant step toward easing frayed U.S.-China trade relations.

China's State Administration for Market Regulation has been conducting the antitrust review. The people said a contingent of Qualcomm's legal team arrived in Beijing to hammer out final details.

Approval would remove the last hurdle for a deal that has been stuck for months amid U.S.-China trade tensions, but one of the people said it could come with conditions. Chinese regulators have expressed concerns that the merged company would crowd out domestic businesses in areas such as mobile payments. NXP offers technology and services used for mobile payments.

The likely approval comes as the Trump administration is battling Congress to roll back penalties on Chinese telecommunications giant ZTE Corp., and as U.S. Commerce Secretary Wilbur Ross prepares to lead an interagency delegation to Beijing starting June 2, where he is set to meet China's chief economic envoy, Liu He.

The acquisition of NXP is considered critical for San Diego-based Qualcomm, which is dominant in smartphone chips but is looking for growth in other areas. Among NXP's products are chips for automobiles, a rapidly expanding sector as more technology is packed into cars.

Qualcomm had been waiting for Beijing's approval to proceed with the purchase of the Dutch company, having secured permission from the eight other major antitrust regulators around the world.

A spokesman for China's Commerce Ministry said last month that the agency had conducted a preliminary review of the Qualcomm deal's impact on competitors and the market and had found "issues that are hard to resolve, making it difficult to eliminate the negative impact."

The State Administration for Market Regulation couldn't be reached for comment.

On Saturday, Qualcomm President Cristiano Amon spoke at the Big Data Expo in Guiyang, China. While he didn't touch on the company's plan to acquire NXP, he emphasized Qualcomm's commitment to China. "China is very important for Qualcomm," he said. "We're rooted in China, we have developed a number of very strong partnerships. Nothing can separate us from China."

Earlier last week, Qualcomm announced artificial-intelligence-related tie-ups with several Chinese companies including **Baidu** Inc.

—Yang Jie contributed to this article.

# J&J Asbestos Suits Split Courts

Trial in South Carolina ends in a hung jury after company loses verdict in California

BY SARA RANDAZZO

In the battle between **Johnson & Johnson** and plaintiffs' lawyers over alleged dangers in its signature baby powder, juries cut two ways last week.

A trial in South Carolina over whether Johnson's Baby Powder caused a woman's mesothelioma ended in a hung jury Friday, days after a California jury awarded a woman \$25.75 million in a similar case.

Johnson & Johnson has lost two of four trials since November claiming inhalation of its talcum-based baby powder is to blame for plaintiffs' mesothelioma, the deadly cancer tied to asbestos exposure.

The mesothelioma cases are a growing share of the over 9,000 claims Johnson & Johnson faces over its talcum powder. Most allege the powder



Johnson &amp; Johnson asserts its baby powder is asbestos-free.

caused ovarian cancer in women who regularly used the product for feminine hygiene.

The new trials come months after Johnson & Johnson notched a few wins in ovarian-cancer cases, including persuading judges to toss a \$72 million verdict in Missouri and \$417 million verdict in California.

In the mesothelioma cases, plaintiffs claim the talcum used in Johnson & Johnson's powder is intermingled with asbestos, a known carcinogen, and that the company

Ms. Anderson's lawyers told the jury she used Johnson's powder an estimated 10,000 times, both on her children as babies and as an avid bowler, to dust her hands and shoes.

Johnson & Johnson said it would appeal and "continue to defend the safety of our product because it does not contain asbestos or cause mesothelioma." The company said that over the past 50 years, multiple scientific evaluations, including from the U.S. Food and Drug Administration, have been conducted and "none have found that the talc in Johnson's Baby Powder contains asbestos."

In April, a New Jersey jury awarded \$117 million to resident Stephen Lanzo in a mesothelioma case, split between Johnson & Johnson and one of its talc suppliers, **Imerys** SA.

A fourth jury in Los Angeles Superior Court in November found in favor of Johnson & Johnson.

Plaintiffs' lawyers point to internal Johnson & Johnson documents such as one from 1973 looking at strategies for

testing asbestos-type fibers at its talc mine and in baby powder, and another from 1974 suggesting ways to suppress the English-language publication of an Italian pamphlet discussing impurities in talc.

Some lawyers hired an expert to do their own analysis of Johnson's powder, and released findings showing eight of 11 tested bottles contained tremolite, a type of asbestos.

In South Carolina, the judge declared a mistrial late Friday after a jury failed to reach consensus in the case of Bertha Boyd-Bostic, a lawyer who died last fall at age 30 from mesothelioma. Her lawsuit claimed her disease stemmed from her lifetime use of Johnson & Johnson's baby powder.

Ms. Boyd-Bostic's lawyers said Friday they look forward to retrying the case. Johnson & Johnson said it is disappointed the jury didn't reach a unanimous verdict.

Johnson & Johnson faces an ovarian-cancer trial starting next month in Missouri, and other talcum-powder trials set for July and September.

# Coca-Cola Serves Its First Alcoholic Drink

BY SURYATAPA BHATTACHARYA

FUKUOKA, Japan—A fizzy lemon-flavored alcoholic drink that went on sale in Japan on Monday marked **Coca-Cola** Co.'s first fling at selling alcohol in its 132-year history.

At a sampling event in Fukuoka on Saturday, hundreds of people lined up for a taste, including some who didn't expect to find the U.S. company experimenting with Japanese-style booze.

Hiroshi Tsukano, 59 years old, a financial planner, thought one of Coca-Cola's competitors was relaunching an old favorite. "I'm a bit surprised that this is a Coca-Cola brand," he said. "It's nice, but I would add a splash of grapefruit or more lemon to it."

Canned drinks known as *chuhai* have long been popular in Japan. They are often made with a distilled grain-based alcohol called *shochu* and carbonated water flavored with fruit juice or other flavorings.

Coca-Cola, a big competitor in nonalcoholic drinks in Japan, is entering the fray with a lemon-flavored version of chuhai called Lemon-Do. It will be available with 3%, 5% and 7% alcohol, including a salty-lemon version and another that is flavored with honey and lemon. The drink doesn't include any Coke.

The company enters a highly segmented and competitive market, where others such as **Suntory Holdings** Ltd., **Kirin Holdings** Co. and **Asahi Group Holdings** Ltd. dominate supermarket and convenience-store shelves. Coca-Cola launched the foray on the southern island of Kyushu; its plans for the rest of Japan or other countries aren't set yet.

"We've started to experiment because, in the end, we are trying to follow the consumer. And, in the case of Japan, this is a relatively well-developed segment of low alcohol," Coca-Cola Chief Execu-



Lemon Do, Coca-Cola's first alcoholic drink, will be available with 3%, 5% and 7% alcohol. The drink doesn't include any Coke.

tive James Quincey said at a shareholder meeting on April 26. He observed that rival companies already make both alcoholic and nonalcoholic beverages.

Although it owned a winery from 1977 to 1983, Coca-Cola has never directly sold an alcoholic drink during a history that dates to 1886.

Akari Utsunomiya, an analyst with Euromonitor International, said Coca-Cola has previously used Japan to test drinks for wider rollout, and the start on Kyushu, with a population of 13 million, could give it insight to apply in other countries.

Despite falling demand overall for alcoholic drinks in Japan owing to the country's shrinking population, demand

for canned booze has been growing, in part because it is taxed less than beer and is cheaper. Most chuhai drinks are priced at roughly ¥200, or about \$1.80, a can. Coca-Cola's newest offerings will retail for ¥162, including tax.

Mr. Tsukano, the financial planner, said he buys beer and chuhai for himself and his wife once or twice a week, as many as three cans at a time. He said he likes to chase two cans of beer with a can of chuhai. "First I am going to ask my wife if she likes this, then we will buy it," he said.

The chuhai market is seen as a growth area because it appeals to both men and women.

Coca-Cola is casting a wide net in trying to attract female

drinkers, offering lower-alcohol options alongside the stiffer 7% variation.

The company is running television advertisements featuring the actor Hiroshi Abe, who poses as a bartender mixing a lemon-flavored drink for a female customer at his bar.

It was a poster of Mr. Abe that attracted Nae Osawa to the tent where the drink samples were distributed.

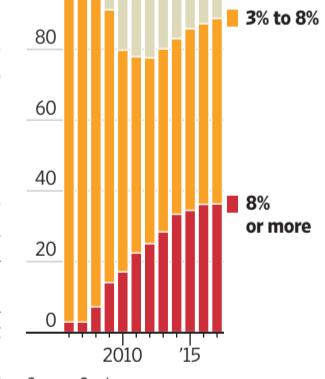
"If this was served at a bar, I would drink it," said Ms. Osawa, 25, who works for a cosmetics company in northern Japan and was in Fukuoka on a business trip.

She sipped the salty-lemon version with 7% alcohol. "It goes down easy," she said.

—Chieko Tsuneoka contributed to this article.

## Stiffer Drinks

Market share of Japan's 'chuhai' fizzy alcoholic beverages, by alcohol content



Source: Suntory

THE WALL STREET JOURNAL.

# Canadian Pacific Faces Strike Threat



Two unions filed a strike notice Saturday with **Canadian Pacific Railways** Ltd., telling management that workers will walk off the job Tuesday night if an agreement can't be reached.

The Teamsters Canada Rail Conference and the International Brotherhood of Electrical Workers, representing close to 3,500 conductors, engineers and signal

operators voted on Friday to reject an offer by the company.

"CP is not negotiating seriously with us," said a spokesman for the Teamsters. The sides began negotiations in Calgary, Alberta, almost immediately after the vote.

The union said it would remain at the table until the strike begins at 10 p.m. EDT Tuesday,

but it said it is dismayed by the company's stance on giving workers enough time off to avoid fatigue. Wage increases are also an issue, said the Teamsters spokesman, but they are not the main problem.

Canadian Pacific didn't respond immediately to a request for comment.

—Vipal Monga

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## TECHNOLOGY

# Bezos Outlines Space Ambitions

Amazon CEO says lunar exploration, eventual settlement are matter of human survival

BY ANDY PASZTOR

LOS ANGELES—Amazon.com Inc. founder and Chief Executive Jeff Bezos vowed to use his rocket startup to develop robotic rovers and perhaps human habitats on the moon's surface, even if such projects fail to win financial support from the U.S. government.

In a personal, wide-ranging talk at a space conference here Friday, Mr. Bezos laid out his vision for lunar exploration and eventual settlement. Depicting such efforts as a matter of long-term human survival, he said: "This is not something that we may choose to do; this is something we must do."

Without divulging details about the new generations of powerful rockets, spacecraft and landing vehicles he envisions will be necessary to establish such permanent outposts, Mr. Bezos made an impassioned argument for accelerating private space travel.

He said future generations won't be able to survive on earth without expanding into other parts of the solar system.

"The alternative is stasis," he said, adding that without space settlements, societies around the globe "will have to stop growing" due to environmental and other constraints. "That's not the future that I want for my grandchildren, or my grandchildren's grandchildren."

Mr. Bezos called the efforts of his rocket company, Blue Origin LLC, "the most important work I am doing." The question-and-answer session occurred at the annual meeting of the National Space Society, a nonprofit group championing space colonies.

A self-described space geek and lifelong reader of science-fiction novels, Mr. Bezos in the past has talked about his determination to play a big part in creating building blocks to usher in supercheap, reliable and frequent transportation beyond the atmosphere.



**Jeff Bezos** at a media event last year. On Friday, he called efforts of his rocket company, Blue Origin, 'the most important work I am doing.'

Like fellow billionaire Elon Musk, the founder and head of Space Exploration Technologies Corp., Mr. Bezos has talked about developing the infrastructure to eventually move millions of people into space and transform the launches of reusable rockets into trips as routine as airplane travel.

But Mr. Bezos's latest comments were unusually stark in saying that to maintain economic vitality, "we will have to leave this planet" and "we don't have a lot of time" to map out a step-by-step approach, starting with reduced launch costs.

"It won't be done by one company" or by just the National Aeronautics and Space Administration, Mr. Bezos said, but instead will require "thousands of companies working in concert over many decades."

On a practical and political level, arguments advanced by Mr. Bezos support President Donald Trump's focus of rely-

## Moon Effort Is Key Step in Developing Habitats on Mars

Noting that for the foreseeable future, "very few people are going to want to abandon earth altogether," Jeff Bezos said liquid-fueled rockets able to be flown 100 times or more with minimal maintenance are vital for a new and affordable transportation model.

Responding to questions about his commitment to pursue human space travel regardless of federal support, Amazon's CEO joked Friday that either "other people will take over the vision, or I will run out of money."

ing on public-private partnerships for space exploration, including building landing craft able to take experiments—and within a few years astronauts—to the lunar surface,

But he ended his talk on a more serious note by reiterating his view that moon exploration is an essential step toward transporting humans to Mars and allowing them to create habitats on the Red Planet.

Such gradual efforts are the only way to avoid a repeat of earlier policy mistakes, he said, which saw the Apollo astronauts land on the moon but then that event morphed into five decades without any more human missions there.

"I don't like to skip steps," he said, explaining that trying to take people directly to Mars would be futile.

"There would be a ticker-tape parade and then 50 years of nothing," he said.

"We must go back to the moon, and this time to stay," Mr. Bezos said, echoing one of the White House's principles for establishing sustainable outposts.

Even before the Trump administration came into office, Blue Origin proposed that NASA help fund it to pursue a fledgling program designed to send robotic spacecraft to the moon. Other companies also are developing similar projects, and NASA is soliciting ideas for various sizes of landers.

The agency hasn't commented publicly on the specifics of Blue Origin's proposal, and on Friday Mr. Bezos didn't mention Mr. Trump's previous pointed criticism of Amazon over policies related to payment of certain local taxes.

On his own, Mr. Bezos has sold roughly \$1 billion of Amazon stock annually to invest in Blue Origin, which hopes to start offering suborbital space tourism flights by 2019. The fast-growing, closely held company also is developing two larger rockets aimed at carrying satellites and spacecraft into earth orbit and beyond.

# Verint Pursues Seller of Spyware

BY SIMON CLARK

U.S. software company Verint Systems Inc. is in talks to buy NSO Group, an Israeli maker of cybersurveillance products, for about \$1 billion, according to a person familiar with the situation.

NSO is known for selling military-grade technology, including Pegasus spyware, mainly to government security agencies. Verint has offered to pay NSO's controlling shareholder, private-equity firm Francisco Partners of San Francisco, with its own stock and assumed debt, the person said. Francisco Partners would become the largest shareholder in Verint if the deal is completed, the person said. Verint, based in Melville, N.Y., trades on the Nasdaq Stock Market with a market value of about \$2.8 billion.

Spokeswomen for Verint and Francisco Partners declined to comment. NSO founders and shareholders Shalev Hulio and Omri Laevie declined to comment.

In 2016, The Wall Street Journal reported that NSO products were used to help foreign governments spy on their citizens. Researchers at Citizen Lab, a group that investigates surveillance technology, said they discovered NSO software in a link sent to the phone of a human-rights activist in the United Arab Emirates. An NSO spokesman said at the time that the company had no knowledge of the case. The spokesman said NSO doesn't operate its systems and requires customers to use them lawfully "for the prevention and investigation of crimes."

Francisco Partners bought NSO for \$110 million in 2014, the Journal reported at the time. The U.S. private-equity firm has raised more than \$14 billion to buy stakes in dozens of technology companies since it was founded in 1999.

Verint's clients include more than 10,000 organizations in 180 countries, according to its website. Verint reported \$1.1 billion of revenue for the 12 months to Jan. 31.

# China's Xiaomi Wagers Big on Europe

Smartphone maker Xiaomi Corp. shot to success selling stylish but low-cost models in emerging markets, including at home in China.

By Sam Schechner in Paris and And Dan Strumpf in Hong Kong

But can that formula work in the affluent markets of Europe, where Samsung Electronics Co. and Apple Inc. hold sway?

The answer could determine whether Xiaomi is worth the valuation of at least \$70 billion that people familiar with the matter say it is seeking in a public offering planned for this year.

Last week, Beijing-based Xiaomi opened the first of what it says will be up to 10 Xiaomi-branded stores in Paris, and one in Milan. In the Paris store, Xiaomi is selling two higher-end smartphone models as well as some of its other electronic gizmos, including portable speakers and an electric scooter.

The European push began last year in Spain, now home to three Xiaomi stores, and beyond France and Italy there are plans for the U.K., Germany and the Netherlands, said Wang Xiang, senior vice president in charge of global expansion.

"We see a great opportunity," said Mr. Wang, explaining that competition in Europe "isn't strong enough."

The stakes there are high for Xiaomi, whose U.S. plans are clouded by rising trade tensions between Washington and Beijing. Chinese technology companies are running into a wall of U.S. government hostility. Earlier this year, Huawei Technologies Co., the third-biggest phone seller globally, failed in a bid to enter the U.S. market. In April

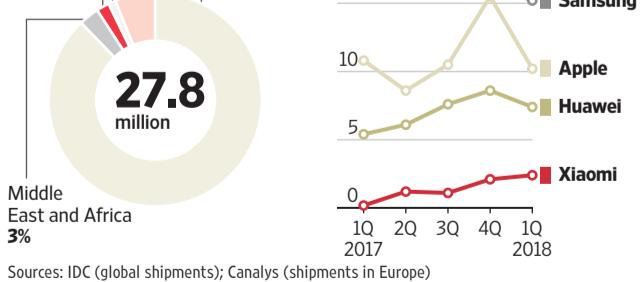


Xiaomi has had success in its home market of China and hopes to duplicate that abroad in stores like this location in Paris.

## Going West

Most of Xiaomi's sales are in Asia, but it hopes to grow its global profile with new stores in Europe.

### Xiaomi's global smartphone shipments, first quarter



Sources: IDC (global shipments); Canalys (shipments in Europe)

### Smartphone shipments in Europe

20 million

15

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1Q 2Q 3Q 4Q 1Q

2017 2018

Samsung Apple Huawei Xiaomi

27.8 million

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## MEDIA

# Beijing Shift on Films Stymies Studios

Party oversight of industry blocks efforts to negotiate better trade terms

Last year, many Hollywood executives worried as the U.S. prepared to renegotiate terms for showing movies in China.

*By Erich Schwartzel  
in Los Angeles and  
Wayne Ma in Hong Kong*

Would President Donald Trump's harsh trade rhetoric torpedo talks?

Turns out they were worried about the wrong leader.

Chinese President Xi Jinping's recent consolidation of power has placed China's film division under the Communist Party's Ministry of Propaganda—and stalled talks about a new China-U.S. film-

trade agreement that would include seeking better terms for studios' take of box-office sales in China.

The shift to party oversight has left U.S. studios with few answers about how to proceed in the world's second-largest movie market, Hollywood executives in the U.S. and Asia say.

Until March, China's film bureau had been part of a government agency independent of the party, the State Administration of Press, Publication, Radio, Film and Television, whose job was to regulate content, including censoring films and scheduling theatrical releases.

President Xi's decision to place film operations under party control, coming just before the all-important summer movie season, adds a new layer of uncertainty for studios already struggling to ad-

here to China's complicated, fast-changing rules.

In his rise to power, Mr. Xi has understood the power of cinema, whether he is encouraging citizens to move to cities with shiny new theaters or blocking American films containing objectionable themes. The reorganization appears to formally acknowledge the role of film as a tool that must be managed by the party.

Now, as the two countries contend with trade disagreements, Hollywood finds itself in a frustrating holding pattern in its most important foreign market, waiting for an update to distribution terms that date to 2012. Negotiations have dragged on since February 2017.

In earlier negotiations, the U.S. delegation had proposed raising the U.S. share of theatrical grosses to at least 28%, according to one studio execu-

tive. But the executive said the U.S. side was still waiting for China to respond when the larger U.S.-China trade talks put everything on hold.

Another person familiar with the negotiations said higher figures also have been discussed.

Studio executives say any substantial increase will be difficult as the country's primary film distributor, China Film Group, requires its share to cover distribution and marketing costs.

"We've been waiting for more than a year," one Hollywood executive said. "And this latest change is not helping matters."

Last week brought some progress, when longtime Propaganda Department bureaucrat Wang Xiaohui was named head of the new film bureau, a post that had been vacant since China's reorganization

was announced in March. It remains unclear how much power Mr. Wang will have or how his bureau's policies will differ from those under the previous structure.

The Ministry of Propaganda didn't immediately respond to a request for comment.

Hollywood once treated China as an afterthought, but now it is an indispensable source of revenue. In the first quarter of 2018, Chinese box-office grosses, fueled by the country's Lunar New Year holiday, exceeded those in the U.S. for the first time. China's annual grosses aren't expected to pass those in the U.S. for at least a few more years, but recent releases such as "Ready Player One," from Time Warner Inc.'s Warner Bros., and Walt Disney Co.'s "Avengers: Infinity War" each have collected more than

\$200 million there.

Most big Hollywood films have been released in China under a February 2012 agreement negotiated by then-Vice President Joe Biden and Mr. t Xi, who was then China's vice president.

It was set to be reviewed every five years.

Both U.S. and China delegations had hoped to announce a new deal in February, but there were delays on both sides.

The U.S. Trade Representative's office was slow to staff up, Hollywood executives said. People familiar with the matter said Chinese officials were wrapped up in the country's momentous National People's Congress, which gave Mr. Xi a second term and abolished term limits.

*—Fanfan Wang  
and Lingling Wei in Beijing  
contributed to this article.*

## MOVIE

*Continued from page B1*  
the company behind the "Star Wars" series.

No one expected "Solo," a prequel focused on Han Solo, the outlaw space pilot portrayed in prior films by Harrison Ford and here in his youth by Alden Ehrenreich, to gross as much as "The Force Awakens" or "The Last Jedi," re-

leased in 2015 and 2017, respectively. But Disney had hoped it would be comparable to 2016's "Rogue One," another spinoff (also subtitled "A Star Wars Story"), which opened to \$155 million on a normal-length, nonholiday weekend.

Instead, "Solo" made just \$84.8 million in the domestic market through Sunday. That is behind not only "Rogue One," but "Star Wars Episode III: Revenge of the Sith," which opened to \$108.4 million in

2005, when ticket prices were 30% lower.

"Solo" also opened at less than light speed overseas, grossing just \$68.2 million from every major foreign market except Japan. It had unimpressive showings across the board, including in China, the U.K., Australia, Brazil and South Korea.

"Rogue One" opened in fewer major markets, but took in about \$135.5 million overseas its first weekend.

"We're looking at a result that's less than we would have liked," said Dave Hollis, Disney's head of theatrical distribution. He added that the studio was glad to see that exit-poll results were strong, indicating "Solo" could do well in the coming weeks thanks to word-of-mouth.

Mr. Hollis also said Disney is starting to look at data to figure out why "Solo" underperformed its predecessors. A key question is whether some audiences were turned off by "Solo"-specific factors or if interest in "Star Wars" overall is waning.

### Han So Low

Opening weekend box office totals for selected Star Wars films

1. The Force Awakens	<b>\$248 million</b>
2. The Last Jedi	<b>220</b>
3. Rogue One	<b>155</b>
4. Revenge of the Sith	<b>108</b>
5. Solo	<b>84.8</b>

Note: Through Sunday of each weekend  
Source: Boxoffice Mojo



Alden Ehrenreich as Han Solo, and Joonas Suotamo as Chewbacca in 'Solo: A Star Wars Story.'

"Avengers: Infinity War" between November and May.

Marvel has more successfully differentiated its superhero movies in genre, theme and setting than Lucasfilm has with its "Star Wars" movies, though, critics and industry observers have said.

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- 26. Covalent Solids
- 27. Mixing It Up: Solutions
- 28. Solubility and Saturation
- 29. Colligative Properties of Solutions
- 30. Modeling Reaction Rates
- 31. Temperature and Reaction Rates
- 32. Reaction Mechanisms and Catalysis
- 33. The Back and Forth of Equilibrium
- 34. Manipulating Chemical Equilibrium
- 35. Acids, Bases, and the pH Scale
- 36. Weak Acids and Bases
- 37. Acid-Base Reactions and Buffers
- 38. Polyprotic Acids
- 39. Structural Basis for Acidity
- 40. Electron Exchange: Redox Reactions
- 41. Electromotive Force and Free Energy
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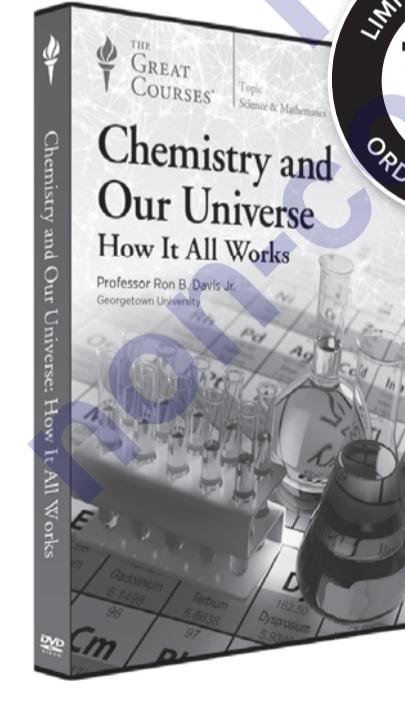
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Estimated Box-Office Figures, Through Monday			
SALES, IN MILLIONS			
FILM	DISTRIBUTOR	WEEKEND*	CUMULATIVE
1. Solo: A Star Wars Story	Disney	\$103	\$103
2. Deadpool 2	Twentieth Century Fox	\$55	\$219.7
3. Avengers: Infinity War	Disney	\$21.2	\$626.4
4. Book Club	Paramount	\$12.5	\$34.7
5. Life of the Party	Warner Bros.	\$6.9	\$40.9

\*Friday, Saturday, Sunday and Monday

Source: comScore



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## BUSINESS NEWS

# Starbucks Bias Training Called First Step

Experts lower expectations for what is described as an 'ambitious project'

BY RACHEL FEINTZEIG AND JULIE JARGON

**Starbucks** Corp. is hoping that antibias training scheduled to start Tuesday will help prevent fraught encounters like the one that led to the arrest of two black men at one of its cafes last month.

How effective it will be is an open question. Although such training has been used by companies for about two decades, its benefits are largely unproven and experts say it needs to be baked into an organization for the long term to really work.

"Expectations have to be managed," said Sherrilyn Ifill, president and director-counsel of the NAACP Legal Defense and Educational Fund, who is advising Starbucks pro bono on its antibias efforts. She told reporters Thursday that it is an "ambitious project."

Starbucks plans to close all of its more than 8,000 com-

pany-operated stores in the U.S. Tuesday to conduct the training. Starbucks employees will gather at the stores where they work to watch videos featuring Starbucks Chairman Howard Schultz, board member Mellody Hobson and the hip-hop artist Common, among others, discussing what bias means and how to treat others respectfully, according to a video preview Starbucks posted online this week. They also will do exercises in which they are asked to share stories of how they have experienced bias in their own lives.

Part of the training is aimed at ensuring that the "third place" Starbucks says it provides between home and work is inclusive, executives say. "May 29 isn't a solution, it's a first step," said Rossann Williams, Starbucks executive vice president for U.S. retail, in a letter to employees that the company cited online.

Starbucks didn't disclose how much the continuing training will cost, but a spokeswoman said, "we believe this is a critical investment in the long-term success of Starbucks" and that the company will con-



Employees will see videos of hip-hop artist Common and others.

met with the store manager and believed she demonstrated unconscious bias when deciding to call the police. The company hasn't named the manager but said she has left the company. Starbucks executives apologized to the two men and settled with them for an undisclosed amount.

The potential for treating customers differently based on race is present in all industries, experts say.

A recent study by two university researchers found evidence of bias among hotel employees. Alexandra Feldberg, a doctoral candidate in organizational behavior at Harvard Business School, and Tami Kim, an assistant professor of marketing at the University of Virginia Darden School of Business, in 2016 sent emails to more than 7,000 U.S. hotels posing as people with Caucasian, African-American and Asian sounding names, seeking restaurant suggestions. The emails that came from Caucasian-sounding names received the highest response rate as well as the friendliest and most thorough responses, their research found. The findings haven't yet been

accepted by a peer-reviewed journal.

"The results tell us that bias is not specific to companies—that it happens at all companies that interface with customers," Ms. Kim said. "If there's no big event like what happened at Starbucks, companies may not realize it's happening within their own company."

L. Song Richardson, dean of the University of California Irvine School of Law, said it is extremely difficult to eliminate the implicit biases people have but that it is possible to build awareness of them.

"The more challenging question is what institutional changes [Starbucks executives] will commit to making in order to reduce instances of biased behaviors. What safeguards will they put in place? What policies will they institute?" Ms. Richardson said.

Ms. Ifill of the NAACP and Heather McGhee, president of think tank Demos and an unpaid adviser to Starbucks, said they would be releasing a report next month detailing steps Starbucks can take to weave antibias efforts into all parts of the company.

## INDIA

Continued from page B1

lates, plastic snack packets hanging from the walls and two ladders to help reach it all.

His rent is \$750, and his two employees cost him around \$160 a month, he said. He has few expenses other than the wholesale price of his products. He keeps no inventory. He recognizes his customers by voice on the phone, and his deliveries arrive within 30 minutes because his delivery boys know where they all live.

A few years ago, **Easy Day**, a national chain of grocery stores once 49% owned by Walmart, set up shop about a mile away, and then Amazon's grocery delivery service moved in to the spot. Mr. Jindal said

he barely noticed, and his own sales continued to climb. Today, those bigger retailers are no longer in the neighborhood.

Saravjeet Singh, one of Mr. Jindal's regular customers, said he shops at big modern stores occasionally but still prefers the convenience of his local shop. "We have a personal relationship with our kirana man; the owner even knows my name," he said. "We can call and ask for just one box of matches or four eggs and they come running."

Big international and local retailers say there is enough business to go around. Walmart runs a wholesale business in India that sells directly to the mom-and-pop shops. "We love the fact that our cash-and-carry business here in the country supports kiranas," Walmart Chief Executive Doug McMillon said this

month in New Delhi after announcing the company's massive investment in the sector. "We believe we can help them."

Amazon didn't respond to a query about whether it views kiranas as rivals. It has joined with thousands of mom-and-pop shops in India, paying them to deliver Amazon orders to homes or store the packages until customers pick them up.

Still, some small retailers are making changes to try to ensure they stay on top. Millions have started accepting cashless payments through e-wallets. And they are interacting with customers through messaging apps rather than on the phone. Some are even turning to e-commerce sites to supply products their customers want.

—Corinne Abrams and Newley Purnell contributed to this article.



A shop can carry more than 1,000 different products, stacked on shelves reaching the ceiling.

SUNITA SHARMA FOR THE WALL STREET JOURNAL

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## MARKETS DIGEST

## Dow Jones Industrial Average

**24753.09** ▲ 38.00, or 0.15% last week  
High, low, open and close for each of the past 52 weeks



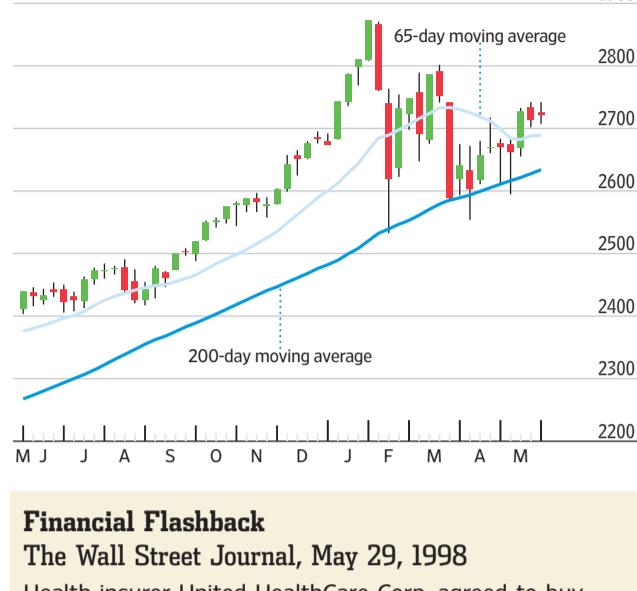
Current divisor 0.14523396877348  
Bars measure the point change from Monday's open



\*Weekly P/E data based on as-reported earnings from Birinyi Associates Inc.

## S&amp;P 500 Index

**2721.33** ▲ 8.36, or 0.31% last week  
High, low, open and close for each of the past 52 weeks



65-day moving average  
200-day moving average  
All-time high 26616.71, 01/26/18

New to the Market  
Public Offerings of Stock

IPOs in the U.S. Market

None expected this week

## Lockup Expirations

None expected this week

## IPO Scorecard

Performance of IPOs, most-recent listed first

Company	SYMBOL	Friday's close (\$)	Offer price (\$)	1st-day close (\$)	% Chg From	Company	SYMBOL	Friday's close (\$)	Offer price (\$)	1st-day close (\$)	% Chg From
Iterum Thera	ITRM	24.85	-1.2	...		EVO Payments	EVO	19.88	24.3	4.5	
CLPS	CLPS	5.40	2.9	-2.0		Pluralsight	PLUR	21.44	42.9	7.2	
GreenSky	GSKY	24.77	7.7	6.0		VectoIQ Acquisition	VTIQ	10.01	0.1	0.1	
Kiniksa Pharmaceuticals	KNSA	19.41	7.8	-0.3		Trinity Merger	TMCXU	10.04	0.4	0.3	
Rockwell	SRRK	15.00	7.1	-3.2		Huya	HUYA	23.93	99.4	49.0	

Sources: WSJ Market Data Group; FactSet Research Systems

## Other Stock Offerings

Secondaries and follow-ons expected this week in the U.S. market

None expected this week

## Off the Shelf

"Shelf registrations" allow a company to prepare a stock or bond for sale, without selling the whole issue at once. Corporations sell as conditions become favorable. Here are the shelf sales, or takedowns, over the last week:

Issuer/Industry	Takedown date/Registration date	Deal value (\$ mil.)	Registration (mil.)	Bookrunner(s)
GoDaddy Technology	May 21 April 5/16	\$825.4	...	Citi, UBS

## Public and Private Borrowing

## Treasuries

Tuesday, May 29

Auction of 4,13, and 26 week bills; announced on May 24; settles on May 31

## Public and Municipal Finance

Deals of \$150 million or more expected this week

Sale	Final maturity	Issuer	Total (\$ mil.)	Fitch Rating	Moody's S&P	Bookrunner/Bond Counselor(s)
June 1	prelim.	Anchorage City-Alaska	164.9	N.R.	N.R.	Wells Fargo & Co/-
June 1	prelim.	Metro Washington Airports Auth	578.2	N.R.	N.R.	Barclays/-
June 1	prelim.	South Carolina State Ports Auth	325.0	N.R.	N.R.	BoA Merrill/-
June 1	prelim.	Tulare City-California	251.2	N.R.	N.R.	Raymond James/-

Source: Thomson Reuters/Ipreo

Closed-End Funds | [WSJ.com/funds](http://WSJ.com/funds)

Listed are the 300 largest closed-end funds as measured by assets. Closed-end funds sell a limited number of shares and invest the proceeds in securities. Unlike open-end funds, closed-end funds generally do not buy their shares back from investors who wish to cash in their holdings. Instead, fund shares trade on a stock exchange. **NA** signifies that the information is not available or not applicable. **ND** signifies fund not in existence of entire period. 12 month yield is computed by dividing income dividends paid (during the previous two months for periods ending at month-end or during the previous fifty-two weeks for periods ending at any time other than month-end) by the latest month-end market price adjusted for capital gains distributions.

Source: Lipper

Friday, May 25, 2018

52 wk

Prem Fund (SYM) NAV Close/Disc Ret

General Equity Funds

AdventClymFd AVK NA 14.5 NA 4.0

AllianzG Conv & Incm NCV 6.24 6.88 +10.3 11.6

AllianzG Conv & Incm NCI 5.60 5.98 +6.8 8.9

AllianzG Equity & Conv NIE 24.10 21.91 -9.1 18.4

AllianzG Conv & Incm NCD JPY 9.78 9.40 -3.9 0.1

Nuveen Pfld & Incm Oppd Fnd JPM 24.50 23.73 -3.1 1.3

Nuveen Tax-Adv Div Gr JTJ 17.56 16.94 -3.5 14.2

Tow Strategic Income Fund TS NA 5.44 NA 4.2

Virtus Global Dividend ZTR 11.10 10.99 -0.1 1.8

Convertible Sec's. Funds

AdvtClymFd AVK NA 14.5 NA 4.0

AllianzG Conv & Incm NCV 6.24 6.88 +10.3 11.6

AllianzG Conv & Incm NCI 5.60 5.98 +6.8 8.9

AllianzG Equity & Conv NIE 24.10 21.91 -9.1 18.4

AllianzG Conv & Incm NCD JPY 9.78 9.40 -3.9 0.1

Nuveen Pfld & Incm Oppd Fnd JPM 24.50 23.73 -3.1 1.3

Nuveen Tax-Adv Div Gr JTJ 17.56 16.94 -3.5 14.2

Tow Strategic Income Fund TS NA 5.44 NA 4.2

Virtus Global Dividend ZTR 11.10 10.99 -0.1 1.8

First Trust Dynamic Eur FDEU 18.27 16.96 -7.2 4.6

Gabelli Dividend & Incm GDV 24.18 22.46 -7.1 9.9

Gabelli Equity Tr GAB 6.36 6.28 -1.3 12.9

Gabelli Equity Tr GABM 14.96 14.72 -1.5 1.7

Gabelli Equity Tr GABR 14.55 14.25 -3.2 3.7

Gabelli Equity Tr GABX 25.40 25.09 -3.2 5.5

Gabelli Equity Tr GABY 26.16 25.83 -1.3 0.2

FT Intern Duration Pfd FPF 23.64 22.00 -6.9 -2.7

Flaherty & Crummey Dyn DPF 24.77 22.99 -7.2 -3.6

Flaherty & Crummey Fnd FFC 19.41 18.53 -4.5 -7.8

John Hancock Pfd Income HPI 20.96 20.94 -0.1 2.8

John Hancock Pfd II HPP 20.66 20.34 -1.5 0.7

John Hancock Pfd III HPS 18.44 17.92 -2.8 2.8

JHancock Pr Dlt CAF 14.55 15.57 -7.0 2.8

MetLife Dividend Fund MDF 14.74 14.33 -9.3 0.9

Nuveen Pfld & Incm Oppd Fnd JPM 10.18 9.76 -4.1 2.1

Nuveen Pfld & Incm Secds JPS 9.78 9.40 -3.9 0.1

Nuveen Tax-Adv Div Gr JPM 24.50 23.73 -3.1 1.3

Nuveen Tax-Adv Div Gr JTJ 17.56 16.94 -3.5 14.2

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Nuveen Tax-Adv Div Gr JTJ 17.5

## MONEY &amp; INVESTING

# Chinese Firm Defaults on Dollar Bonds

By MANJU DALAL  
AND SHEN HONG

Less than seven months ago, an investor consortium led by an obscure Chinese energy conglomerate reached an ambitious deal to buy one of Hong Kong's landmark skyscrapers for a record price.

Not long after, the Beijing-based conglomerate known as **China Energy Reserve and Chemicals Group** backed out

of the \$5.2 billion deal and this month it defaulted on a set of U.S. dollar bonds.

A subsidiary of the group said in a regulatory filing that it failed to repay the principal amount on \$350 million in three-year dollar bonds that matured on May 11. The missed payment triggered default provisions on \$655 million in other debt securities that were due to mature in 2021 and 2022.

The privately held group blamed a "tightening in credit conditions" in China over the past two years, which it said restricted its access to financing channels such as bank loans and onshore bond sales. The group's increasing cash flow and capital requirements "resulted in a liquidity crunch" that led to the default, it added.

The group said it plans to continue business operations

while working to divest itself of some assets to alleviate its cash-flow issues.

Little is known about China Energy Reserve and Chemicals Group, which is principally involved in the oil-and-gas industry. The Wall Street Journal reported last November that one of the conglomerate's owners is an entity linked to China's Communist Party. At the time of the deal for the Hong Kong skyscraper, called

the Center, a China Energy Reserve and Chemicals executive told the Journal that the group was responding to China's call to explore the overseas market. He didn't respond to a request for comment Monday.

After the Chinese conglomerate pulled out of the deal for the Center, other investors stepped in to take its place in the consortium purchasing the building.

The bond default marks the

third time this year that an Asian company has defaulted on its U.S. dollar debt. Earlier this month, **Hsin Chong Group Holdings** Ltd., a property developer that does business in China and Hong Kong, didn't repay \$300 million in three-year bonds. Singapore-listed commodities trading firm **Noble Group** also defaulted on dollar bonds this year.

—Wenxin Fan  
contributed to this article.

Closed-End Funds | [WSJ.com/funds](http://WSJ.com/funds)

Continued from B7

Fund (SYM)	NAV	Prem12 Mo Close/Disc Yld	Fund (SYM)	NAV	Prem12 Mo Close/Disc Yld	Fund (SYM)	NAV	Prem12 Mo Close/Disc Yld	Fund (SYM)	NAV	Prem12 Mo Close/Disc Yld	Fund (SYM)	NAV	Prem12 Mo Close/Disc Yld		
DoubleLine Incm Solutions DSL	NA 19.96	NA 8.9	Wstrn Asset Gbl Incn EHI	NA 9.27	NA 8.3	Nuveen Build Am Bd Fd WBN	21.55	20.14 -6.5 6.0	Templeton Emerging TEI	11.91	10.70 -10.2 9.0	Nuveen AMT-Free Mun Value NWU	16.35	15.72 -3.9 4.5	Prem 52 wk	
Dreyfus H Yd Strat Fd DHF	3.49	3.16 -7.1 9.1	Wstrn Asset High Incn HIX	NA 6.47	NA 8.8	PIMCO Corporate & Incn PTY	NA 18.39	NA 8.9	Templeton Global GIM	7.18	6.24 -13.1 4.4	Nuveen NJ Qual Muni NJX	15.40	13.02 -15.5 5.3		
Fst Tr Hlcn/Lg Shrt Fd FSD	17.04	14.85 -12.9 9.7	Wstrn Asset Opp Fd HIO	5.40	4.78 -11.5 6.9	PIMCO Corporate & Incn PCN	NA 17.61	NA 7.9	Wstrn Asset Emerg Mktz EMD	19.50	13.65 -14.2 8.0	Nuveen NY AMT-Free NRR	16.05	12.13 -13.7 4.9		
Guggenheim Strat Opps Fd FOF	19.08	21.22 +11.2 10.4	West Ast/Hy Def Oppd Fd HYI	NA 14.51	NA 7.6	PIMCO Hlnc Strd PFL	NA 12.20	NA 9.0	Wstrn Asset Gl Def Oppd Fd GDF	NA 16.40	NA 8.1	Nuveen NY Qual Muni NAR	14.62	12.50 -14.5 5.3		
Ivy High Income Opps Fund IHW	15.94	14.22 -10.8 9.6	Other Domestic Taxable Bond Funds			PIMCO IncnStrgy/Fdl PFO	NA 10.66	NA 9.1	Wstrn Enrichd Mun ValFd NEV	NA 14.60	13.68 -6.3 6.0	Nuveen OH Qual Muni NUO	16.13	13.36 -15.3 5.0		
Neuberger Berman HYS NHS	12.73	10.91 -14.3 7.7	Ares Dynamic Credit Allr ARDC	17.80	16.32 -8.3 7.0	Putnam Mas Incn PIN	5.02	4.71 -6.2 6.5	Wstrn MuniCo Oppd Fnd NMZ	13.26	12.54 -5.4 6.2	Nuveen VA Qual Muni NPQ	14.83	12.51 -15.6 5.4		
NextPoint Strat Opps Fnd NHF	20.30	22.14 -15.8 10.0	Barings Corp Investors MCI	NA 15.30	NA 7.4	Putnam Premier Income Tr PPT	5.60	5.38 -3.9 5.8	Wstrn Mun Value Fund NUV	10.07	9.48 -5.9 4.0	PIMCO California Munl PCQ	13.63	16.06 +17.8 6.2		
BlackRock Taxable Muni BBN	23.05	21.61 -6.2 7.1	BlackRock Multi-Sector Tr BIT	18.88	17.10 -9.4 9.0	Wells Fargo Multi-Sector ERC	13.75	12.73 -7.4 9.9	PIMCO California Munl PCU	8.39	8.15 -2.9 6.3					
Wells Fargo Incm Opps Fd JCO	9.79	9.36 -4.4 5.9	BlackRock Taxable Muni Bd BDC	9.25	8.84 -8.8 6.3	Wells Fargo Incm Opps Fd KIO	NA 15.98	NA 9.7								
Wells Fargo Incm Opps Fd JGH	17.84	15.73 -8.8 9.9	Duff & Phelps Ut & Cpb DUC	9.45	9.25 -8.8 7.3	Wells Fargo Incm Opps Fd MCR	8.78	7.92 -9.8 7.0								
Wells Fargo Incm Opps Fd NHD	16.30	14.04 -13.9 7.8	Etn Vncl Lctd Fd EVV	14.63	12.70 -13.2 7.4	MFS Multimkt MMT	6.26	5.61 -10.4 9.2								
Wells Fargo Incm Opps Fd EAD	8.97	8.03 -10.5 8.4														

Cash Prices | [WSJ.com/commodities](http://WSJ.com/commodities)

These prices reflect buying and selling of a variety of actual or "physical" commodities in the marketplace—separate from the futures price on an exchange, which reflects what the commodity might be worth in future months.

Monday, May 28, 2018

Monday, May 28, 2018

Metals	Monday	Friday	Friday	Friday
<b>Gold, per troy oz</b>				
LBMA Gold Price AM	*1303.95		Maple Leaf-e	1369.62
LBMA Gold Price PM	*1303.5		American Eagle-e	1369.62
<b>Silver, troy oz.</b>			Mexican peso-e	1580.72
LBMA spot price (U.S. equivalent)	*12.4900		Austria crown-e	1281.57
	*16.6700		Austria phil-e	1369.62
<b>Other metals</b>			<b>Silver, troy oz.</b>	16.6800
LBMA Platinum Price PM	*908.0		Engelhard industrial	20.0160
Aluminum, LME, \$ per metric ton	*2282.0		Engelhard fabricated	20.6940
			Handy & Harman base	16.5550
<b>Fibers and Textiles</b>			Handy & Harman fabricated	16.5550
Cotlook 'A' Index-t	*94.95		LBMA spot price (U.S. equivalent)	*12.3200
				*16.5100
<b>Energy</b>				
Propane,tet,Mont Belvieu-g	0.9363		<b>Fibers and Textiles</b>	
Butane,normal,Mont Belvieu-g	1.0377		Burlap,10-oz,40-inch NY yd-n,w	0.5800
Natural Gas,HenryHub-i	2.890		Cotton,1.1/16 std lw-MdMphs-u	0.8821
NaturalGas,TranscoZone3-i	2.850		Cotton,'A' Index-t	*04.45
NaturalGas,TranscoZone6-NY-i	2.630		Hides,hvy nntive steers piece fob-u	61.0000
NaturalGas,PanhendEast-i	2.400		Wool,64s,staple,Terr del-u,w	n.a.
NaturalGas,Opal-i	1.930			
NaturalGas,MarcellusNE PA-i	1.460			
NaturalGas,HaynesvilleLLA-i	2.750			
Coal,Caplc,1.2500Btu,1.2502-r,w	60.400			
Coal,PwdrRvrBsn,880Btu,0.8502-r,w	12.450			
<b>Metals</b>				
<b>Gold, per troy oz</b>				
Engelhard industrial	1312.88			
Engelhard fabricated	1411.35			
Handy & Harman base	1303.50			
Handy & Harman fabricated	1446.88			
LBMA Gold Price AM	*1296.35			
LBMA Gold Price PM	*1304.85			
Krugerrand,wholesale-e	1356.58			
<b>Grains and Feeds</b>				
Barley,top-quality Mpls-u	n.a.		Corn oil,crude wet/dry mill-u,w	30.1000
Barn,wheat middlings,KC-u	92		Grease,choice white,Chicago-h	0.2500
Corn,No.2 yellow,Cent IL-bp,u	3.7600		Lard,Chicago	n.a.
Corn gluten feed,Midwest-u,w	139.9		Cheddar cheese,bbi,Chicago	154.50
Corn,green meal,Midwest-u,w	49.77		Cheddar cheese,bbi,Chicago	161.00
Cottonseed meal,u,w	263		Milk,Nonfat dry,Chicago,b	84.25
Hemp seed,Cent IL-u,w	102		Cocoa,Ivory Coast-w	n.a.
			Coffee,Brazilian,Comp	1.1977
			Coffee,Colombian, NY	1.4059
			Eggs,large white,Chicago-u	0.7500
			Flour,hard winter KC	17.30
			Hams,17-20 lbs,Mid-US fob-u	n.a.
			Hogs,Iowa So. Minnesota-u	67.70
			Pork bellies,12-14 lb MidUS-u	n.a.
			Pork loins,13-19 lb MidUS-u	0.9233
			Steers,Tex-Oka,Choice-u	n.a.
			Steers,feeder,Okla,Choice-u	154.75
<b>Fats and Oils</b>				
Corn oil,crude wet/dry mill-u,w	30.1000			
Grease,choice white,Chicago-h	0.2500			
Lard,Chicago	n.a.			
Soybean oil,crude,Cent IL-u	0.2969			
Tallow,bleach,Chicago-h	0.2475			
Tallow,edible,Chicago-u	n.a.			
<b>Other metals</b>				
Barley,top-quality Mpls-u	n.a.			
Barn,wheat middlings,KC-u	92			
Corn,No.2 yellow,Cent IL-bp,u	3.7600			
Corn gluten feed,Midwest-u,w	139.9			
Corn,green meal,Midwest-u,w	49.77			
Cottonseed meal,u,w	263			
Hemp seed,Cent IL-u,w	102			
<b>Grains and Feeds</b>				
Barley,top-quality Mpls-u	n.a.			
Barn,wheat middlings,KC-u	92			
Corn,No.2 yellow,Cent IL-bp,u	3.7600			
Corn gluten feed,Midwest-u,w	139.9			
Corn,green meal,Midwest-u,w	49.77			</

## MONEY &amp; INVESTING

# Political Turmoil Hits Italian Markets, Euro

BY DONATO PAOLO MANCINI AND EMESE BARTHA

A political crisis in Italy put markets on edge Monday, with Italian bonds and stocks selling off sharply, renewing fears among investors in one of Europe's largest economies.

**MONDAY'S MARKETS** The euro also fell to the lowest level since November 2017 against the dollar after Italy's president scuttled an attempt by a coalition of Italian antiestablishment parties to form a government. One euro traded for \$1.16, down from \$1.17 earlier Monday.

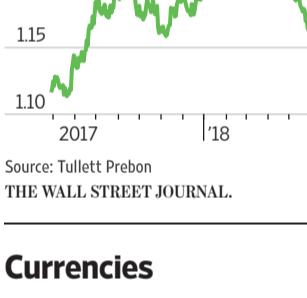
U.S. and U.K. markets were closed Monday for holidays.

The possibility of fresh elections sent the Italian 10-year government bond yield higher to 2.68% from 2.36% earlier Monday, while the interest-rate spread over similar German bonds increased to above 2.30 percentage points, the widest since late 2013, indicating a high level of market stress.

"We doubt that new elections are a panacea for Italy's future stability," said Ann-Katrin Petersen, investment strategist at Allianz Global Investors. She expects bonds of nations such as Portugal and Spain to remain vulnerable over the uncertainty at the heart of the eurozone. Both countries' bonds sold off Monday, though less than Italy's.

## Euroskeptic

The euro fell to the lowest level against the dollar since November 2017 as Italy's political crisis rattled markets.



## Currencies

U.S.-dollar foreign-exchange rates in late New York trading

Country/currency	US\$ vs. in US\$ per US\$ (%)		US\$ vs. in US\$ per US\$ (%)	
	Mon	YTD chg	Mon	YTD chg
<b>Americas</b>				
Argentina peso	.0404	24.7455	33.0	
Brazil real	.2675	3.7381	12.9	
Canada dollar	.7697	1.2993	3.3	
Chile peso	.001601	624.50	1.5	
Ecuador US dollar	1	1 unch		
Mexico peso	.0510	19.5943	-0.4	
Uruguay peso	.03198	31.2700	8.6	
Venezuela b.fuerte	.00001379900.0001	772489.0		
<b>Asia-Pacific</b>				
Australian dollar	.7545	1.3254	3.5	
China yuan	.1563	6.3993	-1.6	
Hong Kong dollar	.1275	7.8427	0.4	
India rupee	.01483	67.430	5.6	
Indonesia rupiah	.0000714	14.007	3.9	
Japan yen	.009139	109.42	-2.9	
Kazakhstan tenge	.003032	329.84	-0.9	
Macau pataca	.1237	8.0826	0.5	
Malaysia ringgit	.2511	3.9825	-1.9	
New Zealand dollar	.6943	1.4403	2.2	
Pakistan rupee	.00864	115.775	4.6	
Philippines peso	.0190	52.596	5.3	
Singapore dollar	.7448	1.3427	0.4	
South Korea won	.0009300	1075.25	0.8	
Sri Lanka rupee	.0063311	157.95	2.9	
Taiwan dollar	.03338	29.956	1.0	
Thailand baht	.03125	32.000	-1.8	
Vietnam dong	.00004383	22815	0.5	
<b>Close Net Chg % Chg YTD % Chg</b>				
<b>WSJ Dollar Index</b>				
87.33 0.01 0.01 1.58				
Sources: Tullett Prebon, WSJ Market Data Group				

Source: Tullett Prebon, WSJ Market Data Group

THE WALL STREET JOURNAL.

# Coinbase Takes Aim at Wall Street

BY ALEXANDER OSIPOVICH

Italy's benchmark stock index, the FTSE MIB, on Monday closed down 2.1% after losing as much as 2.3% in midafternoon trading, helping to drag down European stocks broadly. The Stoxx Europe 600 closed down 0.3% after losing as much as 0.7% during the day.

Italian banks were especially hard hit. **Banco BPM** SpA was among the biggest losers on the Stoxx 600 Europe on Monday, falling 6.6%. Plunging prices set off circuit breakers that halted trading briefly for BPM, **BPER** Banca SpA, **Unione di Banche Italiane** SpA, **FinecoBank Intesa Sanpaolo** SpA, along with Italy's largest bank, **UniCredit** SpA. The suspensions were automatic and based on price fluctuations, the Italian Stock Exchange said.

Italy was embroiled Monday in what some are calling a constitutional crisis after President Sergio Mattarella vetoed the appointment of a euroskeptic economy minister, recommended by a coalition of the populist 5 Star Movement and the League. Party leaders from 5 Star called for Mr. Mattarella's impeachment in response.

Mr. Mattarella has instead turned to International Monetary Fund veteran Carlo Cottarelli to form a government. Mr. Cottarelli said Monday he would attempt to form a government, but he is likely to face resistance from the populist bloc, which enjoys a majority in parliament. The situation could lead to fresh elections focused squarely on the issue of Italy's participation in the euro.

Elsewhere Monday, pressure on Asian stocks eased on the heels of political developments as potential for a summit between President Donald Trump and North Korean leader Kim Jong Un revived.

Early Tuesday, Japan's Nikkei 225 was down 0.8%, South Korea's Kospi was down 0.6% and Hong Kong's Hang Seng Index was down 0.4%.

Brent crude, the global oil benchmark, fell 1.5% to \$75.30 a barrel.

**Coinbase** Inc. did more than any other company to bring U.S. retail investors into digital currencies—and left many feeling burned as bitcoin crashed, plunging about 60% since December.

Now, it is looking for new customers.

Earlier this month, the San Francisco-based company unveiled plans for new services aimed at hedge funds and other big investors, such as brokering large-scale cryptocurrency trades. Coinbase is also opening a New York office to focus on Wall Street clients.

The six-year-old company runs the largest U.S. digital-currency exchange by volume and offers a popular app for storing and transferring bitcoin. Coinbase doesn't directly bet on the price of bitcoin but instead makes money by collecting fees when customers buy or sell the cryptocurrency.

Coinbase enjoyed eye-popping growth in late 2017 as small investors piled into bitcoin. It now boasts of more than 20 million customers—more than Charles Schwab Corp., which has 10.8 million active brokerage accounts.

"In U.S. markets, Coinbase is just way ahead of everyone," said Ari Lewis, co-founder of crypto hedge fund Grasshopper Capital. "And they're not standing still with the retail stuff."

The end of bitcoin mania raises questions about whether Coinbase's success

## Deflated

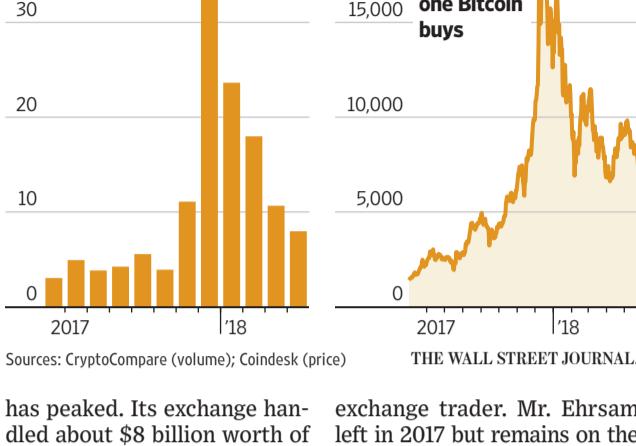
Coinbase's trading volumes fell 78% from December to April...

\$40 billion

...as bitcoin's price tumbled and market activity slowed.

\$20,000

How many U.S. dollars one Bitcoin buys



Sources: CryptoCompare (volume); CoinDesk (price)

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widely associated with crime, Coinbase cooperated with U.S. authorities.

It registered as a money-services business with the U.S. Treasury's Financial Crimes Enforcement Network in 2013 and has since amassed 41 state licenses.

That helped Coinbase avoid the fate of rivals such as BitInstant, whose founder, Charlie Shrem, was arrested in 2014 in a case linked to the Silk Road underground narcotics bazaar. Mr. Shrem pleaded guilty to operating an unlicensed money-transmitter business and spent about a year and a half in prison. "The early days of crypto were very much like the Wild West, with very little legal clarity," Mr. Shrem said in an email.

Coinbase has had its share of growing pains. The company says its user base doubled from August to December. That led to overloaded systems and customers unable to reach tech support.

About 1,530 complaints have been filed about Coinbase with the Consumer Financial Protection Bureau so far this year, more than American Express Co. and PayPal Holdings Inc. combined, according to CFPB data.

Coinbase says it was overwhelmed as its user base mushroomed.

"As a result of this unprecedented demand, some customers had a poor experience," Dan Romero, general manager of Coinbase's retail business, said in an email.



Bank of Montreal and a unit of CIBC said some customer data may have been stolen. A Vancouver branch of Bank of Montreal

# Canada Banks Report Possible Breaches

BY VIPAL MONGA

Two Canadian banks on Monday reported their customer accounts may have been breached.

**Bank of Montreal** said some personal and financial information for fewer than 50,000 customers may have been stolen. Simplii Financial, an online-bank unit of **Canadian Imperial Bank of Commerce**, reported that information for roughly 40,000

customers may have been stolen.

Both banks said they were contacted Sunday by "fraudsters" claiming they were in possession of the information.

BMO, Canada's fourth-largest bank by assets, said it believes the attack originated from outside of Canada.

"They appear to be related," a BMO spokesman said in reference to the attacks, and said the claims were "unverified."

"We are working with the

relevant authorities and are conducting a thorough investigation," the spokesman said in an emailed statement.

BMO said it is confident that "exposures identified related to customer data" have been closed off, and that it is contacting the customers who may have been affected.

Simplii said there was no indication CIBC accounts were affected. The bank said it would return any money lost from Simplii accounts to cli-

ents affected by the fraud.

There were no signs other Canadian banks were affected.

**Toronto-Dominion Bank** "has not been contacted and there is no indication that our customers have been affected," said a spokeswoman for Canada's largest bank by assets.

**Royal Bank of Canada** and **Bank of Nova Scotia** officials didn't immediately return calls.

—Colin Kellaher contributed to this article



SCOTT MONTY/BLOOMBERG NEWS

THE WALL STREET JOURNAL.

## THE TICKER | Market events coming this week

### Tuesday

#### Consumer confidence

April, previous

128.7

May, expected

128

Earnings expected\*

Estimate/Year Ago(\$)

Booz Allen

0.46/0.45

HP Inc.

0.48/0.40

salesforce.com

0.46/0.28

Earnings expected\*

Estimate/Year Ago(\$)

Keysight Tech.

0.83/0.64

PVH

2.25/1.65

## MARKETS

## U.S. Investors Focus on Home Market

By ASJYLYN LODER

Investors are coming home to U.S. stocks as economic worries overseas upend bets on a wave of synchronized global growth.

Global stock funds have underperformed U.S. shares recently as concerns spread about the health of emerging markets, geopolitical tensions in Asia and the pace of European growth. While the SPDR S&P 500 ETF Trust has risen 2.9% since the start of May, the iShares MSCI Eurozone ETF slid 2% and the iShares Core Emerging Markets ETF fell 1.1%.

Some analysts said investors were reckoning with signals that the much anticipated world-wide economic liftoff has yet to arrive, highlighting the vulnerabilities built into the long postfinancial-crisis expansion. That comes as a rising dollar and strong domestic corporate earnings have wrong-footed wagers that growth in Europe and Asia would outpace the slow U.S. expansion.

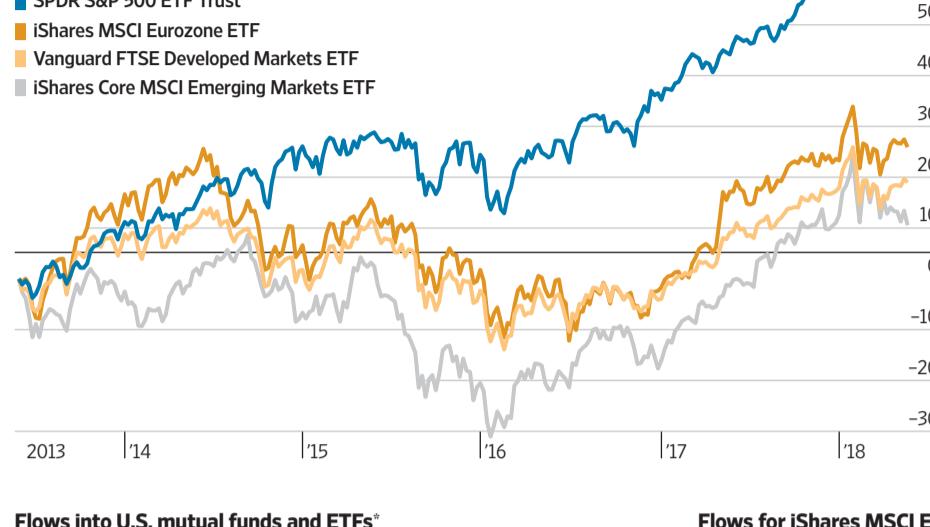
"You're seeing the growth of European returns begin to weaken and roll over," said Jonathan Golub, chief U.S. equity strategist for Credit Suisse AG. "Investors are going to re-evaluate how they compare the U.S. to the rest of the globe because the U.S. is going to look more attractive."

The preference for U.S. stock funds so far this month bucks a long-running trend. During the past decade, investors stashed more money in foreign markets. They bought about \$2 worth of international stock funds for every dollar in domestic equity mutual and exchange-traded funds, according to Morningstar data. Last year, even as major U.S. indexes soared to all-time highs, international funds outpaced U.S. funds at a rate of \$4 to \$1.

Inflows into world equity

Domestic stocks posted some of the biggest gains in the postcrisis era, yet investors have poured money into international stock funds in recent years. Now weak economic data, geopolitical concerns and a rising dollar are weighing on global stocks.

SPDR S&P 500 ETF Trust  
iShares MSCI Eurozone ETF  
Vanguard FTSE Developed Markets ETF  
iShares Core MSCI Emerging Markets ETF



## Flows into U.S. mutual funds and ETFs\*

\$400 billion

International Equity  
Sector Equity  
U.S. Equity



\*Trailing 12 months through April 2018

Sources: FactSet (ETF performance, Stoxx, economic surprise, iShares ETF flows); Morningstar (fund flows)

funds slowed to an estimated \$8 billion in April, the lowest since December 2016, according to the Investment Company Institute. Investors bought \$3.6 billion in international stock funds in the first three weeks of May while they spent \$4.4 billion on U.S. stock funds, putting this month on track to be the first with domestic equity inflows since January.

The prospects for economic growth and market gains now look better in the U.S. than elsewhere, several analysts

said. Domestic companies are on track for the strongest quarter of earnings growth since 2011, boosted by tax cuts enacted late last year. The U.S. labor market also continues to strengthen; the jobless rate in April fell to one of the lowest levels in the post-World War II era.

At the same time, growth abroad appears to be slowing. Data from European factory orders to European inflation readings have missed forecasts. Meanwhile, the strengthening dollar and rising

U.S. interest rates are putting pressure on countries such as Argentina, Turkey and Indonesia.

The Citigroup Economic Surprise Index, a broadly tracked measure of how expectations are being met, shows U.S. data are still broadly matching forecasts. In the eurozone, the index this month dropped to its lowest level since September 2011.

The improving U.S. outlook prompted Richard Bernstein Advisors, a New York firm managing almost \$8 billion, to

liquidate all of its holdings in the iShares MSCI Eurozone ETF in March and reinvest most of the money in U.S. stocks, said Lisa Kirschner, head of research at the firm.

Bernstein isn't the only one selling the ETF. More than \$2.8 billion has been withdrawn from the eurozone ETF since the start of February, bringing assets down to \$13.1 billion, according to FactSet.

The difference between expectations for growth in the eurozone and the U.S. has contributed to a surge in the dol-

lar, which has eroded the allure of overseas assets. The WSJ Dollar Index, which measures the currency against 16 others, has risen 5.6% since hitting a 2018 low in February.

A strengthening dollar makes raw materials more expensive. Returns overseas look thinner when converted back into U.S. dollars. And, as recent debt woes in Argentina and Turkey illustrate, a stronger greenback can be especially detrimental for emerging markets, where countries must repay debt in the increasingly expensive U.S. currency.

Investors often underestimate the impact of currency

# \$4.4B

Sum spent on U.S. stock funds in the first three weeks of May

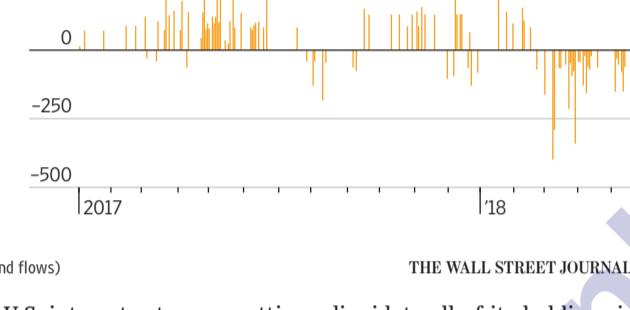
shifts on their returns, leaving them vulnerable after a decadelong international buying spree, said Marina Gross, executive vice president of portfolio research and consulting at French investment bank Natixis SA. Foreign equities now account for about one-third of the stocks in moderate-risk portfolios analyzed by Natixis, up from 25% three years ago, she said.

She pointed out that investors who bought the Stoxx Europe 600 index in dollars did far better last year than those who bought in euros. The dollar-denominated index gained nearly 26% last year, compared with 7.7% in the euro index.

"Because exchange rates can move very quickly and very dramatically, the impact on your return can be substantial and can happen really fast," Ms. Gross said. "It's an under-the-surface risk that investors need to be paying close attention to."

## Flows for iShares MSCI Eurozone ETF

\$500 million



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## HEARD ON THE STREET

FINANCIAL ANALYSIS &amp; COMMENTARY

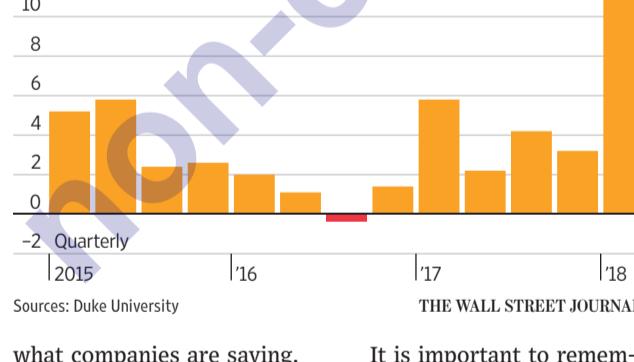
WSJ.com/Heard

Email: heard@wsj.com

## Spending Flashes Worrying Sign

## Capital Idea

Chief financial officers' expected change in capital spending over the next 12 months



what companies are saying. U.S. chief financial officers surveyed in the first quarter by Duke University's Fuqua School of Business said they expected capital spending at their companies would be up by an average of 11% over the next 12 months from the previous year. Capital spending at S&P 500 companies rose smartly in the first quarter, according to a Credit Suisse analysis.

The Commerce Department on Friday reported that orders for durable goods—long-lasting equipment like tractors and machinery—dropped 1.7% in April from a month earlier. That decline was driven by a drop in aircraft orders, however. Orders for nondefense capital goods excluding aircraft, which economists follow closely to gauge where capital spending is going, increased by 1% to a seasonally adjusted \$67.3 billion after falling 1.2% in March.

These orders have been hovering around the same level for the past half year, though. Given how much money the corporate-tax cut is providing companies and how much money is being repatriated from overseas as a result of the tax law's provisions, this is something of a surprise.

It also seems at odds with

not included in the durable-goods report.

It also could be that investors prefer the extra money from the tax cut be returned to shareholders through dividends and buybacks. Some expansion-minded chief executives might prefer making acquisitions, which are immediately accretive to earnings, rather than embarking on costly projects that can take years to pay off. So far this year there have been \$1.5 trillion in merger and acquisition deals worth \$1 billion or more globally, according to a recent CreditSights analysis. That compares with \$759 billion over the same period last year.

Even given those conditions, though, it seems like companies ought to be increasing capital spending by more. A tight labor market is giving them a good reason to try to boost their existing workers' productivity and the tax cut has given them even more means to do it.

Their hesitation is unsettling.

—Justin Lahart

## OVERHEARD

Despite their still significant numbers and a powerful industry lobby, these malodorous and unhealthy residents of every city and town on Earth are facing a draconian ban in their home country.

Smokers in the U.S., where tobacco originated and cigarettes were invented? No, diesel cars in the country where the technology was developed by Rudolf Diesel.

Hamburg, Germany's second-largest city, will be the first city in Europe to ban them in a bid to improve its air quality despite the fact that German auto manufacturers still make plenty of them and that about one-third of all cars on the road are diesels.

The city says it is only banning older models, but that doesn't mean the sluggish, smoke-belching models from the 1980s or earlier. It means any car made before 2016, which is the year after the Volkswagen diesel-emissions scandal broke.

## Emerging Markets Still Have Chance

The lesson that central-bank credibility is hugely valuable has just had another reading in Turkey and Argentina. With other emerging-market countries looking more credible, that is something that should reassure jittery investors.

Turkey's emergency rate increase Wednesday only briefly stemmed pressure on the lira. Argentina has had to call in the International Monetary Fund.

The problem for emerging markets now is mostly about the rising dollar and higher Treasury yields, but recent experience has led to efforts to reduce vulnerabilities.

The next-most-vulnerable economies are on alert. Bank Indonesia cited escalating risks and a "global liquidity downturn" when it raised rates recently. Central bankers from Mexico and Brazil noted the risks of higher volatility in global financial markets at their May meetings. Thursday's statement by the South African Reserve Bank notes the fall in capital flows to emerging markets.

Central-bank anchors are helping to produce very different outcomes in these markets. Over the past month, the Argentine peso and Turkish lira have both fallen more than 10% against the dollar. But the Brazilian real and Mexican peso have fallen only by about as much as the euro; Russia's ruble is up 1%. Bond markets are proving discriminating, too.

None of this rules out a central-bank misstep in the future or a crisis from another source, but it does suggest that investors rattled by Argentina and Turkey shouldn't simply write off emerging markets.

—Richard Barley

## Two Activists Agree: Thyssenkrupp Can Do a Lot More

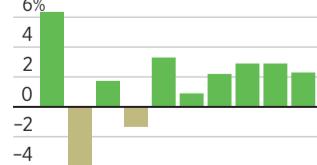
Elliott Management's noisy brand of activism could be just what Thyssenkrupp needs.

Paul Singer's hedge fund last week confirmed reports that it had a stake in the German industrial icon, which produces steel, elevators and a panoply of car parts and other industrial goods. This makes two of the world's top activist investors agitating for change. Cevian Capital, Europe's largest activist fund, owns a \$3 billion, or 18%, stake in Thyssenkrupp and sits on its supervisory board.

While Elliott whips up media storms when they serve its purpose, Cevian

## Slow Turnaround

Thyssenkrupp's operating margin



Note: Through September of each year

Source: the company

For now, Elliott's stake is below the 3% level that requires disclosure, but that could soon change. Any Elliott stake above that threshold would give the two activists combined a larger position than the 21% owned by the charitable foundation that is Thyssenkrupp's top shareholder. The foundation is essentially a passive investor that supports the default management position.

Even Cevian, which built its stake in 2013, has resorted to the media soapbox in this sorry case. It has made clear its displeasure with the turnaround pace under Chief Executive Heinrich Hiesinger. Both invest-

tors seem likely to support a change, though neither has publicly called for Mr. Hiesinger's resignation.

So far, Elliott has only said it sees "significant scope for operational improvement." Thyssenkrupp's group operating margin has remained below 3% for half a decade, and this month it issued a profit warning.

Thyssenkrupp also suffers from a classic conglomerate discount. If the profits from its elevator division, which account for less than half of the group total, were valued in line with those of specialists Kone or Schindler, the unit would be worth more than the whole company at

its current valuation. A breakup is the obvious solution.

More value still could be created if the elevator portfolio could be merged with Kone's, with which it is complementary. Thyssenkrupp is in the process of merging its steel operation with that of Indian group Tata Steel to create a more credible rival to European leader Arcelor Mittal.

The problem with Thyssenkrupp isn't the direction of reform but the speed. Cevian's patience may have reached its limits. Elliott could bring new energy to one of Europe's largest activist bets.

# HEALTH-CARE TECHNOLOGY

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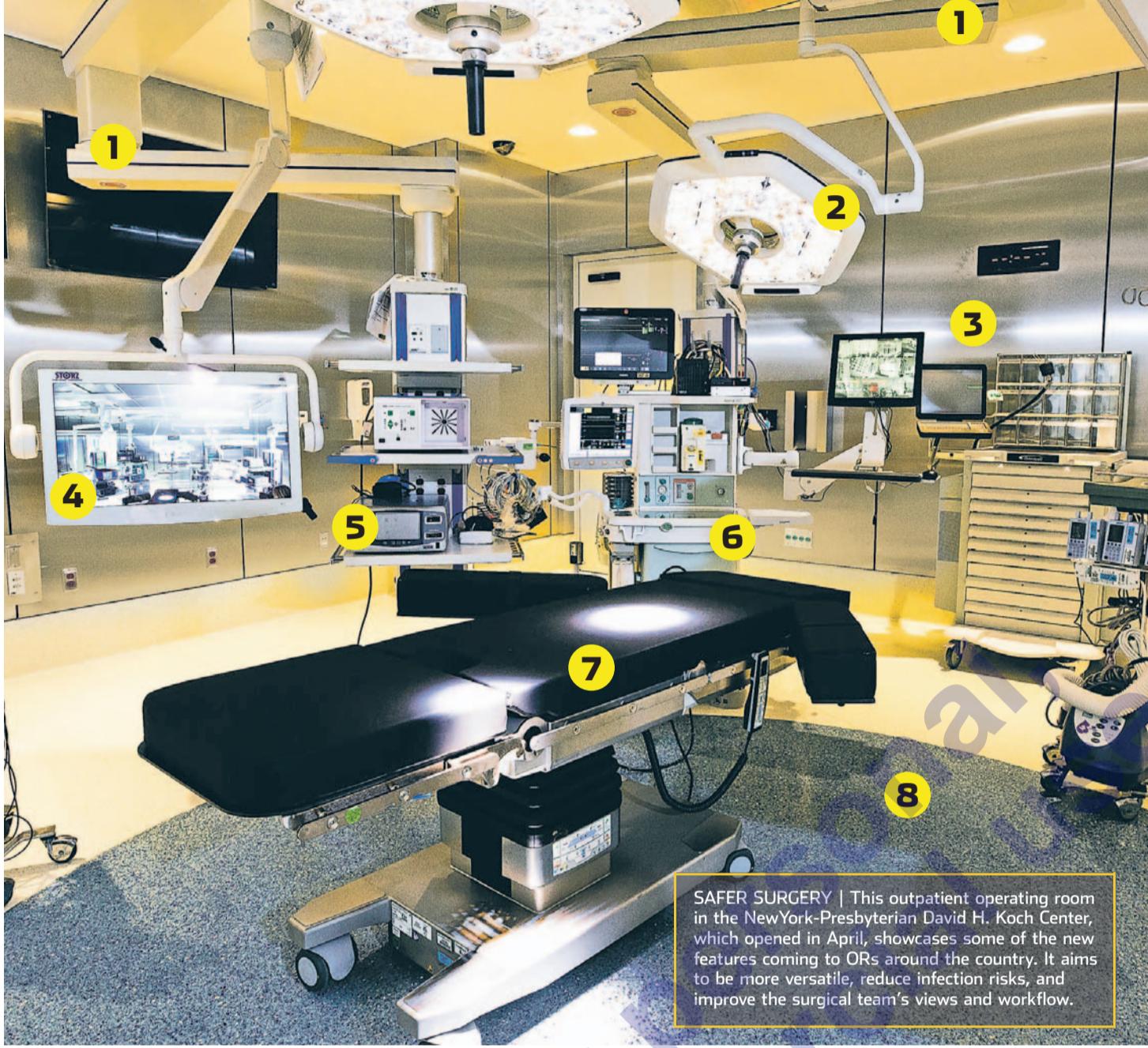
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Tuesday, May 29, 2018 | R1

## The Operating Room Of the Future

A host of changes hold out the promise that surgery will be more efficient, more effective and less risky for patients



### 1. SURGICAL BOOMS

Long reach (16 feet) and modular design make it easier to add equipment quickly during a procedure.

### 2. LED SURGICAL LIGHT

Better light and shadow control, less heat, more accurate color recognition. Aerodynamic design helps minimize airborne micro-organisms.

### 3. STAINLESS-STEEL WALL SYSTEM

Walls can be moved to accommodate new equipment. Hygienic and durable surface.

### 4. VIDEO INTEGRATION SYSTEM

Shows multiple systems such as vital signs, field of surgery and radiological studies. Movable monitors around room let everyone on the team see what's going on.

### 5. ELECTRO SURGICAL UNIT

Cuts and cauterizes tissue safely. Now mounted on boom to take up less space.

### 6. ANESTHESIA MACHINE

Mixes inhaled agents more efficiently.

### 7. SURGICAL TABLE

Accessories for positioning the patient are lighter and more easily attached; easier access to patient placement, resulting in less strain for surgeons.

### 8. TERRAZZO FLOOR

Durable, nonporous, does not support microbial growth.

BY LAURA LANDRO

**T**HE OPERATING ROOM is getting smarter, more effective—and a lot less risky for patients.

Hospitals are investing in new devices, designs and digital technologies that promise a new era of innovation for surgery.

The moves are part of a growing shift away from traditional open procedures that involve big incisions, lots of blood loss and long hospitalizations. They point toward a future where more patients can choose minimally invasive outpatient surgeries, with faster recoveries, fewer complications, and less pain and scarring.

These new technologies cover a range of advances. With some, surgeons can control robot cameras with eye movements as they move into patients' bodies through tiny incisions. With others, doctors can create a GPS-like map projected onto a patient's body to virtually see inside the anatomy before an operation, track their surgical tools and help them operate more precisely.

Other advances aim to reshape the operating room itself, by adding more space for surgeons to work as well as imaging equipment that lets patients receive X-rays and other tests on the operating table instead of getting shuttled around the hospital. And machine learning and artificial-intelligence technology is being developed to let surgeons tap into big data before, during and after they work, to get guidance from computer systems that have analyzed the procedures and learned to make recommendations.

If successful, these changes could have a profound effect on patients. Despite years of progress, surgery remains a risky field. Infections are a frequent complication and can cause death. Studies have shown that even in the same hospital there are large variations in outcomes among surgeons, related to differences in judgment,

ment, skills and individual capabilities. Lower-skilled surgeons have higher rates of complications, readmissions to the hospital and repeat operations. New technology could help level the playing field.

"The field of surgery is evolving very fast, and technological advances are making it more efficient and effective and improving patient outcomes," says Santiago Horgan, chief of the division of minimally invasive surgery at the University of California, San Diego, and director of its Center for the Future of Surgery, which is equipped with the latest technology to train surgeons with simulated procedures. While surgery may never be fully automated, Dr. Horgan says, "in the future robots will be smarter and more interactive, bringing as much information to surgeons as possible during surgery."

Of course, many technologies are still in development, and others have yet to be widely adopted or fully evaluated for safety and cost-effectiveness. And some in the health-care industry warn about embracing new technologies too quickly.

"We don't want to get into an arms race of creating ever more costly therapies, and we have to be careful we are not adopting technology unless it is more effective and improves outcomes over time," says Steven J. Corwin, president and CEO of NewYork-Presbyterian Hospital, which is affiliated with Weill Cornell Medicine and Columbia University College of Physicians and Surgeons.

Here's a look at some of the new technologies out there, and how they promise to reshape patient treatment in years to come.

### EXPANDING OPERATING ROOMS

One of the most basic changes in store is the redesign of the operating room. Some hospitals are creating "hybrid" facilities that combine conventional operating rooms with imaging

equipment used in minimally invasive treatments that rely on tiny tubes inserted in a blood vessel or a body cavity. That way doctors can do both open surgery and minimally invasive procedures instead of scheduling them at different times. For patients, it means avoiding two separate procedures under anesthesia, and less time in the hospital and recovery.

For an idea of how this could improve treatment, consider cardiac catheterization, a so-called interventional procedure, where a tube is inserted through a blood vessel to reach coronary arteries. Doctors might use the catheter to insert a stent to improve blood flow to the arteries, but patients might also need open surgery to bypass the blocked artery. In a hybrid operating room, doctors can immediately shift from the less invasive interventional procedure to open surgery.

Another effort under way is to simply make better use of the typical 600-square-foot operating room. "ORs are often so cramped with no space to walk in and people climbing over carts and bending over equipment, which makes for an extremely unsafe environment," says Anjali Joseph, director of the Center for Health Facilities Design and Testing at Clemson University. Dr. Joseph is co-leading a federally funded project with Scott Reeves, an anesthesiologist at the Medical University of South Carolina, to design an operating room that increases patient safety and is easier for OR teams to maneuver around.

A prototype unveiled in January will allow researchers to perform surgical simulations and test such improvements as reorganizing equipment storage to bring tools closer to the operating table and keep doctors' focus on the patients, as well as improving traffic flow.

The team is also studying the traditional approach of having a "sterile corridor" between adjacent operating rooms to cut down on infection risk. While the idea is that it reduces infections

Please turn to the next page

### INSIDE

#### Visual Aids for Brain Surgeons

Augmented reality projects tumors

R2

#### Promise for Bone-Marrow Transplants

Advances may make the procedure safer and more effective

R4

#### An AI Assist for the Blind

Help with everyday tasks

R4

#### Developing Opioid Alternatives

New drugs show less risk of abuse

R6



#### Robots Look After the Elderly

They offer help and companionship

R6

#### Apps as Contraception

Doctors are skeptical

R7

#### Tools for People With Dementia

Sensors and tablets can enable independent living

R8

#### The Doctor-Patient Relationship Goes Digital

Kaiser Permanente's big push

R9



#### Hope for Ailing Infants

Rapid DNA results can redirect treatment—and save lives

R10

#### An Eye on Doctors

Computer monitoring in hospitals may prevent mistakes

R10

#### Defining Brain Death

Physicians change their approach

R13

#### Blockchain vs. Health Costs

A way to simplify records

R14

## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# The Operating Room of the Future

*Continued from the prior page* by decreasing traffic from contaminated areas, the project's preliminary data suggest that the number of times the door to an operating room is opened and not the presence or absence of a sterile core is what's important. "This will go against 50 years of conventional OR design," Dr. Reeves says.

Among other recommendations from the project team are mobile staff workstations, digital displays high on the walls so everyone on the operating-room team can see the procedure in real time, and "plug and play" ceiling-mounted surgical booms to accommodate new technologies such as advanced imaging.

NewYork-Presbyterian has incorporated a number of new approaches into its new David H. Koch Center, opened in April with 12 outpatient operating rooms, interventional radiology, diagnostic imaging and other services.

The facilities also try to address another persistent problem in operating rooms: infection. The floors are terrazzo, which doesn't support bacterial growth, while a stainless-steel wall system is easy to keep sterile and can be adjusted to accommodate new equipment. Three surgical booms with extra-long reach allow equipment to be suspended from the ceiling, removing the hazard of cords and cables on the floor. LED lights provide illumination with less heat, promoting airflow that minimizes airborne micro-organisms.

**MORE RESPONSIVE ROBOTS**

Research is mixed on the benefit of robotic-assisted surgery, introduced nearly two decades ago as a more precise alternative to conventional minimally invasive surgeries, in which surgeons make small incisions and insert special tools with long, thin instruments. Many studies suggest robotic surgery has fewer complications and shorter hospital stays, but others show lower success rates and other negatives, including higher costs.

Developers are working to make such systems smarter, cheaper and more autonomous. For example, researchers are working on programming robots to do such tasks as stitch up tissue after a surgeon is done.

The field is dominated by **Intuitive Surgical** Inc.'s da Vinci Surgical System, which has been used in more than five million surgeries world-wide. Surgeons sit at a console with a video monitor, using robotic arms to manipulate tiny instruments through small incisions. In addition to better visuals of the patient's anatomy, it also filters out hand tremors and is designed to keep the surgeon in a comfortable position for long, complex procedures. Intuitive is developing enhancements for its systems, including a flexible



The Senhance robotic surgery system gives surgeons a sense of touch and feel based on pressure and tension in the instruments.

robotic catheter to make it easier for surgeons to navigate into the lung to obtain tissue samples while reducing risk to patients.

Intuitive CEO Gary Guthart says the company is also working on robots that will offer "increasing collaboration and control between the computer and the surgeon," much like that between aircraft pilots and modern automated control systems.

A number of new companies are also entering the market, including medical-device giant **Medtronic** PLC and **TransEnterix** Inc., which received approval from the Food and Drug Administration last year for its Senhance Surgical System in some surgical procedures.

The Senhance system has optical sensors that allow surgeons to move the camera and select commands with eye movements and offers haptic feedback, which provides a sense of touch and feel during surgery based on pressure and tension in the instruments, "much as a driver would feel on a steering wheel going over a speed bump," says Todd M. Pope, TransEnterix's founder and CEO.

**BETTER DECISIONS WITH BIG DATA**

A new generation of digital surgery tools aims to combine robotics, big data and other technologies to let surgeons make much better decisions when working on patients.

The most closely watched new entrant in this field is startup **Verb Surgical** Inc., a partnership between Google parent **Alphabet** Inc.'s Verily Life Sciences unit and **Johnson & Johnson**'s Ethicon surgical-equipment division. The partners are referring to their concept as "surgery 4.0," the next step after traditional open procedures, minimally invasive surgery and the introduction of robotics.

Verb is offering scant details on how the system will work. But the idea involves using a type of artificial intelligence known as machine learning—computer programs that can crunch data from

thousands of past surgical procedures to identify best practices and potential errors.

The system, Verb says, could let surgeons train before an operation, and then assess how they did after the operation, measuring things like procedure time, economy of motion, and the number and type of instruments used. Eventually, the company says, the system will help surgeons make decisions in the midst of an operation, from suggesting the right technique in a particular surgery to warning of potential mistakes.

Verb plans to release its first product in 2020, and says it has already demonstrated a fully working system to its parent companies. "Right now, we have a very disconnected OR, with isolated equipment and robots, like a disconnected 1970s car," says Verb Surgical CEO Scott Huennekens. "Our vision is that eventually a connected system will be in every OR, giving surgeons the tools to take the variability out of

surgery."

Some surgeons have expressed interest in the possibilities. "Decisions need to be made in a matter of minutes during surgery, and there is an unmet need in translating existing data on outcomes to the immediate needs of surgeons," says Umamaheswar Duvvuri, a head and neck surgeon at the University of Pittsburgh and medical director of its new surgical innovation center. "If we could have big data crunched and available at the time we are doing surgery," he adds, "it would be akin to being able to say, 'Hey Siri, if I cut this nerve, what happens?'"

**CLEARER VIEWS INSIDE THE PATIENT**

A variety of technologies aim to let surgeons better see what they are working on inside patients as they operate.

Take the case of cancer surgeons. Removing a tumor is a delicate balancing act between cutting out disease and leaving healthy parts of the anatomy intact. But the contrast dye often used to light up diseased areas must be injected into patients well in advance, and may not always work as hoped for. The dyes are also toxic and can cause allergic reactions.

The University of Pittsburgh is working with **ChemImage** Corp., which is developing a method that it says lets doctors better visualize organs and tissues in real time, such as showing where a tumor ends and healthy tissue begins. Its technology, Molecular Chemical Imaging, or MCI, combines spectroscopy, the use of light to measure materials, and digital imaging.

Patrick Treado, founder and chief technology officer of ChemImage, says the technol-

ogy is broadly applicable and will be designed in the future for use with endoscopy procedures, in which doctors insert a tube with a camera that allows them to view and operate on organs.

"Our objective is to provide advanced visualization to the surgeon without changing how the surgeon currently performs surgery, but rather to provide them more and better information," Mr. Treado says. For example, the images could make it easier during a hysterectomy to identify the tubes that carry urine from the kidney to the bladder so surgeons don't inadvertently cut one. In addition to seeing tissues better through fat, overlying tissue and blood, MCI has the potential to make surgeons more efficient with less training.

Another effort to improve what surgeons can see is under development by a Cleveland Clinic spinoff, **Centerline Biomedical**. The idea is an alternative to fluoroscopy guided procedures, the X-ray technology that doctors now use to place a stent graft within an artery.

The traditional approach not only relies on contrast dyes but also exposes doctors and patients to continuous high doses of radiation. The images produced by fluoroscopy are also only 2-D grayscale images.

So, Centerline is developing a system to reduce the need for fluoroscopy and prevent the harmful effects of radiation. Using a mathematical algorithm and safe electromagnetic tracking, it provides 3-D color visualization and allows a surgeon to follow the position of instruments within the patient on a screen with a high level of accuracy—similar to GPS for cars.

With a new federal grant, Centerline is now testing the

system with HoloLens, the mixed-reality smart glasses made by **Microsoft** Corp. The glasses will superimpose a 3-D outline of the patient's vascular system onto a doctor's field of view, "like having X-ray vision," says Karl West, a mechanical engineer and director of medical-device solutions for Cleveland Clinic and scientific adviser to Centerline.

At Lucile Packard Children's Hospital, affiliated with Stanford University, Frandics Chan, a pediatric radiologist, worked with **EchoPixel** Inc. to develop an augmented-reality technology called True3D. The technology converts MRI, CT and ultrasound scans into a 3-D image that can be viewed with polarized glasses that filter the images to the left and right eye in front of a monitor while operating. Surgeons use a stylus to rotate and examine every layer of anatomy, getting more information than from 2-D imaging.

EchoPixel has since found a way for surgeons to see the images without the glasses by using a monitor that can channel the correct images to the left and right eyes. Dr. Chan says that eliminates the need to change glasses during the operation and the risk of contaminating the sterile surgical field. The new approach will be used in the hospital's new surgery center opening in July.

"We are really hoping that this technology will help surgeons be secure at every step so there is no need to guess something," Dr. Chan says.

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**EXPERTS' VOICES | DAVID BLUMENTHAL**

A call from your doctor's office inquiring whether you have

plans for Thanksgiving may not be typical, but it is an innovative way that one health-care system is addressing a clear threat to its patients' health—social isolation.

To be socially isolated doesn't simply mean dealing with the occasional bout of loneliness. It means being substantially disconnected from other people and society in general.

Evidence shows that social isolation is bad for your health, and that is especially true if you are older or a high-need patient—meaning you have two or more chronic illnesses and physical or cognitive limitations. That is be-

## The High Health Cost of Social Isolation—and How to Cure It

cause if you're sick, being socially isolated makes you sicker and can even cause early death

Like the chronic illnesses it complicates, social isolation can be treated. A review of 32 studies targeting social isolation among older adults found that several initiatives could improve patients' physical and mental-health outcomes. Interventions like connecting patients to social-support services have had success at lowering healthcare use and costs.

A number of U.S. health-care systems are experimenting with such remedies. CareMore, a health-care delivery system that operates Medicare Advantage plans in seven states, launched a "Togetherness Program" last May. It focuses on building personal connections with

patients at risk of social isolation. For example, around Thanksgiving last fall, CareMore staff called seniors to ask if they had a place to go.

LinkAges leverages technology and social interactions across generations to help older adults continue to live independently but remain engaged in their communities. One component of the LinkAges model is a "TimeBank," through which participants earn hours by providing services (cooking, driving, sharing hobbies) in return for services, help or instruction.

—Dr. Blumenthal is the president of the Commonwealth Fund, a national health-care philanthropy based in New York.

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# Augmented Reality Gives Brain Surgeons a Better View

By blending digital imagery with the physical world, doctors can see deeper and faster, reducing the risk of error

BY SARAH TOY

BRAIN SURGERY is never going to be easy. When a surgeon is removing a tumor, even a slight miscalculation in the angle of entry can interfere with important functions of the brain.

But augmented reality—blending digital imagery with the physical world—may help surgeons keep their focus at critical moments during the task.

Neurosurgeon Joshua Bederson recently used augmented-reality technology to remove a three-centimeter-wide brain tumor in a 76-year-old man's parietal lobe, a part of the brain that handles such information as touch and spatial orientation. Combining software that builds 3-D models of the head and brain, a tracking camera that matches the patient's facial features to those on the model and a powerful surgical microscope, Dr. Bederson was able to project a virtual image of the tumor and nearby structures directly onto the microscope's field of view.

Before using augmented reality, Dr. Bederson could see only the structures directly in front of him through the mi-



MOUNT SINAI HEALTH SYSTEM DEPARTMENT OF NEUROSURGERY

Joshua Bederson, right, works to excise a tumor as screens show navigation and reference images, including real-time visuals of the patient's brain with augmented-reality overlays of the tumor.

croscope. Now, using this technology, he can see farther—below the surface of the brain where his tools are.

Getting the necessary information during a surgery used to be a slower, more tedious task with many steps. Dr. Bederson would need to stop what he was doing, look up at the 2-D and 3-D images on various remote screens, memorize the

information there, look back down at the patient's brain and his tools, and approximate the positions of underlying important structures based on that information. With augmented reality, he doesn't have to make that switch—known as "attention shift"—nearly as often, reducing the risk of making an error.

Think of it as similar to

Pokémon Go, except with much more complex imagery and considerably higher stakes.

**A deeper picture**

Augmented reality is different from virtual reality, explains Timothy Witham, the director of the Johns Hopkins Neurosurgery Spinal Fusion Laboratory. Virtual-reality systems shut out the outside

world, giving users a complete immersive experience. In contrast, augmented-reality systems allow users to see and interact with their surroundings, but with additional data superimposed onto their visual field.

Virtual reality is useful in the planning process, but using it during a surgery would be impractical—and dangerous. Augmented reality, however, holds great potential in the operating room, according to researchers and a growing number of surgeons.

However, as with many nascent technologies, there is little solid evidence that the use of augmented-reality technology in neurosurgery improves patient outcomes. "At the moment, there are no outcomes-targeted studies," says Antonio Meola, a neurosurgeon at Stanford University Medical Center in Palo Alto, Calif., who has studied augmented reality in neurosurgery extensively. There are still no prospective studies or randomized control trials, the gold standard for establishing the efficacy of new surgical techniques, he says.

Medical centers have been using augmented reality in a limited capacity in endoscopic surgeries for at least a decade,

according to Mehdi Miremadi, a partner at McKinsey & Co. who has worked with several companies developing augmented-reality applications. However, large medical centers started using it in neurosurgery only in the past four to five years, he says, after advances in software that allow for greater precision.

**An easy choice**

Even now, there is a margin of error of one to two millimeters in the information overlay gets placed, Mount Sinai's Dr. Bederson says. So neurosurgeons have to remain vigilant—even a millimeter's miscalculation could mean the difference between retaining one's eyesight and lifelong double vision, he says.

But, Dr. Bederson says, making use of the information that augmented reality technology offers is an easy choice. "I've already reached the point now in my own practice where it is so useful that I would not do certain cases without it if I had a choice," he says.

**Ms. Toy** is a reporter for MarketWatch in New York. She can be reached at [reports@wsj.com](mailto:reports@wsj.com).

# A SMART WATCH IS ONE THING, A SMART HEART IS QUITE ANOTHER

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## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# Promise for Bone-Marrow Transplants

Companies hope new advances will make the procedure safer and more available

BY RON WINSLOW

FEW PROCEDURES in medicine present patients with a sharper double-edged sword than a bone-marrow transplant.

The treatment offers a potential cure for lethal blood cancers such as leukemia or lymphoma and other blood disorders. But it is a highly toxic and sometimes fatal procedure in which patients' immune systems typically are severely weakened or wiped out with high-dose chemotherapy or radiation. Many patients turn down the potentially lifesaving treatment, fearing that the cure is at least as bad as the disease.

Now several companies, acting on recent scientific advances from academic researchers and others, are racing to develop ways to make bone-marrow transplants safer and more effective. The hope is to increase the number of patients who can be treated with the procedure and extend its use to such debilitating conditions as sickle-cell disease and multiple sclerosis.

"It remains the court of last resort in many people's minds," says David Scadden, co-director of the Harvard Stem Cell Institute and director of the Center for Regenerative Medicine at Massachusetts General Hospital. "Until we make it safer and more tolerable, it's not going to be a therapy other than for those most seriously affected" by their underlying disease.

That will take some time. It's currently far from certain whether any of the approaches will improve the risk-benefit equation sufficiently to attract more patients to transplants. And even if all goes well with at least one of these efforts, the results are probably at least a couple of years from the market. What's more, such treatments will likely add significant costs to transplant regimens that can already cost several hundred thousand dollars.

## Umbilical-cord focus

Still, these efforts are the best hope at this point for patients who could benefit from bone-marrow transplants. Companies seeking to solve the transplant problem include Magenta Therapeutics Inc., based in Cambridge, Mass.; Gamida Cell Ltd., of Israel; ExCellThera Inc., Montreal; and Nohla Therapeutics Inc., Seattle.

A crucial part the effort is trying to make umbilical-cord blood a more effective source of the stem cells



Many transplant candidates don't get one because of difficulty finding a donor.

that are the key to bone-marrow transplants.

Many candidates for a transplant never get one because it is especially difficult to find a related or unrelated donor who is a good genetic match. Researchers say cord-blood stem cells are an attractive option in part because they are genetically immature and can succeed even if they are a less-than-perfect match.

But a unit of cord blood yields only about one-tenth the number of stem cells available from adult blood. Without a sufficient dose of cells, transplants are at a high risk of failing or of taking so long to engraft in the recipient's bone marrow that patients face lengthy exposure to life-threatening infections. Fewer than 1,000 patients a year in the U.S. get a cord-blood transplant, according to the Center for International Blood and Marrow Transplant Research, based at the Medical College of Wisconsin.

Bone marrow is soft, spongy tissue that resides inside many bones. It produces the stem and progenitor cells that become red blood cells that carry oxygen to the rest of the body, white blood cells that form the immune system and platelets that regulate blood clotting—all functions critical to sustaining life.

Some 23,000 patients undergo a bone-marrow transplant in the U.S. each year, according to the transplant research center. (The procedure is also known as a hematopoietic stem-cell transplant, depending on whether the donated cells come from

marrow or the donor's blood.)

About 60% of patients undergo an autologous transplant, in which their own stem cells are used for the treatment. The rest get allogeneic transplants, where donors can include siblings or unrelated donors determined to be a match. Patients often seek unrelated donors through sources such as Be The Match ([bethematch.org](http://bethematch.org)), a registry managed by the National Marrow Donor Program, a nonprofit based in Minneapolis.

## Daunting numbers

Even when a transplant succeeds, allogeneic patients are vulnerable to graft vs. host disease, a potentially lethal complication that occurs when the newly formed donated immune system attacks a host it sees as foreign.

Results vary widely depending on the disease, where the donor cells come from and other factors, but about 25% of patients die from the transplant itself. That's down from about 40% three decades ago, says Bronwen Shaw, professor of medicine at the Medical College of Wisconsin and senior scientific director of the transplant research center. About 30% of patients die because their disease relapses, a problem where little progress has been made, she says.

"Even the best survival curves aren't that reassuring for patients," says Stephanie Lee, a bone-marrow transplant doctor and researcher at the Fred Hutchinson Cancer Research Center in Seattle. "We have a long way to go to improve things."

## Challenges to Meet

Bone-marrow transplants hold the potential to treat more than just blood cancers, but safety and effectiveness have been problems.

**23,000**

Bone-marrow transplants a year in the U.S.

**25%**

Approximate mortality rate from the transplant itself, depending on the disease and patient's health

**30%**

Rough percentage of patients who die because their disease relapses

Source: Center for International Blood and Marrow Transplant Research  
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stem cells, says Julian Adams, chairman and chief executive officer. NiCord has received breakthrough-therapy designation from the U.S. Food and Drug Administration, potentially speeding the product's review; it is currently being tested in a Phase 3, or late-stage, clinical trial.

ExCellThera has launched two clinical trials of yet another molecule, called ECT-001, based on research at the University de Montreal. It says its process can increase cord-blood stem cells 35-fold in seven days. Initial experience indicates the approach is "safe and feasible," the company says on its website.

## A temp on the job

Nohla has a different approach that doesn't require increasing cord-blood stem cells before the transplant. Colleen Delaney, director of the cord-blood transplant program at the Fred Hutchinson center in Seattle and founder and chief medical officer at Nohla, developed a product, based on the discovery of a colleague, that rapidly establishes a temporary blood and immune system to protect the patient while the standard dose of cord-blood stem cells gradually takes hold. One benefit: the patient avoids having to wait for additional stem cells to be manufactured once donor cord blood is found.

The product, called NLA101, is given along with the donor cord-blood cells to patients whose immune systems have been fully wiped out and thus aren't there to reject the treatment. That means the temporary cells don't have to be genetically matched to an individual patient and can be readily available off the shelf for a procedure. Once a new immune system based on the donor cord-blood cells takes hold, it attacks the temporary cells.

The goal isn't for NLA101 to persist long-term, says Dr. Delaney. "It doesn't replace donor cells. It does the job of your bone marrow while your bone marrow recovers."

Clinical results so far indicate among other things that the treatment leads to rapid blood and immune-system recovery and a long-term immune benefit with reduced graft vs. host disease and better disease-free survival, she says. Nohla expects to finish a 160-patient Phase 2 study this year and be ready to launch a Phase 3 trial in 2019.

**Mr. Winslow is a writer in Bethel, Conn. Email reports@wsj.com.**

# AI Tools Help the Blind Tackle Everyday Tasks

A host of products promise to radically change the lives of the visually impaired

BY CHRIS KORNELIS

SINCE LOSING HIS vision at age 13, Erik Weihenmayer has summited Mount Everest, white-water rafted and climbed frozen waterfalls. But making soup in his kitchen presented a unique challenge. On a frozen waterfall he could tap his ax against the ice to get a feel for its density, but in the kitchen, he had no way to differentiate between cans of tomato and chicken noodle.

Mr. Weihenmayer, 49 years old, found a solution in Microsoft Corp.'s Seeing AI, a free app for the visually impaired. Among other things, the app can recognize faces, identify money, read handwriting and scan bar codes to differentiate between cans of soup.

"It is a game-changer," says Nathan Brannon, a blind 54-year-old Seattle resident who tests software for accessibility.

Seeing AI is just one of the artificial-intelligence-powered products that are helping blind and vision-impaired people live more independently. Improvements in voice recognition and computer vision, along with machine learning, have led to specialized products such as Seeing AI, as well as mainstream devices like the Amazon Echo, that are allowing the visually impaired to tackle everyday tasks sighted people take for granted. Advocates for the blind say these technologies have the potential to fundamentally change the mobility, employment and lifestyle of the blind and vision-impaired.

Microsoft says it has no plans to monetize the app, which launched in 2017, calling it part of the company's efforts to empower all people, including those with disabilities.

Of course, many of the

voice-activated devices that have become powerful aids for the blind, such as Amazon's Echo and Google Home, weren't specifically designed for them, or with philanthropy in mind.

Mr. Weihenmayer, for example, uses Comcast's voice remote to find TV shows, Apple's Siri to send texts and Amazon's Alexa to cue up his favorite music.

Mike May and his wife, both of whom are blind, have about a dozen Alexa-connected devices in their home that do everything from turn off the lights to tell them when a load in the washing machine will be done. "It's become so much a part of my life that I almost don't even think about it anymore," says Mr. May, who works at Wichita, Kan.-based Envision, a provider of services for the blind and visually impaired.

**Setting the scene**

Both Mr. May and Mr. Weihenmayer also use a product called Aira, which uses glasses with a camera, sensors and network connectivity to connect the visually impaired to human agents, who can describe users' surroundings and assist them with tasks such as online searches.

"They have it done in two minutes," Mr. May says of online searches. "It takes me 10 times as long and I'm fairly proficient."

Mr. May once used Aira, made by Aira Tech Corp., to get a different look at Seattle's Pike Place Market, which he usually navigates with the help of a guide dog. The Aira rep described the scene in detail, Mr. May says, right down to the interesting tattoos adorning a checkout person. The technology costs between \$89 (for 100 minutes) and



The Seeing AI app narrates the scene aloud, including faces—with name, if it recognizes someone.

\$329 (unlimited minutes) a month.

"I think this technology gives people the confidence to go out and explore unknown areas where you just might be a little bit hesitant to go out as a blind person," says Mr. Weihenmayer, a co-founder of No Barriers, a nonprofit that supports and advocates for people with disabilities.

Aira uses artificial intelligence for some tasks already, such as identifying pill bottles, says Suman Kanuganti, founder and chief executive of Aira Tech. But he expects AI eventually to take over more of the work the human reps are now doing, such as navigation.

Aira has raised roughly \$15 million from investors. Mr. Kanuganti says its user base is in the low thousands and it has provided more than one million minutes of services in more than 100,000 sessions.

One major hurdle to bringing specialized products for the blind to market is the size and disposable income of the target audience. The World Health Organization estimates that of the 253 million people

## Where AI Can Help

U.S. population with vision difficulty

Under age 18

**571,800**

65-plus

**3.2 million**

Total

**7.7 million**

Source: Census Bureau

THE WALL STREET JOURNAL.

world-wide who live with vision impairment, 36 million are blind. The Census Bureau estimates that more than seven million Americans are visually impaired. Many of them are unemployed or underemployed.

"You cannot build a business around only blind people," says Ziv Aviram, co-founder and CEO of Israeli-based OrCam, the maker of the MyEye 2.0 device, which is targeted at people with low vision but can be used by the blind, as well. "You can do philanthropy, but not business."

MyEye 2.0 mounts onto the

side of glasses and can recognize money, faces and surroundings. When users point their fingers at signs or menus, MyEye can read them.

The device, which costs around \$4,500, in some cases is covered by the Department of Veterans Affairs, as well as some workforce associations, OrCam says.

## Built-in accessibility

As much as blind people need specialized technology, building accessibility into mainstream products may be an even bigger need, say advocates such as Mark Riccobono, president of the National Federation of the Blind.

He points to the iPhone, which had accessibility built into it from the beginning.

"I can go down to the Apple store and pay the same price and triple-click the home button and I have VoiceOver," says Mr. Riccobono, referring to a feature where the phone will describe aloud what is happening on the screen. "That's built in, it's great, it doesn't cost a penny extra."

One coming mainstream technology that could be life-

changing for the blind is the driverless car.

"Transportation can be a very large barrier in the lives of blind people," impeding everything from employment to education, says Eric Bridges, executive director of the American Council of the Blind. "Having the ability to have one of these vehicles come and take you where you want to go, when you want to go, and not be constrained by the paratransit system or the fixed-route system," promises a greater level of independence and freedom, he says.

In a white paper last year, the Ruderman Family Foundation, which advocates for the inclusion of people with disabilities in society, claimed self-driving vehicles "would enable new employment opportunities for approximately two million individuals with disabilities, and save \$19 billion annually in health-care expenditures from missed medical appointments."

Mr. Bridges and Mr. Riccobono are pushing manufacturers to keep the blind in mind when designing driverless cars. Specifically, they want the car's controls and console to be accessible to those who can't see, which "probably means more than just having it talk," says Mr. Riccobono.

Waymo—Alphabet Inc.'s self-driving-car unit, which plans to launch a self-driving-car service this year—says it is putting audio tools and Braille labels inside its cars to allow visually impaired riders to do everything from pull the car over to call an operator.

Anne Catherine Walker, a 17-year-old visually impaired high-school junior in Mechanicsburg, Pa., says she, for one, can't wait. "I live out in the middle of nowhere," she says. "I want to be able to leave without having to drag someone along with me."

**Mr. Kornelis is a writer in Seattle. Email him at reports@wsj.com.**



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## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# The Heated Quest for Opioid Alternatives

Drugmakers are pursuing a number of new drugs that show less risk of abuse

BY BRIAN GORMLEY

RISING ABUSE of prescription painkillers is intensifying a search for alternatives to addictive opioids.

Overdoses of prescription opioids kill about 46 Americans a day, according to the Centers for Disease Control and Prevention. Despite that toll, opioids remain in widespread use because they are powerful painkillers, and many attempts to develop new therapies have failed.

But drugmakers are exploring a growing number of potential alternatives and are conducting clinical trials of several painkillers designed to have little or no risk of abuse or addiction. "Pain drugs are going to get better," says Neil Singla, chief scientific officer at Lotus Clinical Research LLC, a company that conducts clinical trials and specializes in pain studies. "We've got enough darts out there that someone's going to hit the bull's-eye."

The search for new treatments is a race not only against the tide of opioid abuse but also against the aging of America. With the population developing more back problems, joint diseases and other age-related illness, pain is ubiquitous. More than 25 million Americans suffer from daily pain, according to the National Institutes of Health.

Clinicians also will need better options as more people survive cancer and other diseases and suffer the painful side effects of treatment, says Peter Staats, chief medical officer of National Spine & Pain Centers, a pain-management practice based in Rockville, Md. "We desperately need alternatives" for managing pain, Dr. Staats says.

## New tactics

Opioids, which activate specific receptors in the brain, spinal cord and elsewhere, can cause euphoria that leads to addiction. They can also cause problems like nausea, vomiting and breathing troubles.

Drugmakers hope to sidestep these effects by targeting new molecules and avoiding opioid receptors. One new target is nerve growth factor.

In fetuses and infants, this protein, as its name suggests, promotes nerve growth. But when the nervous system matures, NGF's role is to process pain signals, says Ken Verburg, who heads Pfizer Inc.'s effort with partner Eli Lilly & Co. to develop a drug that binds to nerve growth factor to prevent it from activating pain-signaling neurons.

That medicine, tanezumab, has shown promise in several conditions. For example, a study published in the journal PAIN found that in chronic low-back pain, tanezumab provided significantly greater improvement in pain and physical func-



DANIEL DOWNEY

tioning compared with a placebo or naproxen, a type of pain reliever known as an NSAID, or nonsteroidal anti-inflammatory drug.

Phase 3 studies are continuing in osteoarthritis, chronic low-back pain and cancer pain, and results in osteoarthritis are expected in the second half of this year, Dr. Verburg says.

## New injections

Tanezumab is one of several agents that could offer a new way to manage osteoarthritis—in which cartilage degenerates and changes occur to the underlying bone—and so make it less likely that patients will need opioids for the pain.

One new option is Zilretta, which is injected into the knee and is designed to provide longer-lasting relief than generic corticosteroid shots used for short-term pain treatment. Zilretta, which received Food and Drug Administration approval in October, treats pain as a corticosteroid is gradually released from tiny globes known as microspheres.

Zilretta developer Flexion Therapeutics Inc., based in Burlington, Mass., studied the drug in Phase 3 clinical trials comparing Zilretta to a placebo and an immediate-release corticosteroid. These trials, published in the Journal of Bone and Joint Surgery, found that the drug met its primary goal of providing significant pain relief compared with a placebo over 12 weeks.

Side effects of corticosteroids that could occur with Zilretta treatment include infection in the injected knee, according to the company.

An experimental drug from Centrexion Therapeutics Corp., a Bos-

## Options Needed

From 1999 to 2016, more than 200,000 people died in the U.S. from overdoses related to prescription opioids.

Statistics for 2016 alone:

**42,249**

Deaths from opioid-related drug overdoses

**46**

Daily deaths from overdoses involving prescription opioids

**17,087**

Deaths attributed to overdosing on commonly prescribed opioids

**2.1 million**

People had an opioid-use disorder

**11.5 million**

People misused prescription opioids

Sources: Department of Health and Human Services; Centers for Disease Control and Prevention

THE WALL STREET JOURNAL

knee stiffness and improvement in joint function, according to Centrexion, which is now testing the treatment in Phase 3 studies.

"It's a promising treatment," says Marc Hochberg, professor of medicine and epidemiology and public health at the University of Maryland School of Medicine, who isn't involved in Centrexion trials. "Based on the data we currently have available, it showed promise which hopefully will be replicated in Phase 3" clinical trials.

## After surgery

Other localized treatments aim to reduce opioid use after surgery. Pacira Pharmaceuticals Inc.'s Exparel secured U.S. regulatory approval in 2011 and can be used to treat the pain of surgical wounds.

The product slowly releases the local anesthetic bupivacaine to control pain for two to three days after surgery, according to Pacira, which says it saw a 78% reduction in overall opioid consumption in studies of patients receiving Exparel compared with conventional bupivacaine that limits pain for a few hours.

Jonathan Friedstat, an acute-burn and reconstructive plastic surgeon at Massachusetts General Hospital, has used Exparel in patients who need to have a thin layer of skin shaved from one part of the body and grafted onto another part that has been burned. Skin harvesting often causes more pain than the burn itself, according to Dr. Friedstat, who has used Exparel along with conventional bupivacaine to treat these wounds during surgery.

Three-quarters to 90% of patients have had a good response to Exparel

in his experience, Dr. Friedstat says, adding that these people need far less opioid therapy after surgery. "When it works, they need very little narcotic," he says. In April, Parsippany, N.J.-based Pacira gained a new approval from the FDA allowing Exparel to also be used as a nerve block to curb pain in the shoulder region after shoulder surgeries.

Another company, Heron Therapeutics Inc., says it recently saw reduced pain and opioid use in Phase 3 trials of a medicine that combines a long-acting bupivacaine with an anti-inflammatory agent.

Bupivacaine is sensitive to drops in pH caused by inflammation in the surgical site, according to Heron Chief Executive Barry Quart. Adding the anti-inflammatory agent meloxicam raises the pH to normal levels that existed before surgery. That allows more bupivacaine to enter nerves and stop pain signals from being relayed to the brain, Dr. Quart says.

In Phase 3 trials, bunion-surgery patients receiving the drug had pain reductions of 27% and 18%, respectively, compared with a placebo and conventional bupivacaine, according to Heron. And over 72 hours after surgery, opioid use was 37% less and 25% less, respectively, in patients getting the drug compared with those getting a placebo or conventional bupivacaine, according to San Diego-based Heron.

Heron, which also saw good results in Phase 3 studies of hernia-repair patients, plans to seek U.S. regulatory approval for postoperative pain in the second half of this year, Dr. Quart says.

## A better opioid?

Another approach to easing opioid addiction is to build a better opioid, designed not to produce euphoria. Commonly prescribed opioids induce euphoria—and a desire to continue using the drug—by triggering a spike in the level of the chemical messenger dopamine in the brain's reward center, says Stephen Doberstein, chief research and development officer of Nektar Therapeutics.

San Francisco-based Nektar says it has engineered a new opioid that enters the brain slowly to reduce the release of dopamine. A study published in the journal Pain Medicine of healthy, adult recreational drug users not physically dependent on opioids found Nektar's drug was less likable to them than the opioid oxycodone. The company says it plans to file soon for FDA approval.

"We've dramatically blunted likability," Dr. Doberstein says. "It doesn't appear to cause this euphoric effect that old-fashioned drugs do."

**Mr. Gormley is a Wall Street Journal reporter in Boston. Email: [brian.gormley@wsj.com](mailto:brian.gormley@wsj.com).**

# Robots and Chatbots Look After the Elderly

Researchers are testing whether digital assistants can help older people stay healthy

BY IMANI MOISE

TWICE A DAY a little robot in Rayfield Byrd's living room lights up and asks him a very personal question: "Have you taken your medication?"

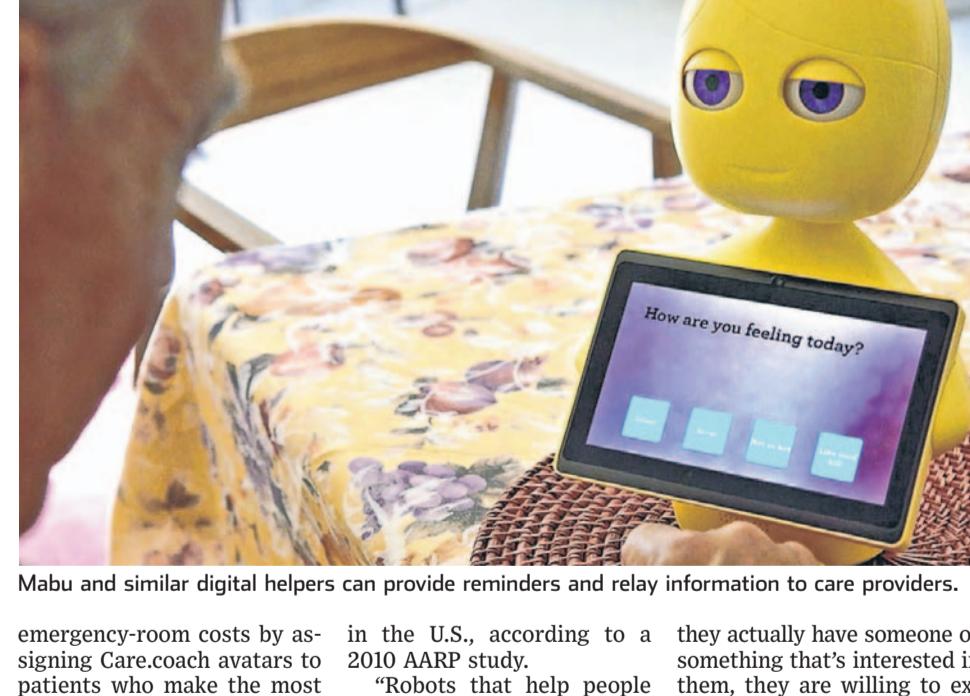
For the past few weeks, Mr. Byrd, a 67-year-old retired transit worker who lives alone in Oakland, Calif., has been able to proudly answer "yes."

The portable robot's name is Mabu, and at the recommendation of his health-care provider, she now lives with Mr. Byrd to help monitor his irregular heartbeat. She checks in on him two or three times a day to make sure he weighs himself, takes his medication and exercises regularly—and relays information back to his health team.

"She's my little blue-eyed girlfriend," he says. "She keeps me on my toes."

## Avoiding the ER

With the senior-citizen population expected to nearly double to 88 million by 2050 and some nursing programs stretched thin, researchers and elder-care centers are exploring the potential of digital companions, in robot or chatbot form, to help the elderly. Digital assistants like Mabu and others are being developed to do everything from monitor chronic health conditions to encourage patients to stay active and engaged—with the overall goal being to find ways to meet the needs of a growing elderly population.



CATALIA HEALTH

without overburdening the health system.

While the idea of bringing automation to elder care has been discussed for years, recent technological advances in natural-language processing have moved it closer to reality, says Dor Skuler, the founder of the firm behind ElliQ, a robot that encourages the elderly to stay active and connected to loved ones. Before such advances, people had to speak to digital assistants in specific formulaic commands, making the technology difficult and frustrating to use, especially for seniors.

Already, digital assistants have allowed some health systems to cut back on nurse home visits and prevent unnecessary trips to the emergency room.

Element Care, an elder-care program in Boston, last year began dispatching digital avatars, instead of nurses, to help some patients manage their chronic conditions at home. The technology, from Care.coach Corp., uses an animal avatar on a tablet to remind patients to take their medications and follow their treatment plans. About 70% of what is spoken by the avatar is written out by human specialists working behind the scenes, says Care.coach Chief Executive Victor Wang, while the other 30% is generated via artificial intelligence.

Kendra Seavey, Element Care's clinical administrative manager, estimates that the center has saved \$150,000 in

emergency-room costs by assigning Care.coach avatars to patients who make the most frequent hospital trips. Sometimes, the avatars guide patients through breathing exercises to calm them down; other times, just giving patients an ear to talk to prevents them from calling 911.

"We have individuals who just get anxious and want to go to the hospital or are lonely and want to go to the hospital," she says. "There's no need for them to go there."

## Alleviating loneliness

Indeed, loneliness is one of the key problems researchers and companies are trying to solve with digital companions. Loneliness is a significant predictor of poor health, and it is widespread, affecting more than one-third of older adults

in the U.S., according to a 2010 AARP study.

"Robots that help people connect with and maintain their relationships with others are becoming increasingly important," says Timothy Bickmore, a professor at Northeastern University who is developing a digital assistant to help the elderly navigate the final stages of life.

While older people aren't usually early adopters of new technologies, seniors who lack companionship tend to be receptive to having automated friends, says Maja Mataric, a professor of computer science and neuroscience at the University of Southern California. "In many cases their friends have died, no one cares to spend time with them, and the grandkids think they smell funny," she says. "So when

they actually have someone or something that's interested in them, they are willing to explore it."

Ms. Mataric, who has studied using robots to improve the attention spans of dementia patients, says robots give patients the illusion of having a physical companion, and the elderly often interact with them in surprising ways, such as by petting them and asking how they are feeling.

Programming robots and chatbots to act as friends is simpler than it might seem, developers say. ElliQ, now in beta testing, turns to face users when they are talking, to show attentiveness, and bounces with excitement when a message arrives from a loved one. Mabu, from Catalia Health Inc., uses eye contact to show it is listening to users.

"It isn't actually very hard to project empathy," Ms. Mataric says. "Empathy is what you do, not what you feel."

Most of today's socially assistive technology also is designed to be cuddly and cute, defying the stiff and scary stereotype associated with robots in the past. Paro, a speechless lap-sized robot from Japan's National Institute of Advanced Industrial Science and Technology, looks like a baby seal and is used much like a live therapy animal to soothe patients. Paro, which displays emotional reactions to touch and sound, became a certified medical device in the U.S. in 2009 and has sold roughly 5,000 units world-wide, primarily in Japanese elderly facilities.

## Real people

But even as technological advancements make empathy and companionship easier to simulate, those in the field say digital companions aren't meant to replace the human touch.

Care.coach's Mr. Wang says human specialists will remain an important part of his product because building a long-term supportive relationship with a patient requires an actual person.

Real people also are going to be needed to perform the harder, and dirtier, tasks associated with elder care—at least for the foreseeable future, experts say. "We aren't developing robots who can toilet the elderly anytime soon," says Ms. Mataric.

**Ms. Moise is a former reporter for The Wall Street Journal. She can be reached at [reports@wsj.com](mailto:reports@wsj.com).**

## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# Apps Promise to Help Avoid Pregnancy

Women use their smartphones to track their fertility. But doctors are skeptical.

BY SAABIRA CHAUDHURI

MORE WOMEN are counting on their smartphones to help them avoid getting pregnant—a trend that has some experts worried.

As people increasingly turn to technology to monitor everything from their sleep to heart palpitations, apps that help women track their fertility are taking off, particularly among millennials, even as questions swirl about their reliability as a sole form of birth control.

"There's definitely a groundswell of interest from 20-somethings in these methods," says Marguerite Duane, a physician and lead author of a 2016 study in the Journal of the American Board of Family Medicine. The study identified almost 100 apps that allow women to track their fertility with the aim of avoiding or achieving pregnancy.

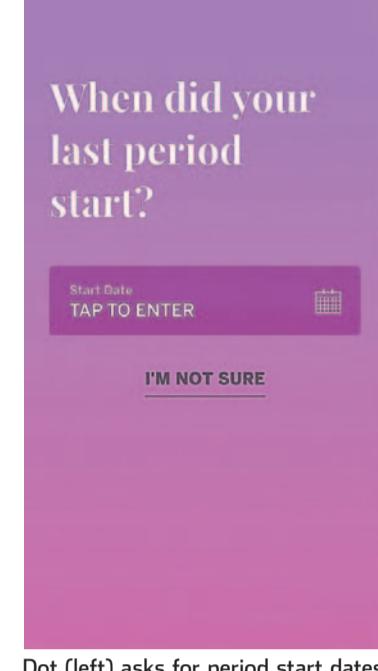
One such app, Natural Cycles, last year received regulatory approval to market itself as a contraceptive across Europe. The company, which says it has 800,000 active users mainly in the U.K. and Sweden, is now awaiting a decision from the U.S. Food and Drug Administration about whether it can become the first fertility tracker to market itself as a contraceptive in the U.S.

Natural Cycles, along with brands such as Sympto, Dot, Ovulation Mentor and Lady Cycle, are designed to identify the few days each month that women are fertile, and they employ a range of methods to do so.

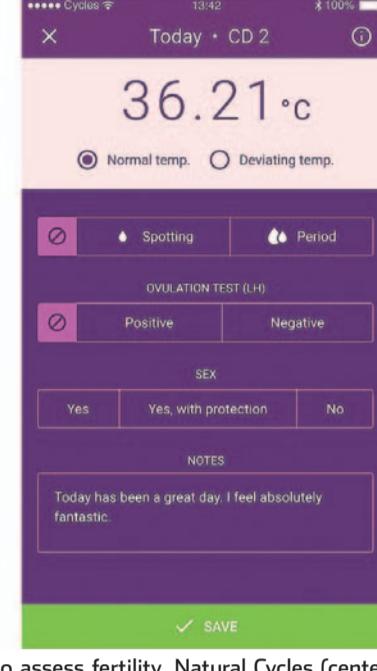
Natural Cycles uses daily temperature readings, coupled with factors such as average sperm-survival rates, temperature fluctuations and cycle irregularities to predict fertile days. Sympto uses a combination of cervical-fluid observations, temperature and menstruation recordings, while Dot uses an algorithm that learns over time to predict an individual's pregnancy risk based on her period start dates. Prices range from free to the \$79.99 annually for the Natural Cycles app.

Despite the growing popularity of these apps, some researchers question their reliability.

In Dr. Duane's 2016 paper, researchers found that the majority of apps they examined didn't follow proven guidelines to identify potential



Dot (left) asks for period start dates to assess fertility. Natural Cycles (center and right) uses temperature and more.



CYCLE TECHNOLOGIES/NATURAL CYCLES(2)

days of fertility and included disclaimers discouraging their use as contraceptives. In a separate study published in 2016 in *Obstetrics & Gynecology*—the journal of the American College of Obstetricians and Gynecologists—researchers found that just three of 33 apps they analyzed accurately predicted the window during which women are fertile.

"I'm usually a positive person, but on these things I'm pretty negative," says Mary Jane Minkin, professor of obstetrics, gynecology and reproductive sciences at Yale School of Medicine. "You don't need a fancy app to plot and chart your temperature."

Dr. Minkin says she wouldn't recommend a contraceptive app for anyone who definitely wants to avoid pregnancy.

## Fancy rhythm method?

Critics such as Dr. Minkin say fertility-tracking apps are nothing more than a twist on the decades-old rhythm method, which predicts ovulation based on a woman's menstrual history. Overall, contraceptive methods based on fertility awareness have an efficacy rate of 76%, lower than the pill's 91% and even the 78% rate associated with withdrawal, according to the Centers for Disease Control and Prevention.

## Dropping the Pill

Nearly a third of American women ages 15 to 44 who said they had ever used the pill reported discontinuing it. Among those who quit, the leading reasons:

**63%**  
Had side effects

**12%**  
Worried about side effects

**12%**  
Didn't like changes to menstrual cycle

**11%**  
Became pregnant

**10%**  
Too difficult to use

Note: Based on 2006-10 survey data.  
Multiple responses allowed.

Source: National Center for Health Statistics

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that follow hormonal fluctuations through the menstrual cycle. By contrast, the rhythm method relies on recording the length of past menstrual cycles to determine one's fertile window.

Leslie Heyer, the founder of Dot, which was launched in 2015 and has about 60,000 active users, says the app's algorithm incorporates information from large global data sets and fertility studies to determine a woman's risk for pregnancy. "It is determining the statistical probabilities of future cycle lengths, the timing of ovulation in those cycles, and calculating fertility probabilities," Ms. Heyer says. "As new information is entered by the user, it takes that into account to adjust its estimates."

Raoul Scherwitzl, Natural Cycle's founder, says his app also goes well beyond digitizing the rhythm method.

"The core difference is that from the temperature data, it can distinguish between a fluctuation arising from the way [a woman] measured her temperature and a true rise in temperature triggered by ovulation, and takes into account sperm survival, irregular cycles, ovulation day and the length of the follicular and luteal phase," Mr. Scherwitzl says.

The typical user of Natural Cycles

is, on average, 29 years old and in a stable relationship, the company says. She must be able to follow a daily routine, preferably taking her temperature at the same time every morning. And just as the pill depends on women remembering to take it at roughly the same time every day, contraceptive apps require users to take a daily, active role in recording symptoms, which can lead to missteps.

Still, a Natural Cycles study of 22,785 women published in the medical journal *Contraception* in December reported a 93% efficacy rate for the app with typical use.

In Sweden, however, complaints of unintended pregnancies among users have sparked an investigation by Sweden's drug regulator.

The company says the reports aren't surprising given its user growth. Mats Artursson, an inspector at the Swedish Medical Products Agency who is leading the investigation, says that so far the rates of unintended pregnancy are in line with the typical efficacy rate Natural Cycles promises.

## Search for alternatives

Entrepreneurs and public-health researchers expect demand for fertility apps to continue to grow as women seek alternatives to their current contraceptive choices.

Many alternatives to the pill primarily use the same hormones, changing only the delivery mechanism to patches, rings, implants and injectables. And nonhormonal options such as the copper coil have been reported as painful to insert and tied to longer, heavier periods.

About 40% of women who take the pill stop within 12 months, according to a World Health Organization analysis of data from 25 countries between 1990 and 2009.

A 2013 report from the Centers for Disease Control and Prevention examining data between 2006 and 2010 found that 63% of U.S. women who stopped using the pill did so because of side effects, and 12% said they stopped because they were worried about side effects.

**Ms. Chaudhuri** is a reporter for The Wall Street Journal in London. She can be reached at [saabira.chaudhuri@wsj.com](mailto:saabira.chaudhuri@wsj.com).

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## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# For Those With Dementia, an Assist From Technology

## Sensors, tablets and other devices can make it easier to live independently for longer

BY SHIRLEY S. WANG

TECHNOLOGY PROMISES to make it easier for people with dementia to live independently for longer and stay connected with family and friends.

Home sensors, communications and personal navigational devices—some of which are already commercially available—provide ways to monitor patients and loved ones from afar. Robotics, smartphone apps and some intriguing experiments with tablet computers, meanwhile, show the potential to help sufferers of dementia sustain their social and family contacts.

Help can't come soon enough. An estimated 50 million people worldwide suffer from dementia, according to the World Health Organization—a number that is expected to rise exponentially as the global population ages. And for families of patients who require nursing homes in later stages, the resulting costs can be crushing.

"Technology has the potential to help preserve independence, or at least maintain it, for many, many more years than is currently possible," says Dr. P. Murali Doraiswamy, director of the neurocognitive disorders program at Duke University Health System. "Ultimately we want nursing homes to disappear. We want people to live peacefully in their own home."

Still, experts caution that many products being marketed as helpful to those with dementia haven't been systematically tested for that population, and that unintended consequences, such as invasion of patient privacy, need to be considered.

"The reality is the evidence that any of this helps or works is very thin," says Jeffrey Kaye, director of the Oregon Center for Aging and Technology.

**Monitoring patients**

Among the products already available are remote-home-surveillance systems that enable basic monitoring of patients from a distance using a mobile phone—offering reassurance about patients' well-being and capabilities.

Wrist-worn motion detectors and GPS devices, for instance, can help detect what a person is doing inside

the home, such as if they are sleeping or agitated. Such devices could potentially help with detecting falls or finding a person who leaves the house and becomes lost. Pine Brook, N.J.-based AngelSense markets a service for dementia patients that requires an equipment purchase of \$99 plus a monthly service fee of \$33 and up.

Something as simple as an electronic-calendar reminder may help some remember appointments and medicines. A case study published last year in the Journal of Alzheimer's disease found that Google calendar helped a woman with dementia remember scheduled events.

### Smart homes

At the University of Montreal, a team led by Nathalie Bier, a professor in the School of Rehabilitation, is trying to design "smart homes" by fitting small, commercially available "Z-wave" wireless sensors around the house in nearly invisible locations, such as on a fridge door. The sensors can detect activity around a stove, for example. If the stove is on but activity there stops, the stove can turn itself off. Similarly, monitoring of water usage shows whether a shower or bath was left running.

Another idea the group plans to incorporate: a smart pillbox that can reveal when someone is, or isn't, taking their medicine. Of versions that already exist, some send a record of when they have been opened and whether the weight has changed, suggesting a pill was taken.

Such details provide information about a patient's routine and what level of care that person needs, such as whether he or she needs help bathing or preparing their own meals, says Dr. Bier.

"It's really trying to provide the right service for the right person at the right time," she says.

Oregon's Dr. Kaye also is experimenting with inexpensive infrared sensors to capture data continuously in the home in real time. He monitors everything from pulse rates and walking speeds to whether the patients open their pillboxes. This kind of data, Dr. Kaye says, is much more telling than information obtained by interviewing patients or caregivers.

Induct, a British-based consortium of researchers who study technology

for dementia care, is investigating potential usefulness of a number of devices, including an experimental smartphone app that attempts to improve the emotional states of people with dementia. The app is designed to launch itself several times a day and assess the person's general mood or well-being by asking how he or she is feeling at that moment, says Martin Orrell, the head of Induct and director of the Institute of Mental Health at the University of Nottingham.

The goal is to examine not just what people are doing, but how they are coping. If a person is feeling down, Dr. Orrell says, the device could suggest activities the person likes that could help distract them or make them feel better.

### Still learning

Still other researchers see potential in tablet computers. Dr. Bier and her team in Montreal have run experiments which suggest that, with specialized training, dementia patients using tablets can keep to schedules and orient themselves to the correct date.

Even as memory deteriorates with disease, Dr. Bier says, good training can help people with dementia use tablets and smartphones to assist them in everyday living for years.

Pilot work by Franka Meiland, senior researcher in the department of psychiatry at VU University Medical Center in Amsterdam, has shown technology that reminds people about which day it is helps to better orient them in the present. Dr. Meiland says she has also conducted research that shows that tablet computers help people with dementia keep in touch with relatives and do activities that improve their quality of life, such as listening to music they like or playing games and activities that keep them entertained.

"We must be cautious" about the role of technology because often a caregiver still may be needed to help the patient use it, Dr. Meiland says,

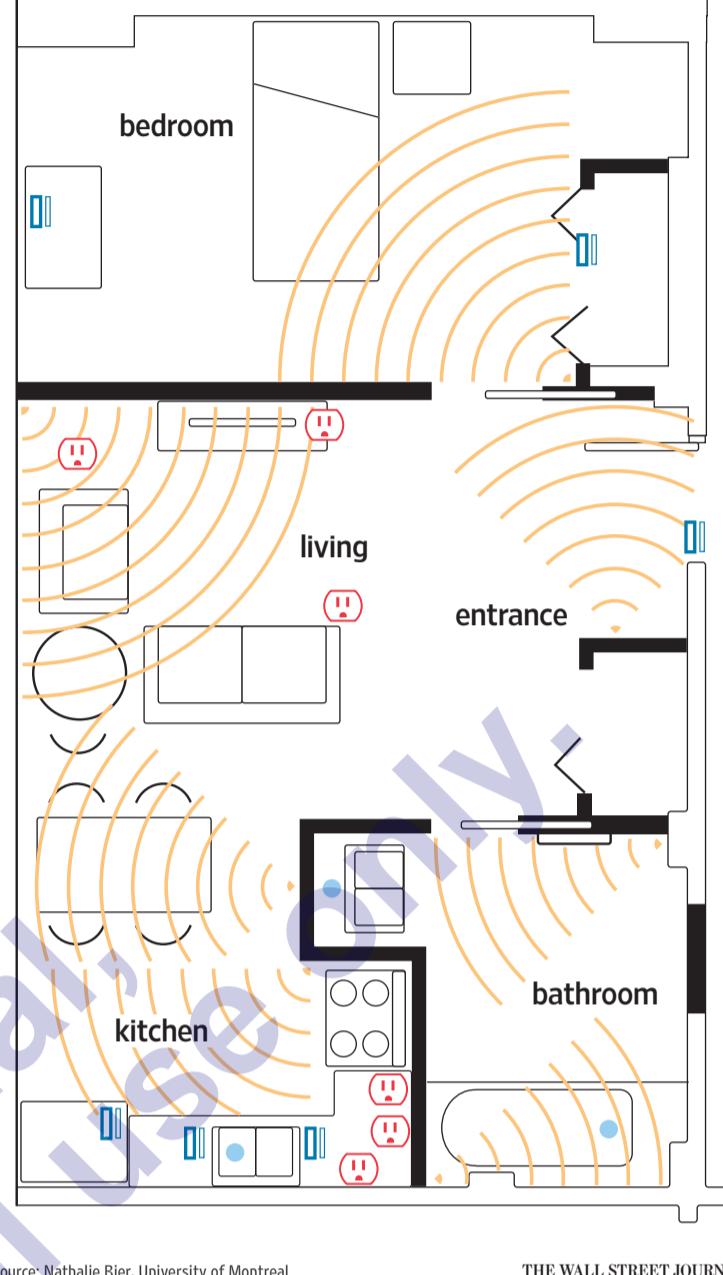
but "there's a promise that assistive technology may make health care much more efficient, helping maintain good quality care."

**Ms. Wang is a writer in London. Email her at [reports@wsj.com](mailto:reports@wsj.com).**

### Keeping Tabs

Home sensors can help in the management and treatment of Alzheimer's, tracking changes in patients' wandering, agitation and circadian rhythm, as well as monitoring for safety. How sensors could be deployed in one apartment and what they track:

- ① Electric Use of appliances, lights, etc.
- ② Motion The patient's movements
- ③ Contact Opening and closing of doors
- ④ Water Water usage



Source: Nathalie Bier, University of Montreal

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## Scientists Looking for Funds May Want to Ask the Crowd



BY SIMON CONSTABLE

SCIENTISTS struggling to find funding for research may have a new source of money: crowdfunding.

That's the conclusion of a new study, which suggests that scientists who lack extensive published research may be better off gathering many modest contributions instead of pursuing large financial grants from traditional sources.

"Junior scientists tend to be more successful than senior scientists" at crowdfunding, say researchers Henry Sauermann of the European School of Management and Technology in Berlin, Chiara Franzoni of Politecnico di Milano and Kourosh Shafie of the University of Florida, in a report published by the National Bureau of Economic Research.

The researchers analyzed data from more than 700 proposed projects on the specialty science crowdfunding website Experiment.com. Of those projects, 48% were successful, raising an average of \$12,617. The median was \$3,103.

Their analysis found that crowdfunding broadened access to money for scientists who have had trouble raising funds from traditional sources, the researchers say. Scientists' record of published research appeared to make little difference in the success of funding efforts, the study found.

### Funding Funding

Crowdfunding can be an effective way for scientists who aren't well established to fund research. How proposed projects fared by the gender of the team leader on a science crowdfunding website, Experiment.com:

	MEN	WOMEN
Pct. chance of attaining funding	46%	55%
Median amount raised if funded	\$3,550	\$3,534

Note: Figures exclude campaigns for which gender of team leader couldn't be determined or didn't apply because an organization was listed as the creator.

Source: Henry Sauermann et al., "Crowdfunding Scientific Research," National Bureau of Economic Research working paper

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The study didn't examine efforts to raise money for scientific research on other crowdfunding websites. Scientific research isn't one of the categories Kickstarter uses for proposed projects, so data on such efforts isn't readily available, the company says. "We haven't done the analysis of Kickstarter projects that would enable us to say whether the findings are accurate or not" for the site, says David Gallagher, a Kickstarter spokesman. However, he says, "It does ring true to us that potential backers would not necessarily be evaluating a researcher's career achievements or past publications."

Neither Indiegogo nor GoFundMe shared data on crowdfunding for scientific research.

Mr. Constable is a writer in Edinburgh, Scotland. Email him at [reports@wsj.com](mailto:reports@wsj.com).

# Here's the New, Digital Doctor-Patient Relationship

Kaiser Permanente CIO Dick Daniels says the insurer is increasingly interacting with patients online

BY MELANIE EVANS

**KAISER PERMANENTE**, based in Oakland, Calif., closely manages the medical care of people enrolled in its health-insurance plan, who use Kaiser's integrated network of hospitals and doctors.

Increasingly, that network is also a digital one.

In the past year, the percentage of Kaiser's insurance enrollees who used its online prescription refill, scheduling and laboratory-result tools climbed, as did use of secure emails between Kaiser and its patients. The company also is redesigning its hospitals, using technology to make patient visits more efficient, from the check-in process to the interaction between doctors and patients. Doctors also have access to a platform that enables video consultations with patients. Virtual interactions with patients rose to 59% of total interactions last year from 56% in 2015, according to Kaiser.

Overseeing Kaiser's digital growth is Dick Daniels, chief information officer. He took questions from The Wall Street Journal about what is driving digital health-care demand and where Kaiser is headed. Edited excerpts follow.

## A better experience

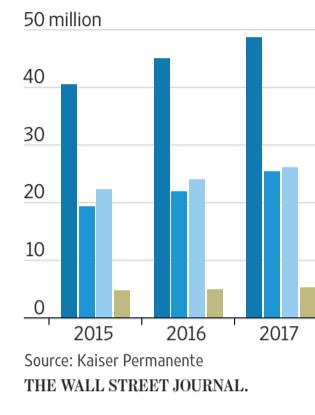
**WSJ:** What has changed in the past five years to make the technology push more urgent?

**MR. DANIELS:** Over five years ago, we were mainly interacting with businesses or commercial customers. With the Affordable Care Act, we began to have more individual consumers coming directly to us. We have more than six million members registered to use KP.org [Kaiser Permanente's site, where they can order prescription refills, schedule appointments, get laboratory results and contact doctors], which is over half of our members.

## Digital Expansion

Kaiser Permanente increasingly interacts with its patients online.

- Lab-test results viewed online
- Prescriptions filled online
- Secure emails sent
- Online requests for appointments



We began to notice more and more of our members coming to our website from mobile devices, and frankly, it wasn't a good experience initially. That led us to create an actual mobile application. What we have seen this last year is over 65% of the access to KP.org is from mobile devices or people using our mobile app.

**WSJ:** What's next? What might change in the next five years?

**MR. DANIELS:** One example is our next-generation medical office building, where members can check in online for their appointment before they physically show up. They can even make their copay online before they show up. Or if there are forms or questionnaires that need to be completed, they can get those done online before they show up. After their appointment, if their physician prescribes a medication, we can text them when their prescription is ready, and they can go and pick it up.

With our newest hospitals, there is a digital panel on the

outside of the door [to patients' rooms]. So before a physician walks in, there is the patient's name and certain key information. We have a screen inside the room, and through that screen we allow the patient to do things like get health education, order their meals, watch on-demand movies, and they can even do some videoconferencing. If the doctor or the nurse wants to do a videoconference with a specialist, they can do that right from their same screen.

**WSJ:** How is Kaiser reimbursed for online interaction with patients?

**MR. DANIELS:** We don't charge fees at this time for online interactions with patients. There is no cost for a call into our clinical call centers, to email your physician, nor for a video appointment at this time. We want to encourage our members to engage with us to promote their health—that leads to better outcomes for all, including the health of our members and the associated costs to our organization.

**WSJ:** Does Kaiser reimburse doctors for time they spend on virtual visits?

**MR. DANIELS:** No, Kaiser Permanente physicians do not get reimbursed per virtual visit, just as they don't get reimbursed per in-person visit. This is because the physician groups receive bundled payments for the overall care for each patient, which promotes a balanced approach of high-quality care with appropriate resource use.

## Positive response

**WSJ:** How do patients use the technology, and has it surprised you?

**MR. DANIELS:** Patients are really picking this up very quickly. If you want to make an appointment, you can make a telephone appointment, a video



'Patients are really picking this up very quickly.'

DICK DANIELS

appointment or an in-person appointment. We're seeing adoption and use of some of these capabilities that is exceeding our expectations.

It does require that we look at our internal workflows to make sure we've got it all worked out. If you have a video appointment with your physician and it's time for your appointment, when you click the button on your side you don't want to get a blank screen.

**WSJ:** How widely used are video appointments?

**MR. DANIELS:** It varies by region. In Northern California, we're seeing very serious uptake. Another area where we're getting good takeup is in Hawaii. Our primary location, where we have a hospital, is on Oahu. But we have members on the neighbor islands. So, either the member is going to come over to Oahu, or in some cases the doctor will head over to the neighbor islands. With video, it makes it really easy.

**WSJ:** What are some of the right and wrong ways to use video appointments?

**MR. DANIELS:** With cameras on mobile devices, a patient can show a dermatologist what they

need to see, and the dermatologist can have a very good experience. The other place I've seen good usage is follow-up visits. A patient may have come in for a procedure, the doctor wants to see them two weeks later, and in many cases for a follow-up visit the video appointment works very well.

The area where I think we're still sorting it out a bit is in behavioral health, psychiatry or psychology. In some cases, it works OK. In some of those instances, the doctor may want the patient to come in.

**WSJ:** Where does all this leave patients who are less technology-savvy or don't have as much access to the internet?

**MR. DANIELS:** We have not limited our access in any way. For many of our physicians, the amount of time they take for the appointment is the same, whether the person comes in or whether they do it over video or even by telephone.

## Flexibility and mobility

**WSJ:** How is technology changing how doctors and nurses deliver care?

**MR. DANIELS:** We're equipping our nurses and physicians with mobile devices, so that as

they are mobile throughout the hospital, they have the ability to access the information they need from their mobile device or their tablets. This really equips them so they are not always looking for a computer to sit down and access information.

They can access the electronic medical record. They have access to alerts. They can receive their secure text messages that way. In some cases, they can actually do video and have a video appointment or video with another caregiver through the device as well. This is really providing them a lot more flexibility and mobility throughout the facility.

**WSJ:** What are some of the biggest obstacles to doctors and nurses using new information technology on the job?

**MR. DANIELS:** Incorporating the technology into a workflow of evidence-based practices is the greatest challenge. Like most change, this takes time to learn and adjust, which can be a challenge for a busy caregiver.

*Ms. Evans is a Wall Street Journal reporter in New York. She can be reached at melanie.evans@wsj.com.*

# Telemedicine Goes to School

Technology is starting to reinvent the visit to the nurse's office

BY EMILY HOLLAND

TELEMEDICINE HAS grown rapidly in recent years. Now hundreds of schools are bringing it to the nurse's office.

School nurses say telemedicine helps them treat students faster right at school, reducing risk of infection, getting the students back to class faster and relieving a big burden on the students' families.

At Abraham Lincoln School No. 22, in Rochester, N.Y., when nurse Amy Dickason thinks a student needs a doctor's attention, she calls Health-E-Access, a program that sends mobile telemedicine units to schools and child-care sites in her area. Equipped with high-resolution cameras, electronic diagnostic and videoconference equipment, each technician can set up a tele-health consultation with a doctor.

For a student with an earache, say, the technician can first assess the eardrum in person, take video and photos of the ear canal, and connect the student to a doctor for a real-time consultation.

Ken McConnochie, developer of Health-E-Access, says most cases are completed within 90 minutes from the moment a student reports to the nurse to when the doctor signs off. During that time, Mr. McConnochie says, in addition to tending to the student, the service also will have spoken with a parent, a written report will have been filed, and any prescriptions, if needed, will have been called in to the patient's preferred pharmacy.

Formerly, Ms. Dickason couldn't be sure a student would see a doctor just because she recommended it. Parents' work schedules, lack of money or lack of transportation often interfered, she says. Telemedicine has helped to address many of these barriers.

In Dallas, there is a school-based tele-health network serving more than 90 schools in the area. Each school nurse's office has a telemedicine cart with stethoscopes, otoscopes and other devices that can stream video and



School nurse Amy Dickason can call in mobile telemedicine units.

data to doctors and nurses. From special rooms at Children's Health, a major pediatric hospital in the Dallas region, Stormee Williams, medical director of school telemedicine, and her staff have treated sinusitis, colds and flu, rashes, asthma and other common conditions.

The system has its limitations, Dr. Williams admits. "For example, I am not able to do a full abdominal exam, which involves touching the belly," she says. "Telemedicine is not the answer to every medical issue," she adds. But for many patients, it can be a necessary first step.

At a time when school shootings and other acts of violence are fueling a call for more mental-health services, experts also see telemedicine as a way to efficiently connect students with psychiatric care.

Parental consent is often required before a psychiatric consultation can be given. The rules vary from state to state, but tele-psychiatrists typically try to involve parents.

Using telemedicine as an early-intervention strategy hopefully can help "avoid some negative and very serious outcomes," says Loren Nix, director of school-based telehealth for the Global Partnership for Telehealth, an organization that helps schools in Georgia, Tennessee and Florida.

One of the biggest barriers to establishing telemedicine in schools is funding. Many cur-

rent programs are funded by state or federal grants or by local hospitals or nonprofits. But programs will bill the parents' insurance for the service when they can—and many telemedicine programs are targeting areas where students aren't covered by private insurance.

In North Carolina, the Health-E-Schools program, developed by Steve North, is used in 55 schools in four rural counties and doesn't turn away those who can't afford care. In 2017, 13% of children treated through the program didn't have any insurance, says Dr. North, who is also founder and medical director of the Center for Rural Health Innovation.

Almost every state allows Medicaid reimbursement for some telemedicine services, but many limit where it can be used and the types of service that are covered. Only 16 state Medicaid programs recognize schools as an eligible site for telehealth treatment.

Telemedicine in schools is still relatively new, and obtaining parental consent can be difficult at times, Ms. Dickason says. But she has found parents to be mostly supportive.

"Once parents have used telemedicine," she says, "they come to realize how helpful it is to them."

**Ms. Holland is a writer in Canton, Ohio. Reach her at [reports@wsj.com](mailto:reports@wsj.com).**



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## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# Hope for Infants With Genetic Disease

Studies suggest that DNA sequencing can be done more quickly, offering diagnoses that can save ailing babies

BY DANA WECHSLER LINDEN

WHILE GENETIC diseases pose the single biggest source of infant mortality in the U.S., many of these disorders are so rare and little understood that an accurate diagnosis can take weeks or months.

Some babies don't have that much time. For others, the battery of tests that tend to be ordered adds to their suffering and often still ends with no diagnosis.

Hope for these children and their families may be coming in the form of DNA sequencing, or screening of a patient's genetic code for telltale aberrations. Right now, DNA sequencing is rarely used in a clinical setting, partly because of cost and because insurance rarely covers it. But recent studies are raising hopes that, due to technological advances and re-engineering of processes, DNA sequencing of acutely ill newborns may be moving closer to mainstream clinical practice, allowing neonatal physicians to make diagnoses much faster—sometimes in a matter of days—to administer effective treatments sooner, and to cut the cost of care.

By making it more feasible to use DNA sequencing, especially early in the process, physicians can skip over the "million-dollar work-up we've been doing," says Tracy Trotter, co-chair of the American Academy of Pediatrics' Council on Genetics. "Now we're talking about one test."

## The problem of diagnosis

About 3% of babies born in the U.S. each year have genetic diseases, often caused by random mutations not passed down by parents, according to the Centers for Disease Control and Prevention. But diagnosing a newborn is challenging because many symptoms aren't pronounced, or are similar to symptoms for a wide range of maladies. In such situations, physicians typically order a succession of consultations and specialized exams, including MRIs, EEGs and other procedures.

This often takes up to three weeks. If the underlying illness isn't discovered and the baby is still struggling, doctors often turn next to targeted gene tests to look at a suspect group of genes and whether a mutation exists there. Gene panels, for instance, focus on a few dozen to a few hundred genes. They also take two or three weeks before results are known.

DNA sequencing, by contrast, looks at a far bigger genetic picture. There are two types of sequencing currently available to physicians involved in neonatal care: whole-genome sequencing, which, as its name implies, reads all of an individual's DNA; and whole-exome sequencing, which looks only at the nearly 2% of the genome—known as the exome—where instructions for building the body's proteins are found. The exome is where most genetic research has occurred, and where most diseases have been found to date. But some genetic



ISTOCKPHOTO/GETTY IMAGES

About 3% of babies born in the U.S. have genetic diseases, but diagnosing a newborn poses special challenges.

diseases can still originate in the other 98%, and thus go undiagnosed unless whole-genome sequencing is performed. Whole-genome sequencing also is expected to help researchers identify new inherited diseases.

Whole-genome sequencing tends to cost much more than whole-exome, but prices of both are declining rapidly. Commercial labs typically charge from \$3,000 to \$10,000 for a whole-exome sequencing of a "trio" of baby and parents, including the interpretation needed for a diagnosis, and whole-genome sequencing tends to cost about 50% more.

A team of researchers at Rady Children's Institute for Genomic Medicine in San Diego, meanwhile, has conducted a study suggesting that whole-genome sequencing can be performed in a matter of days instead of weeks—and with better results than diagnostic tests currently favored for babies in intensive care. In a paper published in *NPJ Genomic Medicine* in April, the researchers reported the results of a study involving 42 acutely ill infants whose symptoms had previously eluded diagnosis. Whole-genome sequencing provided a definitive diagnosis within days for 43% of the cases, and immediately changed the medical treatment for 72% of those. The outcomes: 11 babies potentially avoided serious illness and long-term disabilities, and one had a greatly increased chance of surviving.

For the sequencing to result in treatment changes for nearly a third of the cases looked at "is remarkable," says Dr. Trotter of the American Academy of Pediatrics, who is also a pediatrician in San Ramon, Calif. That's more than five times "anything we've done through any other testing mode," says Dr. Trotter, referring to the range of diagnostic tests given to acutely ill babies who could have a genetic disorder.

To speed up the process, Rady

## Right Start

Rady Children's Institute for Genomic Medicine in San Diego can sequence a baby's whole genome in-house in just two days—far faster than the usual couple of months. Some key numbers from a research study involving sick infants at Rady's Children's Hospital there:

<b>42</b>	Number of babies whose genome was sequenced
<b>18</b>	Babies who got a genetic diagnosis for their illness
<b>13</b>	Needed a change in medical management, such as canceling dangerous surgery
<b>11</b>	Avoided illness or disabilities
<b>1</b>	Reduced likelihood of mortality
<b>\$675,000</b>	Total cost of whole genome sequencing for the 42 babies
<b>Total savings from the cases of six babies analyzed:</b>	
<b>124 days</b>	Reduced hospital stays
<b>\$800,000 to \$2 million</b>	Cost savings on hospitalization

Source: Rady Children's Institute for Genomic Medicine

THE WALL STREET JOURNAL

Children's uses the fastest, \$1 million sequencing machines. The researchers in the study also reorganized the workflow. For instance, the nurse who draws the baby's blood carries it directly across the street to the

lab, where the scientists are waiting for it. Once the DNA sample is prepared, it goes straight onto the sequencer, whereas other labs wait to batch samples for efficiency.

## Cost reductions

The Rady Children's study also suggested that dramatic cost reductions can be achieved using whole-genome sequencing. While the cost of the sequencing totaled \$675,000 for the 42 babies in the study, for just six of the babies (for whom similar control cases could be found), total costs, based on varied assumptions, were cut by a range of \$800,000 to \$2 million.

Even with its narrower scope, whole-exome sequencing supplied impressive results in another study, published in *JAMA Pediatrics* in December. For 278 critically ill infants whose diagnosis had been unknown, whole-exome sequencing produced a diagnosis for 37% and immediately influenced medical care for half of those. For urgent cases sequencing was done in less than two weeks, in contrast to the usual, time-consuming list of diagnostic procedures. The researchers, from Baylor College of Medicine in Houston, said the early treatment that resulted included life-saving operations such as transplants. With effective medication, one baby stopped having seizures, which can cause lasting neurological damage.

Rady Children's complete-genome research is continuing, and six neonatal intensive-care units around the U.S. have signed up to participate.

More data will be crucial, says Dr. Trotter. "If they can nail down and prove the savings, get the third-party payers online, that big jump in treatment changes is going to make it a pretty easy sell" for physicians.

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## EXPERTS' VOICES

DREW HARRIS



## How to Better Use And Protect Data

How do we make the most of our health information while respecting personal preferences, privacy and transparency?

Our digital lives are fragmented because health data is stored in mostly incompatible systems. Doctors use separate electronic health records; fitness-app data is posted in the cloud; pharmacies and insurers keep discrete data repositories; and family health history and social-network records are in different databases. Imagine the insights we could learn if all this data were in one place. Here is what I would suggest:

First, let's make it clear that we own our health data. Doctors, hospitals, employers, insurers and health-app companies may generate and store this data, but if it describes us, it is ours.

We have a right to access this data at minimal or no cost. It should be easily transferred into other electronic systems. The Centers for Medicare and Medicaid Services has proposed rules to promote electronic health record interoperability.

We need to know that our data is secure. Under HIPAA, health-care entities must ensure our records are protected and only shared when authorized. But breaches occur with frequency. And HIPAA doesn't cover social-media or patient-support websites, devices that capture health data or records of our health-related retail purchases.

—Dr. Harris is a consultant and professor of population health and health policy at Thomas Jefferson University in Philadelphia.

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# Doctors, Beware: You're Being Watched

Researchers are studying the use of monitors in hospitals to identify and address preventable mistakes

BY LISA WARD

HOSPITALS HAVE spent considerable resources trying to reduce the number of preventable mistakes that doctors and nurses make, such as skipping hand washing. But it's hard to ensure that caregivers take every preventive step every time.

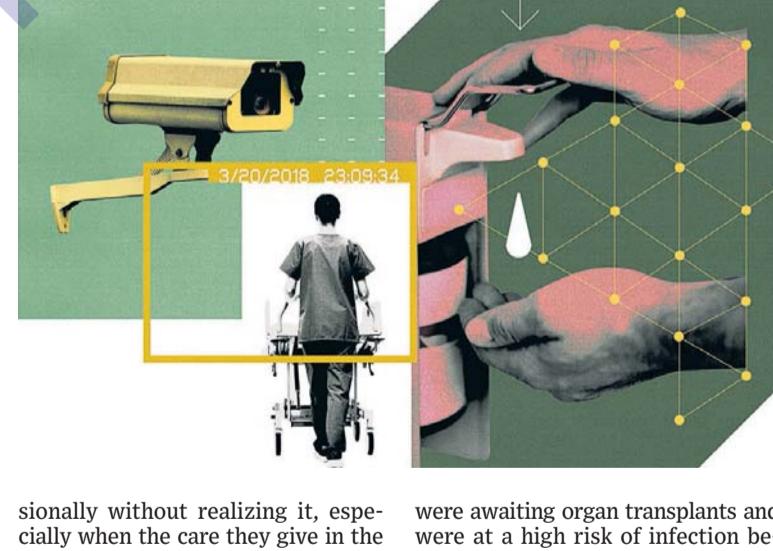
Perhaps they need to be watched all the time.

That's what a group of researchers are trying to find out. In a handful of recent pilot studies, computer scientists and doctors have installed depth sensors and other types of monitors in hospital hallways, next to patients' bedsides and in operating rooms. These sensors generate video images that look like blurry silhouettes—protecting people's privacy—but can be used to train computer algorithms to identify certain movements, like someone stopping at a sanitizer dispenser to clean their hands.

The technology, called computer vision, would allow hospitals to monitor workers 24 hours a day, seven days a week, across an entire hospital ward.

Ultimately, researchers hope to use the data generated by these algorithms to help hospitals find ways to influence their workers' behavior and even rethink how care is given in the first place.

"People are prone to mental slips and lapses," says Arnold Milstein, a professor of medicine and director of the Clinical Excellence Research Center at Stanford University. Even the most attentive physicians and nurses are likely to skip steps occa-



sionally without realizing it, especially when the care they give in the course of a day involves hundreds of small tasks, he says. Computers, on the other hand, can maintain a constant state of vigilance.

## Teaching the technology

There is much room for improvement in reducing preventable mistakes. For example, one in 25 patients develops health-care-associated infections in hospitals, according to the Centers for Disease Control and Prevention.

To help tackle the problem, Dr. Milstein and his colleagues designed a series of studies to see if computer vision could tell whether people used hand-sanitizer dispensers before entering and exiting patients' rooms.

The project began in the hallway of an acute-care ward at Lucile Packard Children's Hospital at Stanford, where many of the young patients

were awaiting organ transplants and were at a high risk of infection because of their suppressed immune systems. By installing sensors above the hand-sanitizer dispensers, the researchers collected thousands of images and annotated about 80% of them, labeling if someone had sanitized their hands or not when entering or exiting a patient's room. They fed the annotated images into an algorithm to teach it to make that distinction. The remaining images were used as a test to see if the algorithm could identify hand washing without the annotations.

Then the algorithm was applied to images collected at an intensive-care unit of Intermountain Healthcare in Salt Lake City. Even though the hallway configuration was different, the algorithm was able to identify hand sanitization almost 85% of the time. When the algorithm was further trained on images captured by Inter-

mountain Healthcare, its accuracy increased to 98%, says Serena Yeung, a Ph.D. student in the Stanford Artificial Intelligence Laboratory.

Researchers are now figuring out how to use the data to design a program to encourage vigilance in hand washing. One idea is creating an alert on the sanitizer dispensers, perhaps with a flashing screen, to remind people to wash their hands before they enter a room. Another is creating a digital dashboard to track compliance throughout the entire unit over time.

"People would know how they are performing as a group, and hopefully be motivated to improve," says Ms. Yeung, adding that training programs or incentives could be used to reward the unit with the best compliance record.

Researchers also are beginning to use computer vision to study hand-washing protocols inside patients' rooms. The idea is to see if current practices, like washing hands after touching a patient, effectively fight harmful and drug-resistant bacteria or if different steps are needed.

## Beyond hand washing

Researchers also are using computer vision to identify movements other than hand washing. For instance, researchers are identifying when patients on ventilators are given oral care, since failing to clean a patient's mouth and throat regularly can cause pneumonia. They are also identifying when staff change patients' position in bed, since failing to turn a patient regularly can cause bedsores. Stanford, Intermountain and, separately, Johns Hopkins Hospital and Johns Hopkins University School of Medicine in Baltimore are working on identifying signs of patients' mobility, like sit-

ting, standing or walking. Immobility during a hospital stay is linked to delirium, long-term disabilities and hospital readmission, and is widely considered a preventable ailment.

The researchers also hope to train an algorithm to identify positions or movements that indicate a patient may be about to fall, and then come up with an intervention that could prevent that from happening.

Other research in computer vision focuses on training algorithms to recognize correct surgery procedures. Down the line, that could lead to better training of surgeons, reviews of procedures that go wrong, or safety checks as a surgery proceeds.

In France, several institutions—the University of Strasbourg; the University Hospital of Strasbourg; the Institute of Image-Guided Surgery of Strasbourg, a hospital and research center; and Ircad, a training center in minimally invasive surgery—are using sensors along with more-traditional video images to teach computers to recognize different stages of surgery.

Researchers and medical professionals hope they can use the technology to improve care—for example, by finding key safety checkpoints where a computer could intervene by issuing a warning before a mistake is made.

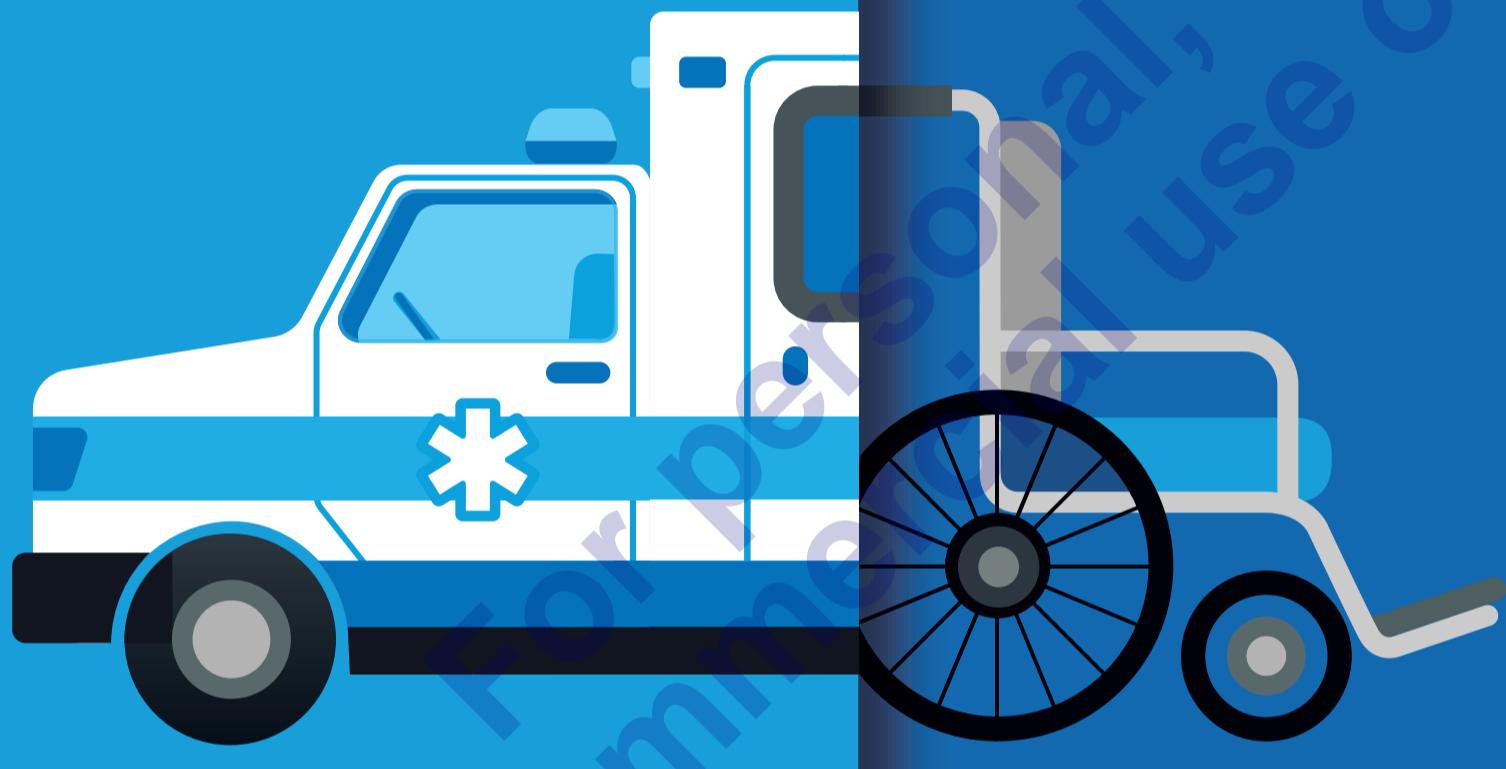
But Nicolas Padoy, an associate professor at the ICube Laboratory at the University of Strasbourg, cautions that the research is still in its infancy and applications like safety check points could be years away.

"The technology is really likely to take off over the next five to 10 years," he says.

**Ms. Ward** is a writer in Mendham, N.J. She can be reached at [reports@wsj.com](mailto:reports@wsj.com).

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## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# Doctors Face Scrutiny About Defining Death

As families challenge the determination of brain death, physicians are changing their approach

BY AMY DOCKSER  
MARCUS

WHAT IS THE definition of death—and who gets to make the call?

For decades, physicians have had the authority to declare a person brain-dead—defined in the U.S. as the irreversible cessation of all brain function, including the brain-stem—even if heart and lung activity can be maintained with machines. The medical profession determined the acceptable tests and procedures used to make the diagnosis.

But lately, the declaration of brain death has come under intense scrutiny. More families are challenging the determination of brain death in loved ones, and a small number of high-profile cases have sparked debate on social media and prompted some doctors to publicly discuss their definition of death.

In response to the public conversation around brain death, some doctors say they are encouraging patients' families to observe when tests are conducted that help determine brain death. Meanwhile, some of the legal cases, especially the high-profile case involving 17-year-old Jahi McMath, have the potential to lead to public reassessment of established legal and medical principles.

Given the challenges to long-held standards, "we are concerned the concept of brain death is eroding," says David Greer, chairman of neurology at Boston University School of Medicine.

## Setting the standards

Legally, standards for determining brain death are largely left up to the medical community. The American Academy of Neurology, a professional society, established criteria for determining brain death in adults, and it urges all doctors and hospitals to follow the most recent 2010 guidelines.

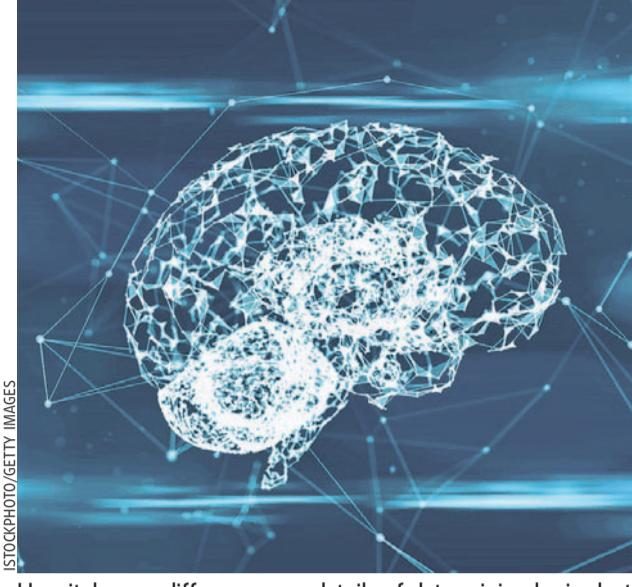
But recently published research indicates there is variability in how doctors and hospitals approach brain death.

Some hospitals differ on how many physicians are required to administer the test, how long to wait between testing of brainstem reflexes and even the type of physician qualified to make the determination. Variability might lead to an inaccurate determination, some doctors say, further eroding public trust.

Ariane Lewis, associate professor in neurology and neurosurgery at NYU Langone Health, says that all physicians need to understand brain death and follow professional guidelines. "Everyone should make the determination the same way," she says.

In recent years, members of the medical community have been making efforts to improve training for doctors in dealing with brain-death cases—not only in making the declaration but in how they explain the diagnosis to families.

The Neurocritical Care Soci-



Hospitals may differ on some details of determining brain death.

ety, a medical society whose members are involved in the care of patients with severe neurological illness, created an online Brain Death Toolkit that includes videos demonstrating different parts of the exam, sample brain-death policies that hospitals may adopt and answers to questions frequently asked by the public.

At NYU School of Medicine, all medical students must now take a 90-minute brain-death training session created by Dr. Lewis, learning about the medical and legal reasons behind the diagnosis and then practicing on an intubated mannequin. The program also includes actors who play the role of the patient's spouse.

Johns Hopkins Hospital established a support team comprising neurologists, neurosurgeons and critical-care doctors, specialists who typically have more training and experience in determining brain death, to help other clinicians make the diagnosis.

But improving the diagnosis of brain death doesn't resolve what David Urion, a pediatric neurologist and co-chairman of the ethics advisory committee at Boston Children's Hospital, says is a main driver of the current cases: The ethos of medicine has moved toward shared decision making on many issues, and some believe defining death should not be different.

"Our thinking has evolved" about how doctors and families interact, says Dr. Urion. "The climate has evolved."

For instance, it can be hard for a family to grasp that a beloved child with a catastrophic brain injury meets a definition for legal death when the child has a beating heart and skin that is warm to the touch. "The child sitting in front of them, from a practical perspective, doesn't look dead," says Dr. Urion. "So how do we explain to them where it is we are coming from?"

To give families a clearer idea of what brain death means, doctors may encourage them to be present when tests to determine the condition are performed. These include assessing consciousness by putting pressure on fingernail beds, or trying to determine

brainstem reflexes by shining a flashlight in the eyes. Families may also be present when ventilator support is removed to see if the patient can spontaneously breathe.

Dr. Urion says doctors are discussing whether they should add a test called the four-vessel angiogram to the examination. It involves X-rays and dye to determine if there is any blood flow in vessels of the head and neck.

It is not part of the standard brain-death examination, but Dr. Urion says in light of the current tensions he thinks the test should be done routinely. Since without blood flow no tissue can survive, it might offer reassurance to both families and doctors that there is no brain activity.

"Technology can help," he says.

## Different values

Lainie Friedman Ross, a pediatrician and professor of clinical medical ethics at the University of Chicago Medicine, has suggested, along with her colleague Robert Veatch, a professor emeritus of medical ethics at Georgetown, that people who object to determining death using neurological criteria should have the right to state their perception of death, perhaps in an advance directive or a registry.

Dr. Ross believes states should adopt laws that would allow people to choose their preferred definition. One likely consequence would be that physicians wouldn't do the brain-death examination if an individual doesn't want death determined based on neurological criteria, she says.

"For some of us, it is more about the quality of life rather than quantity of life," she says. Others have religious objections to brain-death determinations. "A lot of what we are fighting over is what criteria should be used for determining when someone is dead," she says.

Boston University's Dr. Greer says the definition of death isn't something people can choose for themselves. The determination of death has wide-ranging consequences, including burial and inheritance, and whether a physician

## EXPERTS' VOICES | LLOYD B. MINOR



### How AI Can Help With End-of-Life Care

How long have I got left?

For all the advancements we've made in biomedicine since I was in medical school, answering this kind of question with anything approaching certainty still vexes doctors.

It's a question that informs many others: How long should a dying patient "fight" a terminal illness, and when should that person focus instead on minimizing suffering? Is a day at home more valuable than a week in the hospital? Even a small improvement in our ability to gauge the life expectancy of a seriously ill patient could provide enormous value for them and their families.

A new algorithm developed at Stanford Medicine could help. Analyzing data from hundreds of thousands of anonymized medical records, the model predicts which patients are likely to die in the next 3 to 12 months. In early tests, the algorithm analyzed medical data of patients who had already passed away and correctly predicted their remaining

life expectancy in 9 out of 10 cases.

The idea of using algorithms in end-of-life care understandably makes people uneasy, so it's important to be clear: AI isn't going to make decisions for patients or for doctors, and it's not going to deny nor discourage care. If a patient wants to proceed with an aggressive treatment regimen, that choice will of course be honored.

What AI can do is give patients information they have never had before that can help them realize their preferences as they near the end of their lives, whether that's remaining mentally aware, being able to spend time with family, avoiding severe pain, or exhausting every possible avenue to defeat their disease.

I don't pretend AI is a panacea. An algorithm isn't going to make decisions for doctors or patients. But it can help inform their choices by providing them with insight they've never had before.

—Dr. Minor is dean of the Stanford University School of Medicine.

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## Making the Call

Some of the tests doctors perform on adult patients to determine brain death

### ASSESSMENT OF CONSCIOUSNESS:

- Pressure on fingernail beds
- Pinching or rubbing above the eyes, joints of jaw, jugular, upper arm, upper leg
- Cotton swab to irritate the inside of the nose

### ASSESSMENT OF BRAIN-STEM REFLEXES:

- Shine flashlight in the eyes—pupils should react and get smaller
- Move head back and forth—eyes should look back in the direction the head was moved from
- Irritate back of throat—should cough or have gag reflex

### ASSESSMENT OF ABILITY TO BREATHE SPONTANEOUSLY:

- All ventilator support is temporarily removed

Source: American Academy of Neurology

At the time, society accepted that physicians were the ones with the power to determine death. The legal ramifications associated with death led a presidential commission in 1981 to propose the Uniform Determination of Death Act, which defined brain death as a legal form of death that states could then choose to enact into law. The commission largely left it to the medical community to determine the tests and procedures to follow, recognizing that new technologies or changing attitudes might affect medical practices over time.

Recent legal cases have challenged and possibly threatened established principles surrounding brain death.

Thaddeus Mason Pope, director of the Health Law Institute and professor of law at Mitchell Hamline School of Law and someone who follows brain-death disputes, says families have made a number of different arguments, including strong religious or moral views that the only acceptable definition of death for them is when the heart and lungs permanently stop functioning.

Others have argued that the brain-death examinations don't measure the loss of every function of the entire brain as required by the Uniform Determination of Death Act.

Social media has helped drive public attention to the legal cases and allowed families to connect with one another. Mr. Pope thinks physician efforts to improve uniformity in brain-death determination are a good thing, but may not stop the rise in legal challenges.

"Now people feel more empowered to stand up to their doctors, to challenge them on everything," he says, "including the definition of death."

**Ms. Dockser Marcus is a Wall Street Journal reporter in Boston. She can be reached at amy.marcus@wsj.com.**

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## JOURNAL REPORT | HEALTH-CARE TECHNOLOGY

# One Remedy for High Health Costs: Blockchain

The digital ledger could replace fragmented data systems, simplifying record-keeping and improving care

BY TOMIO GERON

**IN THE CONTINUING PUSH** for affordable health care, one of the biggest stumbling blocks is still the confused and error-filled manner in which electronic data is shared among doctors, insurers, hospitals and patients.

One solution could be blockchain technology.

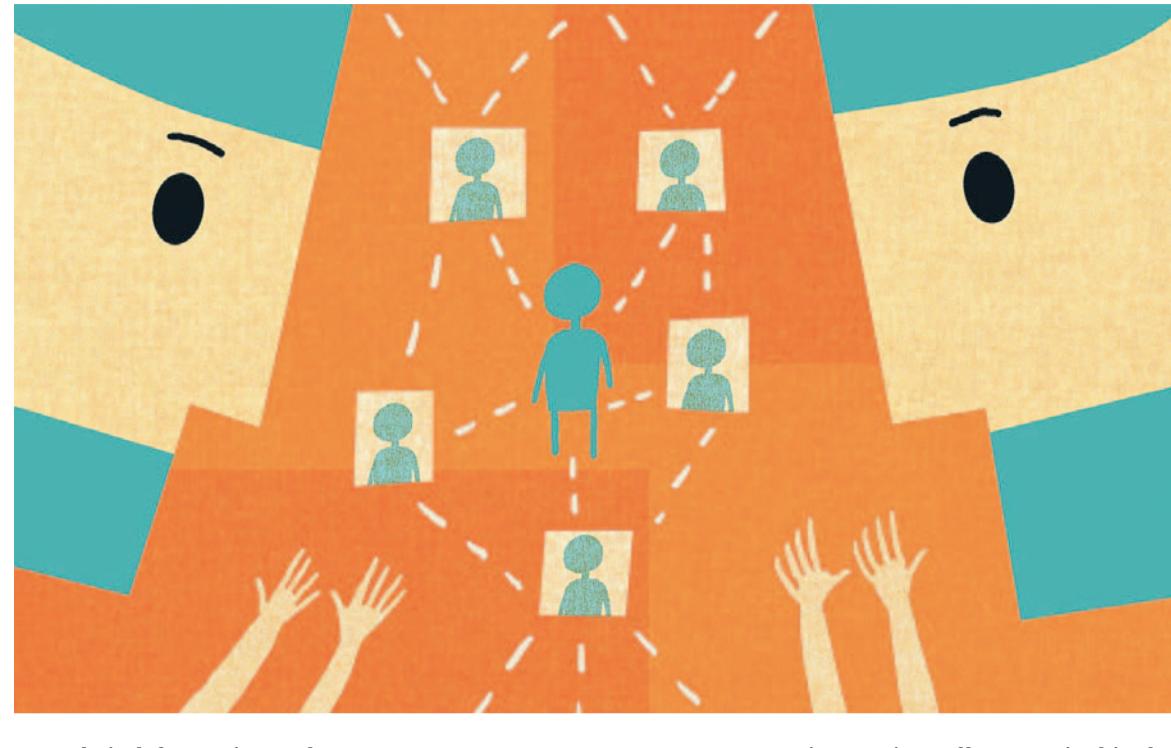
In the current tangle of incompatible records systems that typifies U.S. health care, incorrect information can creep in when patient data gets re-entered multiple times by doctors' offices, insurers and hospital staff. Big errors can seriously affect the quality of care that patients receive, small discrepancies can result in wrongful denials of insurance coverage, and errors of all types add to the system's cost.

Blockchain, by contrast, puts patients, insurers and providers all on the same page. With a low-cost and decentralized-ledger approach to managing information, blockchain technology gives all of the parties in the provision of health care simultaneous access to a single body of strongly encrypted data, and it creates an audit trail each time data is changed, helping to ensure the integrity and authenticity of the information.

Eventually, blockchain could be used to provide a secure and accurate medical history for every individual patient. MedRec, a blockchain system in development at the Massachusetts Institute of Technology, is designed for patients to be able to manage their own records and give permission to different doctors or providers to access and update the records.

With MedRec, if a baby has been given vaccinations by different doctors, for example, all of that information can be accessed from the blockchain, says Andrew Lippman, senior research scientist at MIT and associate director of the MIT Media Lab. MedRec is testing the system using anonymized data from Beth Israel Deaconess Medical Center.

Success of the system—or any similar system—will depend on large numbers of providers and doctors opting in to the program. Other companies in this space are focusing



JAMES YANG

on technical formatting and overcoming compatibility problems between different systems. What is lacking from those efforts, Dr. Lippman says, is a way for consumers to easily and securely access their records and have control of their own records—something that MedRec, by using blockchain, promises to do.

#### Processing claims

While MedRec aims to include all patient health data held by medical providers, other projects are already using blockchain on different pieces of the health-care system—for instance, to improve the insurance-claims process, the accuracy of health-care-provider directories, or the ability to verify doctors' licens-

ing. In January, **Change Healthcare**, a Nashville-based health network of 800,000 physicians, 117,000 dentists and 60,000 pharmacies, introduced a blockchain system for processing insurance claims. While not all providers in the system are using it, the shared ledger of encrypted data represents a "single source of truth" for those providers who are, says Emily Vaughn, blockchain product development director at Change Healthcare.

All involved parties can see the

#### Blockchain puts patients, insurers and providers all on the same page.

same accurate information about a claim in real time, rather than having to send data back and forth, says Ms. Vaughn. This relieves a patient from having to call multiple parties to verify information. And each time data is changed, Ms. Vaughn says, a record of it is shown on the digital ledger, identifying the responsible party. Any changes also require verification by each party involved, again enforcing the record's accuracy.

"You know at what stage in the life cycle the claim is in," says Ms. Vaughn. With all parties working from the same data, "there's a shared understanding of what the next steps are."

Change Healthcare declines to say how much money it is saving with its blockchain system, which can process roughly 50 million events daily. But according to Ms. Vaughn, the savings will come from eliminat-

ing previous efforts required in the reconciling and verifying of data among companies.

The company also is exploring building other applications that could run on the system, such as automated processing of claims and new ways to improve the digital verification of patient and provider identities without endangering patient information.

Ms. Vaughn says the blockchain system and its decentralized design represent a step up in security. "Because the [data] log is replicated across many computers instead of managed by one central computer, it's more resistant to attack and manipulation," she says. Hence it is more difficult for hackers to take over the network. If any one computer is hacked, other separate computers using the blockchain would still have accurate information.

#### Provider directories

Another area where blockchain could be a big help is in maintaining the accuracy of online directories of doctors and other health-care providers.

Doctors groups, hospitals, insurers and diagnostic companies all tend to maintain their own online

listings of contact, practice and biographical details. But it is expensive and time-consuming for each company to continually check, verify and update the records in its directory. Many insurers, for example, try to verify this data quarterly.

A group of companies in April announced a pilot project using blockchain to reduce these costs. The companies are **Humana Inc.**, **MultiPlan Inc.**, **Quest Diagnostics Inc.**, and **UnitedHealth Group Inc.**'s Optum and UnitedHealthcare businesses.

"Each insurance company has their own islands of information with no bridges," says Mike Jacobs, senior distinguished engineer at Optum, which works on digital and data-based innovations for a range of health-care services. "What this alliance is trying to do is create bridges to allow sharing of that information," says Mr. Jacobs.

One report estimated that it collectively costs \$2.1 billion a year to maintain provider directories using current methods. But Busy Burr, vice president and head of health-care trend and innovation at Humana, estimates that 75% of that cost could potentially be saved using blockchain.

The goal of the pilot program is for providers to update their information themselves into the blockchain, where it can be viewed by all parties in the network. Every company participating benefits, and there is no proprietary information shared that the firms have to fear their competitors will use. Companies could potentially be fined if information is inaccurate, Mr. Jacobs says.

Along the same lines, the state of Illinois is looking at a way for hospitals, including in other states, to use blockchain to quickly check the licensing status of a provider, a typically cumbersome process. Nashville-based startup Hashed Health developed a proof of concept of this system for the state, but the project needs more funding to be built, says Bryan Schneider, secretary of the Illinois Department of Financial and Professional Regulation.

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