

The Economist

Inside the new Pentagon

Kraft Heinz, a recipe gone wrong

The periodic table at 150

Thirsty planet: a special report on water

MARCH 2ND-8TH 2019

Modi's dangerous moment



COLLECTION

Fifty Fathoms



©Photograph: Laurent Ballesta/Gombessa Project



RAISE AWARENESS,
TRANSMIT OUR PASSION,
HELP PROTECT THE OCEAN

www.blancpain-ocean-commitment.com

IB
1735
BLANCPAIN
MANUFACTURE DE HAUTE HORLOGERIE

BEIJING · CANNES · DUBAI · GENEVA · HONG KONG · KUALA LUMPUR · LAS VEGAS · LONDON · MACAU · MADRID
MANAMA · MOSCOW · MUNICH · NEW YORK · PARIS · SEOUL · SHANGHAI · SINGAPORE · TAIPEI · TOKYO · ZURICH



On the cover

Two nuclear powers are shooting at each other. They are playing with fire: leader, *page 9*. Skirmishing between South Asia's nuclear powers is in danger of becoming a far more serious conflict, *page 15*. Narendra Modi and the struggle for India's soul, *page 17*

• **Inside the new Pentagon** After 18 years in the Middle East, the Pentagon gears up to fight Russia and China, *page 39*

• **Kraft Heinz, a recipe gone wrong** The problems of 3G Capital and Kraft Heinz are a timely reminder that cost-cutting, deals and debt go only so far: leader, *page 10*. The food industry's woes stretch much further, *page 50*

• **The periodic table** One of science's greatest creations is 150 years old this week. How it has evolved is a perfect illustration of the process of scientific progress, *page 64*

• **Thirsty planet: a special report on water** Climate change and population growth make the world's water woes more urgent, after *page 38*

The world this week

6 A round-up of political and business news

Leaders

- 9 **India and Pakistan** Modi's dangerous moment
- 10 **Trump-Kim summit** Walk on down
- 10 **The parable of 3G Capital** Bad recipe
- 11 **Britain and the EU** More haste, less speed
- 12 **Drug repurposing** Resurrection

Letters

14 On oil companies, Shropshire, Marcel Proust, Brexit

Briefing

- 15 **India and Pakistan** On perilous ground
- 17 **Hindu nationalism** Orange evolution

Special report: Water

Thirsty planet After *page 38*



Bagehot The European Research Group has broken British politics, *page 26*



Europe

- 19 Spain's election
- 20 Baby bribes in Poland
- 21 Dirty and clean democracy
- 22 German arms sales
- 22 Berlin's brave bicyclists
- 23 Sputnik in Turkey



Britain

- 24 Losing control of Brexit
- 25 A rise in anti-Semitism
- 26 **Bagehot** The wrecking crew on the right



Middle East & Africa

- 27 Pressure on Netanyahu
- 28 The struggle for Iran
- 29 Sudan's emergency
- 29 Cricket in Rwanda
- 30 Nigeria's sloppy election



Asia

- 31 Another Trump-Kim summit
- 32 Divorce in Bangladesh
- 33 Foreign workers in Japan
- 33 Australia's dodgy cops
- 34 **Banyan** Japan's feud with South Korea



China

- 35 The war on gangs
- 36 Nurturing ethnic elites
- 38 **Chaguan** The West's struggle over China



United States

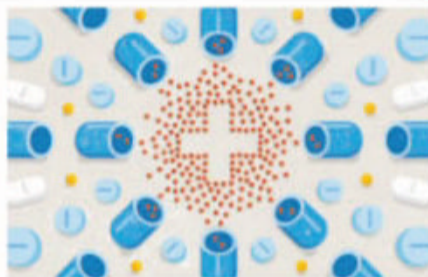
- 39 Inside the Pentagon
- 40 Michael Cohen
- 41 Church and state
- 41 Tech and privacy
- 42 Striking teachers
- 43 Ex-evangelicals
- 44 **Lexington** Democrats and climate change

**The Americas**

- 45 Venezuela repels humanitarian aid
- 46 Why the US won't invade
- 47 **Bello** Peru's neglected treasures

**International**

- 48 New uses for old drugs

**Business**

- 50 Kraft Heinz's accident with the ketchup
- 51 Buffettology
- 52 Cutting American drug prices
- 52 Gold miners get hostile
- 53 **Bartleby** Changing customer behaviour
- 54 Australian coal in trouble
- 55 **Schumpeter** Competitive video gaming

**Finance & economics**

- 56 German banks' woes
- 57 Stubbornly low inflation in the euro area
- 58 Encouraging tax compliance
- 58 The Federal Reserve reviews its framework
- 59 How to cross-check Elon Musk
- 60 Narendra Modi's economic record
- 61 **Free exchange** Global manufacturing woes

**Science & technology**

- 64 The periodic table at 150

**Books & arts**

- 68 A violent summer in Chicago
- 69 The Cleveland Orchestra
- 70 A submerged land
- 70 Hungarian fiction
- 71 **Johnson** Grammar guides

**Economic & financial indicators**

- 72 Statistics on 42 economies

Graphic detail

- 73 The Oscars' waning influence

Obituary

- 74 Li Rui, an advocate for freedom in China

The Economist

Volume 430 Number 9132

Published since September 1843 to take part in "a severe contest between intelligence, which presses forward, and an unworthy, timid ignorance obstructing our progress."

Editorial offices in London and also: Amsterdam, Beijing, Berlin, Brussels, Cairo, Chicago, Johannesburg, Madrid, Mexico City, Moscow, Mumbai, New Delhi, New York, Paris, San Francisco, São Paulo, Seoul, Shanghai, Singapore, Tokyo, Washington DC

Subscription service

For our full range of subscription offers, including digital only or print and digital combined, visit: Economist.com/offers

You can also subscribe by post, telephone or email:

Post: The Economist Subscription Services, PO Box 471, Haywards Heath, RH16 3GY, United Kingdom

Telephone: +44 (0) 333 230 9200 or +44 (0) 207 576 8448

Email: customerservices@subscriptions.economist.com

One-year print-only subscription (51 issues):

Euro-zone countries.....	€275
Denmark.....	DKr 2,035
Hungary.....	HUF 88,932
Norway.....	NKr 2,165
Poland.....	PLN 1,183
Sweden.....	SKr 2,469
Switzerland.....	SFr 349
Turkey.....	TRY 1,705
Other Europe (ex UK)	€275
Middle East-GCC.....	US \$415
South Africa.....	ZAR 4,690, US \$335
Middle East and Africa	US \$335

Please recycle



PEFC certified
This copy of *The Economist* is printed on paper sourced from sustainably managed forests certified by PEFC
www.pefc.org

Take your
business to the
**NEXT
LEVEL.**



Indiana
AStateThatWorks.com[®]



Indian fighter jets bombed what they said was a terrorist training camp in **Pakistan**, in retaliation for a suicide-bombing in **India** which killed 40 paramilitary police. Pakistan responded by sending war-planes to strike at targets in India. In the aerial battle that followed, both countries claimed to have shot down some of the other's fighters. Pakistan captured an Indian pilot. The fighting is the worst since 1999, and marks the first time since the two countries acquired nuclear weapons that they have conducted bombing raids against one another.

Donald Trump walked away from his summit with Kim Jong Un, **North Korea's** dictator, in Vietnam. The talks broke down when the North Koreans pushed for all sanctions to be lifted in exchange for dismantling Yongbyon, an old nuclear facility. America wants the North to reveal where all its nuclear weapons are stored, as a prelude to dismantling them.

Un-American activities

Michael Cohen, Mr Trump's former lawyer and fixer, testified against his former boss before Congress. He accused the president of being a "racist", and a "cheat", as well as a "con man" for suppressing the publication of his high-school and college grades. Mr Cohen has already pleaded guilty to several charges, some of which are related to his work for Mr Trump. The White House said no one should trust the testimony of a "disgraced felon".

Lori Lightfoot and Toni Preckwinkle came out on top in **Chicago's** mayoral election and will advance to the run-off on April 2nd. The city will now get its first black female mayor, and if Ms Lightfoot wins, also the first gay person to hold the office. William Daley, a scion of Chicago's most famous political dynasty, came third.

On the brink

Venezuela's dictatorship blocked deliveries of aid, which it sees as a foreign attempt to undermine it. Police, national guardsmen and paramilitary groups drove back lorries carrying food and medical supplies, and used tear gas and rubber bullets to disperse people who were trying to escort the aid. Some live bullets were fired, too. Around 300 people were injured and four were killed. Hundreds of Venezuelan soldiers and police deserted. Some of their families were reportedly tortured

or raped to discourage further defections. At a meeting attended by Mike Pence, the American vice-president, ten members of the Lima Group of mostly Latin American countries repeated their support for Juan Guaidó, who is recognised as Venezuela's interim president by Venezuela's legislature and by most western democracies. But they ruled out military intervention to topple the regime led by Nicolás Maduro.

In a referendum 87% of participants approved a new constitution for **Cuba**, which will legalise private property, subject to restrictions by the state, and limit the president to two five-year terms.

Brazil's education minister asked all schools to film their pupils singing the national anthem and to send the films to the government. He also asked schools to read out a message that ends "Brazil above all. God above everyone". ▶▶



We see possibilities in ultra-fast EV charging

And in advanced fuels

BP is developing advanced fuels to help cars run more efficiently.

► That was the campaign slogan of the country's new president, Jair Bolsonaro. The minister later admitted that asking schools to read the slogan was a mistake.

Shifting sands

Theresa May, Britain's prime minister, conceded some ground to Parliament over **Brexit**. As well as voting on her revised withdrawal agreement with the European Union, MPs will also have an option to take "no deal" off the table if her plan is rejected. If MPs reject no-deal, they will then vote on whether to ask for an extension past March 29th, which is when Britain is due to leave the EU. Labour also made a significant shift when its leader, Jeremy Corbyn, said it would back a second referendum.

Poland's government announced a package of tax cuts and spending, including a bonus for pensioners and hefty

handouts to parents. The package could cost as much as 2% of GDP. The ruling party faces a tough election this year.

EU leaders visited Sharm el-Sheikh in Egypt to meet leaders of **Arab League** countries and ask for help in keeping refugees out of Europe. The atrocious human-rights records of some participants were barely mentioned.

Staying power

In the face of huge protests against his dictatorship, President Omar al-Bashir declared a state of emergency in **Sudan**, dissolving the federal government and replacing all state governors with military and security men. He is still far from secure. Despite a ban on unauthorised gatherings, the protests continued.

In a surprise move Muhammad Javad Zarif, **Iran's** foreign minister, publicly offered to

resign. The move laid bare the struggle for control of Iran's foreign policy between pragmatists, such as Mr Zarif and President Hassan Rouhani, and hardliners. Mr Rouhani rejected the resignation.

King Salman of **Saudi Arabia** named Princess Reema bint Bandar bin Sultan ambassador to America, the first time a woman has been named to such a post.



Muhammadu Buhari was re-elected president of **Nigeria**. At least 39 people were killed in election-related at-

tacks—fewer than during previous ballots. The opposition claims that the vote was rigged, but observers seem to think it was clean enough.

Tens of thousands of **Algerians** protested against President Abdelaziz Bouteflika's decision to run for a fifth term. The octogenarian leader has made few public appearances since 2013. Most Algerians expect the vote on April 18th to be fixed by the cabal of power brokers who run the country.

Three funeral providers in **South Africa** said they would sue a pastor after they were "tricked" into taking part in a service in which a man was supposedly raised from the dead. A video that went viral shows the man sitting up in his coffin with a startled look on his face. Social-media users were not convinced. Many posted images implying how easy it is to pretend to be dead, and then wake up.

For a better journey,
whatever you drive.

We see possibilities
everywhere.

From renewable energy and cleaner-burning natural gas to advanced fuels and new low carbon businesses, BP is working to make energy cleaner and better.

keep advancing



Donald Trump lifted a deadline of March 1st for China to agree to concessions on **trade**, after which he had threatened to increase tariffs on \$200bn-worth of Chinese exports from 10% to 25%. The president tweeted that “substantial progress” was being made in negotiations with the Chinese and that he expected to meet his counterpart, Xi Jinping, to sign a deal in the coming weeks. No details were provided, but one of the promises China has reportedly made is not to depreciate its currency. A weak yuan makes Chinese exports cheaper.



The **Shanghai stockmarket** rose by 5.6% in response to the suspension of tariffs, its best day in three years. Investor sentiment was also lifted by comments from Mr Xi about quickening the pace of development in China's financial-services industry.

General Electric agreed to sell its biotechnology business to **Danaher**, a health-services group, for \$21bn. It is the biggest step taken to streamline GE under Larry Culp, who became chief executive last October and was Danaher's boss until 2014. The deal was welcomed by the conglomerate's weary investors; the proceeds of the sale will go towards reducing GE's debt.

The share price of **Kraft Heinz** plunged by 27% after the food company booked a \$15.4bn write-down, in part because its key Kraft and Oscar Mayer divisions were overvalued. It also revealed that the Securities and Exchange Commission had opened an investigation into its accounting practices. Warren Buffett, who

helped engineer the merger of Heinz with Kraft Foods in 2015, admitted that he had overpaid for his investment company's stake in the business.

“A bridge over Brexit”

Regulators in America and Britain announced a long-term agreement to ensure that the transatlantic **derivatives market**, which accounts for the vast majority of global derivatives contracts, is not disrupted by Brexit, whatever form it takes. The pact covers both the trading and clearing of derivatives between the two countries. European regulators have taken steps to allow EU derivative contracts to be cleared in London in the event of a no-deal Brexit, but the arrangement is temporary.

America's Justice Department conceded defeat after a federal appeals-court dismissed its attempt to overturn **AT&T's** merger with **Time Warner**, describing the government's arguments as “unpersuasive”. The merger was approved by a lower court last year.

In a surprise development, the Dutch government revealed that it had built a stake of 12.7% in **Air France-KLM's** holding company, and would increase

it to a size similar to that of the French government's stake in the business, which is 14.3%. Disagreements between the two governments over the future of Air France-KLM have escalated, with the Dutch keen to protect jobs at Amsterdam's Schiphol airport. The French complained that the Dutch had not informed them about the investment.

Barrick Gold launched an \$18bn hostile bid for **Newmont Mining**, a smaller rival in the gold industry. Newmont retorted that its pending acquisition of Goldcorp, another mining firm, offered “superior benefits” to shareholders.

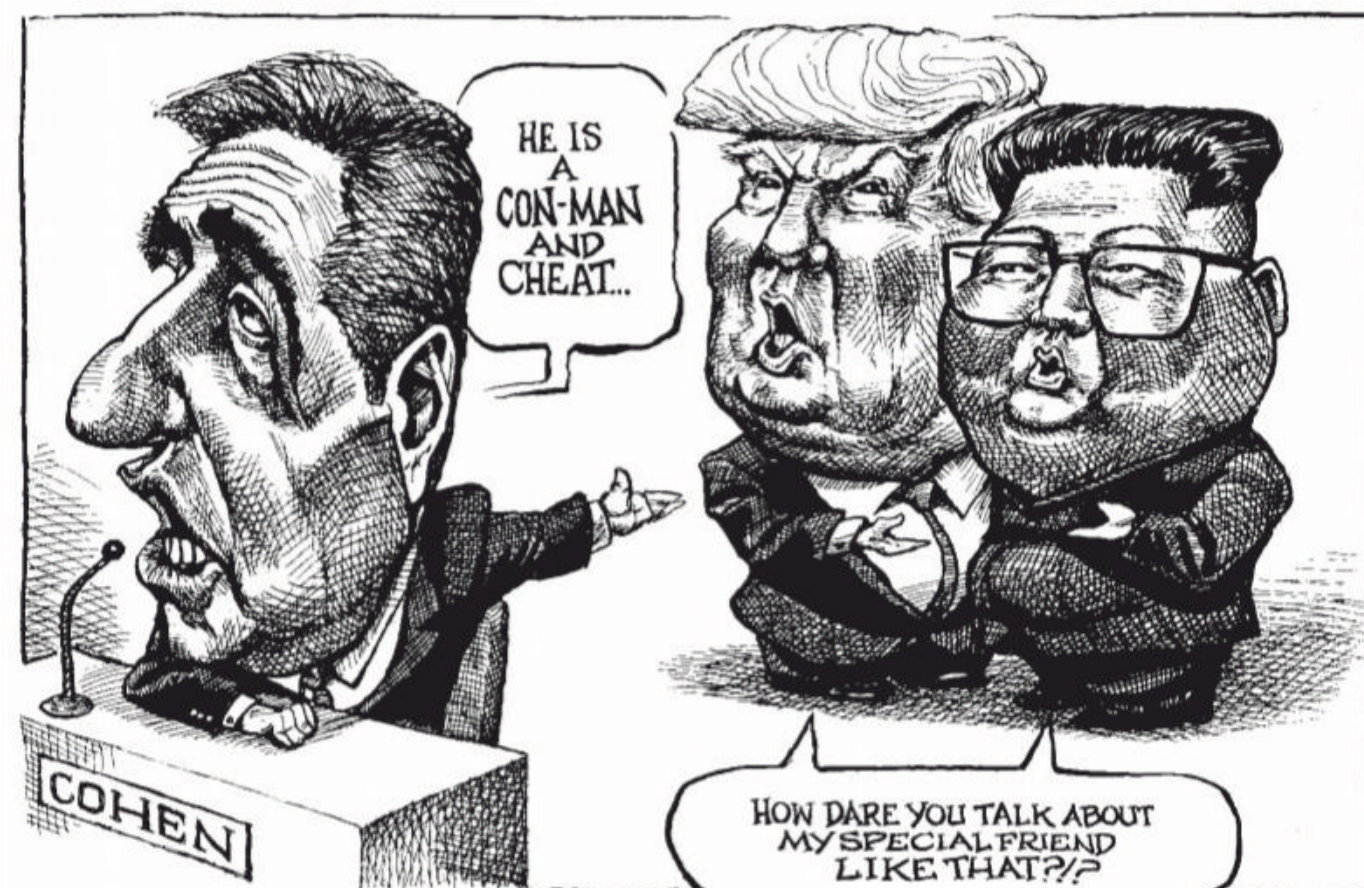
Not just any food

In a challenge to Amazon's ambitions in the online-grocery market in Britain, **Ocado**, a leader in online-supermarket technology, struck a deal to deliver **Marks & Spencer's** food products from 2020. Ocado will then cease selling goods from Waitrose, another upmarket food retailer, which has supplied Ocado with posh nosh since it started home deliveries in 2002. Last year Ocado signed an agreement with Kroger, America's biggest supermarket chain, to develop its online-grocery business.

The name **Merrill Lynch** is to disappear. Bank of America bought the investment bank, which started out in 1915 and became one of the biggest firms on Wall Street, during the financial crisis. It had re-branded the business as Bank of America Merrill Lynch, though many investors clung to the old namesake. The wealth-management side will now be known simply as Merrill, and investment banking will fall under the BOFA brand.

Exxon Mobil reportedly asked the Securities and Exchange Commission (SEC) to block a shareholder vote at its annual meeting on a measure that would oblige it to set targets for reducing greenhouse-gas emissions in line with the Paris accord on climate change. The oil giant argues that the measure is an attempt to “micro-manage” its operations, and “reflects a misunderstanding” of energy markets.

Elon Musk got into more hot water with the SEC when he tweeted inaccurate production forecasts for Tesla's cars, violating part of last year's settlement with the regulator about not disseminating misleading information about the company. The SEC asked a court to hold Mr Musk in contempt.



Modi's dangerous moment

Two nuclear powers are shooting at each other. They are playing with fire

THE ARMIES of India and Pakistan often exchange fire across the front line in the disputed state of Kashmir. When tensions rise, one side will subject the other to a blistering artillery barrage. On occasion, the two have sent soldiers on forays into one another's territory. But since the feuding neighbours tested nuclear weapons in the late 1990s, neither had dared send fighter jets across the frontier—until this week. After a terrorist group based in Pakistan launched an attack in the Indian-controlled part of Kashmir that killed 40 soldiers, India responded by bombing what it said was a terrorist training camp in the Pakistani state of Khyber Pakhtunkhwa. Pakistan retaliated by sending jets of its own to bomb Indian targets. In the ensuing air battle, both sides claim to have shot down the other's aircraft, and Pakistan captured an Indian pilot.

A miscalculation now could spell calamity. The fighting is already the fiercest between the two countries since India battled to expel Pakistani intruders from high in the Himalayas in 1999. The initial Indian air raid struck not Pakistan's bit of Kashmir, but well within Pakistan proper and just 100km from the capital, Islamabad. That, in effect, constituted a change in the rules of engagement between the two (see Briefing). India and Pakistan are so often at odds that there is a tendency to shrug off their spats, but not since their most recent, full-blown war in 1971 has the risk of escalation been so high.

The intention of Narendra Modi, India's prime minister, in ordering the original air strike was simple. Pakistan has long backed terrorists who mount grisly attacks in India, most notably in Mumbai in 2008, when jihadists who arrived by boat from Pakistan killed some 165 people. Although Pakistan's army promised then to shut down such extremist groups, it has not. By responding more forcefully than usual to the latest outrage, Mr Modi understandably wanted to signal that he was not willing to allow Pakistan to keep sponsoring terrorism.

In the long run, stability depends on Pakistan ending its indefensible support for terrorism. Its prime minister, Imran Khan, is urging dialogue and, in a promising gesture, was due to release India's pilot—presumably with the approval of the army chief, who calls the shots on matters of security.

But in the short run Mr Modi shares the responsibility to stop a disastrous escalation. Because he faces an election in April, he faces the hardest and most consequential calculations. They could come to define his premiership.

Mr Modi has always presented himself as a bold and resolute military leader, who does not shrink from confronting Pakistan's provocations. He has taken to repeating a catchphrase from the film "Uri", which portrays a commando raid he ordered against Pakistan in 2016 in response to a previous terrorist attack as a moment of chin-jutting grit. The all-too-plausible fear is that his own tendency to swagger, along with domestic political pressures, will spur him further down the spiral towards war.

The ambiguity of Mr Modi's beliefs only deepens the danger. He campaigned at the election in 2014 as a moderniser, who would bring jobs and prosperity to India. But, his critics charge,

all his talk of development and reform is simply the figleaf for a lifelong commitment to a divisive Hindu-nationalist agenda.

Over the past five years Mr Modi has lived up neither to the hype nor to the dire warnings. The economy has grown strongly under his leadership, by around 7% a year. He has brought about reforms his predecessors had promised but never delivered, such as a nationwide goods-and-services tax (GST).

But unemployment has actually risen during Mr Modi's tenure, according to leaked data that his government has been accused of trying to suppress (see Finance section). The GST was needlessly complex and costly to administer. Other pressing reforms have fallen by the wayside. India's banks are still largely in state hands, still prone to lend to the well-connected. And as the election has drawn closer, Mr Modi has resorted to politically expedient policies that are likely to harm the economy. His government hounded the boss of the central bank out of office for keeping interest rates high, appointing a replacement who promptly cut them. And it has unveiled draft rules that would protect domestic e-commerce firms from competition from retailers such as Amazon.

By the same token, Mr Modi has not sparked the outright communal conflagration his critics, *The Economist* included, fretted about before he became prime minister. But his govern-

ment has often displayed hostility to India's Muslim minority and sympathy for those who see Hinduism—the religion of 80% of Indians—as under threat from internal and external foes. He has appointed a bigoted Hindu prelate, Yogi Adityanath, as chief minister of India's most populous state, Uttar Pradesh. A member of his cabinet presented garlands of flowers to a group of Hindu men who had been convicted of

lynching a Muslim for selling beef (cows are sacred to Hindus). And Mr Modi himself has suspended the elected government of Jammu & Kashmir, India's only Muslim-majority state, and used force to suppress protests there against the central government, leading to horrific civilian casualties.

As reprehensible as all this is, the Hindu zealots who staff Mr Modi's electoral machine complain that he has not done enough to advance the Hindu cause (see Briefing). And public dissatisfaction with his economic reforms has helped boost Congress, the main opposition party, making the election more competitive than had been expected. The temptation to fire up voters using heated brinkmanship with Pakistan will be huge.

Mr Modi has made a career of playing with fire. He first rose to prominence as chief minister of Gujarat when the state was racked by anti-Muslim pogroms in 2002. Although there is no evidence he orchestrated the violence, he has shown no compunction about capitalising on the popularity it won him in Hindu-nationalist circles. With a difficult election ahead, he may think he can pull off the same trick again by playing the tough guy with Pakistan, but without actually getting into a fight. However, the price of miscalculation does not bear thinking about. Western governments are pushing for a diplomatic settlement at the UN. If Mr Modi really is a patriot, he will now step back. ■



The Trump-Kim summit

Walk on down

Talks break down without a deal. It could be a lot worse

OH, THAT DIFFICULT second date. When President Donald Trump first met Kim Jong Un in Singapore in June last year, their talks achieved very little except a change of mood. But it was enough for Mr Trump to claim that he had prevented war in Asia and that North Korea was “no longer a nuclear threat”.

On February 27th and 28th the two men met again, in Hanoi in Vietnam. This time Mr Trump was under pressure to win concrete concessions from Mr Kim, but he ended up walking away with nothing, saying that he would “rather do it right than do it fast.” If you believed Mr Trump’s hyperbole after Singapore, that will come as a bitter disappointment. But if the aim is to simply make the world a little bit safer, Mr Trump’s unorthodox, sweeping approach to the nitty-gritty business of arms-control is not exactly a failure either.

Walking away was at least better than giving way. Details of the summit were still emerging as we went to press, but in the press conference that followed the talks, Mr Trump said that Mr Kim had demanded the lifting of sanctions in exchange for decommissioning the nuclear facility at Yongbyon. That would have been a terrible deal. The North has other facilities which produce weapons-grade uranium, not to mention a stock of warheads and missiles.

Mr Trump also made clear that the disagreement was amicable. He expects more talks and more progress. He went out of his way to praise Mr Kim and to underline the economic potential of North Korea, if only it was prepared to surrender its arsenal and rejoin the world. It would be very Trumpian for the next overture to the North to come soon after this latest rebuff.

Most important, the Hanoi summit retains the gains from Singapore. In the lead up to that first summit the North was testing ballistic missiles capable of hitting most of America. Those tests have stopped, as have its tests of the warheads themselves, lowering tension and the risk of inadvertent escalation. Mr Kim

gave his word that this will not change.

And yet, if denuclearisation really is the aim, the gulf looks unbridgeable. In Singapore, when the two sides agreed to a nuclear-free Korean peninsula, they meant different things. America expects the North to abandon its nuclear weapons in their entirety; the North insists that America withdraw the nuclear umbrella that protects South Korea as well as pull out its troops from the peninsula.

Far from disarming, North Korea continues to build up its arsenal. Much to the irritation of Mr Trump, America’s intelligence agencies, backed by his military commander in Asia, have concluded that Mr Kim and his senior aides “ultimately view nuclear weapons as critical to regime survival.” As if to rub that in, a

recent assessment from Stanford University reckoned that in the past year Mr Kim may have produced enough weapons-grade material for five to seven new bombs, taking his arsenal to 37.

Meanwhile, Mr Kim has failed to take even rudimentary steps towards setting up a negotiating process that might eventually lead to large-scale disarmament. In the lead up to the Hanoi summit, he snubbed Mike Pompeo, the

Secretary of State, and sulked about America’s offers. The North has refused to produce an inventory of its nuclear weapons, laboratories, test-sites and other facilities. Until it does, denuclearisation cannot get under way in earnest. Without a process to give the talks a momentum of their own, the entire enterprise depends on the whim of two highly unpredictable men.

Obduracy built on a misunderstanding is hardly a promising foundation for lasting and large-scale disarmament. But it has at least resulted in a form of containment. For the time being, North Korea is living under a de facto test ban. That stops it from perfecting its weapons, or from using them to intimidate its neighbours. If you compare that with the achievements of Mr Trump’s predecessors, it is not too bad. ■



The parable of 3G Capital

Bad recipe

The problems of 3G Capital are a timely reminder that cost-cutting, deals and debt go only so far

NOT MANY consumers have heard of 3G Capital, an investment fund, but it controls some of the planet’s best-known brands, including Heinz, Budweiser and Burger King. In the business world 3G has become widely admired for buying venerable firms and using debt and surgical cost-cuts to boost their financial returns. But after Kraft Heinz, a 3G firm, revealed a \$12.6bn quarterly loss on February 21st what appeared to be a successful strategy suddenly looks like a fiasco.

The implications reach beyond Kraft Heinz. In total, 3G-run firms owe at least \$150bn (3G’s founders hold direct stakes in some firms while others are held by 3G’s investment funds; for

simplicity, it makes sense to lump them together and call them 3G). Notable investors have got not just egg, but ketchup, on their faces—Warren Buffett’s investment firm, Berkshire Hathaway, lost \$2.7bn on its Kraft Heinz shares in 2018. There is a queasy sense that 3G’s approach of dealmaking, squeezing costs and heavy debts, can be found at an alarming number of other firms.

Leveraged takeovers are nothing new. In the 1980s raiders such as James Goldsmith terrorised boardrooms while private-equity tycoons launched buy-outs, most famously of RJR Nabisco in 1988. With its roots in Brazil, 3G has brought twists of its own to such barbarism. One is the scale of its dealmaking. It is ►

▶ history's second-most acquisitive firm, after Blackstone, with \$480bn of takeover bids, including the purchases of Anheuser Busch and SAB Miller. Another is its distinct style of buying popular brands with oligopolistic market shares. It believes that competition in such industries is muted and that consumers will reliably drink beer and eat beans for ever: Bud was, after all, founded in 1876 and Heinz in 1869. And since 3G is confident that sales will remain steady, it then loads firms with debt and cuts costs using zero-based budgeting, a technique that requires managers to justify every dollar of spending from scratch each year and reinvest only some of the savings in the best brands.

It sounds plausible and it worked for a time—indeed the restaurant division is still performing reasonably. But recently problems have emerged elsewhere. Consumers are getting more fickle and are switching to independent beer brands and healthier food (see Business section). Competitors have raised their game; supermarkets are promoting cheaper white-label brands while e-commerce has given a leg up to insurgent brands. And capital markets have adapted. Investors have urged other firms to copy 3G's cost-cutting tactics, even as takeover targets have got pricier because investors expect 3G to pay top dollar for them.

Signs of trouble emerged in October, when AB InBev, 3G's beer arm, cut its dividend. Although it is still growing overall, in North America its volumes and profits shrank in 2018. Meanwhile, Kraft Heinz's recent woes have led it to cut its dividend and warn that profits in 2019 would fall. Alarmingly, this doesn't seem a mere blip: it wrote down \$15bn of acquisition costs. For good measure it also said that regulators are investigating its accounting. Neither AB InBev nor Kraft Heinz is likely to go bust, but in the long run they might end up being broken up yet again.

Cost-cutting is essential in mature industries. The process of reallocating labour and capital away from declining products



and towards new ones, as well as to new firms, is what boosts productivity. Nonetheless, managers have to get the mix right between slashing expenses and investing for growth, while maintaining an appropriate level of debt. Kraft Heinz has failed on both counts. It now forecasts that gross operating profit in 2019 will be slightly lower than in 2014, before the two firms merged, while its balance-sheet is creaking.

Far from being an exception, Kraft Heinz is a super-sized version of the strategy of much of corporate America over the past decade. Although sales have been sluggish, 66% of firms in the S&P 500 index have raised their margins and 68% have raised their leverage since 2008. A mania for deals in mature industries, premised on debt and austerity, is in full swing. AT&T has bought Time Warner, Disney is buying Fox and Bristol-Myers Squibb, Celgene. These three deals alone involve over \$110bn of extra net debt and envision a \$6bn cut in total annual costs.

Perhaps the good times will roll on. But there have already been two big blow-ups of acquisitive, indebted firms: Valeant, a drugmaker, in 2015-16; and, in 2017-18, General Electric, which has just sold its biopharma arm in order to cut its borrowings. There have been lucky escapes, too. In 2017 Kraft Heinz and 3G tried to buy Unilever for cash and stock for about \$140bn. It was only thanks to a determined fight by Unilever's managers, not its shareholders, that Kraft Heinz withdrew.

Anytime a firm has a string of successes, boards and investors tend to drink the Kool-Aid (another Kraft Heinz brand). In fact their unsentimental collective task is to enforce discipline and to block bids by over-extended firms. Since the end of 2016 the value of 3G's portfolio has dropped by about a third, lagging far behind both the S&P 500 and food and beverage firms. Shares of Kraft Heinz have underperformed Unilever by an incredible 84 percentage points since the failed takeover bid. That's enough to make you choke on your beer and burger. ■

Britain and the European Union

More haste, less speed

Britain at last admits it may need more time. The more the EU gives it, the sooner the Brexit farce can end

UNDER ENOUGH heat, atoms start to fly apart. Such is the state of Britain's political parties as Brexit day approaches. Theresa May, the Conservative prime minister, has long insisted that Britain will leave the European Union on March 29th, deal or no deal. This week she conceded that Parliament would be allowed to request more time after all. Meanwhile Jeremy Corbyn, who has been resisting calls from Labour members to back a second referendum, said it was now the party's policy to support one.

The about-turns show the extent to which both leaders have lost control of their own Brexit policies, and their parties (see Britain section). Their change of direction is welcome. Labour's reluctant backing of a second vote has many strings attached, but Mr Corbyn has at last conceded the principle that the public should have the right to approve or reject any deal. And Mrs May's volte face makes it highly unlikely that Britain will crash out of the EU without a deal in a month's time.

Yet no one should get too excited. This week's developments do not get rid of the cliff edge towards which Britain is heading—

they only push it back, and not very far. Mrs May said that the Article 50 talks could be extended only to the end of June at the latest. That would buy just another three months. The prime minister seems determined to persist with her tactic of pretending to renegotiate her deal with the EU, running down the clock in the hope that MPs will feel forced to approve the deal as time runs out and the cliff edge draws nearer.

This strategy has a poor record. Mrs May originally planned to present her deal to MPs in December, but pulled it when it became clear they would reject it. In January, when time was already tight, they defeated it by a record margin of 230 votes. The deal was supposed to return to the Commons this week for another attempt but the prime minister backed down again, fearing a second rout. She now says MPs will get to vote on her deal by March 12th, just 17 days before exit day. They may yet cave in; some hardline Brexiteers are already hinting that they might rather leave on time with Mrs May's deal than delay Britain's departure, at the risk of ending up with another referendum. But ▶

▶ other MPs, far from feeling more cowed as Brexit day looms, seem to be growing in rebellious confidence. The prime minister has kicked the can down the road so many times. How many believe her when she now says that the end of June will be the final deadline? As Mrs May's strategy remains unchanged even as her credibility collapses further, the risk is that Britain's poisonous Brexit impasse simply continues for another three months.

That is why the EU should try to push Britain towards delaying Brexit for longer, perhaps until the end of the year. An extension is useful only if Britain uses it to build a Brexit strategy that can command the support of a stable majority of MPs and the public. And that is more likely the more time it has. Holding yet another election might be another way to break the deadlock in Parliament (though polls suggest it might just prolong it). This news-

paper has argued that a referendum on Mrs May's negotiated deal would be a better way to achieve such agreement. Either of these radical courses would take longer than three months to succeed.

A long extension would carry risks. Some Tories are itching to topple Mrs May; if they did, her replacement might turn out to be even harder to deal with. And if Britain remained in the EU beyond the end of June then it might be legally obliged to take part in this spring's European Parliament elections, which it is not currently scheduled to do. Yet even as legalistic an institution as the EU ought to be able to find a way around snags such as this, if the prize is a better Brexit outcome for all parties.

When, as seems likely, Mrs May asks for more time two weeks from now, the EU should press her to accept a long extension. And Mrs May should welcome its offer. ■

Drug repurposing

Resurrection

Deploying drugs for new purposes holds great promise

BIG PHARMA is under fire. This week the bosses of seven large drug firms were hauled before the United States Congress to answer pointed questions about the cost of their medicines. The hearings come amid rising bipartisan anger about high drug prices. New laws are threatened (see Business section). Concerns about the affordability of medicines are not peculiar to America; they are global. In Britain the price of a new drug for cystic fibrosis has provoked fury, as has the government's refusal to pay it. Italy is calling for the World Health Organisation to bring greater transparency to the cost of making drugs and the prices charged for them.

Too rarely raised in this discussion is one promising area where pillmakers and governments alike could do more to fight disease while also saving money. Drugs can be "repurposed" (see International section). That is, existing drugs can sometimes be used to treat diseases other than the ones for which they were first designed. This can be a cheaper way to develop new treatments. It could also help answer another criticism often thrown at drug firms: that they do not invest enough in areas where medical need is great but financial returns are unattractive, such as rare cancers, new antibiotics and medicines for children or poor countries. For 7,000 rare genetic conditions, only around 400 drugs have been licensed. Last year saw a record number of new drugs approved. The 59 new arrivals are welcome, but barely scratch the surface of unmet needs.

Drugmakers have a point when they say that the cost of developing new drugs for non-lucrative ailments is prohibitive. (They say it costs more than \$2bn to bring a new molecule from laboratory to pharmacy shelf.) Drug repurposing is cheaper because the drugs in question have already been tested for safety, which is itself hugely expensive. Repurposed drugs must be tested principally for effectiveness against the new disease. Some compounds are being tested to find new treatments for brain cancer, the Zika virus, tuberculosis and motor neurone disease. Others have already yielded new treatments for sleeping sickness, leukaemia and blood cancers.

Given the untapped potential in the 9,000 generic drugs (ie,

those which no longer have patent protection) found in America alone, this could be just the beginning. One charity says it has found evidence of anti-cancer activity in almost 260 drugs that treat other conditions. An academic reckons that one in five existing cancer drugs might be effective against other cancers. Big data makes it easier to identify promising leads.

For all its promise, however, repurposing is underfunded. Once a drug has lost its patent protection, it is difficult for a drug firm to recoup the investment needed to test and relabel it for a new purpose. The leads already identified need to be tested with randomised trials, and then approved by regulators for their new uses. A doctor can prescribe a pill for "off label" uses without such trials. But patients may not trust a drug that is not approved for their condition; doctors may worry about being sued; and health services and insurers may be reluctant to pay for it.

Governments support drug development through grants, tax incentives or other schemes. However, they focus on molecules that have intellectual property attached. This is misguided. They should support generic molecules, too. Some regulations are also unwise. For example, only firms with permission to market a generic drug can get it relabelled. This means that repurposing charities are not able to work

with regulators to speed up the arrival of new cures. They should be. They also deserve more of the public funding used to develop drugs. One interesting proposal is a social-impact bond—where investors would be repaid by a public health system if their financing helped produce a drug that cut the costs of treating a disease. Perhaps firms that relabel drugs could be allowed a temporary price rise to recoup their investment.

Politicians tend to blame drug firms for the cost of drugs, sometimes fairly. But governments themselves have failed to take advantage of the cornucopia of generic medicines. This may include treatments that patients with rare diseases have been waiting for, that could extend the lives of cancer patients and that might transform the lives of ill people in poor countries. The next wonder-drug may already have been discovered and bottled; it just needs repurposing. ■





A New Challenge?

Unique access to global unadvertised vacancies for Executives on £200k to £2m+

InterExec is the global leader in the confidential promotion of Top Executives. Through our 15,000 strong International Network we act discreetly to provide unrivalled access to prime opportunities worldwide.

InterExec
UNIQUE NETWORK • OUTSTANDING TALENT

london@interexec.net www.interexec.net +44 (0)20 7256 9972



BIS
Where perspectives meet

Senior Advisor, Financial Stability Institute

Basel, Switzerland

The BIS invites applications for the position of Senior Advisor at its Financial Stability Institute (FSI). This appointment will support the FSI's efforts to assist financial sector supervisors worldwide in strengthening their financial systems.

You will contribute to our flagship publication, *FSI Insights*, which explores a range of policy issues and related implementation challenges faced by financial sector supervisors. In addition to designing and chairing FSI meetings in Switzerland and abroad, you will represent the Institute at international supervisory events and standard setters' working groups.

We would like to meet candidates with an outstanding track record at a central bank, supervisory authority or in the financial industry. You will have an advanced degree in finance, economics or another relevant discipline, strong English drafting and communication skills, and expert knowledge of financial regulation. Extensive knowledge and practical experience on crisis management and/or financial technology issues will be an asset.

This is your opportunity to work at the hub for central bank cooperation. We offer competitive conditions of employment and the chance to work in an international environment alongside colleagues from more than 60 countries.

The Bank for International Settlements is a global forum for monetary and financial cooperation and a bank for central banks.

Promoting global monetary and financial stability

Deadline for applications:
31 March 2019

To find out more, visit www.bis.org/careers

REQUEST FOR EXPRESSIONS OF INTEREST: Fund Manager for the International Municipal Investment Fund



The United Nations Capital Development Fund (UNCDF) seeks to partner with a Fund Manager to establish, structure, fundraise for, and manage a private investment fund as part of a public /private partnership whose purpose is to further the Sustainable Development Goals.


For detailed information and to subscribe to our mailing list to receive notifications please visit:

<http://uncdf.link/mifmanager>

Please direct your inquiries to mif.eoi@uncdf.org

Deadline extended to 1 April 2019

uncdf.org | [linkedin.com/uncdf](https://www.linkedin.com/company/uncdf) | twitter.com/uncdf | [youtube.com/uncdf](https://www.youtube.com/channel/UC8wG1pYk1pYk1pYk1pYk1pYk)



International Committee for the Red Cross

Director General

The ICRC is a neutral, impartial and independent organization, whose humanitarian mission is to protect and assist people affected by armed conflict, and to promote respect for international humanitarian law and universal humanitarian principles.

The ICRC is seeking applications for the role of Director General (DG), a leadership role responsible for mobilizing and inspiring a global organization of 19,000 people working in over 80 countries. The DG heads the ICRC Directorate, managing the organization's annual expenditure of approximately USD 2,000 million (EUR 1,800 million) and its global humanitarian operations. The DG works closely with the governing organs of the ICRC, supporting the ICRC President in his role as chief diplomat and the Presidency in managing, negotiating, shaping relations and developing partnerships with the key stakeholders of the organization.

The ideal candidate will have the following:

- Significant leadership experience at a regional or global level in a comparably complex organization, ideally as DG/CEO, Executive Director or Executive Committee Member.
- Strong operational leadership and management skills, including inspiring and managing large teams, acquired in the public, non-profit and/or private sector.
- Exposure to field leadership in a humanitarian organization; understands the complex dynamics with humanitarian action in contemporary armed conflict and other situations of armed violence.
- Thought leader and strategic thinker with strong analytical skills.
- Strong, proven negotiation and communication skills.
- Capacity to drive and accompany change, including with regard to digital transformation.
- Advanced university degree.
- Fluent in English and French; command of additional relevant languages is a plus.

To apply, submit your resume and cover letter to the dedicated mailbox presidency@icrc.org by **15 May 2019**. Applications will be treated confidentially by the Office of the Presidency and our chosen third party executive search team. Expected start date in the role: mid-2020.

Reforming energy markets

Climate change is far too complex to lend itself to an easy solution. Your case study of Exxon Mobil does indeed show that “the market cannot solve climate change by itself” and “muscular government action is needed” (“Crude awakening”, February 9th). But the hard fact is that both markets and governments fail to reflect climate-change risks, which explain the failure in slowing global warming. Without a global agreement for an effective, market-based framework for the taxing of carbon at an appropriately high level, no serious and sustainable dent can be made in greenhouse-gas emissions. This alone has doomed the Paris agreement to be a toothless deal. No wonder that coal’s share in the global energy mix keeps growing.

Only forceful policies can alter the behaviour of the energy markets, which do not reflect that fossil-fuel firms are overvalued and may become stranded assets. These firms do not even sense the long-term risk of sitting on vast volumes of unburnable carbon reserves, which is a carbon bubble.

These companies continue to develop reserves that would never be used with effective climate policies in place. They are rewarded by the markets for finding and developing new reserves. There is no noticeable exit from heavy emission-producing activities in anticipation of the possible introduction of a biting carbon tax. Unless this energy-market behaviour is dealt with, the vision of a carbon-free future will remain just that, a vision.

ISTVAN DOBOZI
Former lead energy economist at the World Bank
Gaithersburg, Maryland

Shale (or fracking) explains much of the boom in the oil market, as well as the volatile market performance of energy companies. Production increases are occurring at the same time that profitability is declining. In 1980, 29% of the Standard & Poor’s 500 index was occupied by oil and gas;

today it is 5%. Fracking has flooded the market with cheap gas, pushing prices down further. Investors seduced by the promise of increased profits are being left at the altar of derivatives standing in for real economic growth.

You claim that energy companies that rely on fossil fuels are merely “responding to incentives set by society”. But oil and gas companies with their deep pockets continue to enjoy the privileges of a bygone era with the false promises of jobs and business expansion that have yet to materialise.

The fact is that last year, oil and gas stocks placed last on the S&P 500. Money managers who continue to invest looking nostalgically backwards ignore this at their own (and their beneficiaries’) peril.

TOM SANZILLO
Director of finance
Institute for Energy Economics and Financial Analysis
Cleveland

I take exception to the suggestion that oil companies are merely responding to incentives and are thus not “evil”. When you know how serious the consequences are; when you knew decades ago of the severity of climate change and covered it up; when, knowing all that, you just follow “incentives”—that’s pretty evil. And when you maintain a political propaganda operation to lie about the problem and protect those incentives, that’s pretty evil, too.

SHELDON WHITEHOUSE
Senator for Rhode Island
Newport, Rhode Island

There are a few things you left out of your article on Exxon Mobil. First, it produces about only 3% of the world’s oil. If you want to target a much greater contributor to climate change, go after OPEC and Russia, which together account for more than half the world’s output. You also left out China, which alone is responsible for nearly half the rise of the world’s carbon emissions. Last, you mentioned that Exxon Mobil was against the Kyoto protocol,

without pointing out that nearly all the countries that signed it failed miserably to keep to its provisions.

STEPHEN MILLER
San Francisco

Unfortunately, a tax on carbon is regressive given that poorer families pay a higher proportion of their income on energy, especially those in rural areas who must drive long distances. The remedy you propose, to offset carbon revenues with tax cuts, is also regressive. It will reward those with high incomes who pay higher taxes. A simpler approach is to rebate all revenues as a carbon dividend with the same amount to every person. That should appeal to France’s *gilets jaunes* and similar protest groups in other countries whose support is needed if we are to adopt a saner climate-change policy.

MAX HENRION
Los Gatos, California

The shires have seen it plain

Regarding Bagehot’s hymn to Shropshire and the damage that a no-deal Brexit would do to the county’s sheep industry (February 16th), did he visit Britpart, a fast-growing parts specialist for Land Rover that employs over 300 people at its Craven Arms site? There are always sales support and warehouse jobs available there and the firm exports all over the world. Just down the road is the headquarters of igloo-vision.com, a virtual-reality firm established in 2007. It now has offices in London, New Jersey and Toronto.

Both of these firms offer better pay and employment conditions than Shropshire’s lamb abattoirs. These abattoirs are indirect beneficiaries of subsidies paid to Shropshire hill farmers, currently by the EU, but no doubt soon to be paid by British taxpayers if the guarantees offered by the government are to be believed. Moreover, in the Craven Arms area farmers are already diversifying rapidly into chickens, tourism and equine activities.

I have lived for 20 years at the base of one of those famous

blue hills in Shropshire. The forested areas are largely owned by the Forestry Commission with an increasing concern for diversity and wildlife. It is a significant part of the economy. The idea that landowners and farmers will let the land “degenerate into scrubland” is fanciful when land prices have skyrocketed.

CHRISTINE PENDLETON
Craven Arms, Shropshire

Shropshire’s hills would not degenerate into scrubland without their “woolly lawnmowers”. Instead, they could once again support the varied ecosystems that flourished before the arrival of intensive ovine monoculture. A.E. Housman’s blessing is a mixed one. He has given Shropshire a rich poetic heritage, but he also helped fix our folk aesthetic on unnaturally bare hillsides.

EDWARD GENOCHIO
Birmingham

Novel headlines

I was delighted by your Proustian punning in “Remembrance of posts past” and “In search of lost time (and money)” (February 2nd). Both were takes on the alternative English-language translations of Marcel Proust’s seven-volume novel, “À la Recherche du Temps Perdu”. But given Robert Swan’s appointment as Intel’s new chief executive (“Swanning in”, February 9th), surely you missed a once-in-a-lifetime opportunity for another Proust pun with “Swan’s way”?

WILLIAM TARVAINEN
London

Terminating May’s days

Surely we should be asking for an extension to Article 50 until the end of May (“Crisis deferred, again”, February 16th)?

ALAN MALCOLM
London

Letters are welcome and should be addressed to the Editor at The Economist, The Adelphi Building, 1-11 John Adam Street, London WC2N 6HT
Email: letters@economist.com
More letters are available at: Economist.com/letters



On perilous ground

ISLAMABAD

Skirmishing between South Asia's two nuclear powers may spiral into something far more serious

THE LAST time that Indian and Pakistani jets bombed one another's territory was in 1971, during an all-out war. In that conflict more than 10,000 soldiers died, over 100 planes were shot out of the sky and Pakistan was torn asunder, as the new state of Bangladesh took shape. But then neither side had built the nuclear arsenals that they wield today. So when the roar of Indian warplanes returned to Pakistan's skies on February 26th, it marked the most dangerous moment in South Asia since a months-long mass mobilisation of troops in 2002. How did the two countries get into this situation, and can they step away from the brink?

The immediate origins of India's taboo-busting air raid and the resulting aerial skirmishes lie in a suicide-bombing on February 14th in the Pulwama district of the state of Jammu & Kashmir that killed 40 Indian policemen. It was the deadliest attack in the state, and the worst jihadist atrocity anywhere in India for over a decade. But Narendra Modi, India's prime minister,

also faces an election. Hindu hardliners do not feel he has sufficiently advanced their cause while others feel his promise of modernising India to bring jobs has failed (see next article). Appearing a resolute commander will do him no harm.

Though the bomber was a Kashmiri, one of many locals who seethe at heavy-handed Indian rule in the state, the attack was claimed by Jaish-e-Muhammad (JEM), a Pakistan-based Islamist group with close ties to Pakistan's spy agency, the ISI. That, for India, was the last straw. JEM and Lashkar-e-Taiba, a similar group, conducted spectacular strikes in Delhi in 2001, Kashmir in 2002 and Mumbai in 2008. An attack by JEM in September 2016 killed 19 Indian soldiers, prompting Mr Modi to send special forces across the line of control, the de facto border in Kashmir, in what he trium-

phantly called "surgical strikes". Such incursions were commonplace in the 1990s and 2000s, but Mr Modi's willingness to flaunt such brazen raiding publicly was new. Though of questionable military utility, it reaped political rewards.

After the Pulwama attack bellicose news anchors bayed for revenge. Even liberal-minded Indian commentators, who would usually favour talks with Pakistan, demanded that something be done. Mr Modi did do something. A dozen or so fighter jets, equipped with 1,000lb bombs, took off from Gwalior air base on February 26th, crossing both the line of control and a political and military threshold. Indian civilian leaders had forbidden the air force to fly or fire over that line even during a war over Kargil, part of Kashmir, in 1999.

Crossing the line

The planes struck an alleged JEM facility in Balakot in the state of Khyber Pakhtunkhwa, undisputed Pakistani territory. India claimed that hundreds of jihadists had been killed. Pakistan snorted at this "self-serving, reckless and fictitious claim". India, it said, had crossed only a few miles into Pakistan and pounded uninhabited jungle for theatrical effect.

Even so, Pakistan's powerful armed forces, which have ruled the country for much of its history, were left reeling. Indian jets had appeared to come within 100km of Islamabad, the capital, without being in-

→ Also in this section

17 Hindu nationalism

▶ intercepted. Imran Khan, Pakistan's prime minister, promised to respond at a time and place of his choosing. That did not take long. On February 27th Pakistan said that its own aircraft had struck back. As Indian jets chased the attackers, seemingly into Pakistan, an Indian aircraft was shot down, with the unlucky pilot landing on the Pakistani side of the border.

Neither side is spoiling for a no-holds-barred fight. Mr Modi's government made it clear that it had sought to attack terrorists, not Pakistani soldiers, far from densely populated areas. Pakistan said it had fired from within its own airspace (though India disputes this) and deliberately struck open ground "to demonstrate that we could have easily taken the original target", a group of six military facilities.

The torture and mutilation of Indian soldiers sparked national outrage during the Kargil war. The captured Indian pilot has been well-treated so far. Though India protested at his "vulgar" display to the press, he was filmed clutching a cup of chai and praising his captors as "thorough gentlemen". "The tea is fantastic," he added. On February 28th Mr Khan unexpectedly announced that he would be released the next day. All this may offer a path to de-escalation. Mr Khan gave a sober and emollient speech after the dust-up, acknowledging "the hurt that has been caused due to the Pulwama attack". "Better sense should prevail," he urged. "We should sit and settle this with talks." But it may not prove as easy as that.

Can calm come?

Mr Modi is a captive of his own propaganda. His policy of loud jingoism has left India with less room for manoeuvre. Srinath Raghavan, a former Indian soldier and respected historian, quotes Abba Eban: "A statesman who keeps his ear permanently glued to the ground will have neither elegance of posture nor flexibility of movement." One possibility is that escalation will involve the usual means, such as artillery duels across the line of control, which increased on February 27th and 28th, and raids on border posts. That would be troubling but not cataclysmic. However, Pakistan has closed its airspace and put Khyber Pakhtunkhwa on high alert, suggesting that more incursions are feared. India has increased naval patrols and raised security on Delhi's metro network, reflecting concerns that Pakistan might sponsor retaliatory terrorist attacks.

One Indian expert says that a full mobilisation of the Indian army should not be ruled out. Christopher Clary, who managed South Asia policy at the Pentagon from 2006 to 2009, suggests that America should consider evacuating its citizens from both countries. "Not because we are there yet, but because when the situation



warrants it, there will be no time."

A nuclear shadow also hangs over the crisis. During their last big clash, in 1999, India and Pakistan both possessed nuclear weapons but had only limited means to deliver them. Today India has some 140 warheads and Pakistan about ten more than that. Each wields an array of matching missiles. Pakistan has also built tactical nuclear weapons, with a range of 70km or so, intended for use against invading Indian forces, on Pakistani soil if necessary. Their short reach means they would need to be deployed perilously close to the front line.

Mr Khan chaired a meeting of his country's Nuclear Command Authority on February 27th and reminded India of the stakes: "With the weapons you have and the weapons we have, can we really afford a miscalculation?" Pakistan's aim is to underscore that India, which now spends over five times as much as it does on defence (see chart), cannot bring its conventional military superiority to bear without risking nuclear ruin. It hopes, also, that this chilling prospect will force the international community to restrain Mr Modi.

To Indians, such threats fit with a long pattern of cynical nuclear blackmail stretching back to crises in the 1980s. Some officials share the view expressed in January 2018 by General Bipin Rawat, India's

army chief, that India ought to "call their nuclear bluff". Hawkish Indians look enviously at Israel's model of counter-terrorism and chafe at how Pakistani nukes have defanged their more numerous forces.

Any whiff of nuclear weapons would, in the past, have sent outsiders rushing to the subcontinent to soothe tensions. In 1990 President George H.W. Bush sent his CIA director to South Asia to calm a brewing crisis. During the Kargil war Bill Clinton gave Nawaz Sharif, then Pakistan's prime minister, a dressing down in Washington, DC. In a stand-off that unfolded in 2001-02 everyone from Tony Blair to Vladimir Putin passed through the region.

Today, however, America's calming influence may be lacking. The Trump administration lacks the experience, expertise and focus to lower the temperature in the same way. It is beset by domestic drama and lacks diplomats in important roles. There is no permanent ambassador in Pakistan and the branch of the State Department which covers South Asia has five acting, rather than permanent, deputy assistant secretaries. "I've never seen anything like that," notes Mr Clary.

Diplomatic language

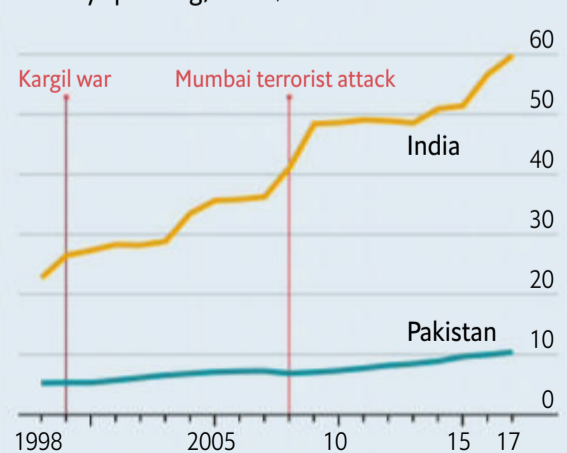
Donald Trump broke his silence on the skirmishes on February 28th, noting that "hopefully it's going to be coming to an end". There are plenty of useful things he could do. One would be to assure India of further intelligence co-operation and defence assistance should it restrain itself from more muscle-flexing. Another would be to demand that Pakistan takes credible action against terrorist groups such as JEM, rather than the cosmetic and ephemeral steps it has taken in the past. Even so, Pakistan is playing a pivotal role in Afghan peace talks by calling for negotiations by the Taliban, which it has long supported. Mr Trump will fear that should India or America squeeze Pakistan too hard, that process, and the prospect of bringing home 14,000 troops, may collapse.

The influence of China is also important. In recent years, it has grown closer to Pakistan, lubricating the relationship with investment and arms, and more hostile to India, with which it shares a long, disputed and occasionally turbulent border. It hopes to show support for Pakistan without being dragged into an unwanted conflict.

The foreign ministers of India, China and Russia met on February 27th and agreed to "eradicate the breeding grounds of terrorism and extremism". To India, that was welcome language. What Mr Modi really wants, however, is for the leader of JEM to be designated as a terrorist at the UN, something that China has blocked for years to spare its ally's blushes. Also on February 27th America, Britain and France proposed a ban at the UN Security Council for the ▶▶

Quick march

Military spending, 2016 \$bn



Source: SIPRI

▶ fourth time. Another Chinese veto would infuriate India. A change of heart, on the other hand, would make de-escalation more likely.

The ball is in Mr Modi's court. His hope was that sending jets into Pakistan would dispel old notions of a pacifist India and collect a few votes in the process. But the pictures on the front pages of newspapers might not now be victorious warplanes but an Indian pilot freed by Pakistan.

The wise choice would be to take up Mr

Khan's offer of talks, while trading military restraint for international support. Mr Khan and his generals, who are largely satisfied with their token bombing raid, have made that easier by swiftly promising to hand back the pilot. The temptation, however, will be for Mr Modi to have the last word with another martial flourish. Pakistan would be compelled to respond, risking all-out war. Equanimity, responsibility and sobriety are required, but those are hardly Mr Modi's strong suits. ■

than on the underlying strength of the Hindu nationalist movement itself. To measure this, the place to start is with the Rashtriya Swayamsevak Sangh (RSS). With an all-male membership of around 5m, the flagship of Hindutva modestly describes itself as the world's largest volunteer organisation. It is far more than that.

Founded in 1925, the RSS has over time absorbed or co-opted nearly every rival Hindutva group. "The miracle and also the design of the Sangh is that they have not split—and that is their power," says Vinay Sitapati, a historian. Its most obvious manifestation is the RSS's 60,000-odd self-financing cells, or *shakhas*, which meet daily for communal exercises and discussion, typically on a patriotic theme. The harder core of the RSS consists of some 6,000 full-time apostles known as *pracharaks*. These devotees exercise discreet control across not just the *shakhas*, but a broader "family" of Hindutva groups.

Keep it close

The family includes India's largest trade union as well as unions for farmers, students, teachers, doctors, lawyers, women, small businesses and so on. RSS progeny run India's two largest private school networks, educating some 5m children. One of these, Ekal Vidyalaya, has grown by targeting remote regions where Christian missionaries have made inroads (see chart 1 on next page). Some RSS groups exercise quiet influence, lobbying for more "nationalist" economic policy, for instance. Others simply wield muscle. The 2m-member Bajrang Dal, a youth branch of the World Hindu Council, an RSS offshoot, has a reputation for beating up Muslim boys who dare to flirt with Hindu girls. The 3m-strong All India Students Council is aggressive in campus politics. By threat or violent action it frequently blocks events it does not like, such as lectures by secular intellectuals. Just outside the orbit of the RSS lie violent extremist groups, such as one believed responsible for murdering leftist writers.

The BJP is a loose affiliate of the RSS. Under Mr Modi, who served as an RSS *pracharak* before being assigned to the party, ties have been tighter. The RSS has thrown its full organisational weight behind his campaigns. In return, Mr Modi has inserted RSS men—or like-minded ones—into every part of Indian politics (see chart 2). But RSS influence also extends to university deans, heads of research institutes, members of the board of state-owned firms and banks (including the central bank) and, say critics, ostensibly politics-proof promotions in the police, army and courts.

Still, frictions have arisen between Mr Modi and his alma mater. "They don't like prima donnas," says Mr Sitapati. Quiet purges, as well as a massive broadening of the BJP's membership to over 100m, have ▶



Hindu nationalism

Orange evolution

DELHI AND PRAYAGRAJ

Narendra Modi and the struggle for India's soul

WHEN THE world's biggest electorate handed Narendra Modi a thumping victory five years ago, India seemed poised for far-reaching change. His party had won an outright majority of seats in the national parliament, a rare feat in India's fractious politics. This was not only punishment for tarnished incumbents or reward for Mr Modi's hard-working, no-nonsense, business-friendly image. Many also saw it as a ringing endorsement of his ideology. Mr Modi's strident brand of Hindu nationalism, which pictures Pakistan less as a strategic opponent than a threat to civilisation, puts him at the fringe even of his own Bharatiya Janata Party (BJP).

After five years in power, the Hindutva (Hindu-nationalist) movement faces a moment of reckoning. That is not just because first Pakistan's jihadists and then its air force have presented Mr Modi with a political crisis. It is also because India is approaching a general election looking as polarised as at any time since independence.

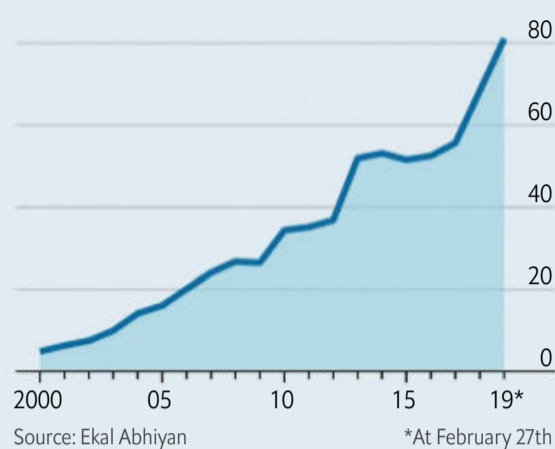
The rival visions confronting India's 900m voters have rarely been so sharply defined. Hindu nationalists regard India as a nation defined by its majority faith, much like Israel or indeed Pakistan. On the other side stand those who see India's extraordinary diversity as a source of strength. For most of the country's seven decades the multi-coloured, secular vision has prevailed. But the orange-clad Hindutva strain has grown ever bolder.

Under Mr Modi, the project to convert India into a fully fledged Hindu nation has moved ahead smartly. The pace would undoubtedly accelerate if, carried on a surge of patriotism brought by the clash with Pakistan, he sweeps into another term. But given that in 2014, the BJP grabbed its big majority with just 31% of the popular vote, how far would Mr Modi be able to push the Hindutva project, even if he does get a new mandate? And if he loses, can a secular India be rebuilt?

The answers depend less on politics

Learning curve

India, Ekal Vidyalaya private schools
Cumulative total, '000



► forged a party hierarchy of personal loyalty to Mr Modi that RSS elders distrust. More broadly, there is grumbling in the Hindutva camp that he has not championed their agenda energetically enough.

This includes education “reform” (to inculcate stronger national sentiment and emphasise Hindu identity); ending “appeasement” (a term Hindutva activists apply to policies aimed at garnering Muslim votes); imposing a uniform civil code (to deny a limited role to sharia, or Islamic law); repealing laws that grant special status to the state of Jammu & Kashmir (to underline Indian sovereignty over a disputed territory that has a large Muslim majority); building a temple to the god Ram at Ayodhya (where in 1992 Hindu mobs destroyed a 16th-century mosque said to be built atop his birthplace); and enforcing rules to protect cows.

Mr Modi’s government has met some Hindutva demands. Nationalist staff have been promoted at every level of schooling, subtly changing the tone of education. But many of the RSS’s demands boil down to putting Muslims, already mostly poor and badly educated, in their place. Accounting for 14% of the population, they are generally excluded from caste-based “reservations” for government favours. Among the BJP’s 1,400 state-level MPs, only four are Muslim. And in Muslim-majority Kashmir, a perennially vexed region, Mr Modi’s government has hardened policies to tackle militancy, imposing direct rule from Delhi, threatening to end unilaterally Indian Kashmir’s special legal status and endorsing, among other measures, the use of shotguns to blast stone-throwing youths. The approach has alienated Kashmiris and also tempted meddling by Pakistan, ever keen to challenge India’s sovereignty. After the longest lull in three decades of violence, it has spiralled again under Mr Modi.

Violence has also accompanied a campaign in BJP-run states to apply stringent laws against the slaughter of cows, sacred beasts to Hindus. Between 2015 and 2018 some 44 people, 36 of them Muslim, have

been beaten or hacked to death by cow vigilantes, says Human Rights Watch, an NGO. The ban has not spread nationally, partly because many Hindus outside the “Cow Belt”—the conservative middle and west of the countryside beef, and partly through anger among farmers who can no longer sell cows beyond milking age.

The demand to erect a Ram temple in Ayodhya has not progressed, either. The issue has been stalled in courts for decades. Mr Modi has tried to push India’s Supreme Court to resolve the case, but his influence is limited. In recent weeks the RSS appears to have quietly advised its affiliates to stop agitating over the issue. This suggests a recognition that, although the demand once galvanised mass emotion, most Hindus are now more concerned with matters such as jobs, schools and health care.

This has not helped Mr Modi’s standing with the Hindu religious establishment. At this year’s Kumbh Mela, a pilgrimage that is the world’s biggest public gathering, BJP flags and billboards proliferated along with boasts of a huge boost in public spending to organise the six-yearly event. Yet several senior religious figures seemed unhappy. “They have been talking of nothing but Ram, Ram all these years, and now they ask us to stop?” mutters Swaroopanand Saraswati, the head of two of Hinduism’s most prestigious monasteries, as a pair of young acolytes flick yak-tail fly whisks. In a nearby encampment, another high-ranking holy man, his forehead streaked with turmeric, complains that the BJP and RSS are trying to hijack the faith while doing little for issues such as protecting the sacred Ganges river.

Secular foes of Hindutva, however, fear Mr Modi has gone too far. “The battle for a secular India is already lost,” says Mujibur Rehman, a political scientist at Jamia Milia University. Mr Rehman does not blame Mr Modi but sees an acceleration under BJP rule of a slow disempowering of India’s non-Hindu minorities. “When the BJP bans

cow slaughter, no opposition party makes the argument that this destroys Muslim livelihoods.” Pratap Bhanu Mehta, a columnist and head of Ashoka University, also sees many signs of Hindutva’s “hegemonic arrival”. One clue is that the BJP’s main opponent, the Congress party, has largely dropped talk of secularism. Since winning the state of Madhya Pradesh in December, Congress has outdone the BJP in cow protection, budgeting millions to build shelters for retired cattle. Its national leader, Rahul Gandhi, now punctiliously visits temples. “He is trying to show that he is no longer ‘embarrassed’ by his Hinduism, and this is a huge thing since the core RSS belief is that the secular state has left Hindus culturally marginalised,” says Mr Mehta.

Hindu the right thing

This may be seen as a healthy shaking off of colonial legacies. Yet what worries Indian liberals is where Hindutva strays into xenophobia and intolerance of dissent. By repeating a mantra of victimhood it constructs a world full of enemies, making it easy to conflate Pakistani jihadists with protesters in Kashmir or simply critics of Mr Modi. A window sticker now common on cars, showing the monkey god Hanuman with an angry orange face, is disturbing as it seems to respond to a threat which, in a country that is overwhelmingly Hindu and proudly so, is hard to perceive. That sense of threat, says Mr Mehta, is what binds the RSS: “Take that away and the whole project disappears.”

Mr Gandhi vows that, if elected, he will remove people with RSS links from the bureaucracy. But its devotees have risen organically within the system. “They are judges, they are professors, they went from RSS-run crammers to pass the civil-service exam, or RSS military academies into the army,” says Pragya Tiwari, author of a forthcoming book on the RSS. “These people aren’t going anywhere.”

Obstacles to the RSS agenda may come more from within the group, and from outside politics. The size of the family means it is also cumbersome and quarrelsome. And its increased exposure to politics has opened new internal frictions and exposed it to greater scrutiny. “Before, people were lulled, they wanted to believe these guys were innocuous, they didn’t really understand what was at stake,” says Ms Tiwari. Now, there is a stronger will to push back.

Yet there seems limited conviction among Indian liberals that the Hindutva tide can be stemmed. Outside big cities, the roots of secular, inclusive India remain shallow. This lack of a strong and attractive liberal alternative matters more in the long term than the coming vote. Mr Mehta’s prognosis: “Unless there is a massive repudiation, their staying power will be much stronger after the election.” ■

All in the family

India, links of top politicians to the Sangh Parivar (RSS “family”), February 2019

● Ties to RSS or affiliate ● Not RSS

President	● Ram Nath Kovind
Vice-president	● Venkaiah Naidu
Prime minister	● Narendra Modi
Speaker of lower house	● Sumitra Mahajan
Cabinet (12 of 25)	●●●●●●●●●●●●●●
Other ministers (11 of 49)	●●●●●●●●●●●●●●
State governors (15 of 33)	●●●●●●●●●●●●●●
State chief ministers (8 of 31)	●●●●●●●●●●●●●●

Sources: *The Economist*; press reports



Spain

The two souls of Ciudadanos

MADRID

Catalan separatism has pushed politics to the right—but how far?

IN IMPROBABLY WARM weather some 500 people gathered on February 23rd in Plaza de la Villa, one of Madrid's oldest squares, to launch the election campaign of Ciudadanos (Citizens), one of Spain's newer political parties. A year ago Ciudadanos, which describes itself as a centrist, liberal party, was leading the opinion polls, with around 27% of the vote in a crowded field. Now it trails behind both the governing Socialists and the conservative People's Party (PP). Yet Ciudadanos and its young leader, Albert Rivera, may still hold the key to Spain's next government.

Mr Rivera fired the opening shot in the campaign by rejecting, from the outset, a coalition with the Socialist party of Pedro Sánchez, the prime minister since June, whom he accused of disregard for the constitution in his negotiations with Catalan separatists. In doing so, Mr Rivera has tried to define the character of the election due on April 28th. It will be about the unity of Spain and it will be a contest between the Socialists on the one hand and a three-headed block to the right of centre in which Ciudadanos has lined up with the PP and Vox, a new ultra-conservative party.

A fortnight earlier this trio joined forces in a much bigger demonstration in another Madrid square, to protest against Mr Sánchez. Vox is a Spanish nationalist party that in some respects resembles far-right movements elsewhere in Europe. This is a strange place to be for a liberal party once compared to Emmanuel Macron's En Marche in France. "I'm surprised they are putting a cordon sanitaire against me and not the far right," said Mr Sánchez.

This stance can only be understood in the "exceptional circumstances" of Spain, says Inés Arrimadas, until now Ciudadanos's leader in Catalonia and the party's star attraction, who announced in the Plaza de la Villa that she will run for parliament

→ Also in this section

20 Polish baby bribes

21 A tale of two democracies

22 Picky German arms sales

22 Berlin's brave bicyclists

23 Russian media in Turkey

— Charlemagne is away

for Barcelona. In October 2017 the separatist regional administration in Catalonia held a "binding", although unofficial, referendum and declared independence later that month in defiance of the constitution. These events amounted to a "coup", says Ms Arrimadas.

Mr Sánchez came to office after a censure motion against Mariano Rajoy, the previous PP prime minister, and with the backing of Catalan and Basque nationalists in the Madrid parliament. Mr Sánchez has attempted to defuse the conflict in Catalonia through a less confrontational attitude. Ms Arrimadas accuses him of making "concessions" to coup-mongers by failing to stop the separatists from using public resources to promote their "republic".

Ciudadanos, which was formed in Catalonia, has always had two souls: one liberal and the other anti-separatist and thus Spanish nationalist. It is still liberal on lifestyle issues and favours modernising economic reforms, but these proposals are "harder to understand" in a "polarised scenario", says Toni Roldán, a Ciudadanos legislator. The party's rise and its decline owe ▶▶

Which way to turn?

Spain, Congress of Deputies

Projected vote share*, %	Podemos 14.4	PSOE 27.3	Ciudadanos 16.0	PP 19.1	Vox 13.3	Others 9.9
Current seats	67	84	32	133		33

Sources: Spanish parliament; *El Mundo*/Sigma Dos

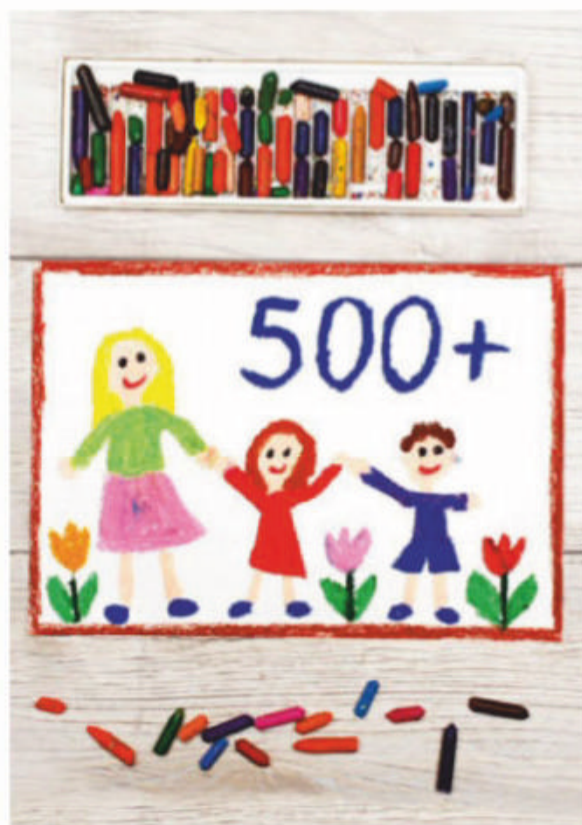
*Published February 24th 2019

▶ much to the political earthquake caused by Catalan separatism. In a regional election in Catalonia in December 2017 Ms Arrimadas's muscular campaigning helped Ciudadanos win the most votes, although the three separatist groups retained their narrow majority of seats in the Catalan parliament. Because of separatist intimidation "it's not easy being Ciudadanos in Catalonia," she said in the Plaza de la Villa. But as the embodiment of the defence of the Spanish nation, the party surged in the national opinion polls.

The Catalan events pushed public opinion, traditionally slightly left of centre, to the right. At the last election in 2016 the right won 46% of the vote; today it polls at 55%, points out Kiko Llaneras, a psephologist. The difference is that today the right is split in three, which means it will probably win fewer parliamentary seats. From nowhere, Vox took 11% of the vote in a regional election in Andalucía in December, helping to eject the Socialists from the regional administration they had run for almost 40 years. Mr Rivera's vetoing of Mr Sánchez is thus a "defensive move" to stop Ciudadanos voters moving to Vox, says Mr Llaneras.

It may help Mr Sánchez, in two ways. He broke off talks with the separatists last month, although this contributed to him losing his budget and thus precipitated his calling of the election. He is now seeking votes in the centre ground from which Ciudadanos is retreating. After the shock in Andalucía, where some 400,000 left-wing voters stayed at home, the Socialists expect the spectre of Vox to help get out the vote. The core of Mr Sánchez's campaign will be about "what kind of country do you want", says Manuel de la Rocha Vázquez, an adviser to the prime minister. "Do we want a closed, nationalistic, xenophobic, male-dominated society? We strongly believe that the majority of Spaniards are in favour of an open, pluralistic, multicultural, tolerant society," he says.

Although this is the third general election since December 2015, its character shows how quickly the country has changed. The past two were held in the shadow of austerity and corruption involving the PP and the Socialists, who seemed to face extinction at the hands of Podemos, a far-left party. Now Podemos is fading amid internal splits. Mr Sánchez, a politician of no fixed ideology, has hastened that process by feinting left in office, with a big increase in the minimum wage and budget proposals for higher social spending. Instead of the Socialists, it is Ciudadanos and the PP who now have to fight on two fronts. Catalan separatism is Spain's thorniest problem. But it is Vox, rather than Podemos, which seems to many like the immediate threat to the system. All this suggests that Mr Rivera's bet on forming a centre-right government is a risky one. ■



Poland's election campaign

The \$10 billion bung

WARSAW

Splashing the cash ahead of the vote

INCUMBENCY STILL has its advantages, at least in a country where the economy is booming. Poland's GDP grew by 5.1% last year, faster than any other country in the EU except tiny Malta and Ireland. Weakness in the rest of the continent will dent that by a point or more in 2019, but the ruling Law and Justice Party (Pis) has money to splash around. On February 23rd it announced an expansion of its popular "Family 500+" programme, under which families are given 500 zlotys (\$132) a month for each child after their first. In future, the first child will also be eligible—an extra handout to which previously only the poorest families were entitled. A 1,100 zloty bonus for state pensioners and cuts in taxes, especially for young people, are also part of the package, which is worth up to 40bn zlotys (\$10.5bn), almost 2% of this year's projected GDP.

That is pretty blatant stuff, especially when you take into account the fact that the new child payments will go into effect in July, just three months before the expected date of the next general election. Some worry that the new promises are unaffordable. Ruling-party strategists scoff that the opposition said the same thing when the 500+ scheme was first introduced in 2016; but last year the budget was close to balance. Debt is 50% of GDP, and falling. The universal benefit, which will disproportionately help those on lower in-

comes, is good for consumption. A bit more stimulus might be just what is needed if business is dragged down by weakness in Germany, the neighbour with which Poland's economy is tightly enmeshed. The 500+ plan has proved so popular, in fact, that the main opposition party, Civic Platform (PO), says it has no plans to scrap it.

The move presages a tight election in October. Civic Platform is pinning its hopes on a good performance in the European Parliament elections in May to create momentum, following local elections last year, at which it did well in Poland's larger cities while failing to make a dent in Pis's superiority in the countryside. Turnout is pitiful at European elections in Poland: last time it was just 24%. Civic Platform's hope is that it can get more of its better-educated urban supporters to vote. It has also succeeded in drawing five smaller parties into its European Coalition, an electoral alliance for the euro-vote. A similar attempt last time failed, but the coalition is level-pegging Law and Justice in the polls. Hence, critics say, the sudden handouts.

The picture is further complicated by a man some hope could be the Polish Emmanuel Macron: Robert Biedron, the 42-year-old former mayor of the small city of Slupsk. Running Slupsk is hardly a high-profile or arduous job. It has only 100,000 inhabitants. Being in the western half of the country, and so accessible to Germany, it has prospering footwear and lorry factories. However, Mr Biedron is, unusually for conservative Poland, an openly gay politician, the first ever elected to the Sejm, parliament's lower house.

He is likely to filch voters from Civic Platform which, despite its urban roots and its popularity in liberal circles in western Europe, favours neither gay marriage nor legalising abortion on demand. He currently refuses to join the opposition coalition, denouncing both of Poland's main parties in equally harsh terms. Still, the hope among Civic Platform's leaders is that once he has established himself in the European election, he may help them form a government in the autumn. His party, which is called Wiosna ("Spring" in Polish), might have lost a little of its bloom by then. But Mr Biedron sees himself as a future prime minister, and may have little appetite for making up the numbers unless (and it is a long shot) he is offered the top job.

The other big question-mark is over Poland's problems with the rule of law. In December 2017 the European Commission in Brussels triggered "Article 7" proceedings against Poland, a procedure never before invoked, citing a raft of threats to the independence of the judiciary arising from what the government calls reforms of its courts. Critics say the government has neutered Poland's constitutional court, which is now packed with its appointees. ▶

▶ However, an attempt to alter the balance of the Supreme Court by sacking all judges aged 65 or over failed after the government backed down following an injunction from the European Court of Justice. The commission's move against Poland has run into the sand, since any attempt actually to sanction Poland under Article 7 requires the unanimous agreement of the other EU governments, which will not be forthcoming. Diplomatic efforts by Poland's urbane prime minister may have blunted the charge that Law and Justice has made Poland a pariah, depriving Civic Platform of a crucial weapon. Pro-opposition newspapers have made complex allegations of corruption in the ruling party, but voters have paid little heed. Law and Justice won an unexpected majority in 2015; it still hopes to scrape another one. ■

Estonia and Moldova

Elections, dirty and clean

CHISINAU AND TALLINN

Two very different post-Soviet democracies

KAJA KALLAS, a former competition lawyer and member of the European Parliament, is just the sort of businesslike politician one expects in Estonia. She took over as leader of Estonia's liberal Reform Party last year; polls show it in a dead heat with the ruling Centre Party. She has run a technocratic campaign, focusing on education and tax policy. But she loses her cool when she talks about EKRE, Estonia's anti-immigrant, Eurosceptic populist party. "They want to destroy everything," she says: all the institutions that have made her open, tech-savvy nation more successful than "other countries that had the same starting-point. Take Moldova, for example."

Indeed, take Moldova. Like Estonia, it declared independence from the Soviet Union in August 1991. Both tiny countries have big Russian minorities, and both have struggled with emigration and shrinking populations. Yet in many ways they are polar opposites. Estonia joined the European Union in 2004 and the euro zone in 2011; Moldova's EU candidacy has ground to a halt. Transparency International deems Estonia squeaky-clean, the 18th-least-corrupt country in the world. Moldova is 117th. Estonia is an IT hub, Moldova a farm economy whose pride is its excellent wines. Adjusted for purchasing power, Estonians are five times richer than Moldovans.

This week both countries held elections. Estonia's polls close on March 3rd, but internet voting started ten days earlier. Moldova's vote took place on February

24th. The results gave some hope for progress in Moldova. An alliance of reformist parties called ACUM, headed by two corruption-fighters, Maia Sandu and Andrei Nastase, took 27 of parliament's 101 seats. But the Socialist Party (PSRM), aligned with the Russia-friendly president, Igor Dodon, got 34. In second place with 30 seats is the ruling Democratic Party (PDM), a nominally pro-European group headed by the country's biggest oligarch, Vladimir Plahotniuc.

Since ACUM has vowed to stay in opposition, a coalition seems to require the PSRM and PDM. But Mr Plahotniuc may have other plans. In Moldova, MPs often switch parties, lured by rewards or threats. Then there is the party of Ilan Shor, a 31-year-old Israeli-born businessman who, as an MP, now enjoys immunity from prosecution.

In 2015 Mr Shor was elected mayor of Orhei, a modest town an hour's drive north of Chisinau, the capital. He has donated money to restore parks, repave streets and build social-housing units. Last year he opened a free amusement park called Orheiland. The town is dotted with Mr Shor's "social stores", offering wares at subsidised prices. Three dozen new buses ply the streets.

The question is where the money comes from. In 2017 a court convicted Mr Shor of playing a role in a scheme that used fake loans to Russian companies to siphon nearly \$1bn from the country's banking system in 2014. Mr Shor has appealed. He blames another oligarch, an ex-prime minister serving nine years in prison.

Ms Sandu, a former education minister revered for battling corruption in the exam system, thinks the entire political class is rotten. Though nominally rivals, "[President] Dodon and the Democratic Party are working together", she says, blackmailing European countries into maintaining aid by threatening to turn towards Russia.

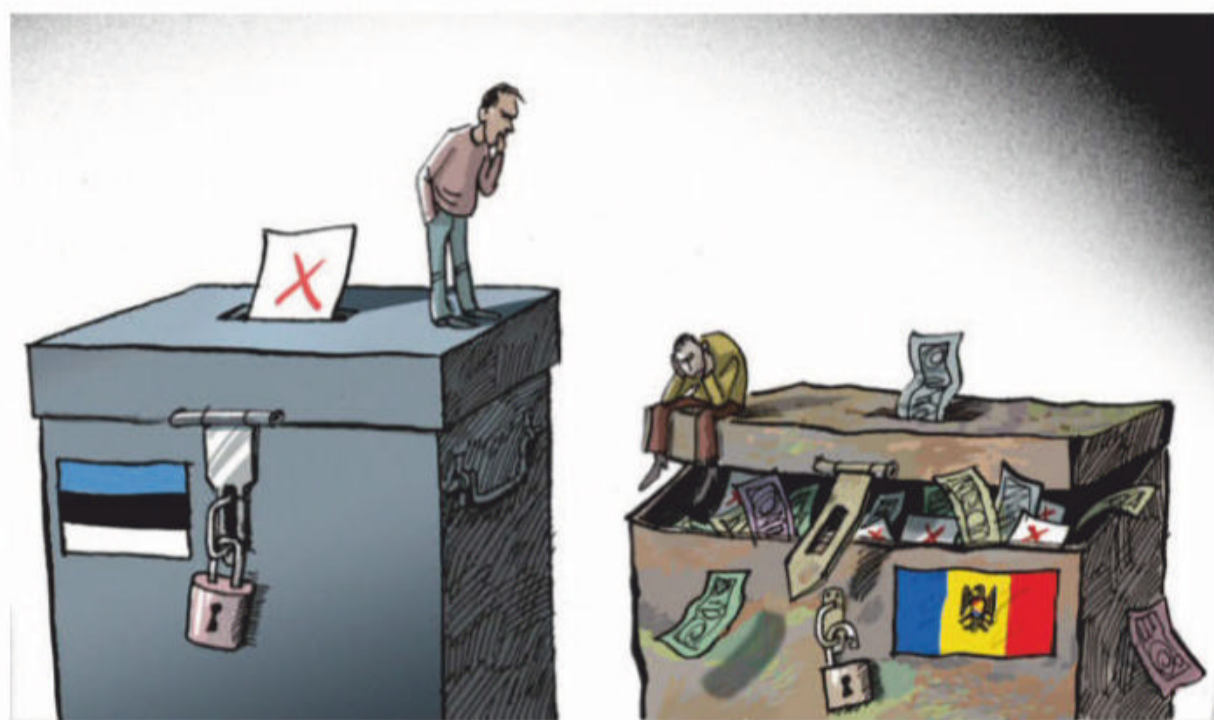
The EU nevertheless cut off most aid last summer, after Mr Nastase won Chisinau's mayoral election only to see it annulled on

flimsy grounds. Political rot and poverty have driven many to emigrate. Over a million of Moldova's 4.3m citizens live abroad, and remittances are about a fifth of GDP.

If Estonia's politics seem boring by comparison, Mart Helme, the leader of EKRE, is trying to fix that. On February 24th, the national holiday, EKRE led a torchlit march of 6,000 followers through Tallinn, the capital, chanting *Eesti eest* ("For Estonia!"). Mr Helme compares "so-called liberal democracy" to communism, and the EU to the Soviet Union. His party wants schools serving the country's Russian-speaking minority to switch to Estonian, and to restrict the numbers of Ukrainians coming in for low-skilled jobs. It is polling at 17%.

The Centre Party of Juri Ratas, the prime minister, gets most of the Russian vote. It is used to EKRE exploiting ethnic tension. But the fearmongering has less traction in this election, thinks Raimond Kaljulaid, a Centre Party MP. Young Russians are better integrated, and Estonian culture is doing well, with successful hip-hop artists and novelists. After a huge decline from 1991 to 2014, the population has risen for the past three years. Last year more Estonian citizens returned to the country than left.

How has Estonia avoided Moldovan-style corruption? Some believe it made better choices early on, privatising state enterprises in a more transparent fashion. Tarmo Juristo of Praxis, a think-tank, credits Scandinavian banks with establishing norms in the financial industry. But others think it may have got lucky. Lucan Way and Adam Casey, of the University of Toronto, argue that former Soviet states democratised better when they had a deep-rooted nationalist movement. This was stronger in Estonia, which was independent from 1918 to 1940, than in Moldova, which was ruled by Romania or Russia for centuries. To judge by EKRE, though, that nationalism may not be entirely benign. ■



German arms sales

Sticking to its guns

BERLIN

Germany's high-minded arms-export policy is irritating its allies

AFTER 13 YEARS at the top of German politics, what does Angela Merkel regret? Asked this question at the Munich Security Conference on February 16th, the chancellor—rather than rueing her decisions on refugees or euro-zone reform—declared herself “greatly concerned” about Germany’s inability to harmonise its policy on arms exports with its European allies.

The chancellor had two audiences in mind. The first was France, which resents Germany’s tight export rules. The second was Germany’s Social Democratic Party, which governs in coalition with Mrs Merkel’s Christian Democrats and resists relaxing those rules. Put simply, the chancellor is trapped between her closest ally and her governing partner.

The proximate cause for the row is Germany’s decision last November to suspend all weapons exports to Saudi Arabia, following the murder and dismemberment of Jamal Khashoggi, a Saudi journalist, by state goons. Because German components are often indispensable for weapons or arms systems made elsewhere, that policy threatened other countries’ export arrangements with the Saudis. Emmanuel Macron called it “pure demagoguery”. The British are also furious, for the decision undermines a potential £10bn (\$13.3bn) deal to sell the Saudis 48 Eurofighter Typhoon jets, which need German parts. Jeremy Hunt, Britain’s foreign secretary, has privately accused Germany of undermining NATO and reducing European leverage on Saudi Arabia. Some French-made helicopters in Saudi Arabia are grounded for want of spare parts.

France and Britain view arms sales as a tool of foreign policy, and governments often back their firms’ export efforts. Germany gives priority to human rights. Under rules dating from 2000, German arms exports are supposed to be limited largely to EU and NATO members and their allies. In practice regulators have often adopted a more relaxed attitude; big customers over the past decade have included Algeria, Qatar and Egypt as well as the Saudis. Between 2012 and 2016 Germany was the world’s fifth-largest weapons exporter, and not without controversy: its tanks and small arms have turned up in the killing fields of Libya, Syria and Yemen.

Yet since 2013, says François Heisbourg, a Paris-based defence analyst, “chaos has replaced order” in German decision-mak-



There’s a catch

ing. That upsets domestic manufacturers, who have been tempted to establish subsidiaries overseas. And it infuriates allies who demand predictability. French concerns centre on proposed joint projects like the Future Combat Air System (a plan that includes fighter jets, satellites, drones and

missiles, to which the Spanish have signed up) and a next-generation tank. Bruno Le Maire, France’s finance minister, fears Germany’s export rules could render such plans “useless”. The pair are now negotiating what would amount to an updated version of a 1972 agreement on arms exports that aimed to ensure neither could veto the other’s decisions. But the details are still sketchy.

Ursula von der Leyen, Mrs Merkel’s defence minister, told the Munich crowd that Germany must not act as if it occupies a higher moral plane than the British or French. Yet Sophia Besch at the Centre for European Reform says German sceptics are more likely to be convinced by arguments couched in European terms. Cross-border co-operation on defence and security offers the best chance to kick-start Europe’s stalled integration. Joint military projects could improve capabilities, boost European industry and hedge against American disengagement. But for Germany, that means overcoming long-established taboos. Seen from abroad, then, Germany faces an awkward choice: compromise on its principles, or stand in Europe’s way. ■

Germany

Boldly biking in Berlin

BERLIN

The German capital wants drivers to stop killing cyclists

TEDDYBEARS, CANDLES and flowers are piled up around a white-painted bike on the side of the road. This is a memorial to an eight-year-old boy who died after being hit by a truck while cycling with his mother to school. These white “ghost bikes” are dotted around Berlin at spots where cyclists have perished. In 2018 nearly one cyclist a month died on the roads of Germany’s capital.

Berlin’s state government, a three-way Social-Democrat, Green and Left Party coalition, is promising a “transport revolution” to reduce the number of road deaths to zero. Last year 45 people died in traffic accidents in Berlin, 11 of them on bikes. (In London, a city nearly three times bigger, 10 cyclists were killed in 2017). In June Berlin passed a law to make driving less attractive. The aim is to turn the city into a sea of Lycra. “Privileging cars has to stop,” says Matthias Tang of Berlin’s department for transport and the environment.

Busy intersections are being re-designed for bikes. Some main roads are getting two-metre-wide cycle-paths that are separated from traffic by bollards, to stop motorists parking on bike-paths, a common outrage. Over 100km of bike-only highways into the city will be built,

and secure bicycle storage set up at train stations. Officials say safer roads will encourage people to swap petrol for pedal-power, thereby reducing pollution and congestion.

But progress has been slow. Berlin’s current government was formed more than two years ago, and promised better bike infrastructure from the start. But the first new wider cycle lanes have only just been built. Opposition conservatives oppose the law, so unless the pedallers’ paradise is built quickly, the “revolution” could be reversed by a change of government in less than three years. Meanwhile, more space for bikes means less for cars, and motorists will not surrender their parking spots without a fight. “It’s expropriation by the back door,” says Jörg Becker of ADAC, a drivers’ association.

Berlin’s population is growing and the economy is doing well. More workers mean that once-quiet streets are getting congested. Rising rents are pushing residents out of the centre, increasing the number of car-commuters and making trains and buses more crowded. More Berliners would no doubt like to get out and feel the breeze in their hair—if they were less worried about being mown down by motorists.

Russia and Turkey

In Sputnik's orbit

ISTANBUL

A Russian propaganda outlet prospers in Turkey

A WOUNDED JIHADIST commander is spotted receiving treatment in a Turkish hospital near the border with Syria. A court awards compensation to a Kurdish villager beaten senseless by security officials. A writer accuses the government of fearmongering after a prosecutor demands life sentences for 16 people involved in protests. These are the kind of stories only a few media outlets in Turkey, the world's biggest jailer of journalists, dare to cover. It may come as a surprise that one of them is a news organisation founded and funded by Russia's government.

In much of Europe and America Sputnik has a richly earned reputation as a Kremlin mouthpiece. Facebook recently accused the group's employees of setting up dozens of fake accounts on its platform designed to spread misinformation. President Emmanuel Macron has referred to Sputnik as "an agent of influence and propaganda" in France. Sputnik has played a similar role in Turkey, where it has enthusiastically supported Russian efforts to deepen the country's estrangement from its Western allies. But the agency has also won over hundreds of thousands of readers and listeners by providing an increasingly scarce product—uncensored news about Turkey in Turkish.

The service, which features a website and radio channel, was launched in Turkey in late 2014. A year later Turkey's airforce shot down a Russian warplane which had entered its airspace after a run over northern Syria. Russia responded with sanctions and demanded a formal apology. Sputnik responded by airing thinly sourced Russian claims about Islamic State oil sales to Turkish officials, including members of Mr Erdogan's family. Some Turkish news outlets picked up the story. In the spring of 2016 Turkey blocked access from Turkish internet providers to Sputnik's website and deported its news manager. Later the same year, as the Russian sanctions started to bite, Mr Erdogan relented, expressed regret for the downed plane and reconciled with his counterpart, Vladimir Putin.

Later in 2016, Mr Erdogan travelled to St Petersburg, where he thanked Mr Putin for condemning a coup attempt against Turkey's government, agreed to bridge differences over the war in Syria, revived a number of joint energy projects, including an undersea gas pipeline from Russia, and expressed interest in purchasing a Russian weapons system. Mr Putin won one other

concession. The day before Mr Erdogan's visit, Turkey unblocked Sputnik.

Since then Sputnik has drummed up support for the rapprochement between Turkey and Russia. Its website teems with stories hailing Turkey's purchase of Russia's S-400 missile system, which NATO and in particular America opposes, as a sign of the country's increasing independence from the Western alliance. On issues like the wars in Ukraine and Syria and the turmoil in Venezuela, Sputnik regularly channels the voice of its Russian paymasters. A study published last year by the RAND Corporation concluded the news agency was part and parcel of a Kremlin strategy to "foment suspicion" between Turkey and its NATO partners and to enlist the country's support for Russia's policies. It is operating on fertile ground. According to a series of polls by Kadir Has University, the share of Turks who identified Russia as a threat to their country dropped from 34.9% in 2016 to 12.4% last year. Those who saw America as such soared from 44.1% to 60.2%. That looks like a good return for Mr Putin on a limited investment.

But Sputnik has also continued to be a thorn in Mr Erdogan's side by flouting the rules imposed on Turkey's leading news outlets. (Analysts and media-rights groups estimate that about 90% of newspapers in circulation are in the hands of business-

men close to the government.) The service recently published excerpts from an interview with Selahattin Demirtas, a Kurdish political leader imprisoned since late 2016. Most outlets are effectively banned from reporting on Mr Demirtas or his movement. Critics reckon that the website wants Turks, especially those who are critical of the Erdogan government, to come for decent coverage of Turkish politics and to stay for the pro-Kremlin spin.

Sputnik's journalists say they are simply providing an alternative to the bland, toothless coverage offered by domestic news outlets. Whatever Sputnik is doing seems to be working. Its service in Turkey now boasts over twice as many Twitter followers (609,000 at last count) as its global service has.

In the kingdom of the bland

Along with the BBC and Deutsche Welle, which also run Turkish-language services, Sputnik has turned into a magnet for unemployed Turkish reporters. Today, the group boasts some of the country's best and most popular journalists. Ahu Ozyurt, a veteran television anchor who joined the service last year, says she was pleasantly surprised to discover that she could invite whomever she wanted to appear on her radio programme. Most of the big news channels blacklist experts overly critical of the Erdogan government. "The mainstream in Turkey is so bad", says Ms Ozyurt, "that just being able to do basic, orthodox journalism feels extraordinary." Those responsible for the sorry state of the Turkish media, starting with Mr Erdogan, ought to take notice. When your newspapers make a group financed by the Kremlin look like a beacon of press freedom, something has gone seriously wrong. ■



Who's using whom?



Parliament and Brexit

Losing control

Brexit may now be deferred until at least June. This will not make it any easier to get MPs to back a deal

AFTER WEEKS of unstable equilibrium British politics has seen two breakthroughs. Theresa May, the prime minister, agreed to offer MPs a chance to vote to extend the Article 50 Brexit negotiations. This in effect takes a no-deal Brexit off the table for the time being. Meanwhile Jeremy Corbyn, the leader of the opposition, promised to support a second referendum on the final deal. This raises the possibility that a Brexit delay might eventually morph into a Brexit revote.

The reason for these breakthroughs is that both leaders are losing control of their own parties. Mrs May's Brexit strategy depended on confronting MPs with a choice between her deal and no deal. But early this week some 15 ministers, including three cabinet members, threatened that they would back a plan drawn up by Yvette Cooper, a Labour MP, to delay Brexit if Mrs May cannot get her deal through Parliament by a specified date. Following one of the most fraught cabinet meetings in years, Mrs May turned up to Parliament on February 26th to offer a succession of promises to appease the rebels: if her deal fails to pass by March 12th, she will ask MPs by the follow-

ing day if they are willing to sanction a no-deal Brexit and then, assuming that the answer is no, the day after they will be able to instruct the government to go back to Brussels to seek an extension to the Article 50 Brexit deadline of March 29th.

Mr Corbyn is a lifelong Eurosceptic who also recognises that a large minority of Labour voters backed Leave. But his leadership is in a battered state. Nine MPs recently quit, Tom Watson, the deputy leader, has formed a new moderate group within the party and a YouGov poll shows Labour trailing the Tories by 23% to 36%. This has enabled the party's pro-Remain constituency to force him to promise a referendum in order to avoid further defections.

→ **Also in this section**

25 The changing nature of anti-Semitism

26 Bagehot: The Tory wrecking crew

Read more from this week's Britain section:
[Economist.com/Britain](https://www.economist.com/Britain)

What does all this add up to? Mrs May's promise of a vote to delay Brexit was so explicit that she cannot go back on her word (though it is a measure of how little trust Mrs May has in Parliament that MPs agonised about whether they should bring their amendment forward as an insurance policy). But she nevertheless hedged her promise with Brexiteer-pleasing caveats such as that she wanted any delay to be "short" and "once only". Her chosen new Brexit day is probably June 30th.

A delay would do nothing in itself to tackle the great sticking point of the "backstop", which seeks to prevent a hard border in Ireland by keeping the entire United Kingdom in a customs union with the EU. Geoffrey Cox, the attorney-general, and Stephen Barclay, the Brexit secretary, spent much of this week in Brussels trying to put into legal form EU undertakings that the backstop will be used only if necessary and that it is not intended to be permanent.

Some hardline Brexiteers may yet decide to hold their nose and vote for Mrs May's deal on March 12th, rather than risk the possibility of delaying or even reversing Brexit. Jacob Rees-Mogg, head of the European Research Group of Tory MPs, said this week that he would not insist on the backstop being dropped altogether. The Northern Irish Democratic Unionists, who voted against the deal last time, are sounding a little more emollient. Yet the prospect of putting back the deadline may have increased chance that soft Tories and Labour Leavers will vote against the deal, because it postpones the danger of crashing out ▶▶

▶ with no arrangements in place.

Then there is the question of how all this will go down in Brussels. An extension to the Article 50 talks would need the approval of all 27 governments. Emmanuel Macron has said that France would consider an extension “if it’s justified by new choices on the part of the British”. Spain’s prime minister, Pedro Sánchez, has made similar noises. Some Eurocrats suggest giving Britain up to a couple of years to rethink its approach and perhaps hold another referendum. But the majority support a short extension, not least because this would allow them to skirt the question of whether Britain should participate in this spring’s European Parliament elections.

Mr Corbyn’s promise to support another referendum is more confusing. The Labour leader said that he would support a “confirmatory” referendum only in the event that Mrs May’s deal managed to pass through Parliament. It is not clear whether he might in future offer to support Mrs May’s deal in return for her putting it to the country, as some Labour MPs have suggested. And it is certainly not clear whether he will actually campaign for a second vote or simply go through the motions, as he did during the referendum campaign in 2016.

Mr Corbyn’s willingness to campaign matters because, as things stand, it is unlikely that a Labour motion to support a second referendum would get through Parliament. Some 30 Labour MPs who represent Leave-voting constituencies would probably vote against such a motion but, so far, only a handful of Tories have come out in favour of a second referendum.

Everything depends on what use Britain’s competing political factions make of a delay in the Brexit timetable. Mrs May’s strategy would be to chip away at her opponents by insisting that her deal, backstop and all, remains the only one available and by resurrecting the threat of a no-deal crash out, only in June rather than March. The Brexiteers would continue to push for a prize that they have been seeking for decades. The large group of moderate MPs would continue to resist the possibility of leaving without a deal on the grounds that it would do grave damage to the economy. (The government’s own analysis of the consequences of a no-deal Brexit, published this week, predicted lower growth, long delays at Dover and costly new customs procedures.) There is little reason to think it would be any easier to solve the problem of the backstop in the next three months than it was in the past three.

The only thing to emerge with any clarity from this week’s dramatic events is that Britain’s agonies are likely to go on for longer than originally billed. Those people who thought that March 29th might put an end to all the talk about Brexit are set to be sorely disappointed. ■

Anti-Semitism

An ill wind

LIVERPOOL

British Jews face an old prejudice from new quarters

LAST WEEK David Hirsh resigned from the Labour Party. He was, he wrote, fed up with being humiliated by anti-Semitism. “I have fought it for years, in the student movement, in the academic unions and in the Labour Party. I won’t subject myself to it any longer.” But the 51-year-old sociology lecturer, and author of a book called “Contemporary Left Anti-Semitism”, is not only worried by what is happening in the Labour Party: he sees a conspiratorial outlook spreading across the political spectrum. “When people talk about cosmopolitans, citizens of nowhere or the Rothschilds, I kind of think they are talking about me and my kids,” he says, “even if we don’t own any banks at all.”

He is not alone. A recent survey by the EU Agency for Fundamental Rights found that three-quarters of British Jews believe anti-Semitism is a problem, up from half in 2012. There has been a rise in the number of recorded anti-Semitic incidents, which range from graffiti to physical violence. The Community Security Trust (CST), a charity, counted 1,652 such incidents in 2018, the highest annual total since it began in 1984. In the past, anti-Semitic incidents have tracked events in the Middle East, with violence against Jews in the West mirroring wars involving Israel. This time that is not the case.



Losing faith

So far polls show no evidence of an uptick in anti-Semitism in broader British society. And British people are by any measure less anti-Semitic than those in most countries, notes Jonathan Boyd of the Institute for Jewish Policy Research (JPR), a London-based think-tank. A study by his organisation in 2017 found that 5% of Britons could be considered anti-Semitic, with another 25% holding at least one anti-Semitic attitude.

But some worry that people may come to adopt more strongly held views if they are exposed to them in public life. And under Jeremy Corbyn’s leadership, the Labour Party has faced repeated accusations of tolerating anti-Semitism in its ranks. On February 27th the party suspended Chris Williamson, an MP, after a video emerged of him telling applauding activists that Labour had been “too apologetic” about anti-Semitism. The previous week Luciana Berger, a Jewish Labour MP, quit the party after a campaign of anti-Semitic harassment. Louise Ellman, from a nearby Liverpool constituency, has faced similar abuse.

On the streets of Ms Ellman’s constituency, Gemma, a 53-year-old IT lecturer and party member, argues that any problems in Labour “have been blown out of all proportion to suit other people’s agendas”. Steve Lawler, a 70-year-old pensioner waiting for a bus, believes that “it’s a coup, like a smear campaign by Labour Friends of Israel”, an organisation Ms Ellman helps run. He is hopeful that Mr Corbyn will be able to create a fairer society—“if Mossad doesn’t assassinate him before then.”

The JPR study found that people on the left were no more likely than others to hold anti-Semitic opinions. But the same was not true of those with ardent anti-Israel views. Many of the most high-profile cases of anti-Semitism in the Labour Party have arisen in debates about the politics of the Middle East. Party members sometimes then resort to anti-Semitism in an attempt to defend their side, often deploying cruder tropes based on notions of disloyalty or control of finance, the media or government, says Simon Johnson, chief executive of the Jewish Leadership Council, a representative group.

The rise in anti-Semitic incidents counted by the CST could be because victims are becoming more willing to record them. But many Jewish leaders suspect something else is going on. Social media not only offer a means to spread bile, they also help to bring people with different hatreds together. One analysis of discussion on a far-right website found that 60% of posts on feminism also mentioned Jews. And Dave Rich of the CST thinks some are taking encouragement from the failure to punish anti-Semitism in the Labour Party. “Certain views,” he warns, “are no longer confined to dingy rooms above pubs.” ■

Bagehot | The wrecking crew

The European Research Group has broken British politics



THE LONDON PALLADIUM is preparing to host one of the great icons of the 1960s, Joan Baez, who burst onto the scene at Woodstock, hooked up with Bob Dylan, and sang some of the most memorable protest songs of the era. This week, however, it played host to a bird of a very different feather—a man who would have been more at home in the 1860s than the 1960s and whose idea of a singalong is “Land of Hope and Glory” rather than “Blowin’ in the Wind”. Some 2,300 people sat enraptured as Fraser Nelson, the editor of the *Spectator*, gently grilled Jacob Rees-Mogg, the MP for North East Somerset and head of the European Research Group (ERG) of Conservative MPs, on his politics and peccadilloes.

Mr Rees-Mogg performed his old favourites. He confessed that he had never done the washing up (“That’s what washing machines are for”). He praised true blue Conservatism and threw jabs at wets in his own party (“Philip Hammond is no doubt in many ways a very great man”). But he also provided something important to his supporters in a week of growing uncertainty about Brexit. He assured them that the referendum would be honoured despite the machinations of the establishment. And he insisted in various ways that Brexit must mean Brexit. “I would be quite happy with a no-deal Brexit,” he pronounced, to thunderous applause.

While Mr Rees-Mogg soaked in a warm bath of adulation, the British political system lay in ruins. The government can work properly only if the prime minister can command the support of her ministers and her party. This week some 15 Conservative ministers, including three cabinet members, threatened to resign if Theresa May didn’t forestall the threat of no-deal by allowing MPs to vote for an extension of the Article 50 talks. Mrs May had no choice but to bend to their will. The government is now a collection of warring factions issuing rival ultimatums. The Conservative Party is falling apart. The civil service looks in vain for clear instructions from its masters.

The blame for this miserable state of affairs lies squarely with Mr Rees-Mogg’s ERG, a collection of up to 100 MPs who claim to be conservatives but are in fact the closest thing that Britain has produced to *sans culottes*. British political parties have always contained pressure groups that try to influence their parties. But the ERG is more like a communist cell. It has not only put the most di-

visive subject imaginable at the heart of British politics (extraordinary as it may seem, “Europe” was low down on most voters’ list of concerns before the referendum of 2016). It has done so by adopting the most poisonous methods possible.

The ERG acts as a party within a party. It has its own chief whip (Mark Francois) as well as its own leader (Mr Rees-Mogg) and deputy (Steve Baker). It meets regularly to decide its line and sends delegations to Downing Street to lay down the law to the prime minister. ERG members increasingly identify themselves as ERGers rather than mere Conservatives when they appear on television.

The ERG is frequently closer to other Eurosceptic parties than it is to the left of the Conservative Party. ERGers have been willing to share platforms with current and former members of the UK Independence Party, such as Nigel Farage. They have a particular liking for the Northern Irish Democratic Unionist Party because of its spirit of besieged indomitability. The ERG also has a remarkable ability to operate as both an insider and an outsider at the same time. It has powerful supporters in the government, such as Liam Fox, the trade secretary, as well as on the backbenches. Some of its leading figures, such as Mr Baker, resigned from the government because they thought it was “betraying” Brexit. It also has an extra-parliamentary wing. Grassroots groups that grew up to support the Leave side in the referendum continue to co-ordinate with the ERG. ConservativeHome, a website, could be called ERGHome.

The ERG has normalised behaviour that a few years ago would have been seen as unacceptable. ERGers have repeatedly defied the party whip. They have briefed the press against Mrs May and her supposed attempts to foil Brexit. They have resisted any dilution of the purity of Brexit, arguing that it means not just leaving the EU but also its customs union and single market. Some of them have even endorsed the idea of de-selecting Tory MPs who don’t agree with them, a tactic normally associated with the far left.

A taste of their own medicine

Yet the ERG has produced a backlash as Remainder MPs have concluded that, when a noisy faction runs riot, they are no longer bound by the old gentlemanly rules. The three Tory MPs who recently left the party to join the new Independent Group issued a colour-confused warning that the Conservative Party was in danger of being taken over by “purple Momentum” and becoming “blueKIP”. Others are adopting ERG-style methods from within the party, such as issuing co-ordinated threats of resignation and writing impassioned op-eds in the *Daily Mail*. The ERG has found itself competing for influence with other rebellious factions.

This tit-for-tat behaviour is rapidly leading to the complete ERGification of the British right. The Tories are quickly splitting into two parties with rival power structures and agendas. The great question is how long it will last. For a depressing answer, look at America. For all their difference in sartorial style—the one is as neat as the other is scruffy—the person that Mr Rees-Mogg most resembles is Newt Gingrich. Mr Gingrich succeeded in breaking American politics by applying a similar combination of ideological zeal and toxic methods to the Republican Party. The ERG faces bigger barriers than Mr Gingrich did. In Britain the ruling party has juicier plums to offer MPs, in the form of government jobs. Party leaders can more easily set the tone in the national party—if, unlike Mrs May, they are capable of exercising leadership. On the other hand, the European question shows no sign of going away. British politics is not quite as broken as American politics. But thanks to Mr Rees-Mogg and his wrecking crew, it is getting there fast. ■



Israeli politics

A blow to Bibi

JERUSALEM

Though accused of corruption, Israel's prime minister vows to fight on

BINYAMIN NETANYAHU has long hoped to make history this year. On April 9th, when Israel holds a general election, he aims to equal the record of the country's founding prime minister, David Ben-Gurion, by racking up a fifth election victory. Following that, in July, he envisions becoming Israel's longest-serving leader. He may yet achieve those milestones, but as *The Economist* went to press he seemed set to make history of a different sort, becoming Israel's first sitting prime minister to be indicted, pending a hearing.

Mr Netanyahu's Likud party has gone to Israel's High Court with a petition to delay the announcement by the attorney general, Avichai Mandelblit, whether to pursue an indictment until after the election. That is unlikely to succeed. Mr Mandelblit has argued that it is "in the public interest" for the decision to be announced before the vote. Moreover, his timing was decided before Mr Netanyahu called the early election, in part to forestall the indictment.

If things proceed as expected, Mr Mandelblit will accuse the prime minister of

bribery, fraud and breach of trust. Mr Netanyahu's lawyers will have an opportunity to dispute the accusations in a pre-trial hearing before formal charges are filed. He himself is already on the attack, saying: "This house of cards will collapse soon." But his oft-made claim about the investigation, that "there will be nothing, because there is nothing", is starting to sound less convincing.

The accusations stem from three cases. In the first, known as Case 1000, the police allege he accepted gifts of jewellery, champagne and Cuban cigars, worth more than \$200,000, from rich patrons in return for political favours. In the second, Case 2000, he is said to have discussed colluding with

a newspaper publisher to curb the distribution of a competitor in exchange for favourable coverage. He is expected to face a charge of fraud and breach of trust in both.

The third case, known as Case 4000, carries the greatest risk for Mr Netanyahu. In that one he is alleged to have intervened in regulatory decisions on behalf of Bezeq, a telecommunications giant, in return for gauzy coverage on Walla!, one of Israel's most popular websites, which is owned by the company. A charge of fraud and breach of trust are again likely, and perhaps bribery, which is more serious. Convictions could result in jail time.

Police have recommended indicting Mr Netanyahu before, in unrelated cases, only for previous attorneys general to let him off with a public reprimand. But it is difficult to see how the most recent cases do not go to trial. Police investigators and state attorneys took over three years to assemble them. Among the dozens of witnesses for the prosecution will be three former close aides to the prime minister. Mr Mandelblit, who will have the final say, served as Mr Netanyahu's cabinet secretary before the prime minister appointed him attorney general. He has deliberated long and hard over the decision.

Israel's legal system has already proven that no one is above the law. A past prime minister, Ehud Olmert, has served jail time for bribery; a former president, Moshe Katzav, was convicted of rape. Still, Mr Netanyahu insists that the accusations against ▶

→ Also in this section

28 The struggle for Iran

29 Sudan's embattled president

29 Cricket in Rwanda

30 Nigeria's sloppy election

him are much ado about nothing. He does not deny accepting gifts from friends and trying to influence the media. But he claims never to have traded favours. Mr Netanyahu says he is the victim of a conspiracy by leftists who are trying to use the legal system to bring him down, since they cannot defeat him at the ballot box.

The law does not require an indicted prime minister to step down. Mr Olmert resigned in advance of being indicted; Yitzhak Rabin, another former prime minister, avoided charges over an illegal bank account by stepping down. If indicted, there is a slim chance that Mr Netanyahu would resign as part of a plea deal, saving himself from an enormous legal bill, but for now he appears intent on fighting the charges and, if he wins in April, even standing trial while serving as prime minister—though that would almost certainly be the subject of a legal challenge.

It may not get to that point. Mr Netanyahu's top two opponents in the election—Benny Gantz, a former army chief of staff, and Yair Lapid, a former television personality—joined forces on February 21st. Their new centrist party, called Blue and White, after the colours of Israel's flag, has begun attracting right-wing voters no longer enamoured with the prime minister. It is polling higher than his Likud party.

Much can change before election day. Most polls still give Mr Netanyahu's coalition of nationalist and religious parties a small majority in the next Knesset. The investigations are a "witch-hunt", he says, the reports of corruption are "fake news"; Israelis should vote for him and stick it to the liberal elite.

His political allies believe many will, so they have not yet abandoned him. But he is beginning to look desperate. He recently brokered an electoral pact between Jewish Home, a religious party in his coalition, and Jewish Power, a racist party that encourages the emigration of all Arabs. Until recently, even Likud considered Jewish Power beyond the pale. The union, though, helps to ensure that the two parties will reach the minimum threshold of 3.25% of the vote required to take seats in the Knesset, maximising right-wing votes.

Critics of Mr Netanyahu say that he is harming Israeli democracy—and fear that he will do more damage if he is re-elected. He has turned his supporters against once-respected state bodies, such as the judiciary. There are rumours that, if he wins, he will try to pass a law that grants prime ministers immunity from prosecution while in office. In the meantime, he will try to turn the election into a referendum, in which voters are to choose between the prime minister and his prosecutors. Increasingly, Mr Netanyahu is ready to weaken Israel's institutions in an attempt to ensure his political survival. ■

The struggle for Iran

How to read a resignation

Tension escalates between Iran's pragmatists and its hard men

MUHAMMAD JAVAD ZARIF, Iran's long-serving foreign minister and architect of its nuclear deal with America and the West, apologised for his shortcomings and resigned, by way of an Instagram post, on February 25th. Within hours, Iran's two rival camps—one still seeking engagement with the West, the other thirsting for confrontation—were at each other's throats. The elected government of President Hassan Rouhani pressed Mr Zarif (pictured) to stay. Unelected authorities backed by the Islamic Revolutionary Guard Corps, spearhead of the hardliners, celebrated his demise. Rarely has the power struggle inside Iran been more exposed.

Mr Rouhani rejected the resignation as "against Iran's national interests". With #ZarifStay trending on Twitter, most members of parliament called on him to stick around. Several ambassadors threatened to follow Mr Zarif out. By contrast, agencies tied to the Guards rushed to confirm his departure. One of their loudest television mouthpieces, Vahid Yaminpour, hailed his "ejection from an aircraft in free fall". Allies of the Guards also predicted that Bijan Zanganeh, the oil minister who has sought to conciliate the West, would go next. Hardliners even called for the ouster of President Rouhani himself.

Iran's supreme leader, Ayatollah Ali Khamenei, who has the final say, has tried



Zarif considers his options

to keep mum. But Mr Zarif's public protest testifies to his frustration with the power of the hardliners. They have blocked his efforts to keep Iran off the international blacklist of countries sponsoring terrorism by ratifying the terms of the Financial Action Task Force, an outfit based in Paris that seeks to curb money-laundering and the financing of terrorism. When the president of Syria, Bashar al-Assad, made his first visit, unannounced, to Tehran since the start of Syria's civil war in 2011, Mr Zarif was excluded from the proceedings. Qassem Soleimani, the head of the Guards' foreign legion, managed them instead.

Back in the Obama era, the Rouhani-Zarif team rubbed along well with the Americans. The deal to rein in Iran's nuclear ambitions, signed in 2015, enabled most sanctions against Iran to be lifted. But the victory of President Donald Trump in 2016 and his decision to pull America out of the deal last year knocked the pragmatist tandem askew. Sanctions on banking and oil exports have been reimposed. Unemployment and inflation have soared. Iran's currency has plummeted in value, along with Mr Rouhani's popularity. Unrest is rising. "The Revolutionary Guards and Khomeini's conservatives want a more radical government," says Pejman Abdolmohammadi, an Iranian-Italian academic at the University of Trento in Italy.

The Guards have long made life trying for Mr Rouhani. Their intelligence units have forced out some of his ministers, even accusing them of ties to Mossad, Israel's spy service. "They are trying to block everything, control everything," says Kaveh Madani, a senior Iranian official who fled to America last year. They have increasingly indulged their habit of arresting dual nationals on flimsy grounds. They have put one of Mr Zarif's fellow negotiators in jail on espionage charges despite objections from Mr Rouhani's own security men. This month a brother of Mr Rouhani was put on trial for alleged corruption. "If they could, they would mount a coup," says a Rouhani aide. A presidential election is not due until 2021, but talk of an early poll is growing.

Some Guards would be happy to see the nuclear deal, to which Mr Rouhani's circle still clings, formally revoked. They do not shrink from the prospect of rising confrontation with Saudi Arabia and the United Arab Emirates over Yemen or over disputed islands in the Strait of Hormuz. Nor do they mind American economic sanctions, because these help protect their vast business interests from international competition. And they seem positively to revel in the diplomatic isolation from the West that Mr Zarif has spent the past five years trying to end. For now Mr Rouhani appears to have persuaded Mr Zarif to stay on. But the two men may have to tailor Iran's foreign policy more to the liking of the Guards. ■

Sudan's embattled president

A last roll of the dice?

ADDIS ABABA

Omar al-Bashir hangs on like grim death

ON FEBRUARY 22ND millions of Sudanese gathered with bated breath in front of their television screens. It had been two months since tens of thousands of protesters, angry at rising food prices, began demanding an end to the 30-year rule of President Omar al-Bashir. Earlier in the day Sudan's security chief had briefed journalists that Mr Bashir would step down as head of the ruling party. Amid mounting excitement, rumours swept the country that he would announce his intention to resign as president next year rather than stand for another five-year term. Would he bow out even sooner?

No such luck. Mr Bashir began by sounding conciliatory. "The demands of our people for better living conditions are lawful," he said, calling for a national dialogue. He told parliament to postpone the constitutional amendments that would have let him seek another term. But then, suddenly, his tone changed sharply as he declared a one-year state of emergency. His government, he said, had been dissolved. There was no sign that he would step down.

This allows Mr Bashir to suspend the constitution. Security forces may raid premises without warrants and seize property. Decrees issued three days later ban unlicensed gatherings and protests, as well as the trading or hoarding of fuel and other subsidised goods. So in practice little has changed, since several of Sudan's 18 states were already under emergency law and the security forces have long enjoyed immunity from prosecution. They have killed at least 50 people since the start of the crisis.

Mr Bashir is still far from secure. Diplomats and politicians in Khartoum, the capital, think he may yet be ousted. His latest move may have been prompted more by discord in ruling circles than by protests on the streets.

But the balance of power may have altered. Since grabbing the reins in a coup in 1989 he has governed in alliance with Islamists, many of whom now reject him. By dissolving the government he has boosted the army, perhaps pre-empting a military attempt to overthrow him. His new cabinet is dominated by technocrats and generals. All 18 state governors have been replaced by military or security men. "He's sending a message to the Islamists that he is no longer their champion," says Ahmed Soliman of Chatham House, a think-tank in London.

He may, as a result, be edging away from

Cricket in Rwanda

Willow in the hills

GAHANGA

Fans say cricket is the fastest-growing sport in Rwanda—and heals old wounds

THE BIKE riders competing in the Tour du Rwanda, billed as "Africa's biggest cycling race", hurtled off on February 24th across mountains famous for gorillas, with the eighth and final lung-bursting stage ending in Kigali, the capital, a week later. President Paul Kagame, meanwhile, tweets his loyalty to Arsenal Football Club. His cash-strapped government is paying the club \$39m over three years for the words "Visit Rwanda" to appear on the sleeves of the players' shirts. Rwandan aficionados of cricket, however, say it is their own hallowed game that is growing fastest.

According to Cricket Builds Hope, a British charity backed by David Cameron when he was prime minister, Rwanda now has 24 cricket clubs, 98 schools that play the game and 15,000 regular players, 40% of them female.



That's a wicked googly

A largely Francophone country until Mr Kagame made English compulsory in schools a decade ago, Rwanda is an unlikely hotspot for cricket. Most locals had barely heard of the sport until this century, when a handful of Rwandans of Indian descent and a clutch of returnees brought up in English-speaking Uganda and Kenya decided to give the game a go. A friend of Mr Cameron, the late Christopher Shale, who happened to chair his local Conservative Party branch, then raised a chunk of money to bring in the bulldozers to build one of the most beautiful cricket grounds anywhere in the world at Gahanga, a village half an hour south of Kigali. The oval outfield is sown with Bermuda grass and the practice pitch is made of astroturf, both imported from South Africa.

Most other Rwandan pitches are a lot rougher. The country's hilly topography is not ideally suited to the game. The first national pitch was made of frayed mats laid over bumpy concrete, sometimes eroded by termites, which made for some wicked bouncers. "People have lost their teeth," says Eric Dusingizimana, an engineer who captained Rwanda and entered the "Guinness Book of Records" for enduring the longest unbroken stint of batting practice (51 hours).

The wounds of the genocide of 1994, when perhaps 500,000 people, mainly ethnic Tutsis, were murdered by the previous, Hutu-dominated regime, have yet to heal. Those ethnic labels are unmentionable today. "The cricket club is a surrogate family for people who've lost loved ones," says Mr Dusingizimana. "Cricket is more than just a game, it has united us." Cricket Builds Hope also provides leadership workshops for poor women, teaching self-awareness, public speaking and advocacy. "It's played a big role in post-genocide reconciliation," says Mary Maina, a former captain of the women's national team, perhaps exaggerating a little.

the Islamists of Qatar and Turkey, with their ties to the Muslim Brotherhood, and instead be leaning back towards the rival regional club led by Egypt, Saudi Arabia and the United Arab Emirates, which all loathe the Brothers. To appeal to young Sudanese, especially women, Mr Bashir has offered to review draconian laws prohibiting "immoral" clothing, among other sins. By sidelining the Islamists Mr Bashir may

hope to be rewarded with cash to ease Sudan's economic crisis.

But violence may well increase. The opposition has furiously rejected the president's call for dialogue. Demonstrations following the declaration of emergency were the angriest in weeks. On February 24th a medical school in Khartoum was ransacked by security forces. Female students were reportedly whipped. ■

Nigeria's election

Time to keep those promises

LAGOS AND YOLA

Muhammadu Buhari wins a sloppy election. Can he do better in his second term?

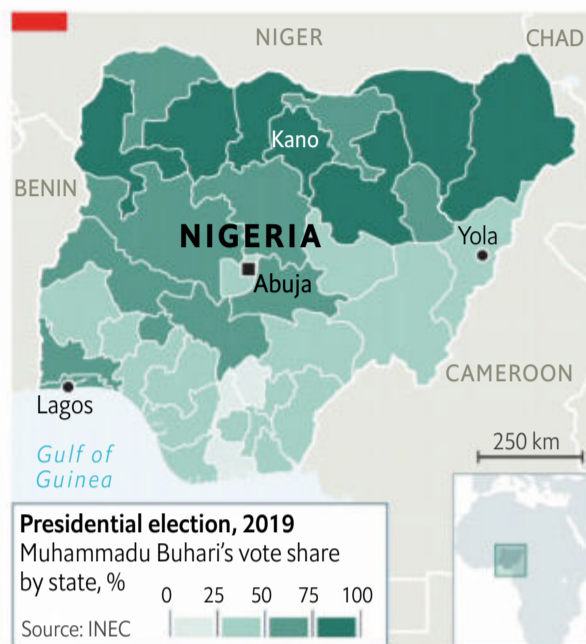
A SMALL CROWD gathered around a plastic table by a dusty roadside in the eastern Nigerian town of Yola on February 23rd. When an electoral officer announced that Muhammadu Buhari, the incumbent president, won the most votes there his supporters in the crowd erupted, cheering and dancing. Fans of his main challenger, Atiku Abubakar, who cast his ballot at this polling station earlier in the morning, slunk away, dejected. "It feels very painful," said Muhammad Sanusi, one such supporter.

That pain has only increased. On February 27th Nigeria's Independent National Electoral Commission (INEC) announced that Mr Buhari had won a second term, with 56% of the vote. His victory this time will not generate the same euphoria it did in 2015. The former general, who ruled briefly as the country's military dictator after a coup in the 1980s, has struggled to fulfil many of the campaign promises he made four years ago. Mr Abubakar's People's Democratic Party (PDP) claims the results were rigged. In a sign of growing voter apathy, turnout, which languished at 44% in 2015, fell to 36% this time.

For many Nigerians, the election has been tarnished by the sloppiness with which it was run. The vote was originally scheduled for February 16th, but INEC postponed it just hours before it was meant to begin because it had been unable to get materials, such as ballot papers, to polling stations on time. When the vote was held at last on February 23rd, observers say most polling stations opened hours late for the same reason, and many election officials were unprepared. The European Union's observer mission cited "serious operational shortcomings".

Voting proceeded peacefully in most parts of the country, but violence broke out in some states. The Nigeria Civil Society Situation Room, a group of NGOs monitoring the vote, reckons at least 39 people were killed over the weekend, most by thugs who attacked polling stations. It is not clear on which party's behalf they were acting. Some fear clashes after the poll, a staple of previous Nigerian elections. About 800 people were killed in 2011. This time, to deter such violence, radio stations in Yola played only songs promoting peace on voting day. "No need to fight-o," one number urged. "Things gotta change by determination; this election no intimidation."

Vote-buying was more widespread. Mr



Buhari's All Progressives' Congress (APC) and the PDP were probably both culpable. In a posh neighbourhood of Lagos, Nigeria's economic capital, one resident says he saw a man handing out cash on voting day. On the eve of the vote, a journalist in Yola said a politician gave his wife sachets of spices to give to voters in her village.

Such problems have also plagued past elections, and observers say this vote was not necessarily worse run. YIAGA Africa, an NGO, carried out a parallel vote tabulation (PVT), a technique for projecting results based on a sample of polling stations in each state. It says the PVT's estimates "are consistent with the official results announced by INEC".

The PDP, though, says the APC plotted to rig the vote with help from the army and INEC. "I hereby reject the result," Mr Abuba-



News that will please only some

kar declared shortly after his defeat was announced. His party alleges that Mr Buhari's replacement of the Supreme Court's chief justice in January, ostensibly for corruption, was in fact aimed at thwarting a legal challenge to the results. Mr Abubakar has said the PDP will mount one. The court-appointed election tribunal could take months to issue a verdict. That said, the courts have never overturned a presidential election in Nigeria.

Many Nigerians will be disappointed to see Mr Buhari remain in power. Broadly, his campaign this time focused on the same three areas as it did in 2015: corruption, the economy and security. Progress on all three has been limited on his watch.

"I was very disappointed with Buhari's first term," says Umar, a civil servant in Abuja, the capital. But he says he "had to vote for him in the end" because he believed Mr Abubakar was corrupt. Graft remains ever-present in the lives of most Nigerians, and opponents accuse Mr Buhari of fighting it selectively. His own party has welcomed light-fingered defectors from the PDP into its ranks. The APC governor of Kano state, in northern Nigeria, was filmed last year receiving thick stacks of dollars. (He denies receiving the money.)

Ordinary Nigerians struggle to make ends meet. The economy is still only slowly recovering from a recession in 2016. Some saw it as a chance to diversify, but oil still accounts for over two-thirds of government revenue. Manufacturing is crippled by power shortages. One factory boss in Kano, once an industrial hub, says manufacturers there are producing at around 10% of capacity. Mr Buhari's supporters say that, given more time, he can do better.

Security was one area where Mr Buhari appeared to be making progress. The army has pushed the jihadists of Boko Haram out of major towns in the north-east. But they have not been defeated and, in recent months, have looked resurgent. Even more deadly are clashes between farmers and herders in the country's "middle belt". Many in the predominantly Christian south accuse Mr Buhari of favouritism towards the country's largely Muslim northern half. (Mr Buhari is a northern Muslim.) Dire Atako, a Christian timber trader living outside Yola, voted for Mr Abubakar (also a northern Muslim) because he wanted change after his village had been attacked by herders. "The present government assured us of security, but I have seen houses here burned down," he says.

At Mr Abubakar's polling station in Yola, Abdul Mutallib, another of his followers, looked on as APC supporters gloated. "If our candidate loses, we'll accept it," he said. "Life goes on." If the rest of the country's political class shows the same restraint, then Nigeria's flawed democracy will have made some progress. ■



The second Trump-Kim summit

Bromance on hold

HANOI

Donald Trump and Kim Jong Un leave Vietnam without a deal

THE MESSAGE was hard to miss. “Welcome to Hanoi, city of peace” read the multi-coloured, flashing LED display on the road from the airport into central Hanoi. Placards depicting stylised doves and hands clasped in a deal-sealing shake lined the streets all over town. Even the South Korean pastry chain catering to the press got in on the act and put up posters calling for peace on the Korean peninsula in anticipation of the second meeting between Donald Trump, America’s president, and Kim Jong Un, North Korea’s dictator, in Vietnam’s capital this week.

The decorations turned out to be overly optimistic. On February 28th American officials abruptly cut the summit short, cancelling a “working lunch” and a joint signing ceremony that had been planned for later in the day. Instead they announced that the two leaders would be leaving Hanoi without agreeing on a deal. In a press conference shortly afterwards, Mr Trump said that he and Mr Kim had had a “very productive time” but had ultimately failed

to come to an agreement that would work for the United States. “Sometimes you have to walk,” the president told reporters.

That was a surprise. Many observers had predicted a narrow deal, in which North Korea might have offered the dismantlement and inspection of its main nuclear site at Yongbyon in return for goodwill gestures by America, such as the establishment of liaison offices in both countries and moves towards a declaration ending the Korean war. The talks’ failure will dismay Moon Jae-in, South Korea’s president, who had been planning to announce his new vision for economic cooperation on the Korean peninsula at celebrations mark-

ing the centenary of the March 1st movement, a rebellion against Japanese colonialism that is celebrated by both Koreas.

However, given the large gap between the two sides’ negotiating positions and the lack of agreement in working-level discussions in the run-up to the summit, it had always been optimistic to assume that Mr Trump and Mr Kim would thrash out in a few hours what their negotiators had failed to agree in weeks of talks. At their first meeting in Singapore last June, the two leaders had pledged to establish “new US-DPRK relations” and to build a “lasting and stable peace regime on the Korean Peninsula”. Mr Kim also pledged to work towards “complete denuclearisation of the Korean Peninsula”.

In the months since, the fuzziness of that statement had led to a deadlock, since the two sides were unable to agree on what any of those commitments actually meant and in what order they should take place. North Korea was adamant that a reset of relations, including security guarantees and, ideally, relief from sanctions, had to precede any moves towards disarmament. America insisted that no concessions would be forthcoming without substantial steps towards disarmament, such as the closure of some of the North’s main nuclear sites, verified by international inspectors, or a list of all nuclear facilities and a timeline for their dismantlement. In recent weeks American officials had sounded ever

→ Also in this section

32 Divorce in Bangladesh

33 Japan’s half-baked migration scheme

33 Police corruption in Australia

34 Banyan: Japan and South Korea

▶ less exacting both in their demands and in the timeframe for achieving them, appearing to accept denuclearisation as a long-term goal that would be reached step by step, if at all. “I’m in no rush,” Mr Trump repeatedly said before he travelled to Vietnam, a stance he reiterated even as he entered talks with Mr Kim on the morning of February 28th. Yet even this growing malleability, it seems, was not enough to mollify the North Koreans.

Nonetheless, there was an air of bonhomie. Just as in Singapore, the two leaders exchanged smiles and handshakes in front of an enormous display of American and North Korean flags and congratulated each other on their “successful and great meeting” before most of it had taken place. On Wednesday evening, they could be seen bantering over a dinner of shrimp cocktail, steak, pear-fermented kimchi and hot chocolate cake. In an effort to whet North Korea’s appetite for market reforms, a group of officials was taken around a Vietnamese car factory and given a talk on joint ventures while their boss prepared for his meeting. Mr Trump, meanwhile, tweeted about the “AWESOME” opportunity for “my friend Kim Jong Un” to turn North Korea into an economic powerhouse.

In the end, no amount of banter or allusion to future riches could bridge the gap. “It was about the sanctions,” Mr Trump confirmed when asked by reporters. “They wanted them lifted entirely but we couldn’t do that.” North Korea was offering too little—in essence, apparently, some form of access to Yongbyon. Both Mr Trump and Mike Pompeo, America’s secretary of state, emphasised that “real progress” had been made at the summit. They said that the relationship with North Korea continued to be productive, that Mr Kim had promised to stick to his moratorium on tests of nuclear devices and missiles and that they were hoping to make headway on an agreement in the weeks and months ahead.

Mr Trump and his aides seem to have concluded that walking away will do less harm to America’s security than showering North Korea with concessions without gaining much in return. They are also implicitly admitting that denuclearisation is a long process rather than something that can be achieved overnight, as Mr Trump had previously implied. The calm mood that has prevailed on the Korean peninsula for the past year is clearly preferable to the nuclear brinkmanship of 2017. However, according to security analysts and intelligence services, even though Mr Kim is no longer conducting tests, he is still expanding his nuclear programme. Mr Trump’s insistence that there is “no rush” to disarm North Korea suggests a preference for a deal that is much less ambitious than ridding the world of Mr Kim’s nukes: ensuring that they are not used. ■

Divorce in Bangladesh

Getting out of the house

DHAKA

First women get jobs, then they get ideas

IT WAS WHEN Nasrin Khaleque got a job that she realised her marriage “was not normal”. None of her female colleagues seemed to have husbands who checked to see what they were up to ten times a day, or who objected if they went out for coffee after work. She told her husband she wanted a divorce. “I realised I didn’t have to put up with it,” she says.

According to the Bangladesh Bureau of Statistics, the number of applications for divorce has increased by 34% in the past seven years. More and more are filed by women, especially in cities. Not long ago, women could not initiate divorces. During marriage ceremonies, the presiding registrar would ask the husband and his family if they wanted to give the bride the right to seek a divorce, says Fawzia Karim Firoze, president of the Bangladesh National Woman Lawyers’ Association. “Of course many, if not most, families said ‘no.’” A legal change means women now enjoy the right as a matter of course. But they still have to give a reason for wanting a divorce, such as infidelity. Men do not.

For the poorest and the richest, says Mrs Firoze, divorce was never that unusual. Among the poor, marriages are seldom official, allowing men to abandon one wife for another easily. As for the rich, “Wealth buys certain freedoms.” But among the



There’s no telling where it could lead

middle classes, divorce has been rare: “They face the most stigma. What will my family say? What will other people say?”

That is changing. The rate of divorce is increasing across the board, but particularly among the middle classes, according to Tania Haque of Dhaka University. Internet access and social media mean women are more easily able to communicate with friends and to lead lives outside their marriage. “This makes the prospect of divorce seem less daunting.”

With greater access to a world outside the home come changing expectations. Ms Haque believes that popular Indian soap operas have helped to propagate a more liberated world view. For both men and women, she adds, social media have also made it easier to have affairs. Sabrina Saba Mumu, who left her husband after he had an affair, says that her mother’s generation would have tolerated their husbands’ infidelities. She and her friends are less accepting. “We want marriages that are equal partnerships,” she adds, “not a relationship where the man is the boss.” That means sharing housework and child care, too.

Most importantly, more and more women have jobs. In 1974 women were just 4% of the labour force. In 2016 they were 36% of it. Much of this is down to the booming garment industry, which employs mostly women. Earning a salary makes leaving a bad marriage financially possible.

Many men are unhappy about these changes. Ms Saba Mumu says her husband wanted her to look after him the way his mother did, but, as a successful research scientist, she “didn’t have time to cook all his meals and do everything else he asked”. Miss Khaleque’s husband thought that because she came from a small town she “wouldn’t be so ambitious”. He forced her to wear a headscarf to work and forbade her from talking to male colleagues. After she had their daughter, he tried to stop her working altogether, saying that she belonged at home.

Religious groups are also troubled. One of the most prominent, Hefazat-e-Islam (“Protectors of Islam”), formed in 2010 partly in response to plans to change inheritance laws to make them more favourable to women. When Hefazat supporters later marched on the capital calling for stringent segregation of the sexes, that was widely perceived as a call for women to stay at home, especially by the city’s many female garment-workers. Hefazat also rails against adultery and “shamelessness”.

Hefazat’s hectoring has not stopped the divorce rate from rising. But the social stigma for men and, especially, women who seek divorce remains strong. “In hindsight leaving was the easy part,” says Miss Khaleque. “My family’s judgment since has been harder to take.” ■

Foreign workers in Japan

Welcome, sort of

GIFU

A plan to let in more low-skilled migrants is half-baked

CHO LAN spreads out papers on the table as she explains that her job, sewing women's clothing at a small factory in Gifu, a prefecture in central Japan, was based on lies. The 51-year-old Chinese worker came to Japan in 2015 on a foreign-trainee visa, hoping to earn a higher salary. But she says the details on her pay-slips bear no relationship to the number of hours worked (which she meticulously documented in notepads and with videos of the factory clock) or the pay she received. "I feel very tricked," she says. Her story is echoed by many like her, says Ken Kai, the (also Chinese) head of a shelter in Gifu where Ms Cho is now staying.

From April Japan will for the first time openly accept low-skilled workers in certain industries facing labour shortages. That will remove one of the lies from stories like Ms Cho's: neither she nor the firm she worked for believed she was a trainee (she had 20 years of experience in her field). Japanese firms have long used that scheme, on paper designed to give workers from poor countries the chance to develop skills to take home, to recruit low-skilled workers. Others enter the country on visas meant for students or people of Japanese descent. Now they will be able to come honestly. Workers will be able to change jobs, which they could not under the trainee scheme. And although Shinzo Abe, Japan's prime minister, often states that they will not be able to bring their families or stay indefinitely, the new visa in fact opens up a path to both.

But the scheme does not resolve all the complaints of low-skilled migrants. "The politicians did not debate the power imbalance that causes the issues," says Ippei Torii of the Solidarity Network with Migrants Japan, an NGO. Yoshihisa Saito of Kobe University reckons that in reality workers will struggle to change jobs. They will, for example, be allowed to move only within the same industry. Foreign workers also depend more heavily on their employer than in other countries, for example for help getting housing. Many landlords will not rent to foreigners, and the ones who do require a guarantor.

Too little is being done to tackle many of the problems facing low-skilled workers in Japan, says Yuichiro Tamaki, the head of the opposition Democratic Party for the People. It is not uncommon for migrants to do too much overtime or to be underpaid.



(Ms Cho says she often worked from 6am to midnight). Companies often get away with breaking laws, such as not paying the minimum wage. It does not help that the most desperate demand for foreign workers is in rural areas, where bosses are not always aware of laws, says Misa Matsuzaki, who runs Work Japan, a job site for blue-collar foreign workers.

It is unclear how the government will stamp out other problems, such as physical and verbal abuse, or the use of dodgy bro-

kers. There are only a handful of support centres and hotlines for complaints, many run by NGOs. Much of the new law is unclear, says Mr Saito. The government says, for example, that companies must help workers learn Japanese. Yet it remains to be decided exactly what that means. As a foreigner it can be difficult to do simple things like get a mobile phone or open a bank account, says Ms Matsuzaki.

Getting workers to Japan in the first place could be hard, too. They must pass two exams, to show job-relevant skills and some degree of proficiency in Japanese. Officials admit that many of the necessary foreign test centres have yet to be set up, and that tests may be too difficult to attract the 350,000-odd workers Japan reckons it needs over the next five years. In February Japan said it would lower the Japanese-language requirements for nursing-care workers admitted under the trainee scheme, as fewer had come than expected.

"If my issue gets resolved, I would think about continuing to work here," says Ms Cho—the money is good. "But all my friends and family at home say to come back home; that working here is bad." Even some government officials admit that the law was enacted in haste, because of pressure from business. If Japan wants to end its labour shortage, it needs to ensure that migrants are treated decently. ■

Police corruption in Australia

Criminal injustice

SYDNEY

A state police force is investigated for using lawyers to inform on mobsters

POLICE IN THE state of Victoria spent millions of dollars trying to keep their arrangement with Informer 3838 a secret. She was a young criminal barrister who snitched on some of Australia's most notorious drug lords while she was representing them in the 1990s and 2000s. The informant, whose name is protected by the courts, claims her actions helped convict nearly 400 criminals. She also violated their right to confidentiality and possibly, their chances of a fair trial. Dozens of gangsters could walk free now the affair has become public.

The police claimed the lawyer would be murdered if her clients discovered she had double-crossed them. But the High Court lifted suppression orders on the case in December, saying that faith in the courts was more important than her personal safety. Informer 3838 had committed "fundamental and appalling breaches" of her duties as a barrister, it ruled. Police had "corrupted"

prosecutions and "debased fundamental principles of the criminal justice system". A royal commission is investigating.

Before that inquiry began in February the police admitted that the lawyer had been dishing dirt for a decade longer than they previously thought: from 1995 to 2009. Neither was she alone. Six other legal clerks, secretaries and solicitors were on police books, some as recently as 2016. Other states are asking whether their forces resorted to similar tactics. More than 20 prisoners were told last year that they might have grounds to appeal against convictions secured using ill-gotten information. Three are already doing so. If other professionals snitched on their clients, it follows that more sentences could be in jeopardy.

Melbourne was shaken by the gang wars that raged between 1998 and 2010. At least 36 mobsters were killed in that period, and police were desperate to punish the perpetrators. But citizens' right to confidential- ▶

ity when speaking to their lawyers is enshrined in law. “Police shouldn’t ask and lawyers shouldn’t tell,” says Arthur Moses, president of the Law Council of Australia. Officers knew that well. Ron Iddles, a former detective, reckons that up to 15 senior policemen turned a blind eye to the arrangement with Informer 3838. “They saw the risks,” he said in a television interview, “but there was directions from above.”

This is not the only controversy to cast a shadow over Victoria Police. This year officers in the state have been accused of falsifying a witness statement and of battering

innocents. One victim was a meekly compliant pensioner arrested for drunk driving who was knocked out by an angry copper (he kept his job). Another was an aboriginal teenager who was arrested despite not remotely fitting the description of the criminal the police were hunting, and allegedly assaulted. Complaining about brutality seems futile, though. Most misconduct allegations are referred to the police themselves for investigation. In cases of assault, less than 4% are ever proven.

Last year a parliamentary committee recommended sweeping reforms to that

system, saying that Victoria’s anti-corruption watchdog, IBAC, should be given more power to investigate misconduct. But the state government has not enacted the changes. Other states have conducted far more sweeping inquiries into police abuses and corruption. The last such review in Victoria occurred in the 1970s, according to Colleen Lewis, a retired criminology professor. Darren Palmer, a criminologist at Deakin University, complains of “25 years of serious mismanagement in policing in Victoria”. That will take more than a royal commission to fix. ■

Banyan You started it



Why South Korea and Japan still can't put the past behind them

ONE HUNDRED years ago this week, 33 Korean intellectuals called for independence from the colonial overlord, Japan. Its gendarmes struggled to contain the revolt this sparked, in which over 800,000 Koreans took part. At least 900 Koreans were killed. In one notorious incident police locked protesters in a church and burned it down.

To mark the anniversary, South Korea’s president, Moon Jae-in, is encouraging hundreds of commemorative events in the coming weeks. Japanese diplomats are nervous about the beating Japan is to get. For Mr Moon, the founding of a provisional government by exiles in Shanghai, as the March 1st movement was being suppressed, more neatly marks the birth of modern Korea than the creation of the Republic of Korea in 1948. After all, that took place, somewhat embarrassingly, under American tutelage. The first president, Syngman Rhee, was a dictator. And only two years later the country was plunged into a civil war that has left the peninsula still cruelly divided today.

History is messy and painful. Even today few Koreans acknowledge that millions of their compatriots collaborated with the Japanese. Far better to define the Korean character as emanating, pure and brave, from a far-distant moment when it revealed itself in opposition to a monster. For some politicians, Japan-bashing is part of the point.

But relations between Japan and South Korea are bad enough already. Mr Moon has undermined an agreement between his predecessor, Park Geun-hye, and Shinzo Abe, Japan’s prime minister, meant at last to resolve the issue of Korean “comfort women”—tens of thousands forced during the second world war to have sex with soldiers in imperial army

brothels. In return for (yet another) Japanese apology and ¥1bn (\$9.3m), South Korea was to stop using the issue as a diplomatic wedge, and to remove the statue of a comfort woman outside the Japanese embassy in Seoul. Half of the money has gone unpaid, and the statue remains.

Things got worse last year when South Korea’s Supreme Court ordered two Japanese industrial giants to compensate South Koreans forced to work for them during the war. Japan is furious. It says the treaty of 1965 establishing formal relations settled all colonial-era claims in return for \$800m, \$6.3bn in today’s money, in aid and loans. (The issue of the comfort women arose later.) The South’s then dictator—Ms Park’s father, Park Chung-hee—used the money to kick-start development rather than succour victims.

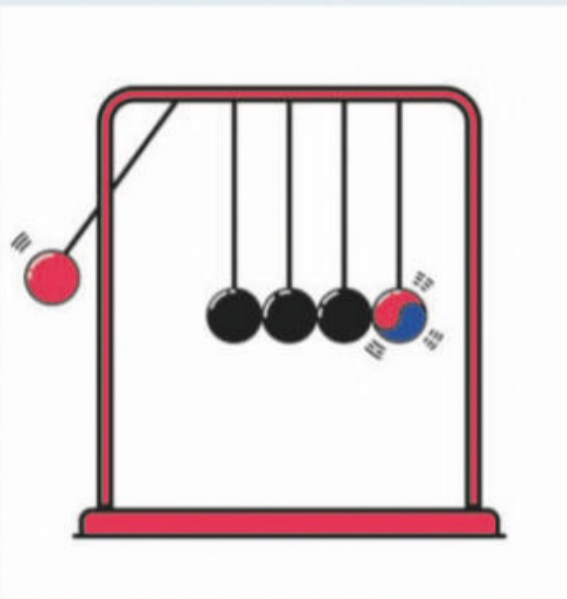
Then, in December, Japan claimed a South Korean destroyer in the Sea of Japan had locked its fire-control radar onto a Japanese maritime-surveillance plane—highly provocative, if true. Denying it, the South Korean government accused the

plane of buzzing an operation to rescue a stricken North Korean fishing vessel. This is a sensitive sea: South Korea is neuralgic over Japan’s claim to Dokdo, a remote group of islets.

At least relations among ordinary Koreans and Japanese are good—last year 7.5m South Koreans visited Japan. But as Park Cheol-hee of Seoul National University puts it, leaders are squandering the chances that warmth affords, at a time of growing regional peril. Certainly, Japan is to blame too. Its wartime apologies came thick and fast in the 1990s, when it was keen to be seen to be doing the right thing. These days Mr Abe and his government are more cynical—and fed up. It is popular to decry remorse as “masochism”. Mr Abe has even suggested that comfort women weren’t coerced.

Worried about its two allies falling out, America urges them to overcome historical differences. That’s blithe. The United States never acknowledges its own contributions to the region’s difficult history. In 1905 it gave Japan a free hand in Korea. As the occupying power in the late 1940s, it put a stop to Japan’s lively examination of its wartime guilt in order to ensure the country was onside during the cold war.

In 1951, by evading the matter of rightful ownership when helping Japan draw a line under the war in the Treaty of San Francisco, America laid the ground for Dokdo’s present controversy. And leading up to the 1965 treaty, when America had bills to pay in Vietnam and wanted Japan to pony up in South Korea, it urged both sides to adopt only vague statements about “remorse for the past” in favour of looking to the future. Today’s problems are a reminder: a “future-oriented” relationship can’t start without a proper reckoning with the past.





Social control

Behind the mask

BEIJING

A campaign against organised crime has a political twist

IN THEIR EFFORTS to eradicate criminal gangs, Chinese officials deploy a colourful vocabulary. Beijing is festooned with red banners urging citizens to “resolutely root out black and evil forces”. (In other countries this might be a job for police officers or exorcists.) Other banners mix metaphors. “Dig deep and thoroughly investigate the protective umbrellas” of such menaces, says one.

In January 2018 China’s leader, Xi Jinping, launched a three-year campaign against organised crime. State media brim with reports of success. The authorities in Zhanjiang, a city in the southern province of Guangdong, claim to have dealt an effective blow to “vehicle tyrants” (taxi-business mafias), “sand tyrants” (gangs that control the sand-mining industry), “sea tyrants” (those involved in the seafood business) and “basket tyrants” (those engaged in the basket trade). So far more than 10,000 alleged gangsters have been brought to trial across the country. State media say police have smashed 6,000 gangs, with the help of citizens who are offered lavish rewards for leads (disguised recipients are pictured).

Campaigns against *hei shehui*, or “black

society”, as organised crime is often called, are common in China. But officials have been at pains to point out that this one is different. Previous such efforts have been called *dahei*, or “smashing black”. This one is called *saohei*, or “sweeping [aside] black”. The metaphorical shift is intended to suggest a more comprehensive effort: one that is aimed not only at the mob, but also at their official protectors and the grassroots political structures they have infiltrated. Official descriptions of crimes being targeted paint more than simply a picture of gangsters terrorising ordinary citizens. They describe a menace to the Communist Party itself. Top of the list are “black and evil forces that threaten political security, especially the safety of the [political] system and of political authority, and that infiltrate the political arena.”

A cartoon released by police in Zhaoqing, another city in Guangdong, gives an example. It shows what appears to be a Buddhist leader, judging by the decor and the kowtowing of his followers. He talks of establishing an “ideal country where we can do what we want”. Next he is shown leading protesters outside a government building. In the final scene he counts piles

→ **Also in this section**

36 Boarding school for minorities

38 Chaguan: When giants battle

of banknotes. “The goal of an independent kingdom is getting ever closer,” he chortles, before police burst in.

Other examples given by state media relate to political control in the countryside. They include clans that “lord over” rural areas (many villages are inhabited mainly by people of one surname) and the often-related issue of gangs that rig the vote in grassroots elections (their efforts sometimes proving more effective than the party’s). Perhaps not surprisingly, the gangs that help developers and officials to evict people from their homes are not mentioned as targets of the campaign. Rather, it is black and evil forces that “whip up unrest” during demolitions that are to be crushed. In other words, as the police are likely to interpret this, activists who try to organise resistance to the bulldozing of their communities.

Muffling the masses

Also in the cross-hairs are the forces of evil that organise people to go in groups to submit petitions at government offices. Petitioning higher authorities for redress of local injustices is an ancient tradition in China that has continued under Communist rule. The party, however, is fearful of people with grievances gathering in public. The *saohei* campaign appears to offer the police an excuse to round up organisers and treat them as gangsters instead of merely bundling them off to detention centres to await deportation to their home towns. In January bosses at an industrial park in the coastal province of Fujian met to discuss two main topics: progress with ▶▶

▶ *saohei* and how to control petitioners in order to prevent “sudden incidents” during the Chinese new-year holiday.

In Tibet and the neighbouring region of Xinjiang, officials are using the *saohei* campaign to bolster their relentless efforts to crush unrest. Tibetans have been told to inform on dark and evil forces that “link up with the Dalai [Lama] clique”, that advocate the Dalai Lama’s “middle way” of compromise with China, that lurk in monasteries and use religion to stir up opposition to the party, or that encourage campaigning for the protection of the Tibetan language (see next story). In Xinjiang officials say the main purpose of the *saohei* effort is to fight gangs related to the “three evil forces” of terrorism, extremism and separatism.

Since he took over as China’s leader in 2012, Mr Xi has been waging a campaign against corruption as well as perceived political threats to the party in the form of independent lawyers, unauthorised religious activity and dissidents generally. It may seem surprising, then, that more than six years later—amid a climate of fear that pervades officialdom and stifles most of the party’s critics—the party still sees so many threats to its control.

Yet it does. In January the country’s police chief, Zhao Kezhi, said the *saohei* campaign should be the “dragonhead”, ie, at the forefront, of this year’s security work. But the “focal point”, he said, should be “preventing colour revolutions”. Four days later, at a hastily convened meeting of senior officials from around the country, Mr Xi called for “high alert” against “black swan” or “grey rhino” events: crises resulting from unexpected incidents or obvious but neglected problems. As part of measures to ensure social stability, he said there should be “no let-up” in the *saohei* drive.

The last time such a high-profile campaign was waged against gangs was a decade ago in the south-western region of Chongqing by its then leader, Bo Xilai. Mr Bo’s efforts earned him much approval locally, but were also widely criticised for their ruthlessness—critics said the campaign was used as a pretext to arrest businesspeople on trumped-up charges and seize their assets. Smashing black, as many commentators noted, turned into *heida*: “black [ways of] smashing [people]”.

Mr Bo is now in prison for corruption, having lost a power struggle just before Mr Xi assumed power. But his methods remain in favour. A lawyer in Beijing says private businesspeople are just as worried by Mr Xi’s campaign as those in Chongqing were about Mr Bo’s. Lawyers, he says, have been ordered not to defend those arrested without official permission. Local government websites say prosecutors have been given quotas for handling cases related to the *saohei* campaign. Black and white are getting confused once again. ■

Ethnic minorities

A class apart

BEIJING

To cultivate ethnic elites, officials offer places at schools in the interior

MEIDUO WAS 11 when she left her village in Tibet to attend boarding school. Her family had been trying to secure this opportunity for her ever since she began her education. They believed that studying in a more prosperous part of China would give her a brighter future. Yet when the moment came to say goodbye, they could not bear to send her off. So Meiduo, with a suitcase bigger than herself, went to the railway station with a teacher who escorted her to her destination. It was four years before the girl saw her relatives again.

Meiduo (not her real name) is one of more than 141,000 children from Tibet who have taken part in a scheme known as “inland classes”, or *neidiban*. Set up in 1985, it offers selected students places at secondary schools in parts of China inhabited by the country’s Han majority. There are dozens of schools scattered over more than 20 provinces that accept such children from Tibet (including some of Han ethnicity). In 2000 the offer was extended to children in Xinjiang, a western region bordering Tibet with a large population of mostly Muslim Uighurs. Since then more than 100,000 students from Xinjiang have attended *neidiban* schools in 45 cities.

Admission to the programme is highly competitive. Applicants must not only excel academically. They must also “ardently love” the party and socialism, say guide-

lines issued last year by a local government in Tibet. Even so, those accepted must receive further “ideological and political education” before they set off.

The programme’s apparent aim is to win the support of elites in restive frontier areas and give the brightest ethnic-minority children more exposure to Han culture. The education they receive at *neidiban* schools is usually superior to that available in their native regions. It is also heavily subsidised. The students gain a mastery of Mandarin that would be hard to achieve at home. Under a government affirmative-action policy, university-entrance requirements are lower for ethnic minorities.

In 2015 President Xi Jinping said the project had achieved “outstanding” results. But it gets mixed reviews from participants. A Uighur graduate from the first Xinjiang class says most of his classmates were, like himself, the children of government officials. But they were described condescendingly at the school as “precious people” from Xinjiang, even “like pandas”. He says they were closely watched.

Despite efforts by his school to introduce the Uighurs to their Han fellow-students, members of the two ethnic groups rarely became friends. At most *neidiban* schools, ethnic-minority students attend separate classes and live in segregated accommodation (this is justified by schools on “security” grounds). “We’re second-class citizens. Why? We’re all Chinese...aren’t we?” says a former *neidiban* student of Tibetan ethnicity.

Some pupils find it hard to adapt to their schools’ Han-centric teaching, including exclusive use of Mandarin. Meiduo says there were many students at her previous school in Tibet who were good enough academically to qualify for *neidiban* education, but decided not to apply. She says they did not want to “forget their own culture”.

Among Tibetans the programme has a high drop-out rate—participants often find it hard to adapt to the different cultural and academic environment. After finishing their studies, ethnic minorities have difficulty getting the kind of work they want. The government offers them incentives to work in remote parts of their home regions as teachers and police officers. But most prefer to work in cities, says Timothy Grose of the Rose-Hulman Institute of Technology in Indiana. In majority-Han areas they often face discrimination because of their ethnicity. Many people in China associate Tibetans and Uighurs with trouble: their regions are fraught with separatist tensions and brutally repressed by the state.

Yet demand for the *neidiban* remains strong. “Students [are] being lured in through the opportunities it creates for upward social mobility,” says James Leibold of La Trobe University in Melbourne, Australia. “Even if it comes at a cultural cost.” ■



ADVERTISEMENT

Abu Dhabi environmental regulator calls for a collective response to safeguard marine life

The UAE capital hosts the World Ocean Summit 2019 as part of the emirate's sustainable development strategy



Razan Khalifa Al Mubarak
Managing director,
Environment Agency-Abu Dhabi

The Arabian Gulf and surrounding region include some of the world's fastest-growing economies and populations. Its seas are also among the busiest, but economic activity is putting marine ecosystems under threat.

It's not a problem that can be solved by countries acting alone, according to the Gulf's biggest environmental regulator.

"As the oceans and seas are an important shared resource, protection will require a collective and unified response," says Razan Khalifa Al Mubarak, managing director of Environment Agency-Abu Dhabi (EAD).

As the United Arab Emirates (UAE) prepares to host The World Ocean Summit 2019 on March 5-7 at Abu Dhabi's St Regis Saadiyat Island Resort, Ms Mubarak sees "a great opportunity to showcase and share best practice in marine protection and sustainable development of the blue economy".

Abu Dhabi doubtless looks forward to highlighting its six marine protected areas at the summit. Covering around 13% of its maritime waters, these zones are among 17 protected areas enshrined in law since January 2018 through decrees issued by Sheikh

Khalifa bin Zayed Al Nahyan, president of the United Arab Emirates and ruler of Abu Dhabi.

The measures are seen as having helped the UAE to the top of the Ocean Health Index for the healthiest seas in the Middle East and North Africa region. It also ranks joint-first globally for its marine protected areas, alongside the likes of New Zealand, the Netherlands and Ecuador, in the Environmental Performance Index produced by Yale and Columbia Universities with the World Economic Forum.

The UAE's deep seafaring traditions range from pearling to fishing, trading and ship-building. "These are woven into our cultural fabric and ingrained in Emirati society," Ms Mubarak points out.

Keeping these industries vibrant—and branching out into new ones—while remaining committed to preserving a pristine maritime environment is the increasingly urgent challenge.

"The UAE has a clear vision for sustainable and green economic growth. The environmental and sustainability challenges we face are mainly global in nature but need to be addressed at a local level," says Ms Mubarak.

Taking a "glocal" approach has been key to EAD's effectiveness as an environmental regulator that supports sustainability beyond the UAE's borders.

The Abu Dhabi Global Environmental Data Initiative (AGEDI), an EAD affiliate, supports policymakers by addressing gaps in environmental and societal data. AGEDI also leads major research programmes such as the Blue Carbon Project and the Local, National and Regional Climate Change Programme.

EAD is a founding member of Eye on Earth, whose other partners include the United Nations Environment Programme. The global, multidisciplinary members of Eye on Earth improve access to data to strengthen the environmental components of sustainable development.

Another important programme for EAD is the Dubai-based International Centre for Bio-saline Agriculture, whose scientists conduct applied research and development to boost agricultural productivity and sustainability in marginal and saline environments.

The agency also authored Abu Dhabi's Environment Vision 2030, which specifies that economic expansion must not be to the detriment of the environment. This document complements the UAE federal government's Green Agenda 2015-2030, a development plan that lays out how economic growth and diversification will reduce emissions and increase resource efficiency.

These blueprints form the basis for specific environmental targets. EAD, in partnership with other government agencies, is charged with creating programmes that will achieve these targets, along with incentives to boost participation from the public and private sectors.

"We monitor all aspects of the environment and provide state-of-the-environment information to inform decision-makers of progress and to help the government and government entities decide what initiatives and what policies should be adopted in the future to maintain the focus on our green growth objectives," Ms Mubarak explains.

The goals the UAE has set itself are challenging. By 2050, the UAE aims to derive 50% of its energy from clean sources, improve energy efficiency by 40% and shrink its carbon footprint from power generation by 70%.

"It takes hard work and a clear focus, but it all starts with the Leadership vision and the will to make it happen," says Ms Mubarak.



Chaguan | When giants battle

Western countries are being bullied by China and America over Huawei. China frightens them more



CANADIAN DIPLOMATS in China recently carried out one of their grimmer duties: paying a monthly visit to a former colleague, Michael Kovrig, who is being detained by state security agents. Mr Kovrig, a diplomat for over a decade before joining the International Crisis Group, a conflict-prevention charity, was grabbed off a Beijing street on December 10th. He is being held in a room kept brightly lit at all times, and questioned for up to six hours a day. Granted one consular visit a month, Mr Kovrig may not see his family or hire a lawyer. On this occasion friends gave the consuls messages to read to him (handing over letters is banned). Mr Kovrig, a lover of jazz, the blues and literature—he likes the science fiction of Harlan Ellison—was allowed to receive a book. Though accused of endangering China’s national security, a catch-all offence, Mr Kovrig has not been charged with any crime.

Mr Kovrig is, in effect, a hostage. He is being held because on December 1st Canada arrested Meng Wanzhou, a senior executive of Huawei, a telecommunications giant, and the daughter of its founder. The action was taken at the request of American prosecutors, who accuse Ms Meng of scheming to sidestep sanctions against Iran. Along with Mr Kovrig, China has detained a second Canadian, Michael Spavor, who runs tours to North Korea. Even the most urbane Chinese officials turn icy when pressed about their treatment of Canada, Chaguan can report. Their line is that China had to respond forcefully to the arrest of Ms Meng. They swat away the idea that Canada is merely following its extradition treaty with America. They give no credit to Canada’s rule of law (Ms Meng is free on bail and living in her handsome Vancouver home). In their telling, Canada made a political choice to please America, while angering China. Now Canada must feel pain, so the next time America asks for such help every ally will think twice.

The Kovrig case has shaken diplomatic Beijing. China’s agents are reported to have quizzed Mr Kovrig about his years at Canada’s embassy there, when his work—analysing Chinese politics by cultivating official and scholarly contacts—enjoyed diplomatic immunity. A source at another embassy says China’s apparent breach of the Vienna Convention has “frightened” some staff.

Several diplomats call China’s actions self-defeating. Many governments are reviewing whether to let Huawei help build 5G

mobile networks. Some, such as Australia, have already banned the firm. Huawei bosses say that they run a normal private company, and are not beholden to any state. Yet Huawei’s supposed independence is not easy to square with China’s all-out defence of the firm. A Western country reviewing 5G plans was startled to hear Chinese foreign ministry officials call Huawei’s fate a “core” concern. If that wording was deliberate, in theory that ranks Huawei with such vital interests as the status of Taiwan.

What kind of country is China?

This is a fight bigger than Huawei. The West is really debating whether China can be trusted as a pillar of high-tech globalisation. Decisions about public procurement lie on a spectrum, with easy questions at each extreme. Can a Western army safely buy bootlaces from China? Obviously, yes. Would a Russian firm be hired to rewire the Pentagon? Clearly, no. Whether Huawei should help build 5G networks is a hard question, somewhere in between those two extremes. When cyber-spooks in Britain, say, declare that the technical risks of using Huawei kit can be managed, they mean that 5G switches are more like bootlaces than many realise. For their part, Huawei’s critics in America, led by Vice-President Mike Pence and the secretary of state, Mike Pompeo, stress the risks of entrusting any sensitive infrastructure to any Chinese firm. Put another way, they mean that China is an adversary like Russia.

Team Trump has casually tossed about some momentous threats. Trump envoys told Poland’s leaders that doing business with Huawei threatens Poles’ dreams of a permanent American troop presence on Polish soil. Mr Pompeo suggested to the Fox Business Network, a television channel, that the use of Chinese telecommunications technology is incompatible with membership of the “Five Eyes” intelligence-sharing group, comprising America, Australia, Britain, Canada and New Zealand. If a country puts Huawei gear into critical information systems, “we won’t be able to share information with them,” Mr Pompeo asserted. Allies hope that is not official policy. One diplomat says that Mr Pompeo’s words took other bits of America’s government by surprise.

If Mr Pompeo causes surprises, his boss provokes unhappy bewilderment. President Trump has publicly suggested that he might bargain away Ms Meng’s extradition for the right trade deal with China—undermining Canada’s insistence that her fate hinges on the law, not politics. Welcoming Chinese negotiators to the Oval Office on February 22nd, Mr Trump said that a long-mooted executive order outlawing Chinese telecommunications technology from American networks “may or may not” be on the table during trade talks. In Beijing’s leafy embassy districts, diplomats know the conclusion that China would like them to draw, namely that no principles guide American criticisms of Huawei, merely clumsy ambitions to contain China as a technological rival.

In truth, many countries feel bullied by both China and Team Trump. Diplomats are depressed that hopes of engaging China, for instance in tackling climate change, are being derailed by discussions about Chinese undermining of Western democratic life, rampant state-sponsored commercial espionage and other alleged sins. Across the West, intelligence agencies have gained unusual sway over China policy, says a diplomat, adding that spies bring a distinctive grimness to such debates: “We’re out here walking in the sunlight, those guys move in a darker world.”

A less aggressive China could easily capitalise on divisions among Western countries over Huawei. Instead China is using fear to pursue its goals. Hence the bleak mood in Beijing embassies. ■

**SPECIAL
REPORT:**
Water

→ March 2nd 2019

5 Parched Earth

7 Rivers and lakes

8 Fighting over access

9 Groundwater

10 Desalination

11 Saving every drop

13 Hard and soft solutions

Thirsty planet





Nathalie Gaveau. Entrepreneur and one of Europe's top 50 women in Technology 2018 (Forbes).



**BEST PRIVATE BANKING
SERVICES OVERALL**

Awards were independently determined and awarded by the Euromoney editorial team. For more information, visit their website. UBS did not pay a fee in exchange for these awards.

What will my next chapter look like?

When you've built and led a successful business, it's not easy to know what's next. Or where that will lead. Whichever way you choose to go, your current and long-term financial goals should follow. And we can help you with that.

**For some of life's questions, you're not alone.
Together we can find an answer.**



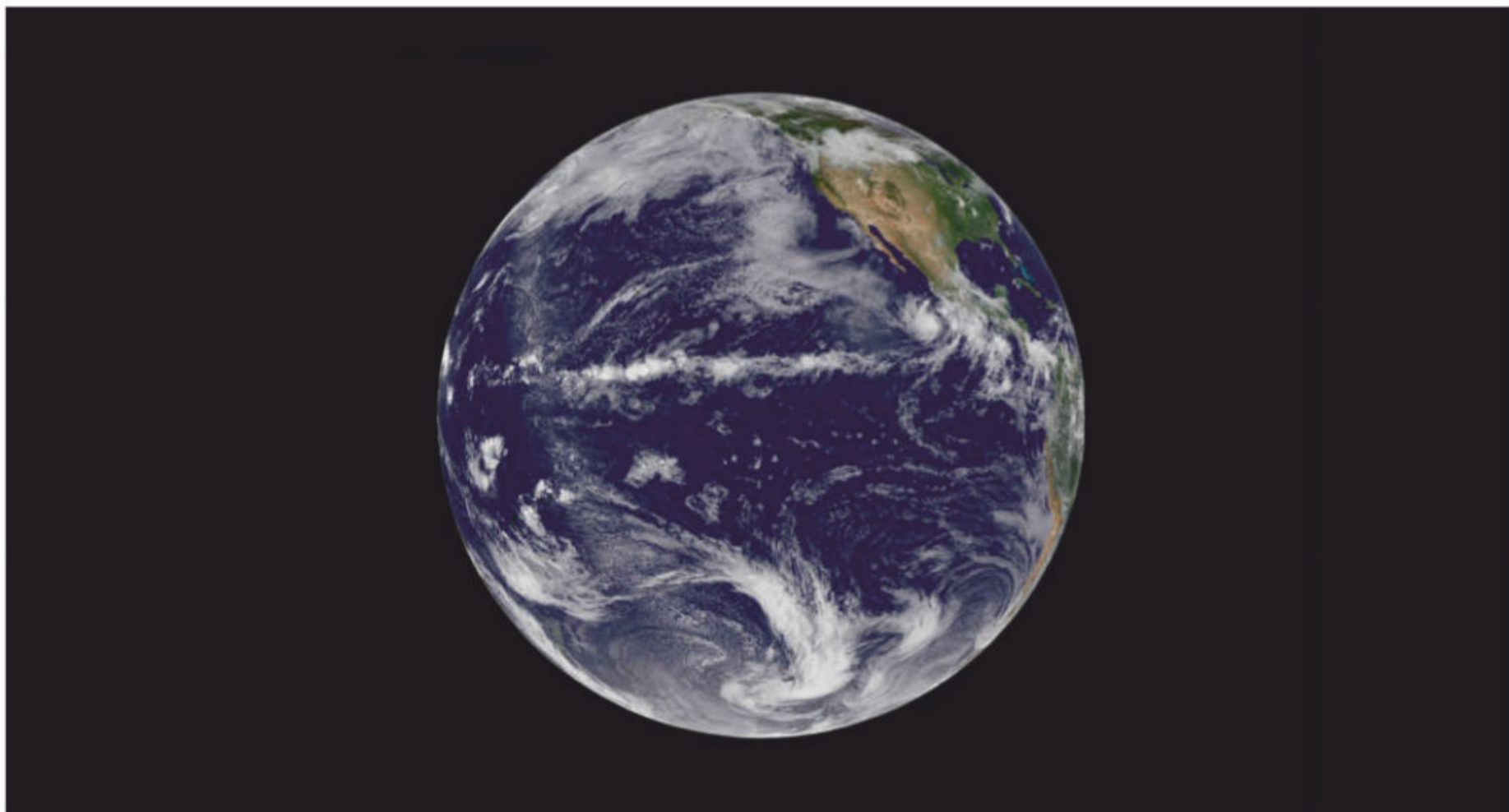


Only a free mind can fly.

Apply AI to power every human decision.
Let your people's imagination take you places.



fractalanalytics.com



Thirsty planet

Climate change and population growth make the world's water woes more urgent, says Simon Long

AS IT SCOURS the universe for signs of extraterrestrial life, NASA has a motto-cum-mission-statement: "Follow the water". About 70% of the human body is made up of water, it says, and 70% of Earth's surface is covered in the stuff. "Water creates an environment that sustains and nurtures plants, animals and humans, making Earth a perfect match for life in general."

If water is a proxy for life itself, it is perhaps not surprising that worries about the health and availability of supplies here on Earth can take on apocalyptic overtones. A scorching, arid future marked by a fierce, bloody struggle for a few drops of water is a standard theme of dystopian fiction and film-making. This report will examine how close such nightmares are to reality. It will look at the state of the world's freshwater and at the increasing demands on it, and consider the ways they can be met.

The first thing to recognise is that the 70% figure is largely irrelevant to the debate. The sea it represents is salty, accounting for 97.5% of all the water on Earth. A further 1.75% is frozen, at the poles, in glaciers or in permafrost. So the world has to rely on just 0.75% of the planet's available water, almost all of which is subterranean groundwater, though it is from the 0.3% on the surface that it draws 59% of its needs (see chart on next page). This report will argue that misuse of water may indeed lead to a series of catastrophes. But the means to dodge them are already known, and new technologies are constantly evolving to help.

The fundamental problems, however, are neither the resource itself, since water is likely to remain abundant enough even for a more populous Earth, nor technical. They are managerial, or, more precisely, how to withstand economic, cultural and political pressures to mismanage water. In the harsh words of Asit Biswas, a wa-

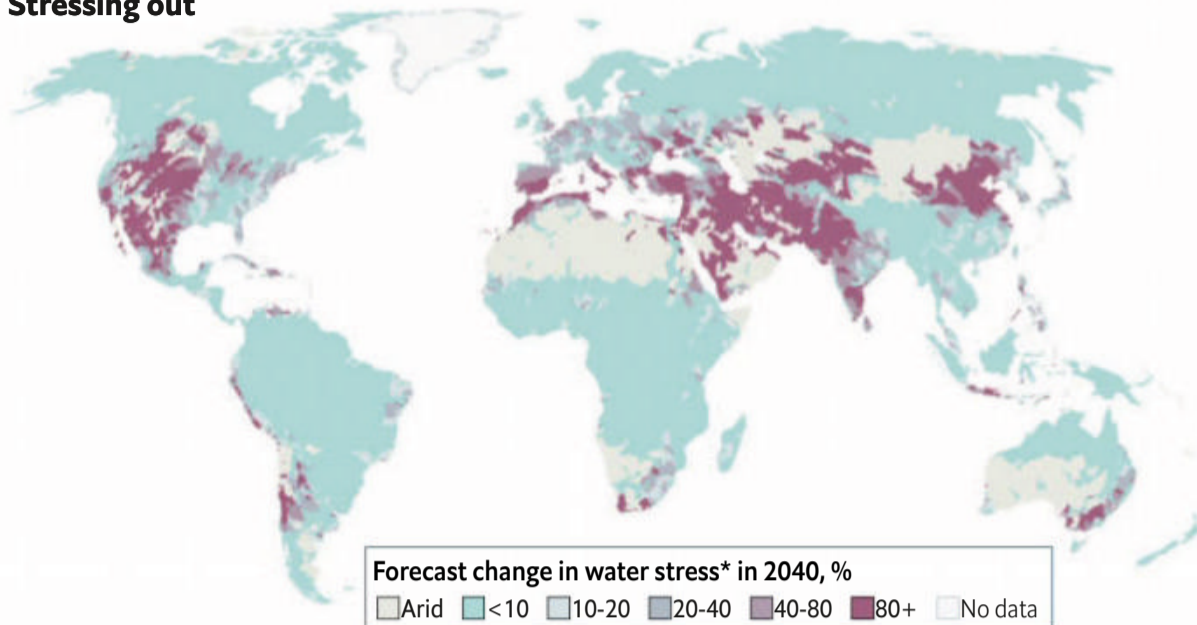
ter expert at the Lee Kuan Yew School of Public Policy in Singapore: "Lack of money, scarcity, and so on—they're all excuses. The problem everywhere is bad management." Or, as Jean-Claude Juncker, president of the European Commission, put it in an entirely different context: "We all know what to do, we just don't know how to get re-elected after we've done it."

Even governments not facing the vexatious business of winning over voters struggle to institute sensible water policies. People regard access to water as a fundamental human right and hence as something that should be available on the basis of need, rather than the ability or willingness to pay. That makes it hard to charge a proper price for it, which in turn encourages profligate use. Even those who would be willing to curb their consumption for the benefit of generations to come may not be aware how much they are using. They consume it mostly not through drinking or washing, but through the water that has gone into the food they eat and the clothes they wear.

In any event, water seems an infinitely renewable resource. Used in a bath, it can be reused—to water plants, for example. Rainwater can be "harvested" or may seep into the ground to replenish an aquifer. Water that evaporates from lakes, swimming pools and reservoirs, or "transpires" in the photosynthetic process whereby water passes into the leaves of plants, joins the atmosphere and will eventually be recycled. Over 60% of the rain and snow that falls is returned in this way through "evapotranspiration". But, like water that has run into the sea, it cannot be used again until nature has recycled it.

The present-day world provides ample examples of environmental devastation that serve as a warning that water usage has its

Stressing out



Source: World Resources Institute

*The ratio of water withdrawal to supply

► natural limits. Boats are stranded aground in the middle of nowhere, amid the vanished waters of what was once the world's fourth-largest saline lake, the Aral Sea, between Uzbekistan and Kazakhstan. Last year Cape Town in South Africa averted only narrowly the unwanted prize for being the first of the world's big cities to run out of water. By the time rain finally broke a three-year drought, water levels in the reservoirs supplying the city had fallen to below 20%, and officials were discussing the feasibility of towing an iceberg from Antarctica to provide meltwater to drink. Four years earlier, it had been São Paulo in Brazil that had teetered on the brink, with reservoirs reduced to 5% of capacity.

Even the sober assessment of the UN's latest annual world "water development report" smacks of a kind of desperation. Already, it notes, more than a quarter of humanity—1.9bn people, with 73% of them in Asia—live in areas where water is potentially severely scarce (up, other studies suggest, from 240m, or 14% of the world's population, a century ago). The number facing shortages almost

doubles if you count those at risk at least one month a year. Meanwhile, global water use is six times greater than it was a century ago—and is expected to increase by another 20-50% by 2050. The volume of water used—about 4,600 cubic kilometres a year—is already near the maximum that can be sustained without supplies shrinking dangerously. A third of the world's biggest groundwater systems are in danger of drying out. So the numbers living under severe water stress are expected to climb to as many as 3.2bn by 2050, or 5.7bn taking seasonal variation into account. And they will not just be in poor countries (see map). Australia, Italy, Spain and even America will endure severe water shortage.

Three main factors will drive the continued growth in demand: population, prosperity and climate change. In 2050 the number of people in the world is expected to increase to between 9.4bn and 10.2bn,

from just under 8bn now. Most of the increase will come in parts of the world, in Africa and Asia, that are already short of water. People will be leading more water-intensive lifestyles and move into cities, many of them in places at great risk of water shortage.

The biggest uncertainty in projecting future demand lies in estimating how much will be needed for agriculture, which currently accounts for about 70% of water withdrawals, mostly for irrigation. Some forecast a big increase in demand, as food production has to rise to feed a growing population. Others, such as the OECD, have predicted a small decline in water use in irrigation thanks to a reduction in wastage and a rise in productivity.

Still less predictable is the impact of climate change. The scientific consensus is that, in the words of Henk Ovink, the Dutch government's special envoy on water matters, the process will be "like a giant magnifying glass, making all our challenges more extreme". Wet places will become wetter and dry places drier. The world's water endowment is already highly unequal—just nine countries account for 60% of all available fresh supplies. China and India have about 36% of the world's people, but only about 11% of its freshwater. Climate change will exacerbate this inequity. And rainfall, such as the South Asian monsoons, on which much of subcontinental economic life hinges, will become more erratic.

The most dramatic short-term effects have been the increasing number of extreme weather events. Over the past two decades these have affected on average about 300m people every year. Last September's almost simultaneous storms—Hurricane Florence in the east of America, and super-Typhoon Mangkhut in East Asia—were linked by scientists to rising levels of greenhouse gases, warming oceans and changing climate. Measurements of sea temperatures down to 2,000 metres show a steady rise since the 1950s, to new records. Climate models have long forecast that warmer oceans will lead to more intense, longer-lasting storms. The rising temperatures are accompanied by rising sea levels—at a rate of about 3mm a year—as the warmer water expands, and as ice at both poles melts. Higher seas bring storm surges that can reach farther inland. And warmer air temperatures mean the atmosphere can hold more moisture that eventually falls as precipitation.

In the long run, however, the bigger problem from climate change will not be too much water but too little. As a report by the World Bank puts it: "The impacts of water scarcity and drought may be even greater, causing long-term harm in ways that are poorly understood and inadequately documented." Of course, a lot depends on how much the climate changes and how fast. ►►

Mostly salt

Global water resources, %



Water abstraction from rivers, lakes and groundwater, %



Consumptive use* of abstracted water, %



Source: World Bank

*Water unavailable for further use in the system

▶ Last October the Intergovernmental Panel on Climate Change published a report comparing the consequences of restraining global temperature rises to 1.5°C above pre-industrial levels as opposed to 2°C. It concluded “with medium confidence” that, with a 2°C rise, an additional 8% of the world’s population in 2050 will be exposed to new or aggravated water scarcity by 2050. With a 1.5°C rise, that falls to 4%. There would be considerable regional variation. For example, it cited research showing that, in the Mediterranean region, a 1.5°C rise in temperatures would lead to statistically insignificant changes in the mean annual flow in its rivers and streams. A 2°C rise, however, would bring decreases of 10-30%.

Decreasing streamflow is a worldwide phenomenon. Some of it results from declining rainfall. But much is the direct result of human intervention—the damming and diversion of rivers for flood control, water-storage and irrigation. And, where rivers still flow, the water in them is often unsafe to drink or even bathe in. In surveying the Earth, surface water is an obvious place to start. As throughout this report, examples will be drawn worldwide, but especially from two countries with very contrasting experiences: Israel, which is sometimes held up as a model of sensible water management; and India, which almost never is. ■

Rivers and lakes

Surface tension

Poisoned and over-exploited, many rivers are in a parlous state

THE RIVER VIEW HOTEL on the banks of the Yamuna river at Okhla, on the outskirts of Delhi, lives up to its name. But the view is not uplifting. Rubbish is strewn along the water’s edge. As elsewhere in India, industrial pollution, untreated sewage and the still widespread practice of open defecation make this stretch of the Yamuna a toxic soup teeming with bacterial infection. According to India’s Central Pollution Control Board (CPCB), in 2016 the water contained at times 1.6bn faecal coliform bacteria per 100ml—more than 3m times the CPCB’s “desirable” bathing limit of 500 per 100ml.

About 600km (373 miles) downstream from Okhla the sacred Yamuna joins an even holier river, the Ganges, or Ganga, at Prayagraj (formerly Allahabad), site from January to March this year of the six-yearly *kumbh*, a Hindu festival that is expecting 150m devotees—perhaps the largest human gathering ever held anywhere. They have waited for days for the chance to cleanse their souls, if not their bodies, by taking a short dip (limited to 41 seconds, in an effort to avert stampedes) in the blessed waters. The river there is considerably less toxic. In December the CPCB ordered state governments to stop “grossly polluting units”—distilleries, paper mills and textile factories—discharging effluent into the river. The Tehri dam upstream released more water to ensure it flowed just fast enough to wash away sins but not sinners.

Even farther downstream, the Ganges

reaches Varanasi, Hinduism’s holiest city and the parliamentary constituency of India’s Hindu-nationalist prime minister, Narendra Modi. Year-round, devotees visit to bathe or drink the waters, or to cremate their dead on the ghats, the series of broad stone staircases that line the southern bank. One of Mr Modi’s first and most fervent pledges in office was to clean up the Ganges, to ensure its “purity and uninterrupted flow”. He renamed the Ministry of Water Resources by adding to its title “River Development and Ganga Rejuvenation”.

But the water remains polluted and dangerous to health, and the Ganges’ flow is weakening, in part because of the hydroelectric dams on its upper reaches. A study in 2018 found its flow in some stretches may have fallen by 50% since the 1970s. Climate change has actually encouraged the damming of the river. By one reckoning about 70% of the Ganges’ flow is contributed by meltwater from the Himalayan glaciers from where it springs. Engineers had assumed that, as temperatures rise, more ice would melt, increasing the river’s flow and hence its hydroelectric potential. In fact, it has declined in the past few years, because the aquifers supplying Himalayan rivers have been shrinking as winter precipitation drops. In the long run, however, the fate of the glaciers might doom the great rivers. A study published in February by the International Centre for Integrated Mountain Development, a think-tank in Nepal, warned that even on relatively benign forecasts of global warming, more than a third of Himalayan glaciers will have melted by 2100, with river flows declining from the 2060s.

The state of the holy river is worth dwelling on. Some 400m people—5% of humanity—live on its plains. But it may also be the most powerful symbol anywhere of the sheer difficulty of managing freshwater supplies. As Victor Mallet, a British journalist, asks in his book on the Ganges, “River of Life, River of Death”, “Why do Indians and their governments tolerate for even a week the over-exploitation of their holy river—sometimes to the point of total dehydration—by irrigation dams and its poisoning by human waste and industrial toxins?” After five years of government under Mr Modi, that question remains unanswered.

The clean-up effort has two main elements. The first involves a nationwide campaign, known as *swachh bhārat* (clean India) to end open defecation, in which India in 2014 led the world, with ▶▶



Anyone for a dip?

▶ 600m open defecators out of a global total of 1bn. Thanks to subsidies for the construction of 92m toilets (mostly simple twin-pit arrangements that turn faecal sludge into harmless compost), the government says the “ODF” (open-defecation free) rate has risen from 39% in 2014 to 99% now. Many scoff at such hyperbole, but, at the very least, in many places to venture at dawn through the Indian countryside is no longer to intrude on a mass latrine.

The second aim, building treatment plants, has been beset by disagreements over the design of the scheme. Private companies are to bid for treatment contracts, with payment partly based on sensors tracking the water they produce. They are handicapped by the lack of sewers in much of India, so in many cases they will have to block discharges with weirs to divert them for treatment.

If such a sacred source is so hard to rescue, what hope for other ravaged rivers and lakes, in India and elsewhere? For his book “When the Rivers Run Dry”, published in 2006 and recently updated, Fred Pearce, a British writer, visited dozens of countries around the world and writes of river after river under seemingly life-threatening stress. Three of the rivers have, since Mr Pearce’s first visit, become test-cases for different approaches to solving surface-water problems: large-scale infrastructure to bring water from elsewhere; flow-management through digital monitoring;

India in 2014 had 600m open defecators out of a global total of 1bn

and the use of economic levers. In Israel, the state of its famous sources of surface water—the River Jordan and the Sea of Galilee (in fact, a freshwater lake)—is also a national preoccupation. After five years of its worst drought in nearly a century, the level of the Sea had sunk late last year to alarming levels. Heavy rains in December and January ended the crisis, but Israel’s supply of natural freshwater remains precarious, according to Uri Schor of Israel’s water authority.

For much of Israel’s history, Galilee supplied most of its drinking water. Under the British mandate over Palestine, economists used to worry that immigration into the territory would overwhelm its available water resources. In 1939, 834,000 people lived there. The upper limit was seen as 2m. Israel now has 8.7m inhabitants, with another 5m people living in the occupied territories. They no longer rely on the Sea of Galilee for water. More than half the water Israel uses is man-made, from desalinated seawater (see page 8) and treated effluent. So during the drought the 400m cubic metres that used to be pumped annually from the Sea was cut, to less than 70m in 2018. Now Israel plans to replenish it with desali- ▶▶

Water fights

Disputes over water will be an increasing source of international tension

IT HAS BECOME a cliché of doom-mongering: future wars will be over water. The forecast is old enough to face a sceptical backlash. Whatever happened, people ask, to the water wars? One answer emphasises the role water has played in past conflicts. In his autobiography, Ariel Sharon, who before becoming Israel’s prime minister had been a commander in the six-day war of 1967, wrote that it “really started on the day Israel decided to act against the diversion of the Jordan...The matter of water diversion was a stark issue of life and death.”

Another answer is that, though many conflicts involve water, it is rarely their sole motivation. That will remain true. But it also seems likely that water will be an aspect of ever more conflicts. A chronology maintained by the Pacific Institute, a think-tank in Oakland, California, of water-linked conflicts, shows a startling increase in their number in just the past few years (see chart).

The institute distinguishes between three types of violence. Sometimes water itself can be used as a weapon, as when China in 1938 breached dykes along the Yellow River to repel the Japanese army, or, just last year al-Shabaab, a terrorist group, diverted water from the Jubba river in Somalia, causing a flood that forced opposing forces to move to higher ground where they were ambushed.

Sometimes water is the trigger, as last year when conflicts over pasture land and water led to violence in both northern Kenya, and central Nigeria, where 11 people were killed in an attack by Fulani herdsmen on a farming community. Finally, water installations can also be the target of military action, as in 2006 when Hezbollah rockets damaged a wastewater plant in Israel, which mounted retaliatory attacks on water facilities in Lebanon. Last year, during ethnic strife in the populous Oromia region of Ethiopia, dozens of water systems were attacked.

Most water conflicts will be sub-national disputes. But transboundary

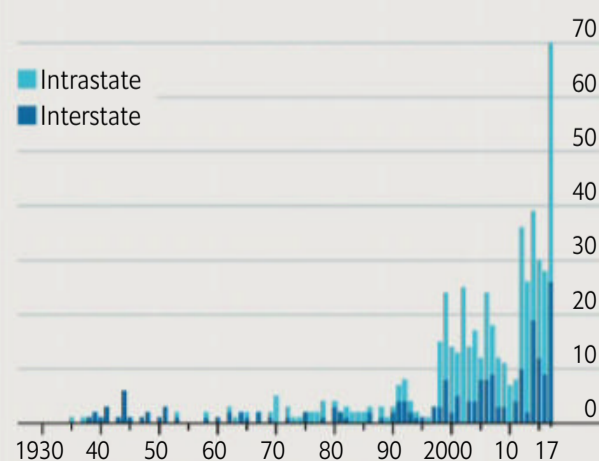
tensions are also likely to intensify. A study last year by the Joint Research Centre, a think-tank under the European Commission, used computer modelling to rank the rivers where these are most likely to flare up. Its scientists listed five: the Nile, Ganges-Brahmaputra, Indus, Tigris-Euphrates and Colorado.

In all these instances, downstream nations fear or resent the effect on their waters of the actions of upstream countries. Egypt worries about the Grand Renaissance Dam that Ethiopia is building on the Blue Nile, about 40km from the Sudanese border. India and Bangladesh fear that China’s water-diversion ambitions might one day turn towards the Brahmaputra as a source for China’s thirsty north. South-East Asian nations are concerned, too. Pakistan and India, in turn, squabble over the treaty they concluded in 1960 (to which the World Bank was also a signatory) on sharing the waters of the Indus.

In contrast, no treaty regulates the Tigris and Euphrates rivers where dam construction in Turkey has reduced flow in Iraq and Syria. The Colorado river is shared by seven US states and two in Mexico. After a 19-year drought, water flow has dropped by nearly 20%. In Mexico, the river that created the Grand Canyon and fed a vast marshy delta has, for two decades, been almost completely dry.

Controlling the sauce

Number of water conflict events



Source: P. Gleick, Pacific Institute, Water Conflict Chronology, 2018

▶ nated water so it will form a strategic water reserve.

For now, though, the Sea of Galilee is probably more important to tourists and pilgrims. They can also survey the River Jordan, which runs south into the Dead Sea, the fast-evaporating saltwater lake at Earth's lowest point on dry land (430 metres below sea-level). The Jordan has long disappointed visitors expecting to see the "deep and wide" waterway from which Michael rowed his boat ashore. In places it can be crossed with a standing jump.

The Yellow River in China, the world's seventh-longest at 5,500km, now counts as a success story. It gets its colour, and name, from the loess-soil sediment it carries downstream. Its fertile basin was the cradle of Chinese civilisation and, in an epithet often given the river, its "sorrow". A build-up of sediment changed the river's course 26 times before 1949. But the sediment also raises the river above the surrounding plains, so that it has to be contained by dykes. Often it has flooded, catastrophically. The risk of floods remains, but a massive dam at Xiaolangdi in Henan province enables engineers to release water to flush the sediment downstream, reducing the danger.

By 2015 this system had also more than doubled the channel's capacity. But it was still only two-thirds what it had been 50 years before. Indeed, in recent years the river's drying out has been as big a concern as its flooding. By 1997 it was so overused that it only reached the sea 139 days in the year. At that stage 40% of its waters were too polluted even for irrigation. The quality has much improved but by 2017 water in one-tenth of samples taken from the Yellow River was still deemed unfit for farming. Since then digital centralised controls over the release of water from dams have been introduced. Billed as the world's most advanced water-rationing system, this has kept the flow to the sea uninterrupted. Environmentalists, however, complain that the dams have harmed the river's ecosystem, and that pressure has shifted from the river itself to its increasingly polluted tributaries and underground aquifers, which are shrinking alarmingly.

In Australia, the Murray river, with its main tributary, the Darling (known as the Murray-Darling basin), drains one-seventh of the country, a region the size of France and Spain combined. It irrigates farms, and supplies cities in the east. When Mr Pearce visited the region in 2006 drought had already lasted more than a decade, yet he was shocked to find local farmers insouciant about squandering water, using wasteful flood irrigation, for example, when the water was available. Since the 1970s enormous farms growing thirsty crops such as cotton and nuts had spread across the basin.

That disastrous drought prompted government action to restore the river—if not to its heyday, when paddle-steamers plied it, then at least to levels where it could sustain the farms and people that rely on it. Australia already had an elaborate system for trading water rights, allowing farmers to buy or sell entitlements according to their need in any given season. An index compiled by Aither, a consultancy, tracks a weighted price for these entitlements in the Murray-Darling basin, and showed a 96.1% rise in the ten years from July 2008. The government's plan aimed to reduce water consumption by at least 2.75 cubic km a year, or about a fifth, either by purchasing water licences from farmers who were willing to offload them, or by financing projects that would save water (eg, through more efficient irrigation).

Water usage was cut by two-thirds of this target, recovering 2.1 cubic km of the surface water. In 2016 the state of South Australia saw its highest flows since 1993. Yet by last year the river was again low, with hundreds of kilometres running dry, entitlement prices rising fast and fish dying in huge numbers. Scientists concluded the basin as a whole was yet to show real improvement. ■

In places, the River Jordan can be crossed with a standing jump



Groundwater

Subterranean blues

Underground water has helped feed the world, but in many places it is dangerously depleted

IN 2004, WHEN Danmanti Devi was four years old, her mother took her to see a doctor because of pains in her legs. The doctor wrongly diagnosed polio. He could do no more than prescribe painkillers. Danmanti's legs are now deformed. Many others in Churaman Nagar, her 140-household hamlet of mud huts and a few "pukka" brick houses in rural Bihar, one of India's poorest states, also hobble on the knock knees or bow legs characteristic of a condition known as skeletal fluorosis. She is one of millions of Indians to suffer this, and to have contracted it merely from drinking water containing dangerous levels of fluoride. She is a victim of the over-exploitation of India's groundwater.

Fluoride, like arsenic, is present naturally in groundwater. It is harmless (or even beneficial) in small concentrations. The World Health Organisation (WHO) suggests a limit of 1.5 milligrams per litre. In Churaman Nagar, the water that comes from standpipes overseen by the local *panchayat* (village council) has 16mg.

The hamlet's inhabitants are among India's most downtrodden. They are *dalits*, once called "untouchables", at the bottom of the Hindu caste system. They eke a living as wage labourers in nearby brick kilns or by distilling moonshine.

In being poisoned by their drinking water, however, they are sadly typical. The most obvious danger—bacterial pollution—is a "second-order problem", says V.K. Madhavan, chief executive in India for WaterAid, a British charity. More fundamental is contamination by arsenic, nitrates, salinity and fluoride. Some of this is natural, some a consequence of industrial effluent, and of seepage from landfills, septic tanks, leaky underground gas tanks and the overuse of fertilisers and pesticides. But the most intractable difficulty is the pumping of groundwater from ever deeper below the surface. The deeper the water, the more likely it is to be contaminated by chemicals such as arsenic seeping downwards.

As long ago as 2002, the WHO called the effects of arsenic con- ▶▶

► tamination of groundwater in Bangladesh “the largest mass poisoning of a population in history”. Tens of millions are at risk in neighbouring India, too. Efforts to save people from the bacterial diseases carried by surface water leave them condemned to longer-term dangers hidden in the groundwater. Arsenic has been linked to cancers of the skin, gallbladder and lungs.

In the scheme of things, the extraction of groundwater for drinking and bathing by India’s poor, like those in Churaman Nagar, is a minor cause of its over-exploitation. Far more important is irrigation. Almost 60% of India’s irrigation needs are now met from groundwater. The Green Revolution which, in the 1970s, transformed India’s ability to feed itself and turned it into a big food exporter, relied on tube wells, powered by electric pumps.

It also turned India into the world’s biggest extractor of groundwater. The five largest such users, which include America, China, Iran and Pakistan, account for 67% of total extractions worldwide. In India, the water is free. A law from 1882 gives every landowner the right to collect and dispose of all water on and under his land. The cost of the electricity needed to pump it ever farther to the surface is one constraint. But Indian politicians love to lavish cheap or free electricity on rural voters when elections loom (as, in India, they often do). The Green Revolution saw agriculture’s share of total energy use climb from 10% in 1970 to 30% by 1995.

This freed many farmers from the fickle monsoon—India usually receives more than 70% of its annual rainfall in the annual downpours from June to September. In Churaman Nagar, and elsewhere in Bihar, residents believe the rains are weaker than they were, though scientists have so far measured only a tiny decline in the rains in recent years.

In India and elsewhere the easy availability of groundwater has encouraged the cultivation of thirsty crops in water-stressed areas. Starting under British rule, irrigation canals and groundwater-extraction turned the arid lands of Punjab into India’s agricultural powerhouse. Similarly, in China, the dry plains of the north-east now produce 60% of the country’s wheat and 40% of its maize on an area with 4% of its water resources.

As Sunil Amrith, a historian at Harvard University, notes in his new book, “Unruly Waters”, the half-century since the 1960s has reversed a centuries-old pattern in which agrarian wealth lay where rains were most abundant. Instead, Israel, Punjab and Manchuria have actually become net exporters of water, if you include what hydrologists call “virtual” water used in the production of a crop or good. In other words, they sell more water in the form of crops and products than they import in that form or extract from their own sources of water. Mr Amrith notes the “most bitter of ironies” in this agricultural miracle: intensified production means that more land is planted with crops, which reflect more solar radiation than forests. The land becomes cooler, weakening the temperature differences with the sea that drive the circulation of the monsoon. So measures taken to protect farmers from the vagaries of the monsoon have in fact themselves helped make the rains more fickle.

This phenomenon is not confined to India. Across the world, the need for more food production encourages deforestation and the use of more land for agriculture. That in turn will increase demand for irrigation which, as precipitation becomes more erratic and surface water is over-used, will probably rely ever more on groundwater. The long-term impact of this is uncertain. Research led by Mark Cuthbert, of the School of Earth and Ocean Sciences at Cardiff University, found that groundwater systems are likely to take far longer fully to respond to differences induced by climate change than does surface water. Only half the world’s groundwater flows are likely to find a new equilibrium within 100 years. The arid regions where water is scarce are often where response times are longest. So the full impact of withdrawals now may not be felt for decades, or much longer in some cases. ■



Desalination

Worth its salt?

Manufactured water can supplement the natural stuff, but never replace it

THE SOREK desalination plant, about 15km south of Tel Aviv, is eerily unpopulated. This is the largest such plant in the world, producing as much as 230m cubic metres of desalinated water a year—about one-fifth of Israel’s domestic water supply. Yet only 20 staff are needed at any time to operate it. Seawater is piped in from over a kilometre out at sea. It is given a preliminary clean in a series of large tanks where it is filtered slowly through sandbeds before being pumped through “reverse osmosis” membranes (pictured).

These are based on a design first patented in the early 1960s by Sidney Loeb, an American scientist who moved to Israel and saw his invention eventually oust competing methods and become the dominant desalination technology not just in his new homeland, but around the world, accounting for 69% of the output of desalinated water. They certainly seem effective. The water is absolutely tasteless. Indeed, what it lacks—calcium and magnesium, for example—causes more worries than pollutants.

But these are minor quibbles, easily fixed: at first sight, desalination seems the answer to the world’s water needs. Seawater is not going to run out. Indeed, sea levels are already rising because of climate change. To be sure, desalination is catching on. A recent synthesis of available data by Manzoor Qadir, of the Institute for Water, Environment and Health at the UN University (UNU), and other scholars, found that 15,906 plants are in operation world-

Singapore goes one better: it drinks its treated sewage

wide, producing 95m cubic metres a day of desalinated water. Israel already has five plants and is planning another two. The country has a target of increasing annual production from 600m cubic metres a year now to 1.1bn in 2030. In global league tables, however, Israel remains a relatively small producer, with a 2% global share, ►►

► compared with Saudi Arabia (15.5%), the United Arab Emirates (10.1%) and Kuwait (3.7%). Nearly half (48%) of global production is, not surprisingly, in the Middle East and north Africa. China and America also have large capacities (see chart below). Eight countries (the Maldives, Singapore, Qatar, Malta, Antigua, Kuwait, the Bahamas and Bahrain) produce more desalinated water than they withdraw from natural sources.

That breakdown of where desalination is used hints at two reasons it is not a panacea. One is geography. If the sea is the feedstock it will be too costly to transport desalinated water long distances inland—to western China, for example. Secondly, even for coastal regions, desalination is very expensive, which explains why two-thirds of existing facilities are located in high-income countries. The expense comes partly in the capital cost of the plants. Sorek required a total investment of about \$400m. In Israel the desalination industry marks a departure from one of the cardinal principles of its water-management policies—that all water is a public good. From the moment a raindrop leaves a cloud it is the state's property. However, four out of the five desalination plants are privately owned.

The second big reason for the expense is the energy they use—typically between one-half and two-thirds of the cost of desalinated water. Israel has managed to achieve relatively good energy efficiency, partly through the use of innovative membranes. The price of Sorek's water is \$0.50-0.55 a cubic metre, down from \$0.78 for water from the first Israeli plant built on the public-private model at Ashkelon, which opened in 2005.

The UN paper concentrated on a third drawback to desalination: what happens to the salty sludge (known as brine) left behind by the pristine, desalinated water. At Sorek, as is typical, it is taken out by a pipe and discharged nearly 2km out at sea. Around the world, desalination plants produce nearly 50% more brine (141.5m cubic metres a day) than freshwater.

The researchers worry about the threat that uncontrolled discharge of brine could cause to marine life. At the very least it raises the salinity of the surrounding seawater, depleting the dissolved oxygen. But in some places it may be accompanied by toxic chemicals used in the treatment process. More optimistically, they also point to opportunities to use reject brine, for example, in aquaculture, where it has achieved increases in fish biomass of 300%.

The sea is not the only source of manmade water in Israel. It also treats and reuses 86% of its waste water. In this it claims to be far ahead of the rest of the world—with the next-highest recycler being Spain, with just 20%. This is cheaper than desalinated water and is primarily used for agriculture (which accounts for 52% of Israel's water usage), with about 10% returned to "nature" (eg, to increase river flow), or used for putting out fires. That leaves the ex-

pensive stuff to flow out from the taps in people's houses. In this area Singapore even goes one better: it drinks its treated sewage. "NEWater" is reclaimed wastewater treated with advanced membrane technologies and ultra-violet disinfection. Its four plants can meet up to 30% of Singapore's needs—three times as much as its local catchment.

All of this costs money. Both Israel and Singapore are unusual in trying to recoup the full cost from the consumer, though Singapore subsidises lower-income users. Pricing is a reminder to consumers in both places of water's importance to national security, and of the truth of an observation made by Mr Schor of the Israeli water authority: "Desalination is the most expensive way to produce a cubic metre of water. The cheapest way is to save it." ■

Saving water

Waste not, want not

The best way to solve the world's water woes is to use less of it

IF THE WORLD is to reduce its use of water, the most obvious area in which to look for savings is where most water goes: agriculture. How much water this accounts for varies enormously from country to country. In Britain, which is a huge importer of embedded or "virtual" water (that consumed in producing any crop or product) accounting for as much as two-thirds of its water needs, it is relatively little. In Egypt it is about 84%, and in India as much as 90%. Viewed more broadly, as a global water "footprint"—a concept developed by Arjen Hoekstra, a Dutch scientist—including not just the direct uses of water in agriculture, but the indirect ones all the way along the chain from field to fork, agriculture accounts for 92%.

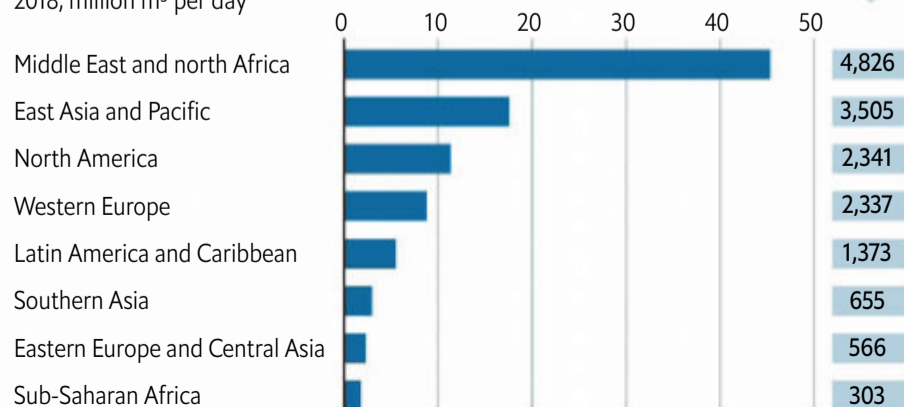
Much of this is wasted. "Flood" irrigation systems, where water is released to inundate fields or furrows, lose water to evaporation, or to percolation (ie, to the soil itself before it can be absorbed by the crop's roots). A common estimate is that flood-irrigation squanders 50% of the water it releases. Sprinkler systems can help with efficiency. But these, too, are imprecise, vulnerable to the wind and to loss of water through evaporation.

Far more effective are "drip" irrigation systems introduced in Israel in the 1960s and since spread around the world. As the name suggests, these direct limited amounts of water to the plants themselves, so that they get enough but not too much. Avi Schweitzer, chief technology officer of Netafim, an Israeli company that sells drip-irrigation equipment and technology in 110 countries, says that, by minimising both evaporation and percolation, it manages to achieve 95-97% efficiency in delivering the water to the photosynthetic process.

This saves large amounts of water and increases yields. Precise amounts of nutrient and crop-protection chemicals can be added to the irrigation water. And the new generation of systems employ remote sensors that can monitor weather, soil and plant conditions and calibrate how much water is delivered. Mr Schweitzer, however, concedes that, for now, the high capital cost precludes the use of drip irrigation in much of the world, and limits its use to cash crops. The goals for the future are to reduce costs for commodity crops such as grains, and to improve precision even more. The market will expand. Climate change is likely to mean that more rain-fed farmland—at present estimated to make up about 80% of the world's total—will be irrigated. ►

Plain saline

Global, capacity of desalination plants
2018, million m³ per day



Source: "The state of desalination and brine production: A global outlook", by E. Jones et al.

► Greater efficiency, however, comes with risks of its own: that farmers persist in planting thirstier crops than is rational in an arid climate, or switch to more water-intensive ones. Even in Israel, just south of the shrinking Sea of Galilee, swathes of irrigated land are covered in plastic-draped banana plantations.

So reducing the water consumed by agriculture will depend not just on improving efficiency, but on rationalising crop-planting. And that in turn will depend on demand and hence on changes in diet and even fashion. A foretaste of controversies to come was a furore that arose last year over avocado-eating—criticised by many as an emblem of selfish millennial hipsterdom. Avocado consumption in America increased by 300% (to about 4.25bn avocados a year) from 2010 to 2015. Farmers scrambled to meet demand, including in very dry places, such as some parts of Chile and in Mexico, where the craze was blamed for a surge in deforestation. A kilo of avocados can need up to 2,000 litres of water, so local sources were strained, and activists mobilised to campaign against the culinary fashion.

In future, people around the rich world at least are likely to be made more aware of the water footprint of what they eat (and wear: the global average water requirement for producing a kilo of cotton is 9,359 litres). Avocados may need more water than tomatoes (214 litres) but they are far more frugal in their water needs than meat—chicken takes 4,325 litres per kg, mutton 10,412 and beef 15,415 (see chart). Globally, however, the trend is not towards a low-water diet. On the contrary, as countries such as China grow richer, meat-eating is on the increase. Over the past 50 years, global meat production has quadrupled.

Another way in which water is used inefficiently in agriculture is in waste or loss of food, which adds up to as much as a third of global production. In countries such as India, the inadequacies of the cold chain and logistical hurdles mean that much never reaches the shops. Even in rich countries, food shops and consumers end up discarding vast amounts of uneaten food.

A new report by the World Economic Forum, a think-tank, emphasises technological fixes to this problem. Sell-by and use-by dates could be replaced, it argues, by remote sensor technologies, such as near-infrared spectrometers and hyperspectral imaging, capable of evaluating the perishability of individual items. It looks forward to the day when the imaging technology is available on shoppers' smartphones.

A less visible but perhaps more shocking waste is in the form of “non-revenue water”—that is, water supplied by utilities but never paid for. Some is diverted and stolen; much is simply lost through leakage. The lost revenue often leads to a vicious circle. Money is too short to maintain and repair the system, leaks increase, prices rise and theft becomes more widespread. The problem is most obvious in poor countries. Delhi's water board, for example, reported in 2011 that 53% of the water it distributed was non-revenue. In Hanoi that figure was 44%. But even in the rich world, where pipes and other infrastructure may be old, rates can also be staggering. London, for example, reported 28% and Montreal 40%. Again, technology is helping. Sensors and smart valves that use the water itself to send a pulse, which alters when there is a leak, can make it easier to pinpoint trouble-spots.

In almost every aspect of water usage the scope for using less is enormous. It is a question of incentives. Optimists point to signs that this is changing. Some governments still use the availability of cheap and



Read it and weep

plentiful water as a lure to foreign investors. But some businesses are seeing water-efficiency as both an economic goal in itself and as an important part of their image-building. In the Canadian province of Ontario, for example, the local arm of Nestlé, a Swiss food-and-drinks giant that is one of the world's biggest sellers of bottled water, has found itself embroiled in a lawsuit between First Nations representatives and the provincial government, which has led to a moratorium on issuing new bottling permits.

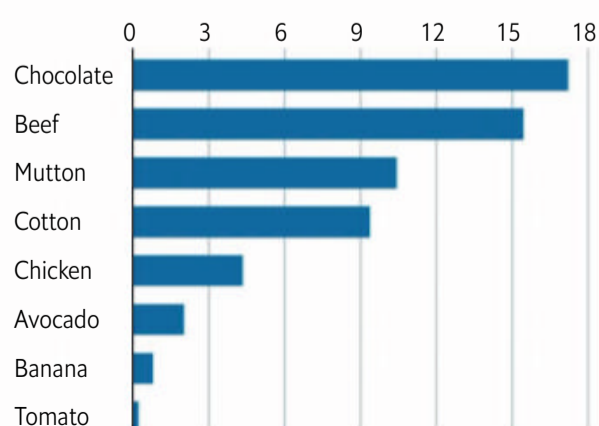
Elsewhere, Nestlé is making much of its efforts to save water, aiming to reduce usage in every product category between 2010 and 2020 (a target it says is already within touching distance). In

some countries, for example, such as America, Brazil and South Africa it makes baby milk in “zero-water” factories, reclaiming water evaporated from cow's milk used in the manufacturing.

Unilever, another multinational, also has set “sustainability goals”. One is to keep the water used in its manufacturing processes to 2008 levels, despite greatly increased production. Already, it says, it has cut water use per tonne of production by 39% since 2008 in seven water-scarce countries representing half the world's population. Less successful has been its drive to reduce the amount of water its customers use—by making products, such as detergents, for example, that need less water. Since 2010, per-consumer use has fallen only by 2%. ■

The worst for thirst

Volume of water required to produce 1kg
2010, litres '000



Sources: Institute of Mechanical Engineers; Water Footprint Network



Conclusion

Hard and soft solutions

Water, the original solvent, can provide its own solutions

AFTER RATTLING into the hillside outside Jerusalem for 7km, the little three-carriage railway reaches the end of the line, some 300 metres underground. The diminishing speck of light at the tunnel's opening has long vanished altogether. This, for now, is as far as it goes. The German-Austrian contractor will eventually bore about 13.5km. But progress is fitful, depending on the rock being drilled through and whether it will need some artificial strengthening. The drill has already negotiated one large cave, complete with stalactites, which had to be reinforced with concrete. More such obstacles are expected. The contractor works non-stop, but the average progress made by Isabel, as their "double gripper" boring machine has been named, is just 22 metres a day. As its jaws grind into the wall of rock ahead, conveyor belts carry the rubble out to the tunnel's opening.

The tunnel will accommodate a tube 2.6 metres wide, the deepest potable-water pipe in the world, that will pump (mostly desalinated) water through 30km of tunnel from sea-level to an elevation of 860 metres to supply much of Jerusalem's drinking-water needs. In a country famous for its ambitious water-supply schemes, this is the biggest since the 1960s. It was in 1964 that Isra-

el inaugurated its National Water Carrier, a public-works project to bring water from the north of the country down to the Negev desert in the south. It was an emblem of the young country's determination to survive. And it is a dominant theme in water policy to this day. In a dramatic symbol of a determination to shape the natural order to human needs, the direction of water-flow in the national carrier is to be reversed, to give clean, desalinated water back to "nature" in the north of the country.

Water "megaprojects" are not unique to Israel. Humanity has long embraced what Peter Gleick, a scientist who co-founded the Pacific Institute, a think-tank in California, calls "the hard path" to solving its water problems: one that relies "almost exclusively on centralised infrastructure to capture, treat and deliver water supplies". When water has been short, the solution has been to find a new source, or to bring it from somewhere else, in ancient times using large amounts of human labour.

Ancient Sumerians in southern Mesopotamia dug canals. More than 4,000 years ago Egyptian farmers relied on the Nile—traces of their irrigation systems survive today. Throughout the Roman Empire cities were supplied by manmade aqueducts. High in the Andes in present-day Peru the Incas and their predecessors built cisterns and irrigation canals, and carved terraces into the hillsides.

Modern technology means that megaprojects now are on a scale the ancients could only dream of. China's are the grandest. The Three Gorges Dam on the Yangzi river, which went into full operation in 2012, involved the flooding of hundreds of villages and the displacement of 1.2m people. The reservoir it created is 600km long. Besides providing energy for one of the world's biggest power stations, the project was touted for improving navigation and preventing floods. Ever since it was first mooted as an idea a century ago, however, the dam has been controversial, with worries about its impact on biodiversity, cultural heritage and even seismology.

Environmentalists are also leery of another proud boast of modern Chinese hydraulic engineering: its south-to-north water-diversion project (pictured overleaf), by some measures the most expensive infrastructure project in the world. It counts as the largest transfer of water between river basins in history. It recognises that, for all China's well-publicised struggles with air pollution, a shortage of water is its biggest environmental problem. That shortage is acute in the north, where 11 provinces have less than 1,000 cubic metres of water per person per year, the usual international measure of water stress. Those provinces include four of China's five biggest agricultural producers.

So, since 2014, two-thirds of the tap water and one-third of the total water supply in Beijing, in the arid north, has come by canal and pipeline from a reservoir 1,400km to the south, fed by a tributary of the Yangzi. China hails the project as an unqualified success, supplying more than 50m people in its early years of operation. And it is part of an even bigger project that will see up to 45bn cubic metres of water a year transferred—7% of Chinese consumption. Environmentalists and water experts at home and abroad are more sceptical, however. Mr Biswas at the Lee Kuan Yew School in Singapore says the project gives China at best "a few years' grace". The worry is that it is a distraction from more pressing and important policy changes—cutting demand for water—and may actually encourage wasteful use. As elsewhere, the authorities fear that charging users for the true cost of their water might provoke protests and threaten social stability.

Similar doubts surround India's scheme to "interlink" 37 rivers through a network of 15,000km of canals, the ultimate aim being, as in China, to move water from well-endowed regions—such as some of the Himalayan foothills in the north—to areas of scarcity. The plan has been discussed for decades. The current government has tried to give it fresh impetus. But even if it forges a political consensus in Delhi behind the plan, it would be hard to realise be- ▶▶



South to north, Chinese-style

► cause of tensions between different states over water.

With so many cities around the world facing an acute need for water, “the hard path” will not be abandoned. It will always seem easier to bring water in, or to exploit a new source, than to move tens of millions of people, or completely redraw the map of agricultural production. The scale of the problem was suggested by research published in 2014 by The Nature Conservancy, an American charity. Its list of water-stressed cities was dominated by places in India and China—with Delhi second, Shanghai fourth and Beijing fifth. Mexico City came third. But top of the list was Tokyo. Other rich-world cities were also high up, including Los Angeles (eighth) and even London (15th).

Few, however, would disagree with Mr Gleick that the hard path alone is no longer enough and that it needs to be complemented with a “soft” one that seeks to improve the way water is used, rather than to find new sources of supply. That means spending on local facilities, efficient technologies and education and training.

How to do this is already known. In water-scarce regions where people—usually women—have to spend hours each day fetching water from a distant source, it may mean building pipes or borewells and training people to maintain them. In places with heavy seasonal rain followed by long dry seasons it means building (or in many cases restoring) storage systems, ideally in places where evaporation will be low. (In Bermuda, with abundant year-round rain, domestic water needs are met by harvesting rainwater from the islands’ roofs, which building regulations stipulate must make room for storage tanks.) And to ensure that the water people drink does not kill them, the discharge of untreated effluent has to be stopped, and people have to use toilets.

Waste water, as Israel and Singapore have shown, can be treated as a resource to exploit rather than a problem to dispose of. As the UN’s Sustainable Development Goals (SDGs), the targets for 2030 adopted in 2015, acknowledge, water-management has to be “integrated”, that is co-ordinated both between the various bodies responsible for different bits of the water cycle and other policies that have an impact on water. At times this will entail cross-border co-operation. It will always require community involvement.

None of this is rocket science, which helps explain a paradox of most conversations with scientists, ecologists and charity-workers who have devoted their lives to solving the world’s water problems. Most are full of horror stories about how woefully the world is misusing and wasting its water. Yet most will profess cautious optimism about the long-term future.

The World Bank has even sought to cost the water-related SDGs.

It estimated that, to “achieve universal and equitable access to safe and affordable drinking water for all” and “achieve access to adequate and equitable sanitation for all and end open defecation” would need \$114bn a year, 69% of it spent on sanitation. So to provide access to drinking water for the whole world would cost not much more than \$30bn a year, or roughly the size of the defence budget in, say, Italy or Brazil.

The total of \$114bn would amount to just 0.39% of the GDPs of the 140 countries the World Bank studied. That would, however, be 0.27 percentage points more than is currently spent globally. It would require a massive reallocation of resources. For that to be realised, three issues need to be tackled: ownership; price; and political priorities. On ownership, India and Israel represent two extremes. In India it may be hard to repeal the British-era law giving landowners the right to all the water on and under their property. But it should be possible to mitigate some of its effects by, for example, penalising the over-extraction of groundwater. Israel’s nationalisation of all water supplies has helped “integrate” policy, but may not be replicable elsewhere. In many countries water rights are less clear and subject to litigation. America, for example, still suffers from tension between two different doctrines adopted in the early days of the modern nation: a “riparian” one in the east, giving rights to those near to a body of water, and the “prior-appropriation” one in the west, giving rights to the earliest users.

Pricing will be even harder. Few utilities in the world charge consumers the full cost of the water they use. And even in countries where they do, a water subsidy may be included in the cost of the goods people buy in shops. To persuade people to recognise and pay for the water-intensity of their lifestyles may require concerted campaigns of the type that have helped cut smoking rates in many places. But because they will affect the entire population, it

will be even harder. On the other hand, as experience in some unlikely places has shown—Phnom Penh, the capital of Cambodia, for example—poor people will pay for a clean, reliable source of water. After all, in much of the world, they already pay over the odds for dirty, dangerous and erratic supplies.

Finally, even if the world is cajoled into using water more sustainably, that will still leave questions of allocation. On the global level, it is easy to see where the priorities should lie: in the hundreds of millions who do not yet have access to safe and adequate drinking water and sanitation. At the national and subnational level, there will always be powerful interests lobbying for their own needs, whereas those without access to clean water are, almost by definition, the powerless. So, as Jonathan Farr, senior policy analyst at WaterAid, puts it, water management—however sustainable, progressive and integrated—has first to concentrate on access. Money is not the binding constraint. Nor is technology. It is a political choice. ■

Poor people will pay for a clean, reliable source of water

ACKNOWLEDGMENTS A list of acknowledgments and sources is included in the online version of this special report

OFFER TO READERS Reprints of this special report are available, with a minimum order of five copies. For academic institutions the minimum order is 50 and for companies 100. We also offer a customisation service. To order, contact Foster Printing Service: Tel: +1 866 879 9144; email: economist@fosterprinting.com

For information on reusing the articles featured in this special report, or for copyright queries, contact The Economist Rights and Syndication Department: Tel: +44 (0)20 7576 8000; email: rights@economist.com; Online: Economist.com/rights/reprints+and+permissions.html

MORE SPECIAL REPORTS Previous special reports, and a list of forthcoming ones, can be found at: Economist.com/specialreports



SPACE SUMMIT: The world is not enough

November 1st 2018 – New York

Three diverse players in space exploration came together on November 1st 2018 to discuss what it takes to build a space economy and the earthly applications of space technology at The Economist Events' second Space Summit. During the opening session, sponsored by HPE, panellists discussed their key challenges in researching and building technology for space. Dava Newman, Apollo Programme Professor of Astronautics at Harvard-MIT, said that "everything changes in microgravity" and that while allowances had to be made for adjustment in space and back on Earth, humans were able to "dual adapt".

In addition to gravity—or the lack thereof—she stressed the importance of research into radiation, genetics and designing machines adapted to humans' problem-solving capacities. Eng Lim Goh, Hewlett Packard Enterprise's vice-president and chief technology officer for high-performance computing and artificial intelligence, identified two key challenges on the machine side: solar and cosmic radiation as well as intermittent connectivity back to Earth. Machine autonomy is crucial, he said, to overcoming limited connectivity, the effects of unpredictable radiation and the varying computational loads required in space. Smarter software, rather than "hardened hardware", is essential for systems to anticipate events, correct errors and adapt the intensity of their performance in response to radiation and the harsh conditions of space. Mr Goh also announced that HPE's supercomputer Spaceborne—which has been aboard the International Space Station for more than a year—would be returning to Earth on SpaceX 17, rather than SpaceX 16. This extended mission allows NASA to expand beyond benchmarking the computer's performance in space (the original intent of sending the computer to the ISS) to opening up Spaceborne's high performance computing services for experiments by astronauts and researchers in space—which Mr Goh termed "above-the-cloud services".

On the space economy, NASA's Dave Hornyak, ISS technology demonstration research portfolio manager, encouraged companies and universities to "use space to create your own market" and consider their own commercial or research objectives and long-term goals. NASA frequently uses privately owned technologies on its missions and hopes to encourage more commercial innovation in space. He added that it is too early to comment on the proposed privatisation of the American share of the International Space Station (ISS), which depends on government policy as much as results from the call for proposals.

All the panellists highlighted the dual uses of space technologies, both in space and on Earth. Ms Newman, of MIT, gave examples of water filtration systems and miniaturised ultrasounds that could be used in rural areas, and of space-suit technologies that could help patients with mobility and motor-control issues. Genetic engineering too, could prepare human bodies for outer space and contribute to cancer treatment and personalised medicine. Mr Goh discussed the crossovers between improvements in machine autonomy and "swarm learning", saying that HPE was developing these technologies with the dual objectives of reaching Mars and making advances in autonomous vehicles. These crossovers and the "wow" factor of space have great potential for education, and getting the next generation interested in science, technology, engineering and maths.

The discussion closed with the lunar gateway and the next manned trip to the Moon. NASA's Mr Hornyak said there would be a commercial aspect to it on a similar basis as the ISS, but that smaller capacity meant there would be a higher threshold for the projects and technologies selected. Despite the excitement of returning to the Moon, everyone agrees that the real prize is still Mars.



**Hewlett Packard
Enterprise**

The
Economist

The award-winning magazine of ideas, lifestyle and culture

1843

Have you met Ms Jones?

The impressionist
who sees the funny side
of identity politics



Put your feet up with *1843* – style and stories,
brought to you by *The Economist*

February/March issue on newsstands now

economistsubscriptions.com/1843





 → Also in this section

 40 Michael Cohen

 41 Religion and government

 41 Tech and privacy

 42 Teachers' activism

 43 Ex-evangelicals

 44 Lexington: Democrats and climate

Defence policy

Bringing out the big guns

WASHINGTON, DC

After 18 years in the Middle East, the Pentagon gears up to fight Russia and China

PATRICK SHANAHAN draws his finger down a list of his priorities for the Pentagon: hypersonics, directed energy, space, cyber, quantum science and autonomy. It could not be further from the dusty battlegrounds of the past 18 years. “When we talk about space, this is not designed for counter-terrorism,” he says. Mr Shanahan, a former Boeing executive, was propelled into the job of secretary of defence in January, having served as understudy to James Mattis for less than 18 months. He has taken the helm of an organisation that is in the throes of change, as it prepares for life after the wars in Iraq and Afghanistan.

In January 2018 the Trump administration published its National Defence Strategy (NDS). Officials lamented that nearly two decades of whack-a-mole against insurgents and jihadists had eroded the country’s military edge, resulting in exhausted and under-trained units armed for the wrong enemy. So the NDS decreed that America would henceforth focus on “long-

term, strategic competition between nations”—namely, China and Russia. Mr Shanahan was charged with implementing the vision while Mr Mattis travelled around the world calming ruffled allies.

“This is the first time since the Reagan era where the United States has been motivated to modernise its war-fighting architecture, its technologies,” says Michael Griffin, the Pentagon’s technology chief. “The first time we’ve been forced to think about how we fight war.”

One priority is to re-tool the armed forces with the weapons they need. Mr Griffin paints a picture of each service wielding its own ultra-fast and long-range hypersonic missiles, fed information from a vast satellite network girdling the skies, all of it supported by a procurement process that can spit out high-tech weapons in years rather than decades.

David Norquist, Mr Shanahan’s acting deputy and the Pentagon’s finance chief, points to rising investments in firepower-

heavy platforms, like the Virginia-class submarine and new B21 bomber. But he also acknowledges that big planes and ships may not survive for long under a hail-storm of Chinese or Russian missiles. So money is also going to larger numbers of smaller, cheaper and dispersible platforms—like an unmanned boat.

The second priority is ensuring that the armed forces not only have the arms they need, but also the training and readiness to use them in the sort of fighting they would face in eastern Europe and the western Pacific. Disaster relief is nice, says one general, but “this is a warfighting operation.” Ryan McCarthy, undersecretary of the army, says that half his brigade combat teams—freed from what was an intense pace of deployments—are now at the highest level of readiness, up from a small fraction of that two years ago. Basic training is being increased from 14 to 22 weeks.

Training and exercise scenarios are adapting, too. They increasingly reflect “large force-on-force conflict against very high-end adversaries,” says John Rood, the Pentagon’s policy chief. Soldiers who once practised dealing with terrorists’ roadside bombs now drill in dodging enemy air strikes or chemical weapons. The army is raising new battalion-sized forces, one apiece for Russia and China, which integrate cyber, electronic warfare and space capabilities—skills that were lost or ne- ▶▶

▶ glected in the counter-insurgency years.

A third focus is changing what the Pentagon actually does with its troops, planes and ships. “The basic concept”, says Mr Rood, “is that we’re going to give priority to the Indo-Pacific.” He points out that 2018 saw the longest absence of an aircraft carrier from the Persian Gulf since 2001; two carriers were instead sent to the Pacific.

A working group at the joint staff has been poring through 150-odd “global execution orders” (directives to commanders around the world) that have accumulated over the years, weeding out those which do not fit with the NDS’s focus on great power competition. Seven out of eight advise-and-assist missions in Africa Command have already been cut. Central Command, which covers everything from Egypt to Pakistan, will have more fat shaved off.

But rebalancing is only part of the story. The most significant element of the NDS, says Mr Shanahan, is “dynamic force employment” (DFE in mil-speak). That refers to moving forces around the world quickly and unpredictably to bamboozle adversaries. Last year, for instance, the *USS Harry S. Truman*, an aircraft-carrier that usually hangs around the Middle East, was abruptly called home midway through her deployment cycle and then suddenly sailed into the Arctic Circle—the first carrier to do so in 27 years—to join massive NATO exercises. For a carrier, whose movements are planned years ahead, that is warp-speed. Similar surprise deployments of bombers, fighter aircraft and surface-to-air missiles are being planned under DFE.

Despite all this, insiders grumble that civilians have not forced services to change spending patterns drastically enough. Rear-Admiral Mark Montgomery, former policy director for the Senate Armed Services Committee, is concerned that the army is still buying too many vehicles initially designed for low-end war, such as light tanks. Chris Brose, the committee’s former staff director, says the Pentagon is not doing anywhere near enough to develop, build and test the huge numbers of autonomous, unmanned systems it needs.

Mr Shanahan urges sceptics to wait for the 2020 budget, which he has called “a masterpiece”. “What you’ll see in these budgets is a sizeable investment in these critical technologies and programmes, whether it’s autonomy, artificial intelligence, hypersonics, cyber. The critics haven’t had exposure to those plans yet.” He adds, coyly, that “there’s a good portion of the budget you won’t ever see”, implying that more radical efforts may be buried in classified spending. And he is confident that he can remould a 700,000-strong bureaucracy. “People like myself, we spend our whole life implementing. We know how to move large organisations. We know where to place our bets.” ■

Michael Cohen

His turn in the barrel

WASHINGTON, DC

Testimony from the president’s former fixer was at once familiar and shocking

FOR TEN years, Michael Cohen was Donald Trump’s attack dog. By his own estimate, the president’s former fixer threatened more than 500 people or entities at Mr Trump’s request. But in sworn testimony before the House Oversight Committee on February 27th, and armed with documents to bolster several striking accusations, Mr Cohen called his former boss “a racist...a con man [and] a cheat” who is “fundamentally disloyal” and a threat to American democracy. The parties’ responses to his testimony hinted at how they will respond to Robert Mueller’s imminently expected report, providing a preview of the political battles likely to rage for the rest of Mr Trump’s term.

None of Mr Cohen’s accusations were entirely new. But hearing them made openly before Congress, under penalty of perjury, crystallised how extraordinary they are. Mr Cohen said that Mr Trump knew in advance—courtesy of Roger Stone, a political consultant who had been urging Mr Trump to seek the presidency for decades—that WikiLeaks would release stolen emails damaging to Hillary Clinton’s campaign. That may have violated federal campaign-finance law, which bars Americans from accepting any “thing of value” from foreign nationals. More importantly, it would make the campaign complicit in an attack by a foreign intelligence service.

Mr Cohen also entered into evidence a pair of cheques—one signed by Mr Trump



Nothing but the truth

from his personal account and the other from his trust account, each for \$35,000, both from 2017, after he took office—which he said were reimbursements for hush money paid to a pornographic-film actress. Mr Cohen says that as late as February 2018, Mr Trump told Mr Cohen to say that he did not know about these payments.

He also brought three financial-disclosure statements to illustrate his claim that Mr Trump inflated his net worth when he wanted people to think he was rich, and deflated it to minimise his taxes. In 2012-13, according to the statements, his net worth rose from \$4.6bn to \$8.7bn—due largely to his “brand value”, which Mr Trump did not mention in 2012 but by 2013 was somehow worth \$4bn. Questioned by Alexandria Ocasio-Cortez, who showed that she was almost as effective an interrogator as she is a tweeter, Mr Cohen said that Mr Trump also inflated the value of his assets to an insurance firm, which would count as fraud.

Mr Cohen said Mr Trump, “knew of and directed the Trump Moscow negotiations throughout the campaign and lied about it.” He said he briefed Mr Trump, as well as Donald junior and Ivanka, about the project around ten times in 2016. Mr Cohen said he knew of no “direct evidence that Mr Trump or his campaign colluded with Russia.” But, he said, “I have my suspicions,” noting that Mr Trump’s desire to win at all costs made it conceivable that he would collude with a foreign power.

Republicans on the committee did not really defend the president from these accusations. Instead, they implied that Mr Cohen’s testimony was some sort of plot to land a lucrative book or film contract. And they impugned his character, noting that he was convicted of lying to Congress, among other things, and will soon begin a three-year prison sentence. But literary glory aside, it is unclear what Mr Cohen’s motivation to lie to Congress again would be—particularly as Mr Mueller’s office was certainly watching, and would doubtless have charged him again had he done so.

Mr Trump can take comfort in the Justice Department policy, which warns against indicting a sitting president. And campaign-finance convictions are hard to win. In 2012 federal prosecutors failed to convict John Edwards, a Democratic politician, for spending donor funds on hush-money payments to a mistress.

Still, Mr Cohen accused the president of conduct more serious than that which led to impeachment for Bill Clinton (lying about an extramarital affair), and which is comparable to Richard Nixon’s (covering-up a break-in at Democratic headquarters). For Mr Trump, that ending remains a long way off. While he has solid Republican support, Democrats will shy away from impeachment. But the prospect is closer now than it was before Mr Cohen testified. ■

Religion and government

Cross roads

WASHINGTON, DC

A Supreme Court case could poke holes in the wall between church and state

IN 1947, when the Supreme Court first interpreted the constitution's bar on laws "respecting an establishment of religion", the justices consulted Thomas Jefferson. The First Amendment erects "a wall of separation between church and state," the third president had written in 1802. This means, the court said a century and a half later, that the government may neither "prefer one religion over another", take part in the "affairs of any religious organisations" nor impose taxes to support "religious activities or institutions." Justice Hugo Black explained in a 5-4 decision why this wall did not stand in the way of a New Jersey law covering the bus fares of Catholic-school students. In dissent, Justice Robert Jackson called the majority opinion "utterly discordant". The ruling, for him, brought to mind "Julia who, according to Byron's reports, 'whispering I will ne'er consent,'—consented."

The battle over the church-state line is no less divisive—and even more muddled—70 years on. Prayer in school was tossed out in the 1960s. Stand-alone nativity scenes inside government buildings were struck down in the 1980s. But other Biblical verses, crosses and menorahs in the public square have won the court's blessing. On one day in 2005, the Supreme Court upheld a Ten Commandments monument near a capitol building while rejecting another outside a courthouse. When the justices last ruled on the matter in 2014, they found no trouble with a town board launching its meetings with Christian prayers. As long as the government does not relentlessly "denigrate" or "proselytise" dissenters, Justice Anthony Kennedy wrote—again, for a 5-4 majority—it respects America's church-state balance.

On February 27th a new flashpoint came before the court in the guise of an old memorial to first-world-war soldiers. Since 1925 Bladensburg in Maryland has been home to a 40-foot Latin cross honouring 49 men from Prince George's County who died in the fighting. Upon its rededication in 1985, the Peace Cross's reach was extended to veterans of all wars. For Rachel Laser, president of Americans United for Separation of Church and State, it is "remarkable" that the cross, which stands at the intersection of two big motorways on public ground, "is thought to be anything but a clear violation of the establishment clause." The memorial is a sectarian sym-

bol, she says, and denies "equal dignity" to non-Christian soldiers who died.

When the Fourth Circuit Court of Appeals ruled against the cross in 2017 it invoked a precedent set in *Lemon v Kurtzman*, a 1971 ruling that states could not pay the salaries of teachers at private Catholic schools in Pennsylvania. Justice Antonin Scalia once likened *Lemon* to a "ghoul in a late night horror movie" that just won't die. At the Supreme Court hearing Justices Neil Gorsuch and Brett Kavanaugh both professed a desire to drive a stake through its heart. Whether or not *Lemon* gets the squeeze, the oral arguments added credence to the widespread hunch that the Supreme Court will save the Peace Cross. The question is how bold the justices will be.

Late in the hearing, inklings of possible compromise came from Justices Elena Kagan and Stephen Breyer. In 2005, Justice Breyer had found it "determinative" that 40 years passed before anyone raised an objection to a Ten Commandments display in Texas. His vote saved that monument.

Likewise, the historical context of the Peace Cross counts, he said. What message would it send, he asked, if people "see crosses all over the country being knocked down?" Justice Kagan said she, too, finds "something quite different" about the "historic moment in time" when the cross was built. Perhaps the justices could let the Maryland memorial stand while saying "no more" to future crosses on public land?

A third way could avoid bulldozed crosses while respecting America's religious diversity—as Justice Ginsburg pointed out, 30% of the country now identifies as something other than Christian. Gregory Lipper, author of a brief criticising the cross, thinks Justice Breyer's proposal could form the basis of a deal between the liberal justices and Chief Justice Roberts; it may, he says, ward off "more grievous harm." But with the court's new conservative majority, the chief may be tempted to make a more dramatic statement when the decision comes this spring. Thomas Jefferson's wall could be up for a redo. ■



Tech and privacy

The Cambridge Analytica bill

SAN FRANCISCO

Congress is trying to create a federal privacy law for the fourth time in 45 years

CONGRESS FIRST tried to pass a privacy law in 1974. Lawmakers succeeded, but lobbying from financial services companies ensured that it applied only to the government, not private firms. Impetus to regulate privacy in the private sector waxed and waned over the next 30 years, building with the first tech bubble, then evaporating in the horror of the 2001 attacks. In 2012, Barack Obama tried again and failed.

Almost half a century after their first effort, politicians are having a fourth go, triggered by the Cambridge Analytica scandal. Some have already offered their own bills, and work is now under way to knit all those into a bipartisan offering. Ranking Republicans and Democrats held two hearings on Capitol Hill this week with the explicit goal of informing the federal privacy bill. The discussion was familiar to privacy wonks—▶

► how transparent data collection should be, what limits there should be on it, how to avoid burdensome regulation—but the environment in which it took place suggests it might be fourth time lucky.

Big tech companies are on board, owing to a mixture of self-interest and a sincere feeling that something must be done. Their policy teams regularly meet the congressional staffers who are drawing up the legislation. A bill is expected to be introduced before the August recess, probably in the Republican-controlled Senate. What all sides do not yet agree on is what the bill should say.

The core controversy is over whether a new federal law should override what some states have already done. The disagreement hinges on California, which adopted a new privacy law last year which will go into effect in 2020 and is broadly aligned with European regulations. Republicans and tech companies want the federal law to supersede California's rules, replacing them with a something more permissive. Democrats want any federal law to match California's standard.

California is not the only state threatened by pre-emption. It would also kill a law in Illinois regulating the collection of biometrics. In Vermont, rules that regulate the opaque business of data-brokers would disappear. Rules that are in draft form in at least ten state legislatures would be wiped away. Those who oppose pre-emption see this as a step backwards, away from strong privacy rules. Those in favour think it is good to try to harmonise a complicated patchwork of state rules.

Including pre-emption in the federal bill presents a political problem, regardless of beliefs about the correct level of privacy regulation. Any federal law must pass through a House presided over by Nancy Pelosi, from California's 12th district. It is hard to imagine the House, which contains a powerful bloc of Californian Democrats, undermining the Speaker's state.

The regulations are not just a domestic concern. European courts, both national and supranational, are examining whether American regulation measures up to that in Europe. If it does not, that would mean that the personal data of Europeans cannot flow to America for processing, hurting American internet companies. A set of regulations which keeps Europe happy is therefore in the interests of both politicians and tech companies.

It seems likely that some common ground exists. There is broad agreement that a level regulatory playing field would be good for companies and citizens, while the need to keep the American data-processing market open to Europe is obvious. Even so, disagreements about just how sharp to make America's new privacy rules may yet derail their creation. ■



Teachers' activism

Civics 101

OAKLAND AND SAN FRANCISCO

California's teachers' strikes conceal a conflict between generations

I LIKE CATS, unicorns and peace, but I love my teacher!" declares one sign, with two rainbows, held by a young pupil at Crocker Highlands Elementary School in Oakland on a weekday morning. She should have been at school, but instead she joined her mother and thousands of Oakland's teachers outside City Hall. Oakland's teachers are asking for higher salaries, support staff and more. Teachers in nearby Sacramento may be next to put down chalk and pick up placards.

Such strikes have become a national phenomenon. Teachers in Los Angeles, Denver and West Virginia have gone on strike this year, after action in Arizona, Colorado, Kentucky, North Carolina and Oklahoma in 2018. Last year around 375,000 teachers and staff went on strike. They accounted for about three-quarters of the total number of American workers who downed tools. As a result, 2018 saw the highest number of workers involved in strikes since 1986.

The complaints differ by school district, but one common refrain on picket lines is that teachers are not paid enough for their hard work. The wage gap between teachers and similarly educated workers has certainly widened since the mid-1990s. In many states teachers are paid less than other public-sector employees, such as prison guards and police officers.

The financial crisis a decade ago caused some states to gut spending on education,

suppressing teachers' wages. Teachers in West Virginia and Oklahoma, where strikes have occurred, are among the worst-paid in the nation. In parts of California, where the average public-school teacher earns what might appear to be a plum salary of \$79,000, around a third higher than the national average, the cost of living is an animating issue. Many teachers struggle to live without room-shares and within an hour's commute of their schools.

A Supreme Court decision has also played a part. Unions are particularly intent on proving their value to members after *Janus v American Federation of State, County and Municipal Employees* deemed it illegal to compel union dues from public employees. The strikes have helped unions "re-establish their relevance for younger members" after the *Janus* case, says Andy Rotherham of Bellwether Education Partners, a non-profit.

Finally, the continued rise of charter schools is also fuelling protests. In 2016 around 6% of all American pupils attended a charter school, more than double the share in 2009. Along with private schools, charters are seen as responsible for declining enrolments, which deprive public-school districts of funds because they are paid per student. But the villainisation of charter schools is not the whole story. Behind the teachers' strikes is a broader angst and frustration with the status quo, according to one superintendent of a large school district that has weathered a strike.

The idea that school districts should quickly meet the demands of teachers may sound as uncontroversial as the rainbows and unicorns on the pupil's sign in Oakland. But in many instances settling with teachers will not address the long-term problems facing public schools.

Some school districts have been badly mismanaged. Oakland's has been somewhere between \$20m and \$30m in debt for the past 15 years and has not taken the necessary steps to bring its costs into line with declining enrolment. Three-quarters of pupils qualify for free or cheaper lunches, which they get when schools are open, and rely on free tutoring to prepare them for the upcoming SAT exams, making the strikes there particularly painful. The district operates nearly twice as many schools as pupil numbers justify, but teachers who are striking oppose efforts to close any and reduce costs. A report from a civil grand jury last year chastised the district for a "laundry list of errors and poor decisions contributing to the fiscal crisis." Settling the current strike by agreeing to salary increases and backing away from school closures would exacerbate the district's various problems.

Another issue that gets too little attention is the cost of retired teachers' pensions and health-care costs, which are rising in ►►

▶ many states, including California. In 2012 the state approved a 30% increase in income-tax rates, in part to fund schools more efficiently, but all the extra revenue went on pensions and health care for pensioners rather than on pupils or teachers' salaries, according to David Crane of Govern for California, a non-partisan political outfit. The state could enact some reforms. For example, California, which educates 12% of America's public-school pupils, chooses to subsidise health care for retired teachers and their families who could otherwise qualify for the Affordable Care Act (ACA) and Medicare. Eliminating that subsidy could save the state \$2.6bn, allowing it to pay teachers more. In the Los Angeles Unified School District alone, this change would translate into around \$10,000 more pay for every teacher, says Mr Crane.

Young teachers are probably unaware

that they are forgoing higher salaries to support pensions and benefits for their older peers, and it is not a topic that teachers tend to talk about. "The last thing unions want to introduce into the conversation is something their younger members would be pissed off about," explains Mr Rotherham of Bellwether.

Frustration with an underperforming system is not confined to schools. Unrest and dissatisfaction can be found in many corners of American life. But they risk eroding what could be a constructive conversation about how to reinvigorate public schools and do better by pupils. "My concern is that it's become a political war of us versus them, versus doing right by our kids," says Ted Lempert of Children Now, a non-profit. "We are breaking apart consensus and reframing the debate about education in a way that makes reforms harder." ■

say they are white evangelicals, while 26% of those aged 65 or older are white evangelical Protestants. Together with the decline in the share of whites who identify as Catholics, this has caused anxiety among some of the faithful that white Christian America is under threat.

The argument about how to restore lost greatness has been running for 40 years. In the late 1970s the Southern Baptist Convention (SBC), an umbrella organisation for evangelical churches, was roiled by a confrontation between modernisers, who were in charge of the organisation, and traditionalists, who blamed them for presiding over a levelling-off in church attendance. The traditionalists won, but on their watch the malaise has worsened. Nor are falling numbers the only problem: an exhaustive investigation by the *Houston Chronicle* and the *San Antonio Express-News* identified more than 250 church leaders who have been accused of sexually abusing people who worshipped at SBC churches.

Many churches remain committed to preaching conservative politics from the pulpit on Sundays. The SBC's leadership, however, has been critical of Mr Trump. Russell Moore, a theologian who heads its work on public policy, is among the president's most eloquent critics.

This may be too little, too late for a group of former evangelicals who are trying to organise "ex-vangelicals"—or "exvies"—into a nascent political movement. Christopher Stroop, a journalist, has emerged as a leader among the exvies. Mr Stroop was raised in a fundamentalist evangelical household, where he went to non-denominational Christian schools and was surrounded mostly by friends who shared his beliefs. In high-school, biology lessons about DNA would be interspersed with preaching from the teacher, and sometimes with documentaries on "flood geology" and the search for Noah's ark. "There was strong pressure to be a young-Earth creationist," Mr Stroop says. He also recalls a class field-trip during school hours to a prototype Tea Party convention. Mr Stroop says his education was "all about isolating children in the subculture so they'll grow up to be the culture warriors the church wants them to be."

He typifies a larger pattern. In a paper published in 2017 Paul Djupe, Jacob Neiheisel and Anand Sokhey, all political scientists, found that people stop attending church when they have intellectual disagreements with their religion and when they lose social attachments to their congregations. Since Americans have become yoked to their political tribe with an intensity that often rivals religious fervour, those with moderate political disagreements frequently find their faith hard to reconcile with their politics and end up leaving their churches. ■

Ex-evangelicals

Flocks away

AUSTIN

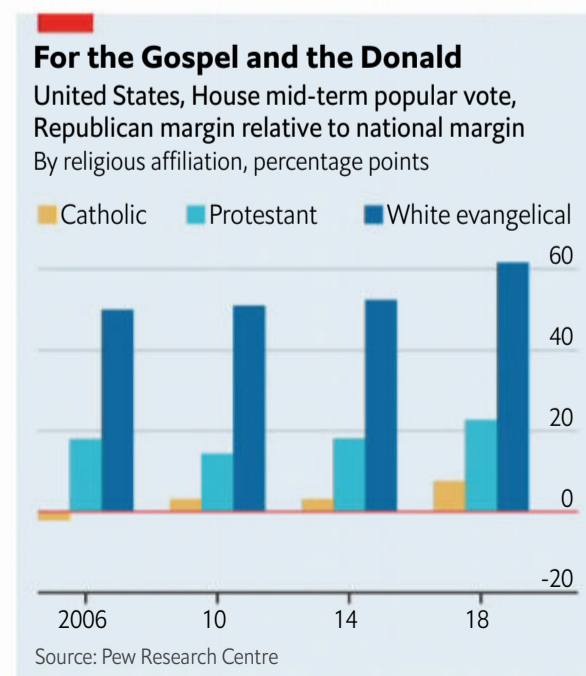
The politicisation of white evangelical Christianity is hurting it

ARMS OUTSTRETCHED, the congregation at Hyde Park Baptist Church welcomed the Holy Spirit into their two-storey, stained-glass sanctuary. Along with the spirit came their pastor, Kie Bowman, accompanied by a full jazz orchestra. He summed up his sermon as: "to impact culture, love the Bible". But interspersed with this joyful invitation to share the Gospel were some spiky remarks, such his assertion that "you have to be convinced by the media that God does not exist." Such has been the transformation of white evangelical Christianity over the past half-century. But conservative politics in church have also caused a backlash.

Mr Bowman's statements reflect the battle that evangelical denominations have been fighting since the 1980s, when evangelical leaders began to move past discussions about morality and embraced conservative rhetoric about individual rights. Andrew Lewis, author of a book about this phenomenon called "The Rights Turn", says that Republicans and conservative Christians now have a shared approach to the law. As examples, he points to the use of free-speech rights to defend anti-abortion legislation and to argue against regulating campaign finance. That fusion seemed complete in 2016, when 81% of white born-again Christians voted for Donald Trump, according to data from the Democracy Fund Voter Study Group.

Yet this coupling seems to be hurting

membership of evangelical churches. Several polling firms have detected a decline in the share of Americans who describe themselves as white evangelicals over the past decade. The Pew Research Centre found a two-percentage-point drop from 2007 to 2012. PRRI found a six-percentage-point drop in the share of the population that identify as white evangelicals, from 23% in 2006 to 17% in 2016. ABC and the *Washington Post* found a still larger decline of eight percentage points, larger than the drop among mainline white Protestants. The problem is partly generational: in the PRRI data just 8% of young Americans aged 18-29



Lexington | Imagine there's no politics

It's easy if you try. But it's not a good way for Democrats to devise badly needed climate policy



NOW INTO its 26th season, the self-parody act that is the Republican Party on global warming is still playing to a loyal audience. With the nomination of Kelly Knight Craft to be ambassador to the UN, Americans can expect to be represented in the world's premier climate-policy forum by the wife of a billionaire coal magnate and Trump donor who claims to admire “both sides of the science” on global warming. Reports meanwhile emerged of a White House scheme to commission a panel of sceptics to attack the government's own National Climate Assessment. The latest iteration of this quadrennial review of America's changing climate, launched in 1990 by George H.W. Bush—the last Republican leader to play it straight on global warming—irked Donald Trump. Released in November, while California was battling its worst wildfire of modern times, it did not support the president's claim that insufficient “raking” of the forest floor was to blame.

No wonder many Democrats want to cut the Republicans out of climate policymaking altogether. Their two past attempts to curb greenhouse-gas emissions—a legislative effort in 2009 and the regulatory steps taken by Barack Obama—both foundered on Republican resistance. The first, the Waxman-Markey cap-and-trade bill, passed the House but was not taken up in the Senate after the Democrats lost their 60-vote majority there. The second is being dismantled by the fossil-fuel lobbyists Mr Trump hired to run the Environmental Protection Agency. The Democrats' nascent third effort, the Green New Deal (GND) championed by Representative Alexandria Ocasio-Cortez and endorsed by Kamala Harris and other presidential hopefuls, is therefore designed differently. It is intended to have the durability of legislation, but to be so broadly appealing to Democrats it can be passed without Republican support.

Thus its main innovation: targeting climate change and social inequities together. A blueprint released by Ms Ocasio-Cortez and Senator Ed Markey, one of the architects of the 2009 bill, promises universal health care and affordable housing, as well as extremely steep emissions cuts. This has been viewed as a naive effort to cure all the ills of modern capitalism at a stroke. Yet it is also intended, in theory more pragmatically, to expand Democratic support for emissions cuts by harnessing the two main parts of the party's coalition: college graduates who want climate-change policy and

blue-collar workers whose jobs are threatened by it. Resistance from those workers' representatives—for example Joe Manchin of West Virginia, the ranking Democrat on the Senate energy committee—was another reason why Waxman-Markey failed. The social policy in the GND blueprint is designed to win them over.

The enthusiasm the green deal has generated, from the climate activists who invaded Mitch McConnell's Senate office this week as well as the 2020 contenders, is testament to more than Ms Ocasio-Cortez's salesmanship. Its emissions targets, which would include decarbonising electricity generation within a decade, are at once vastly ambitious and merely commensurate with what scientists recommend. That makes it hard for anyone concerned about global warming to gainsay the proposal. It has a powerful moral allure. Yet the gravity of climate change also means the world cannot afford another failed effort by America to curb its tide of carbon pollution. And the green deal appears to have no chance of success.

Only a unified Democratic government—with a filibuster-proof majority or no filibuster to worry about—could entertain passing it. This is not simply because the climate-related proposals in Ms Ocasio-Cortez's draft are left-wing. In fact, by allowing a possible role for carbon pricing, nuclear power and carbon capture-and-storage, they are more moderate than many activists would like. A bigger problem is that by lumping together climate and social policy the proposal appears to confirm one of the main Republican arguments for inaction on global warming: a contention that Democrats are using the issue as a smokescreen for a left-wing economic agenda. This has hitherto been an exaggeration; Democrats have been pushing carbon pricing, a market-based solution, for a decade. Yet the green deal provides compelling evidence for it, which makes the prospects of Republicans returning to sanity on global warming even more remote.

It might therefore seem sensible that the deal's architects are only counting on Democratic votes. Yet moderates such as Mr Manchin—who says the GND is “not a deal, it's a dream”—seem unlikely to support it. The proposal is already being used to attack such Democrats in rural states with lots of extractive industries. Opposing it would offer them a relatively low-cost opportunity to define themselves against their party. It is therefore hard to imagine anything resembling Ms Ocasio-Cortez's blueprint passing into law. And if it did, Republicans would unite to overturn it, just as they did in response to Mr Obama's much less provocative health-care reform. The inconvenient truth for Democrats is that they cannot impose their policies by legislative fiat any more than Mr Obama could do so by executive order.

Greenhorn greens

It is a tough conclusion, because the prospects for bipartisan climate action are modest at best. And it would be hard to maintain enthusiasm on the left for the incremental steps, such as limited carbon pricing, such action might entail. While privately conceding the unreality of the green deal, some Democratic lawmakers therefore view it as a powerful slogan, to be replaced by more achievable policy in due course. That could make tactical sense, if it helps ensure the next Democratic president prioritises the issue. But it risks underestimating how hard it will be to pass any serious climate policy. Opposition politicians who duck the painstaking work of developing credible policy are liable to come to power with no serious plan—as the Republicans demonstrated in their opposition to Obamacare. It is an example Ms Ocasio-Cortez and her supporters are closer to emulating than they think. ■



Venezuela (1)

Congratulations, you kept out the food and medical supplies

CARACAS AND CÚCUTA

After failing to get aid into the country, the opposition to Nicolás Maduro's dictatorship ponders its next steps

BY ABOUT 11AM on February 23rd, four lorries, each loaded with 20 tonnes of food, medical supplies and toiletries, had arrived at the Simón Bolívar and Francisco de Paula Santander bridges, which link the Colombian border town of Cúcuta with Venezuela. At the Simón Bolívar crossing, used by thousands of people on a normal day, Colombian police opened a metal barricade they had erected. Venezuelans gathered on the Colombian side poured through, hoping to clear a passage for the vital supplies to enter Venezuela. Chanting "liberty", they headed towards Venezuelan riot police, who had arrayed themselves behind clear plastic shields. Minutes later, the first tear-gas grenade fell. The crowds fled. Many were hurt in the stampede.

This was the first skirmish in a day of pain and frustration for Venezuelans who are trying to relieve their country's humanitarian crisis and topple the dictatorship that caused it. By the end of it nearly 300 people had been injured on the Colombian border by tear gas and rubber bullets fired by Venezuelan security forces and by live ammunition from paramilitary *colectivos*. On the border with Brazil, where more aid awaits entry into Venezuela, four peo-

ple were killed over two days. Almost no supplies got through.

Nicolás Maduro, Venezuela's president, hailed this success in repelling an incursion of powdered milk, surgical gloves and other necessities as a "victory". He celebrated by dancing salsa with his wife at a rally in Caracas. For Juan Guaidó, whose claim to be the real (interim) president of Venezuela is recognised by the opposition-controlled legislature and by 52 democracies, it was a setback. February 23rd, he had promised, would be a day of deliverance "by air, sea and land".

Watched by the world's media, Mr Guaidó's operation should have shamed Mr Maduro's regime. But the despot and his massively corrupt cronies blame everyone but themselves for Venezuela's plight. And although footage of food and medical supplies turned away cannot have improved Mr Maduro's dismal reputation at home, there is not yet much sign that the armed

forces or paramilitaries are abandoning him. Venezuelans yearning for an end to his rule are gloomy. "Maybe I am impatient," mused Alexandra Flores, a lawyer in Caracas, "but I fear this [attempt to overthrow the regime] could fizzle out."

Mr Guaidó and his international backers are striving to ensure that does not happen. Their first response to the setback was a startling one. On the evening of February 23rd Mr Guaidó tweeted that he would "formally propose to the international community that we must keep all options open to liberate the homeland". This echoes President Donald Trump's warnings that the United States could use armed force against Mr Maduro's regime. Marco Rubio, an American senator, tweeted that the Venezuelan regime's brutality towards the aid carriers "opened the door to various potential multilateral actions not on the table just 24 hours ago". He accompanied this with images of 20th- and 21st-century dictators who thought they were invulnerable but were toppled and killed or jailed.

An American military intervention is highly unlikely, unless the Maduro regime does something insane like attacking the US embassy (see next article). The Trump administration is not seriously preparing for one. On February 25th Mr Guaidó joined a meeting in Bogotá, Colombia's capital, of the 14-member Lima group, countries that are seeking a solution to Venezuela's crisis. All except a few (including Mexico, which did not attend) recognise him as Venezuela's interim president. They condemned the regime's thuggery and asked the International Criminal Court to investigate ►

→ Also in this section

46 Invading Venezuela

47 Bello: Peru's splendours

▶ whether it constitutes a breach of human rights. But they ruled out military action.

That leaves open the question of just what Mr Guaidó's backers are prepared to do to end Venezuela's suffering. The plan, said Mike Pence, Mr Trump's vice-president, who was at the meeting in Bogotá, is "to continue to isolate Maduro economically and diplomatically until democracy is restored". The United States Treasury widened sanctions on members of the regime to four more people, all state governors. They include Rafael Lacava, governor of Carabobo. He speaks fluent English and played a role in the release of Joshua Holt, an American, from a Venezuelan prison last year. During that negotiation he spoke to Mr Trump by telephone. The sanctions against Mr Lacava suggest that the United States has no further interest in talking to the regime.

On the sidelines of a UN Security Council meeting to discuss the crisis, Elliott Abrams, the Trump administration's point man for Venezuela, promised more sanctions. These could bar non-American companies from trading with Venezuela. But Mr Trump has already imposed the toughest sanction at his disposal, denying the Maduro regime and PDVSA, the state oil company, access to revenue from sales to the United States of hydrocarbons, Venezuela's most important export by far. Venezuela is trying to sell its oil to other countries, such as India. Tankers holding 10m barrels of it, worth about \$500m, are waiting for customers off Venezuela's coast, according to Kpler, an energy-research firm.

Mr Guaidó and his allies hope such pressure will cause enough defections from the armed forces to topple the regime, or to force some of its leaders to break with Mr Maduro and negotiate with the opposition a transition back to democracy.

More than 400 members of the Venezuelan armed forces and police have deserted in recent days and crossed into Colombia, according to Colombia's immigration agency. Many crossed the bridges they had been patrolling and pledged their loyalty to Mr Guaidó's government. One brought his baby daughter, another his drug-sniffer dog. "It's repress, repress, repress, I can't do it anymore," said one exhausted national-guard sergeant who had just sprinted across the dried-up Táchira river.

But most of the men in uniform remain at their posts. The families of deserters have reportedly been tortured or raped—a powerful deterrent. The sergeant said that members of the paramilitary *colectivos* were issuing the orders in towns along the border. They stopped a protest by inhabitants of San Antonio de Táchira by forcing them to stay in their homes. "You have just seen a little taste of what we are ready to do," crowed Venezuela's vice-president, Delcy Rodríguez.

Mr Guaidó's immediate challenge is to return to Venezuela, after leaving the country in defiance of a travel ban. (He sneaked out via back roads, with help from sympathisers in the army, he says.) Presidents in exile "achieve little", Mr Guaidó notes. Mr Maduro has threatened to jail him. If any harm comes to him, "it would be the last decision Mr Maduro would make", a senior American official told journalists. ■

Venezuela (2)

A Caracas idea

WASHINGTON, DC

Using force to oust Nicolás Maduro would be horribly risky

IN PAST DECADES the United States has used force to change governments in the Caribbean basin. Nowadays the country is trying to extricate itself from wars, not get into a new one. Yet President Donald Trump has repeatedly insisted that "all options are on the table" to remove Venezuela's dictator, Nicolás Maduro, from power. What if he means it? Experts think a military intervention would be unwise, for many reasons. Some spoke on condition of anonymity.

A full-scale shock-and-awe invasion would require a formidable logistical and operational effort. The intervention in Panama in 1989, which removed from power Manuel Noriega, a drug-running dictator, involved nearly 26,000 troops, many of whom were already in the country. It was quickly over.

But Panama is a minnow. Venezuela is a mountainous country twice the size of Iraq. It has large cities. In such conditions, the United States' high-tech weaponry confers less of an advantage. Each of the pre-

sumed objectives—detaining Mr Maduro, installing a new government, organising elections and allowing in aid—would be a big task, involving large numbers of boots on the ground.

No doubt the superpower would defeat Venezuela's 130,000-strong armed forces. "The Venezuelan military would disintegrate very quickly," says Evan Ellis of the US Army War College. Yet that would merely bring on a second problem. A new government would need that same army to maintain order. Although many ordinary Venezuelans would welcome an invasion, others would resist. Thousands of gangs and militias could create chaos. "Some of them would fight for Maduro, some would fight for Venezuela, but many more would take up arms to repel a Yankee invasion," notes an analyst at a think-tank that is connected to the Pentagon. Francisco Toro, founding editor of Caracas Chronicles, an independent news site, warns of the danger of creating "Libya in the Caribbean".

Trouble could spill over into Colombia, especially if that country participated in a military operation. Even after making peace with the FARC guerrilla group in 2016 Colombia is fighting small insurgencies. Outlaw groups include the ELN, which shelters in Venezuela. Hence a third risk: starting a regional conflict. "I don't think there's a military solution to this that doesn't create the likely situation of a protracted regional war," says Cynthia Arnsion of the Wilson Centre in Washington.

A fourth complication is that any intervention has to reckon with the role of countries that back Mr Maduro's regime, both on the ground and at the United Nations. Thousands of Cubans, including military advisers and intelligence officers but also doctors, are in the country. Luis Almagro, the secretary-general of the Organisation of American States, likens them to an "occupation army". Russia and, more cautiously, China support Mr Maduro; both ▶▶



If you desert, your families will be tortured

▶ are able to veto UN backing for a military intervention, which would anyway be hugely controversial.

If a major American intervention is so problematic, what about a minor one? Perhaps willing partners could put the boots on the ground, limiting the United States' role to providing logistical and other support. That, however, would not mean a smaller operation or an easier one. A less direct approach would be to arm anti-Maduro groups. But memories of the Contras in Nicaragua should quickly squash that temptation. More plausibly, intervention

could be confined to securing delivery of humanitarian aid, through air drops and safe zones along the border. "That would be the only sort of military intervention that would be remotely feasible given history and current circumstances," says Craig Deare, who briefly co-ordinated Venezuela policy at the National Security Council in 2017. Yet even that might require significant muscle, including the destruction of Venezuela's air defences and aircraft.

All this explains why, for all the talk about what may be on the table, it does not yet appear to be an imminent plan. "I can

dispel the theory that there is a military option for Venezuela," says a defence official in Washington. She denies that staff are being asked to draw up plans.

That could change if Mr Maduro hangs on for months despite a deepening humanitarian disaster and a mass exodus of refugees. American officials warn that violence against Americans (which was what triggered the intervention in Panama) would change the situation. So might any attempt to harm Mr Guaidó or his family. A military option, for all its difficulties, cannot quite be ruled out. ■

Bello Uncovering Mochica splendours



Peru fails to make the most of its recent archaeological finds

ONE NIGHT in 1987 the police woke Walter Alva, a Peruvian archaeologist, and invited him to come to inspect some stolen gold objects. The tip would lead Mr Alva to discover the intact tomb of a ruler of the Mochica (or Moche) civilisation, whom he dubbed the Lord of Sipán. It held the lord's full regalia of gold breastplates and crowns, exquisite nose- and ear-pieces and a unique necklace of giant gold and silver peanuts.

It was the start of an archaeological revolution in northern Peru. Since then Mochica temples, built from mud reinforced with gravel and shells, have been unearthed at Huaca de la Luna, near the colonial city of Trujillo. They are decorated with embossed and colourfully painted friezes of fanged warlord deities and bound prisoners. In 2005 at a site called El Brujo, Régulo Franco, another archaeologist, found a tomb almost as rich as that of Sipán, but of a woman, now known as the Lady of Cao.

These discoveries underline that ancient Peru was one of the half-dozen cradles of civilisation. It remains a creative place, as its gastronomic boom attests. But modern Peru's dysfunctions are preventing it from reaping the full benefit of the new finds.

The Mochicas thrived from around 100 to 600AD by irrigating the valleys of the coastal desert. Theirs was perhaps the most artistic of Peru's ancient cultures, far more so than the much later Inca empire. Apart from their metallurgical prowess, they were skilled potters, producing sculpted vessels and stirrup-spouted jars on which they recorded their likenesses, lives, animal deities and religious ceremonies. Thanks to the recent tomb discoveries, it is now clear that some of these representations accurately portrayed priests and rulers.

Although the pots and friezes describe warfare and human sacrifice, archaeologists now believe these were rituals to placate the deities of a people acutely vulnerable to drought and flood. "There are no Mochica fortresses, there are temples," says Ricardo Morales of the University of Trujillo, who directs the Huaca de la Luna site. Recent scholarship also suggests that there was no Mochica super-state, but rather a collection of local lordships in each valley, linked by a common religious ideology and iconography. Finding the Lady of Cao "changed our conception of power in ancient Peru", and the role of women within it, notes Mr Franco.

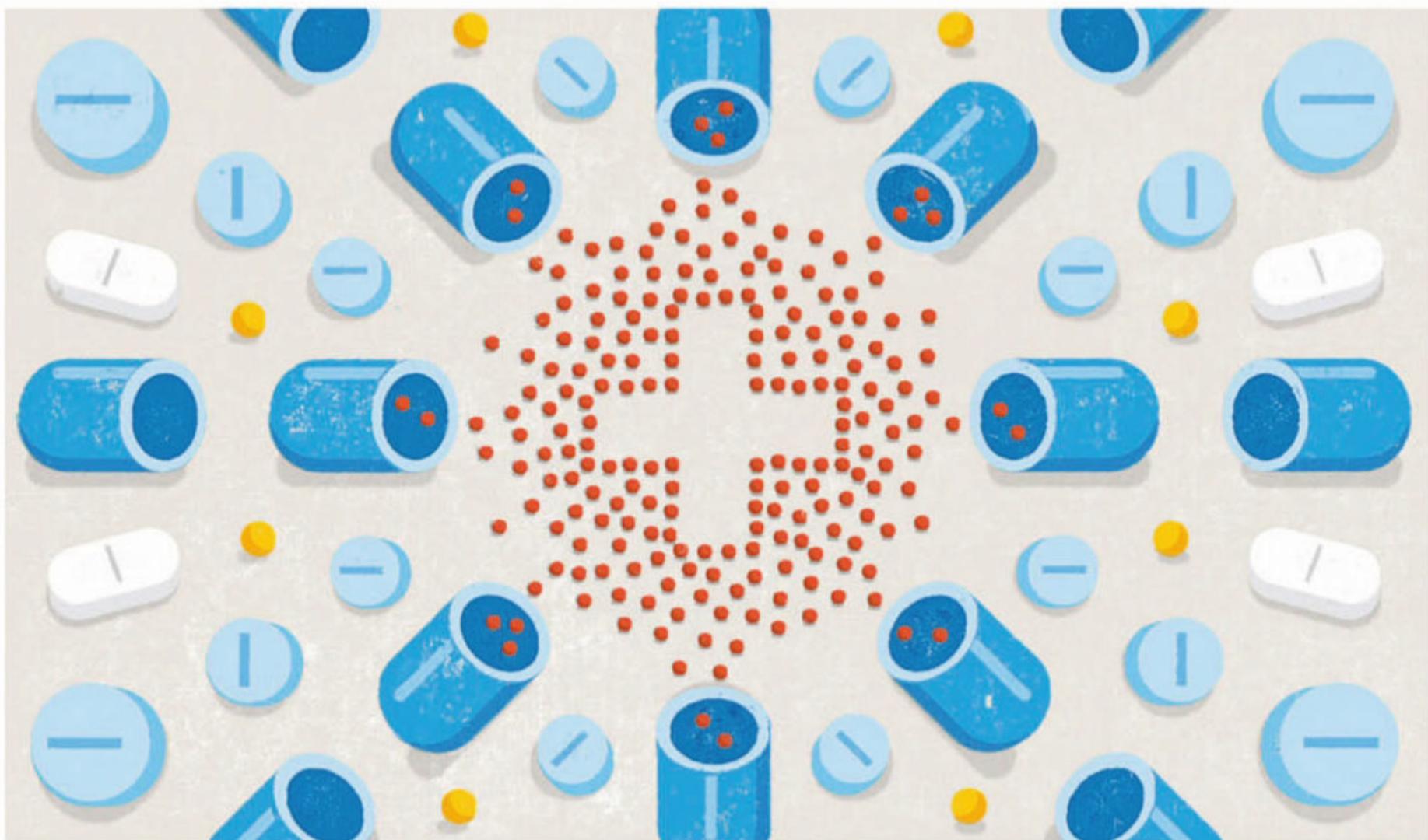
The Sipán treasures are displayed at a superb museum, directed by Mr Alva, in a nearby town. There are museums on site at Huaca de la Luna and El Brujo, both run by non-profit foundations. They represent a kind of miracle. For decades locals lived from tomb-robbing, and Peru's treasures were melted down or sold on an international black market. The country has around 100,000 archaeological sites. It is impossible to police them all.



Although funds are always tight, the archaeologists are trying to win over the locals. Mr Morales says he sees Huaca de la Luna as a "development pole". His project employs 38 staff, while another 98 sell handicrafts to visitors. Peru is developing archaeological skills. Whereas many of the Sipán artefacts were sent to Germany for conservation, this was done on site for the Lady of Cao. The archaeologists say that the biggest impact of their discoveries is on Peruvians' self-esteem. "There wasn't a native hero," says Mr Alva. Now there are several. At the village next to El Brujo, DNA testing is under way to see whether the residents are descended from the Lady of Cao.

Visitor numbers are rising, but remain low. The Sipán museum received 198,000 last year, mostly Peruvians. Despite recent decentralisation, Peru revolves around Lima. The government promotes the Inca sites of Cusco and Machu Picchu, although they are saturated with tourists (1.4m went to Machu Picchu in 2017). Roads in the north are vulnerable to the El Niño flooding that helped to end the Mochica civilisation. Because of a damaged bridge, the fastest bus between Trujillo and Chiclayo, the two main cities, takes almost five hours to cover 200km (125 miles). There are few good hotels. Official incompetence leaves roadsides strewn with rubbish.

Yet from the top of the temple mount at El Brujo the view is breathtaking: the Pacific breakers, the desert and the sugar-cane fields that stretch to the Andean foothills. Turkey vultures glide overhead. The archaeologists have revealed that what once seemed to be desert hills were the ramped, decorated and tomb-filled temples of one of the world's most sophisticated early civilisations. They deserve to be far better known.



Medicine

A higher purpose

Many off-patent drugs have promising new uses; but more incentive is needed to invest in them

TOWARDS THE end of 2014 a 66-year-old British man named Alistair had a seizure. A scan revealed shocking news. He had an inoperable brain tumour—a glioblastoma—that was likely to kill him in a few years. Soon afterwards, he read a newspaper article suggesting that a cocktail of cheap, everyday drugs, chosen for their anti-cancer effects, had helped a patient with the same disease. His doctors were unimpressed but said: “We can’t stop you.”

Four years on Alistair is still taking this drug regimen alongside the “standard-of-care” treatment. The drug cocktail is prescribed by Care Oncology, a private clinic in London, which recommends a statin (a cholesterol-lowering drug), metformin (used to treat type-2 diabetes), doxycycline (an antibiotic) and mebendazole (an anti-worming agent). These may sound radical, but are actually safe, cheap, generic medicines with evidence of some anti-cancer effects. Nonetheless, their labels do not say they treat glioblastoma—nor any other cancer for that matter.

This lack of clinical interest is not un-

usual. There is a huge untapped medicine chest of generic drugs with unexploited uses. Originally approved for one disease, these drugs went off-patent and now show promise in other diseases. Thalidomide, a morning-sickness drug forever linked with scandal and disaster, found new uses in leprosy and a blood cancer. An acne medicine is now part of an effective treatment for a form of leukaemia. Viagra, famously, came from failed work in angina.

The scale of the opportunity for “drug repurposing” is vast. Bruce Bloom, boss of Cures Within Reach, an American repurposing charity, says 9,000 generic drugs have been approved. Pan Pantziarka, of the Anticancer Fund, another charity, says his group has found evidence in almost 260 non-cancer drugs of anti-cancer activity. Most have lost patent protection. The science that has piqued interest in these drugs comes from pre-clinical lab work in animals, case reports, small clinical trials and large-scale observational studies.

Increasingly, large-scale screening studies are plucking options from obli-

on. After screening thousands of approved drugs, the National Institutes of Health (NIH), an American research agency, identified 25 molecules that might fight drug-resistant bacteria, half of which are already approved drugs. The California Institute for Biomedical Research in San Diego has a library of 12,000 drug compounds it is testing against disease-causing pathogens. Two drugs are in trials as a result: an anti-rheumatic treatment called auranofin for tuberculosis; and clofazimine, a leprosy drug, to treat the parasite *Cryptosporidium*.

Drugs like these—off-patent, cheap and already approved—are relatively quick to develop to treat new diseases. New molecular entities can cost hundreds of millions of dollars to test, and safety and toxicity problems mean that 45% of drugs fail clinical trials. Repurposed drugs, with well-established safety profiles, can save about five to seven years in development time. Approval rates are higher, and some think overall costs are 60% of those of new drugs.

Multiple choice

Interest in drug repurposing has been rising, particularly for medicines that could treat neglected diseases in poor countries, and rare diseases, cancer and mental health. A recent study in *JAMA Psychiatry* said that statins, metformin and blood-pressure drugs had potential for treating mental illnesses such as schizophrenia and bipolar disorder. Minocycline, an antibiotic, is already being tested as a treat- ▶

ment for autism. Ammar Al-Chalabi, a neurologist at Kings College, London, wants to repurpose Triumeq, an HIV drug, to fight motor neurone disease.

There is a problem, however. Katherine Arline of Shepherd Therapeutics, a biotech firm that works in rare cancers, says that, because the costs are high and may not be recouped, firms have little incentive to run clinical trials on generic drugs. Once the costs of testing and registering have been paid, the lack of patent protection means that any firm can make the drug. Some describe generics as “financial orphans”.

One approach is to change the generic drug to create something patentable. This is how the American drug firm, Johnson & Johnson (J&J), approached ketamine, an anaesthetic with a stack of evidence to support its use in treatment-resistant depression. J&J tweaked the molecule to create a variant that could also be inhaled. Reformulation is costly and risks reducing the efficacy of the drug. But J&J seems likely to receive approval from the Food and Drug Administration, the FDA.

For years, like many off-label medicines, ketamine has been a valuable but hard-to-obtain therapy. This has driven the growth of ketamine clinics in America and Europe. In Britain Oxford Health, a unit within the National Health Service (NHS), will provide it. But the NHS as a whole does not cover it because it is not approved for this use, so patients must pay £795 (\$1,058) for three infusions; J&J’s esketamine is likely to be far more costly.

Several issues dog reusing generic medicines in new indications. Mr Bloom says that, in his experience, between one-third and a half of patients are loth to use drugs outside the current standard of care—even if they have a disease they know is going to kill them. And even if doctors might be willing in principle to prescribe an off-label drug, many feel unable to do so because of worries about their legal liability should something go wrong. Or there may be disputes over whether public health services or insurers will pay for drugs that have not been approved for that disease.

Nonetheless, many non-profit groups see promise in supporting trials into drug repurposing. Epidemiological data can offer enticing leads. An insurance database in Taiwan shows a 76% reduction in the risk of tuberculosis among diabetic patients on metformin, and progressively larger protective effects with higher cumulative doses. However, Udai Banerji, a researcher at the Institute of Cancer Research in London, warns that randomised clinical trials are necessary to prove definitively the value of a drug to treat a new disease.

Trials are costly, but the benefits can be huge. The Drugs for Neglected Diseases Initiative, a Swiss non-profit research group, supported R&D into fexinidazole, which

was abandoned by a pharma firm at an early stage but was then found to show anti-parasitic qualities. This January, after years of work, it was approved for sleeping sickness in the Democratic Republic of Congo. It is the first oral medicine for the disease, and works for all stages of it.

When it comes to cancer, some of the most promising generic pills are already well-known. Cancer Research UK, a charity, is testing aspirin to see if it can stop cancer recurring; metformin in a large prostate-cancer trial; and an anti-fungal medication to treat bowel cancer. The Anticancer Fund in Brussels has high hopes for propranolol in treating angiosarcoma—cancers of the inner lining of blood vessels—and for pancreatic cancer. Propranolol is a generic 1960s beta-blocker used for a wide range of ailments such as hypertension, anxiety and migraine. If approved for cancer, its price would be negligible compared with the tens of thousands of dollars a month



normally charged for cancer medicines. Mr Banerji estimates that one cancer drug in five that goes off-patent is likely to have uses in treating other cancers. It is “almost free money”, he says.

The Anticancer Fund believes that the path to wider uptake of repurposed drugs is through approval and relabelling by drug regulators for new treatments. Although difficult and expensive, Mr Pantziarka says it unleashes a cascade of important events. When a regulator licenses a drug, clinical guidelines are updated, drug formularies are changed, reimbursement should follow more smoothly and clinicians gain experience using it. In America Mr Bloom agrees that relabelling will encourage the usage of repurposed drugs.

Money, though, is a crucial constraint. Even governments keen to pump cash into drug development prioritise drugs with patents. Mr Pantziarka says many official funding schemes, such as the EU’s Horizon

2020 programme, want projects that hold intellectual property. In America the National Centre for Advancing Translational Sciences will support research to help drug companies repurpose molecules for which they hold patents.

Finance is not the only obstacle. Only the makers or original developers of a drug are permitted to adjust its label. Sanofi, based in Paris, was the firm that requested regulatory review of fexinidazole for sleeping sickness—although the R&D was a charitable effort. But drug firms are not obliged to support non-commercial efforts to repurpose drugs. And outside the industry it is hard to find the legal expertise to manage the necessary paperwork.

Some of these concerns are under review by an expert group on repurposing within the European Commission. It is looking at how regulatory changes, as well as legal and financial support, could support repurposing by third parties such as charities and foundations. The Anticancer Fund wants the regulator to be able to evaluate evidence on drugs that has been submitted by third parties such as itself.

As non-profits make headway in repurposing, corporate interest may be rising. Mr Bloom says that ten years ago not a single pharma company would have anything to do with his charity. Today he receives calls from at least two or three small- to mid-sized firms every month saying they are interested. In terms of achieving new treatment options, this is good news. But it will not bring cheaper medicines in areas traditionally neglected by the drug industry. Firms will focus on finding ways to patent the new uses—through reformulation or new combinations of substances—and charge high prices for the finished product.

If governments want cheaper drugs, non-profits will need financial incentives and a helpful regulatory framework. Would-be repurposers have come up with some suggestions. They include making regulators give free advice and waive approval fees, and a public fund to support repurposing. Another idea is a “social-impact bond”—backed by private investors funding a range of drug trials for diseases that cost public-health services a lot of money to treat. When drugs are approved, investors are paid back by the public health service, which makes savings by using the newly approved generic drugs.

Patiently waiting

The slow pace of change leaves patients like Alistair stranded. Care Oncology says it will publish results from its glioblastoma patients this spring. Though welcome, this will fall short of the gold-standard trial evidence needed to register a drug. The treatment will be left in limbo. And patients will be left to wonder why governments fail to see the purpose of repurposing drugs. ■



Food companies

An accident with the ketchup

NEW YORK

The food industry's woes stretch beyond 3G and Kraft Heinz

THIS WAS supposed to be the quarter that Kraft Heinz showed America's huge, struggling food companies a new model for success. A merger in 2015 had joined two of the world's most iconic food makers. Backed by 3G Capital, a private-equity firm, the new group slashed costs at a pace that made rivals shudder and investors swoon. After a failed bid in 2017 for Unilever, an Anglo-Dutch giant, Kraft Heinz set out to prove it could not just cut fat but boost sales on its own. Bernardo Hees, the company's boss, pointed cheerfully to new products, including Heinz MayoChup and something called Just Crack an Egg. The company was on the path to "sustainable, profitable growth", he declared in November. Unfortunately, it wasn't.

On February 21st Kraft Heinz announced a staggering \$15bn impairment, a dividend cut of more than 30% and an inquiry into its procurement by the Securities and Exchange Commission (SEC). Earnings calls are often sleepy affairs. This one was a nightmare. Some of 3G's long-time critics are now clucking with satisfaction. Others fear 3G is tarnishing American treasures such as Kraft Macaroni and Cheese and Warren Buffett, who partnered

with 3G to combine Heinz and Kraft and last year lost nearly \$3bn on the deal. Yet dramatic as Kraft Heinz's decline may seem, 3G's impact and the food industry's problems extend far beyond it.

While its founders are Brazilian, 3G's buyout business is based in Manhattan. (Its most famous founder, Jorge Paulo Lemann, lives in Switzerland.) Unlike many big private-equity firms, 3G's main investors are not pension funds but family offices and individuals, including its partners. It does not have a wide portfolio, but backs just two companies: Kraft Heinz and Restaurant Brands International (RBI). Blackstone, a private-equity firm based a few blocks away, has nearly 2,500 staff. 3G's New York office has fewer than two dozen. Yet 3G's leaders have rocked the consumer industry like few investors in history.

All buyout firms are thirsty for deals, but 3G is uniquely parched. Before starting 3G, the firm's founders went on a beer-buying spree that culminated in 2016 with Anheuser-Busch InBev's purchase of SAB Miller for more than \$100bn. AB InBev, in which 3G's partners have a large stake, now brews more than one in four of the world's beers. Kraft Heinz counts Kraft cheese,

→ Also in this section

51 Analysing Buffettology

52 American drug prices

52 Goldminers and mergers

53 Bartleby: Conscious decoupling

54 Australia's coal worries

55 Schumpeter: Video gamers v couch potatoes

Heinz Ketchup, Jell-O, Philadelphia Cream Cheese and Oscar Mayer among its holdings. RBI includes Burger King, Popeyes, a fried-chicken restaurant, and Tim Hortons, a popular Canadian chain.

The way 3G runs companies is as notable as its appetite for buying them. In a practice called zero-based budgeting, managers must justify their expenses anew each year. The idea is to expand margins continuously. Overseeing this are managers chosen for their talent and work ethic, rather than mere experience. Daniel Schwartz, a 3G partner, became the chief executive of Burger King at 32. Mr Hees, a 3G partner who spent more than a decade working for a Latin American railroad, became Kraft Heinz's boss at 45. David Knopf, its chief financial officer, assumed his position in 2017 at 29.

To 3G's detractors, this all seems a bit mad. The company's strategy can be caricatured as follows: buy a big business, cut costs, repeat. This is not entirely fair. RBI has invested in marketing Burger King, winning prizes for its ads. AB InBev is working to boost its sales, for instance by pushing higher-priced beers and deploying best practices across its vast geography.

But buying big companies and slashing costs remain 3G's speciality. The risks of that strategy have become clear. RBI struggled to integrate franchisees at Tim Hortons. AB InBev last year said it would slash its dividend by half.

Nowhere has 3G's approach played out more tumultuously than at Kraft Heinz. America's food industry seemed the perfect target, with flabby companies and

powerful brands. Rare is the American who has not slurped Kool-Aid or downed an Oscar Mayer hot dog smothered in Heinz Ketchup. 3G reckoned the brands were strong enough to withstand large cuts. As it turns out, they were not.

This was not the same for AB InBev, which despite abysmal results in America, has little beer competition from in-store brands, is rarely sold online and faces ample growth abroad. Kraft Heinz's business, by comparison, is concentrated in America, where the food industry is being turned on its head. Its brands may be familiar, but that does not make them popular. Small firms are offering healthier options, taking advantage of cheap digital marketing and nimble contract manufacturers. The smallest 20,000 packaged goods players account for about half the industry's growth, according to Nielsen, a research firm.

Meanwhile, the rise of e-commerce and European discount grocers has put pressure on food retailers, which are in turn squeezing food companies. Stores led by Walmart are using extensive data to launch their own, increasingly sophisticated, low-cost private label goods, all the while pushing companies to lower their prices.

Things started well for Kraft Heinz. Its operating profit margin surged from 15% in 2014 to 24% in 2017. The first big setback came that year when Paul Polman, then Unilever's boss, rebuffed the company's \$143bn courtship. (Unilever, wisely, has devoted growing attention not to food but to beauty and household products.) Without his megadeal, Mr Hees turned to the basic work of lifting sales by pouring more money into advertising, product innovation and Kraft Heinz's sales force, but that ate into profits.

Equally striking is the company's new \$15bn impairment, a recognition that the value of giant brands has shrivelled. Mr Buffett says that he misjudged the worth of Kraft's stable of products (see next article). "The management team entered into this merger with the assumption they could cut the spending needed to maintain brands, let alone help them grow," says Robert Moskowitz of Credit Suisse, a bank. "The world changed on them—retailers changed and consumers changed."

Flawed though 3G's approach may seem, few food companies offer a successful alternative. Companies have tried to evolve by buying smaller firms, often at lofty prices and with mixed results. For instance Campbell Soup bought Bolthouse Farms, a maker of fruity drinks, in 2012, but is now trying to sell it. Last year it bought Snyder's-Lance, a pretzel and popcorn company, to boost its snacks business. Its debt level has risen accordingly. Indeed, shopping sprees at Campbell, ConAgra and General Mills have made those companies more levered than Kraft Heinz, according

to Sanford C Bernstein, a research firm.

Kraft Heinz now wants to shrink to grow: it plans divestments over the next 18 months to improve its balance sheet so it can make other, big deals. But the SEC's subpoena suggests that some internal processes might be unravelling as managers struggle to meet bold goals. The notion that big deals will save American food firms looks increasingly dubious. In 2014, before Heinz bought Kraft, the combined gross operating profits of the companies were about \$6.5bn. Now, due in part to some problems beyond its control, Kraft Heinz expects its 2019 profits to be about the same. ■

Berkshire Hathaway

Buffettology

What four decades of correspondence from the Oracle of Omaha reveal

WHEN FUTURE generations want to study today's capitalists, a good place to start would be Warren Buffett's annual letters to the shareholders of his firm, Berkshire Hathaway. Unfortunately, any economic insights from the world's most celebrated investor are woven in with lots of corny jokes about golf and fast food. Mindful that readers may not have the intestinal fortitude to stomach the Oracle of Omaha's unique sense of humour, *The Economist* has performed a textual analysis of 40 years' worth of Mr Buffett's letters to see what his language reveals about his thinking.

Berkshire has changed a lot. Having

grown considerably in size, Mr Buffett now speaks of "businesses", rather than "business". He has also taken to using the adjective "huge" (see chart). The letters track how the firm used to focus on buying small stakes in listed companies; it now buys large, established firms outright.

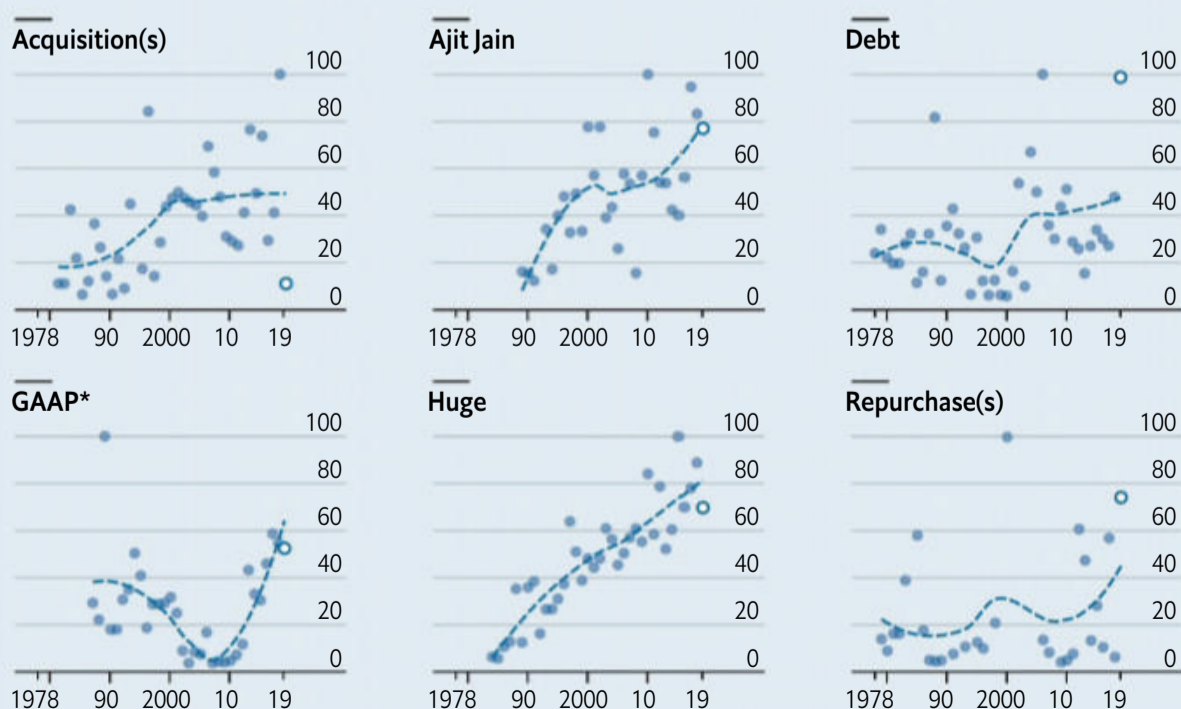
This shifting strategy has made it tough for outsiders to value Berkshire properly. On the face of it last year was a pretty dismal one for the company. Berkshire's book value per share rose by just 0.4%, its worst showing since the financial crisis. Earnings were just \$4bn, a meagre 1.2% return on equity.

Mr Buffett contends these figures partly reflect arcane accounting standards which do not cope well with his varied investments. A change in accounting principals forces him to put mark-to-market swings in the value of his \$173bn equity portfolio through his earnings, resulting in a \$20.6bn loss in 2018. By contrast, the book value of companies Mr Buffett owns outright, an increasing share of his portfolio, are carried at "far below" their current value, making it tough to assess Berkshire's performance by its annual change in book value. Mr Buffett has moaned about these dynamics a lot. References to America's Generally Accepted Accounting Principles (GAAP) have soared.

In other ways, though, Mr Buffett remains consistent. His philosophy has always been to look for cheap companies. He reckons that shares in firms with decent long-term prospects are too pricey at the moment. Instead, Berkshire will focus on buying back its own shares as well as investing in liquid stocks in 2019. Mentions of "repurchases" are on the rise but "acquisition" shows up just three times this year. ▶▶

Sage words

Frequency of words used by Warren Buffett in annual letters to share holders
100=maximum



Sources: Berkshire Hathaway; *The Economist*

*Generally Accepted Accounting Principles

Historically, Mr Buffett has been loth to borrow vast sums of money, arguing that “rational people don’t risk what they have and need for what they don’t have and don’t need”. He made an exception in 2013, when he invested in Kraft Heinz. This was one of Mr Buffett’s biggest mistakes. Shares in Kraft Heinz have plummeted. Berkshire has taken a hit of nearly \$3bn to its balance-sheet as a consequence. Mentions of “debt” spiked in this year’s letter.

The biggest question facing investors in Berkshire is who might replace Mr Buffett, now 88, as leader of the company. His partner, Charlie Munger, turned 95 in January. The two most obvious candidates are Ajit Jain, who is 67, and Greg Abel, 56. They were both appointed to Berkshire’s board last year and got 3 mentions each in Mr Buffett’s letter this year. Mr Buffett claims Berkshire’s blood flows in their veins. In years to come their letters might prove this to be the case—if so, Berkshire’s investors are likely to be happy. Especially if they skip the jokes. ■

American pharmaceuticals

The sharp end of the spear

NEW YORK

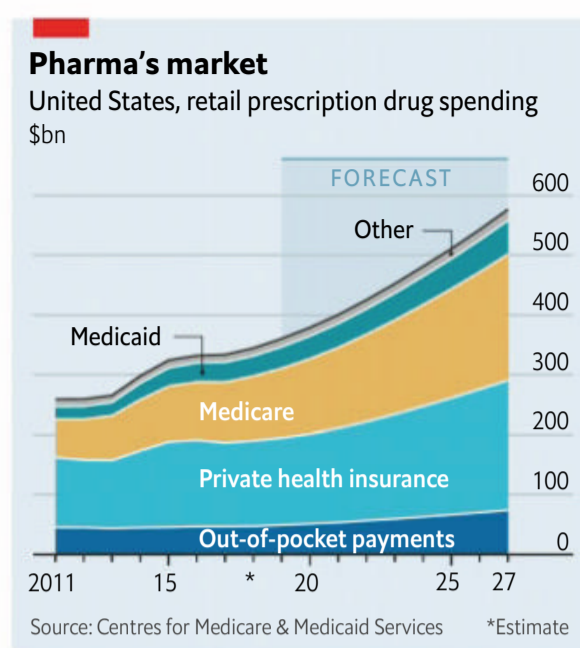
Global drugs firms are under pressure to rein in prices

“AS A LIFELONG farmer who raised hogs, cattle and sheep...[I] know when someone’s trying to pull the wool over my eyes.” So declared Senator Chuck Grassley, a Republican from Iowa, this week after the Senate Finance Committee, which he chairs, ordered top executives from seven global drugs firms to explain why American drug prices are the world’s highest. Ron Wyden, the senior Democrat on the committee, denounced the industry’s “two-faced scheming and profiteering”.

Big Pharma has been pilloried for decades but still flourished, not least because it keeps producing life-saving innovations needed by Americans, who are in aggregate getting fatter, older and sicker by the year. Still, the hearing marks a dangerous moment for the industry. Reforms may force big changes to a lucrative business model.

Anger is growing over rising drug costs (see chart). Insulin cost less than \$200 for a vial 15 years ago but sells for nearly \$1,500 today, according to one estimate. Such price spikes have led to bipartisan support in an otherwise rancorous Congress for measures to tame the industry.

The reform efforts could lead to three changes, reckons Benjamin Isgur of PwC, a consultancy. One involves pricing. In October the Trump administration unveiled an



“international pricing index” that would link the prices paid for a number of expensive drugs purchased by Medicare, a giant government health-care plan for the aged, to lower prices paid for those same drugs by other rich countries.

If implemented, this would force dramatic change. PwC estimates that it could lead to a loss of \$500m in annual revenues at each of five big drugs firms, and losses of between \$100m and \$500m a year each at six others. Knock-on effects could push down prices for drugs not purchased by Medicare. This week pharmaceutical executives noisily objected to the proposal, arguing that a sharp cut in profits would inevitably reduce their research capabilities.

The second push is for transparency. In America, Big Pharma sells its output mostly to pharmacy-benefit managers (PBMs), a handful of intermediaries who consolidate the demand generated by many insurers. PBMs force drugs firms to give huge secret rebates (part of which they pocket) on list prices in return for favourable treatment. Drugs bosses argued at the hearing that it was PBMs, and not their own greed, that led to higher list prices.

The Trump administration calls this a “hidden system of kickbacks to middlemen”. In January it proposed an end to the existing legal protection for confidential rebates between drugs firms and PBMs. Instead it wants discounts to go directly to consumers. Drugs bosses hailed this as a step towards transparency.

PBMs remain unbowed, arguing they are the most able to stand up to Big Pharma. Steve Miller, the chief clinical officer of Cigna Express Scripts, a recent union of a big insurer and a big PBM, thinks the Trump plan for transparency is flawed. PBMs have already tried to get insurers to pass on rebates to consumers, he says, but they prefer to use the savings (arising mostly from drugs used by the sickest) to cross-subsidise and lower the cost of typical insurance plans (to win more healthy customers). He advocates explicit caps on

“co-payments” required of patients.

The third, and more promising, area of likely reform involves boosting competition. Momentum is building for American regulators to catch up with Europe in promoting “biosimilars”, which are generic approximations of patented drugs. In America drugs firms sometimes use thickets of patents and payoffs to biosimilar upstarts so that a lucrative but ageing drug can be milked a few more years. At this week’s hearing Mr Wyden likened the tactics used by America’s AbbVie to protect Humira, a blockbuster drug with global sales of some \$20bn last year, from competition in America to “Gollum with his ring”.

Imperfect though these proposals are, they still pose a threat to Big Pharma. Observing that at no time in his career has he seen such bipartisan commitment to tackling drug pricing, Dr Miller insists: “Drugs are the sharp end of the spear.” Perhaps, but PBMs should take little comfort from the misery of Big Pharma. Congress is already planning to hold hearings on them, too. ■

Gold mining

An untimely proposal

OTTAWA

A big gold miner crashes a rival’s planned union

IN THE MOVIES weddings often feature a dramatic moment where the minister asks the congregation whether anyone objects to the union. On February 25th Barrick Gold performed the corporate equivalent of a spurned lover leaping to their feet mid-ceremony, offering \$18bn to buy American gold firm Newmont Mining before it could consummate its \$10bn takeover of Goldcorp, a Canadian one. Newmont was rushing into an “ill-conceived” merger and should stop to consider Barrick’s unsolicited “but clearly superior” bid, said Mark Bristow, Barrick’s chief executive. Newmont’s boss, Gary Goldberg, called the intervention “desperate and bizarre”.

After some grim years for the industry, the gold price is picking up and big miners want to grow bigger. The easiest and safest way to do that is to buy someone else’s mines. To which end Toronto-based Barrick bought Randgold Resources, a South African firm, for \$6bn in a deal that closed in January. Newmont hopes to complete buying Goldcorp later this year.

This is not the first time Barrick has approached Newmont. Talks were well advanced in 2014 before an acrimonious falling out. Mr Bristow, Randgold’s former boss, has tried to persuade Mr Goldberg that much has changed since 2014. So far he

has been unable to convince him that the two are a natural fit.

At least part of the problem is that Barrick is not offering Newmont's shareholders a premium to sweeten a deal which would leave them with 44.1% of the merged company and Barrick's shareholders with 55.9%. Instead, Mr Bristow is talking up an estimated \$7bn in savings over 20 years. These would mostly come from putting gold mines in Nevada, now separately owned by the two, under one management and removing duplication in such things as transport and processing. Mr Barrick

also wants Newmont to sever the agreement with Goldcorp, which means paying a \$650m break-up fee.

Newmont is clearly not keen. The figures it has come up with show substantially lower savings from a merger with Barrick and higher benefits if shareholders stick with the Goldcorp deal. It also reckons Barrick has risky assets in countries like the Democratic Republic of Congo, Mali and Papua New Guinea, as well as a poor share-price performance since the two companies last talked. Newmont's shares have risen 65% in value since 2014, whereas Bar-

rick's only managed a 22% rise.

Yet something seems to have encouraged Barrick to move, aside from not wanting to fall behind a combined Newmont-Goldcorp as the world's largest gold firm by market capitalisation. Barrick's Mr Bristow probably thinks Newmont's shareholders are up for a deal, reckons Chris Terry of Deutsche Bank. Indeed, the reaction to Newmont's purchase of Goldcorp has been mixed. Goldcorp's share price dipped this week, which suggests some investors are betting that Goldcorp could be left standing at the altar. ■

Bartleby Conscious decoupling

A new book explains how managers struggle with changing customer behaviour

THINK ABOUT the companies like Uber and Airbnb that have burst through into public consciousness in the past ten years. While many of them depend on the internet, their success is not down to any particular technological innovation of their own design. Instead, their secret lies in their business model.

Thales Teixeira of the Harvard Business School argues that the principle that underlies a lot of these models is called decoupling. In his book "Unlocking the Customer Value Chain"*¹, he explains how this concept applies across a wide range of industries.

Buying a product will involve at least four stages. First, customers will evaluate the items available; then they will choose one or two; then they will buy them; finally they will consume them. In the traditional model, the first three took place inside a single retail store. Customers would look at the TVs or dishwashers on offer, pick one they liked with a price they could afford, pay at the till and then take the item home or arrange for the retailer to deliver it.

These steps are all part of what Mr Teixeira calls the "customer value chain". Disrupters have muscled in on some parts of this chain. One example is the practice of "showrooming". Shoppers enter an electrical store like Best Buy and examine what's on offer. But instead of purchasing the item in the store, they buy it online. Amazon has even created an app allowing customers to scan a product's bar code, or take its picture, and discover its online price. The selection of products has been decoupled from their purchase.

Other examples of the decoupling process cited by Mr Teixeira include Zipcar, where driving a car is separated from purchasing and maintaining it;

TiVo, where watching TV is delinked from sitting through ads; and Birchbox, where customers are sent samples of beauty products, eliminating the need to visit a store to try them.

This is not, as the author points out, a particularly new idea. Budget airlines like Ryanair have long since decoupled flying from the services and amenities that usually accompanied it. Passengers have to pay separately for the extras, like seat selection and the carrying of baggage. Other airlines have followed suit.

Customer services have for some time been disrupted by a trend with the ugly name of disintermediation, the cutting out of middlemen. Most holidays are now purchased directly, rather than via travel agents; shares are bought via low-commission services, rather than through advisory stockbrokers. New entrants can gain market share if they can offer customers a lower cost or greater convenience. Decoupling doesn't subtract middlemen but still results in lower costs to the consumer.

The beauty of the decoupling approach is that the only limit to innovation is

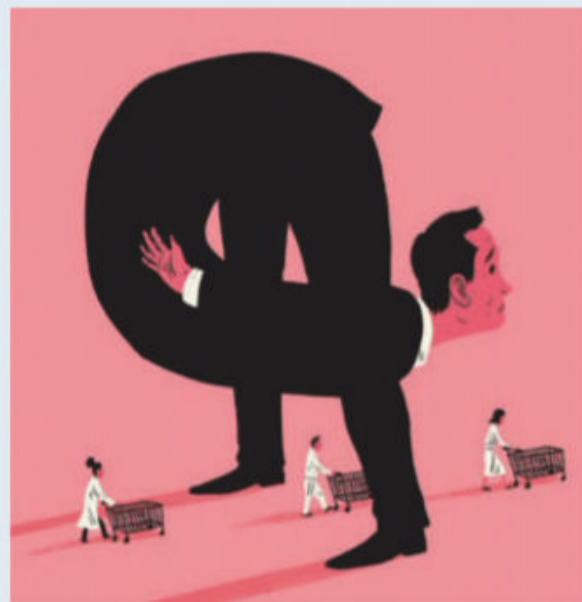
imagination, rather than technical brilliance. For example, Mr Teixeira cites Trov, a company which allows customers to buy insurance solely for specific items for specific periods of time. If you want to insure your latest smartphone for a two-week holiday, you can do so; and then insure it again for a weekend trip later in the year. The need for insurance is decoupled from the hassle of buying an annual policy.

Suppose that you like a restaurant's ambience, but not its food. In theory, you could book a table but order the food from elsewhere, paying separately for the service and the cooking. If 3D printers become ubiquitous, design and manufacture could be decoupled, with consumers paying for the digital blueprint.

Mr Teixeira argues that decoupling is a customer-driven phenomenon—bottom-up rather than top-down. Successful businesses will spot how consumer tastes are shifting, and that may involve looking at other industries as well as their own. For example, they can look at the success of Netflix's subscription-based model; what works for TV programmes may also work for other goods and services. Already, there are companies that will deliver socks or perfume on a regular basis, decoupling this from a trip to the mall.

The challenge for existing managers is that they must worry about more than whether their overall costs are lower than those of their immediate rivals. If a part of their process is inefficient, or inconvenient for consumers, the decouplers may well grab hold of it.

* subtitled How Decoupling Drives Consumer Disruption, published by Currency Books



Coal in Australia

The dangerous dark stuff

SYDNEY

Troubling signs emerge for Australia's giant coal industry

COAL HAS been king in Australia ever since British colonists first spotted the black stuff in coastal cliffs north of Sydney in the 1790s. Its grand epoch may finally be fading. China, Australia's second-biggest coal customer, after Japan, was reported on February 21st to have imposed delays on coal imports from Australia at the northern port of Dalian, but not on those from other countries. A day earlier Glencore, a Swiss-based company and Australia's biggest coal miner, announced it would cap coal production at current levels. And, for the first time, an Australian judge has refused to allow a new coal mine because it would have contributed to climate change.

The events have intensified a debate over coal's future in Australia. Already, coal risked being enveloped in political battles over Australia's climate policy and the economy's reliance on China, the country's biggest trading partner. Mining companies must increasingly grapple with not just green protesters but anxious banks, under pressure from investors to limit financing for new, polluting projects. Some big miners brush off any threat. "It is way too early for us to think that this is some turning point," says Andrew Mackenzie, the chief executive of BHP, a giant miner based in Melbourne.

Coal is forecast to be Australia's top export by value this year and the industry's most immediate concern is the status of shipments to China. The delay on shipments has left Australian officials scrambling for explanations. Some recent Australian political decisions affecting China have displeased Beijing. Citing security concerns, Australia last year banned Huawei, a Chinese technology company, from building Australia's 5G mobile network.

Simon Birmingham, Australia's trade minister, dismisses as "conspiracy theories" arguments that China's coal suspension is payback for that. Michael Roche, a consultant in Queensland, a state that supplies China with much coking coal, which is used to make steel, disagrees. He believes China is targeting Australia: "It is letting us know, 'We can hurt you'."

Miners hope that any delays with China will be temporary. The industry's environmental problems, however, will not be. Climate concerns have infused Australian coal's other recent shocks. On February 8th Brian Preston, chief judge of the New South Wales Land and Environment Court,

banned a bid by Gloucester Resources to mine 21m tonnes of coal over 16 years near the country town of Gloucester. Among the mine's "adverse impacts" the judge listed greenhouse gases that would contribute to climate change. Notably, the mine was to produce coking coal and not thermal coal for power plants. BHP's Mr Mackenzie reckons the decision is unlikely to have a broad impact. "People will realise the rank stupidity of preventing a development in Australia only to find it's replaced elsewhere with dirtier coal," he says. But the idea that concerns over climate change could limit not just mines producing thermal coal but coking coal too is new, with the potential for broad reverberations.

Other commodities

Though Glencore is not abandoning coal, it is steering investment towards commodities such as cobalt, copper and nickel, which underpin a lot of the transition to renewable energy. It is doing so after pressure from Climate Action 100+, a group whose affiliates include several Australian pension funds that want to support cleaner energy. They may put pressure on Glencore to cut coal production in future. Urged along by its investors, BHP has pressed Australia's mining lobby to revise its posi-

tion on energy policy. BHP itself, however, retains two thermal coal mines, including one in Australia.

In the long term Australia's coal industry may see a bifurcation, as exports rise for coking coal, which is crucial for the production of steel, and slump for thermal coal. Already, banks are limiting the amount of finance they make available for coal projects. Australia's banks have also declined to underwrite a controversial plan by Adani, a firm based in the Indian state of Gujarat, to build what was once billed as Australia's biggest thermal coal mine in the untapped Galilee Basin in northern Queensland.

David Lennox, an analyst in Sydney, thinks "significant investment" in new coal mines will diminish over the next 30 years. Firms providing capital, he reckons, will see growth in gas and renewable-energy projects providing better returns "because they won't have people protesting about them". The Clean Energy Council, an industry body, cites investment of A\$20bn (\$14.3bn) in 83 renewable-energy projects already under way in Australia; a figure that has doubled since late 2017.

However, the transition from coal to cleaner fuels may be slower than in other countries, because of the industry's scale. Scott Morrison, prime minister in the conservative coalition government, gave a speech on climate change on February 25th, which he hopes will boost his political fortunes in an election due in May. But he did not mention coal at all. Mr Morrison has openly championed coal. When he was Treasurer two years ago, he waved a lump of it in parliament and declared: "This is coal. Don't be afraid." Perhaps he now is. ■



Diggers dig deep while they can

Schumpeter | Video gamers v couch potatoes

Business has a lot to learn from trigger-happy teenagers in their bedrooms



IF READERS, LIKE Schumpeter, have children who barely have time to say hello as they hunch over a computer, headsets on, talking with friends while blasting their digital enemies to smithereens, here is some advice. Take them to a competitive video-gaming, or e-sports, tournament, like the Counterstrike: Global Offensive (CS:GO) “major” in Katowice, Poland, this weekend. It is an orgy of creative destruction—in the glorious, goriest sense.

Amid the razzmatazz and cosplay, it may not feel like a potent threat to mainstream entertainment. The Spodek, a Soviet-era arena shaped like a flying saucer in the heart of Katowice, only seats 11,500. But that is deceptive. The action takes place online as well as in the stadium. Fans are obsessed by the fierce strategising and skill behind teams shooting each other, throwing digital grenades and setting off bombs. As many CS:GO fanatics will watch the final as boxing fans watch a title fight. The biggest e-sports game, League of Legends, achieved more than 100m online viewers for a final last year, mostly Chinese. That is more than the number of Americans who watch the Superbowl.

Most compelling for fans, though, is the ecosystem around e-sports. CS:GO fans are also CS:GO gamers. They discuss the tournaments with their CS:GO teammates. They stream games on Amazon’s Twitch, listen to CS:GO “casters” (commentators) on YouTube, and go behind the scenes with—and even tip—their favourite players. It is an adrenalin-filled corollary to social media. The intense, year-round relationship between e-sports and its fan base should strike fear into the heart of the sports and entertainment industries whose core audiences are ageing fast. Trigger-happy 15-35 year-olds are literally calling the shots. They have the dependable era of the couch-potato in their sights.

The line between e-sports and video gaming is blurry. Gaming long ago vaulted from the bedroom to big business. Its global revenues, estimated at almost \$150bn this year, rival those of traditional sports. In America last year, the industry earned as much as Hollywood. E-sports is professional gaming, which builds on the huge popularity of competitive gaming among amateurs. Newzoo, a consultancy, says its revenues will exceed \$1bn for the first time this year, mostly from media rights, advertising and sponsorship. That is just \$5.45 per serious fan. Yet already the smart money has

caught the sweet smell of digital disruption.

Take Team Liquid, a Los Angeles-based outfit that is one of the hottest teams in Katowice. A few years ago, its CS:GO manager, Steve Perino, earned \$500 a month, and would lie to people about his job because it was too obscure. His players, self-taught in their bedrooms, had exceptional talent but were sullen and insecure. Then they hit the big time. Liquid now has teams spanning 14 different video games, each with its own fan base (similar to, say, soccer and basketball). Its financial backers include Michael Jordan, a basketball legend, Peter Guber, a film and baseball mogul, and David Rubenstein, a private-equity bigshot, giving it a valuation estimated by *Forbes* last year at \$200m. It has a plush training facility, including chef and psychologist, and its CS:GO team spent 11 days at a “boot camp” in the Netherlands preparing for Katowice, counselled by a champion poker player. Mr Perino now makes sure his five team members build upbeat personal brands, to keep advertisers and sponsors like Honda happy. When Mr Guber invited the team to his palatial home in January to celebrate a big win, the penny dropped. “Holy shit, we’ve made it,” Mr Perino says.

E-sports teams are striving to become not only more professional, but more profitable. Riot Games, owned by China’s Tencent, which publishes League of Legends, last year revamped a North American league, in which teams bought slots for \$10m from which they cannot be relegated. Similar to the National Basketball Association, such leagues attract sponsors and guarantee teams a steady income. The cash prizes from tournaments are huge: \$150m in total last year. In Europe, teams do not command the same lofty valuations as their American peers, says Nikolaj Nyholm, founder of RFRSH, owner of Astralis, the Danish world champions of CS:GO. But Astralis is increasing revenues by directly cultivating its fan base. In China six cities are vying to be hubs of e-sports (though a government crackdown on gaming has hurt). In South Korea, where e-sports first became a craze, it has matured. The best players are marketing machines. One Russian advertises Head & Shoulders—surely a useful product for gamers.

Not so anti-social

E-sports has picked up a lot from mainstream sports and entertainment. But those industries ignore its advance at their peril. The first lesson is engagement. E-sports “athletes” have direct contact with their fans, via Twitch, YouTube and social media, streaming to them live via webcams to their bedrooms. That creates a more intimate relationship than most fans have with stars. The second is global reach. Team Liquid transmits to its Brazilian fans in Portuguese, and its Chinese fans in Mandarin. Victor Goossens, who founded the team in his teens, revels in being a “citizen of nowhere,” rather than being tied to a home-town club. That broadens the appeal. The third is experimentation. Fortnite, a gaming sensation, is combining e-sports with entertainment. In February a game hosted by Marshmello, a DJ, attracted 10.7m viewers.

The competition is pricking up its ears. Sports teams with dwindling numbers of young fans are investing in e-sports. Traditional broadcasters, like Disney and ESPN, have purchased media rights. Netflix’s recent interactive film, *Bandersnatch*, targeted gamers. Incumbents may hope that a sport steeped in bloodshed will have limited mainstream appeal for advertisers (not to mention parents). But instead they should seize on the appeal of high-intensity engagement, rather like Sanquin, a Dutch blood bank that niftily sponsored a League of Legends killfest. Otherwise its hashtag #MyFirstBlood could be their epitaph. ■



German banks

A marriage made in misery

FRANKFURT

For now, a merger of Deutsche Bank and Commerzbank is only hypothetical. Just as well. It would solve the problems of neither

GERMANY'S ECONOMY may be slowing, but its financial capital is booming. New towers are rising to join those of Commerzbank, Deutsche Bank, DZ Bank, Helaba and others on Frankfurt's jagged skyline. More are on the drawing board. Had you read no financial news for the past decade, you might presume that Germany's banks were thriving too.

How wrong you would be. Bankers grumble about subterranean official interest rates—they must pay the European Central Bank 0.4% a year to deposit cash—that show no sign of rising. Those compound an old problem: Germany's extraordinarily crowded banking market. The country has 1,580 banks, grouped in three “pillars”: private, public and co-operative. Although the grand total is shrinking by 40–60 a year, the public pillar still contains 385 *Sparkassen*—savings banks, mainly municipally owned—and half a dozen *Landesbanken*—regional lenders, such as Helaba, that also act as clearers for *Sparkassen*. There are 875 local co-ops. Their clearer and corporate lender, DZ Bank, is Germany's second-biggest bank by assets.

Some, to be sure, have found ways of making money. Unencumbered by the cost

of running branches, DiBa, an online bank owned by ING, a Dutch lender, has clocked up double-digit returns on equity (ROE). But according to Oliver Wyman, a consulting firm, German banks' average ROE dwindled from a thin 4% in 2010 to a dreadful 1% in 2016. Big private-sector banks are the most discomfited by the lack of elbow room. They have to compete with public and co-op sector banks that have goals beside profits. The private banks' shareholders regard 10% as a decent ROE. Few big European banks hit that mark; Germany's are far from it (see chart on next page).

Deutsche Bank, the country's biggest

bank, left it ludicrously late to adapt to the financial crisis of 2007–08. Since 2015 it has been undergoing a painful restructuring, including cuts in global investment banking, where before the crisis it went toe-to-toe with Wall Street's mightiest. In 2018 it made its first annual profit in four years—just. Its ROE was 0.4%. Commerzbank, the third-biggest, made a mere 3%. On the stockmarket Deutsche is worth less than a quarter of the book value of its equity; Commerzbank, a little more.

Reportedly, Germany's government would like to see Commerzbank and Deutsche Bank merge. Politics aside, the state has a limited direct say. It owns 15% of Commerzbank, the legacy of a bail-out and a merger with the stricken Dresdner Bank in 2008–09. It has no stake in Deutsche. Rumour has also linked Commerzbank with French and Italian suitors, and suggested that Deutsche's bosses would prefer a deal with Switzerland's UBS, but ministers may be loth to see another big bank in foreign hands (HVB, based in Munich, is owned by Italy's UniCredit). In a speech on industrial strategy last month Peter Altmaier, the economy minister, included Deutsche in a list of “national champions”—although national albatross is more accurate.

It is possible to build a business case for a deal. The main gains would come from cutting costs and greater scale in retail banking. Deutsche has around 1,500 branches (including those of Postbank, which it bought in 2008–10) and Commerzbank 1,000. Combined, the two would have nearly 20% of total deposits, according to Autonomous Research, easily the biggest ▶▶

→ Also in this section

57 Low inflation in the euro area

58 Encouraging tax compliance

58 The Fed reviews its framework

59 How to cross-check Elon Musk

60 Narendra Modi's economic record

61 Free exchange: Manufacturing woes

— Buttonwood is away

share. There is some overlap in business customers, but Commerzbank focuses on the *Mittelstand*, Germany's army of mainly private, export-oriented firms and Deutsche more on bigger companies. Commerzbank has quit investment banking; Deutsche, though weakened, has clung on.

The timing, though, would be terrible. Deutsche, having decided to sell Postbank in 2015 and to keep it two years later, is still tying two systems together. A merger would mean combining Commerzbank too. Both banks are already slashing costs and shedding staff; a union would add another round.

And the deal would do little to ease the banks' biggest headache: the structure of Germany's banking market. Though they consist largely of minnows, the public and co-operative sectors are serious rivals, accounting for most deposits, mortgages and lending to companies. Without faster consolidation in those pillars—or inter-pillar deals—marriage will not bring Commerzbank and Deutsche bliss.

Granted, the past decade has seen action, besides the steady stream of unions among neighbouring savings banks and co-ops. The merger of DZ Bank and WZ Bank, a similar but smaller outfit, in 2016 united the top of the co-operative pillar. In the public sector, the financial crisis forced the eventual dismembering of WestLB, much of which was absorbed by Helaba, in 2012. HSH Nordbank, another *Landesbank*, was bought by private investors last year, having been sunk by bad shipping loans and recapitalised with state help, and renamed Hamburg Commercial Bank.

Helmut Schleweis, the head of the German Savings Banks Association (DSGV), which represents the public-sector banks, has called for the creation of a "super *Landesbank*". According to *Handelsblatt*, a fi-

ancial newspaper, he wanted to start with the merger of Helaba and NORD/LB, another *Landesbank* holed by bad shipping debts, and eventually to bring in LBBW, from the south-west, Deka Bank, an asset manager, and Berlin Hyp, a mortgage lender.

Late last year Helaba had a close look at NORD/LB—its domain would have stretched from the river Main to the Baltic—but could not agree on terms. The DSGV and Lower Saxony's state government have since hatched a plan to recapitalise NORD/LB. Cerberus, an American private-equity firm, is said to be a likely buyer. (A rare optimist about German banking, Cerberus has stakes in both Commerzbank and Deutsche Bank and part-owns Hamburg Commercial Bank.)

Without that first stage, the super-*Landesbank* looks improbable. Even with it, persuading public-sector owners, with

their own political agendas, to give up a large stake in their local bank for a smaller slice of a national one would be a tall order. A regional savings banks' association owns nearly 70% of Helaba, for instance; the state of Baden-Württemberg owns 41%, and the city of Stuttgart 19%, of LBBW.

Mergers between pillars remain all but unthinkable for now. Klaus-Peter Müller, a former boss of Commerzbank, once declared that he admired the *Sparkassen* so much he would like to buy one, if only he could. With that path to consolidation closed, his successors may wonder how they will ever make much money from the domestic market. But others might look at Germany's economic record over the decades and conclude that the three-pillar system has served the country pretty well—even if it frustrates some of the occupants of Frankfurt's towers. ■

Inflation in the euro area

Virtue signalling

Will a worsening outlook for inflation lead the European Central Bank to reconsider its strategy?

PATIENCE, PERSISTENCE and prudence: the latest incarnation of the European Central Bank's policy guidance appears to take a leaf out of early Christian writings on virtue. The central bank has counselled that, because it takes time for pricing pressures to recover from crisis years, it will keep interest rates unchanged at least through the summer of this year.

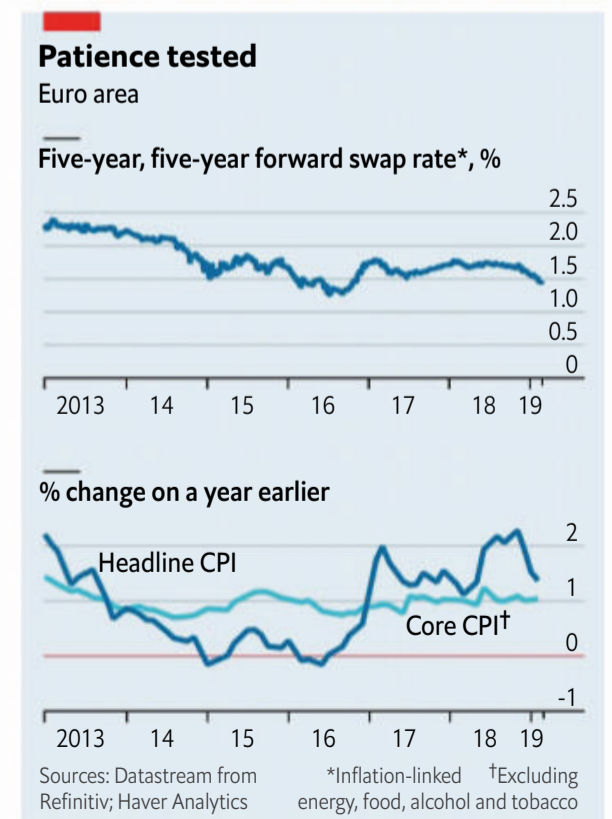
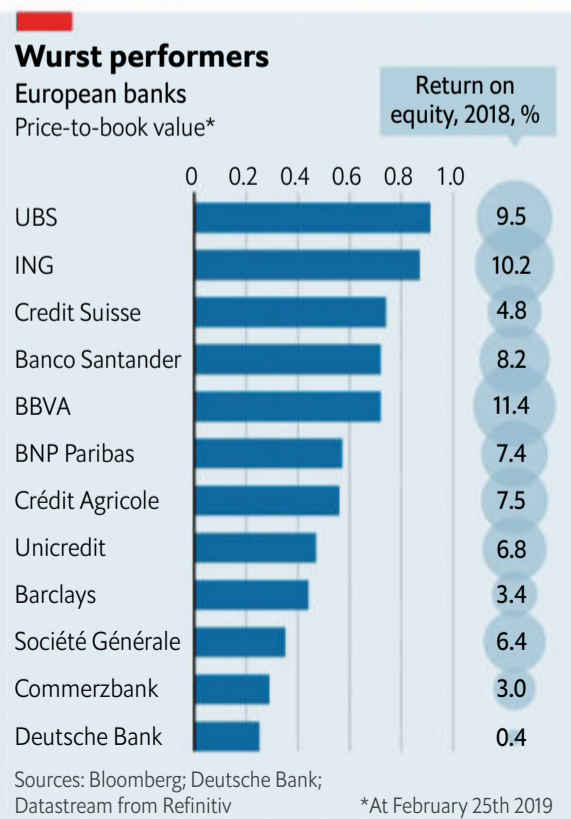
Its waiting game, though, is being sorely tested. Underlying pricing pressures have been doggedly low for years. Now gloomy economic news risks further delaying their recovery. At its monetary-policy meeting on March 7th the bank will have to consider whether to ease policy.

The headline inflation rate, which stood at 1.4% in January, has been buffeted around by movements in oil prices. But core inflation, which strips out volatile components such as food and energy prices, has proved difficult to budge. It has hovered around 1% since 2015. That is subdued compared with its average level in 2000-07, and far off the bank's target of headline inflation below, but close to, 2%.

The bank had hoped that above-trend economic growth would drive up wages and eventually force companies to put up their consumer prices. Indeed, economic growth was robust in 2017 and early 2018; annual wage growth had risen to 2.5% by the third quarter of 2018, a percentage point higher than rates in 2016. But price inflation has not yet followed—it is subdued

even in labour-intensive service sectors such as recreation or restaurants. Perhaps, ECB officials might have thought, this was just a matter of time.

Slowing growth, though, has dealt their hopes a blow. Italy fell into recession in the second half of 2018; Germany narrowly avoided that fate. Production disruptions in 2018 explain some of the downturn, but the moderation has continued into 2019. Further deterioration could slow price



Tax compliance

Hitting the jackpot

Some countries are using receipt lotteries to boost tax revenues

PEOPLE PAY taxes because governments say they must and society says they should. But what if tax compliance became fun? Governments around the world are encouraging consumers to ask for receipts by turning them into lottery tickets. Taiwan was an early experimenter, in 1951. The past decade has seen a flurry of such schemes: China, the Czech Republic, Lithuania, Portugal, Romania and Slovakia all now have them. Latvia will launch one later this year.

The aim is to make it harder for retail businesses to evade taxes. Worldwide, 20-35% of government revenue comes from value-added taxes (VAT) or similar levies on consumption. But as much as a third of what should be collected is thought to be forfeited because businesses under-report revenues. The problem is not business-to-business transactions; firms can usually reclaim any VAT they pay if they keep proper records. But when selling direct to consumers, it is tempting to accept cash without recording the sale. A tax-dodging retailer can undercut law-abiding rivals or pocket a higher margin.

The idea of a receipt-lottery scheme is to give customers an incentive to ask for receipts, thereby forcing sales to be recorded and taxed. Receipts might be printed with a code that can then be submitted into a central draw. Prizes range from decent sums of money to cars and holidays. Digital technology means schemes are cheap to run, even allowing

for the cost of prizes.

Few countries have studied schemes' impact. An exception is Slovakia, which has run a lottery scheme since 2013 as one of a range of attempts to reduce its unusually high rate of VAT evasion. In 2014 the finance ministry estimated that the lottery had contributed a very modest €8m (\$11m) in annual revenues. But the Brazilian state of São Paulo is so sure its lottery increases tax collection that it grants citizens who give their taxpayer number when making a purchase not just a chance to win a prize, but a rebate of 30% of the sales taxes they have paid.

For governments trying to up the tax take, consumption taxes have appeal. They are less noticeable than income taxes or cuts to public services. But higher rates fall most heavily on poor people, who tend to spend a bigger share of their income. Receipt lotteries allow governments to raise revenue without raising rates. As a bonus, they also increase awareness of tax evasion and encourage citizens to look out for tax cheats.

According to a report for the European Commission in 2017, of the ten European countries with the biggest shortfalls in collection of VAT in 2014-15, nine have, or are setting up, a receipt-lottery scheme. (Italy is the exception.) Though a receipt lottery cannot end evasion on its own, says Jonas Fooker, a researcher at the University of Queensland, adding "a bit of magic" to mundane purchases can help.

risers. Peter Vanden Houte of ING, a bank, points to research by ECB staff suggesting that companies are most emboldened to pass wage costs through to prices when demand is healthy and inflation high. Neither condition is now in place.

Investors are also pessimistic about inflation. Market expectations of inflation in the medium term have fallen since late 2018. One measure favoured by central banks is the medium-term inflation-linked swap rate (see chart on previous page). That has fallen to 1.4%, well below levels reached in mid-2014, points out Andrew Benito of Goldman Sachs, a bank. Back then Mario Draghi, the head of the ECB, pointed to falls in the measure as a threat to price stability; a programme of asset purchases soon followed.

The bank's most likely tool this time would be a change to its forward guidance on interest-rate rises. It has committed to

keeping interest rates unchanged at least through the summer of this year; it could push that date out further. Some economists think it might extend its targeted longer-term refinancing operations, which offer cheap loans to banks. Depending on its design, that would at least avert tighter funding conditions. Though the scheme is due to expire next year, its loans will stop counting towards regulatory liquidity measures this summer, forcing banks to refinance early.

Action next week is not guaranteed. Some ECB officials have indicated that they want proof that the slowdown is persistent. The head of the Dutch central bank, Klaas Knot, for instance, has said that he wants to wait and see. But the cost of delaying easing rises as the outlook for inflation worsens, and inflation expectations threaten to linger below the target. Excessive patience might be harmful. ■



Central banking in America

Food for thought

NEW YORK

The Federal Reserve reviews its monetary-policy framework

SARA GORATH was a little surprised when she was asked to speak at an event held by the Dallas Federal Reserve. What could a woman who runs a food bank have to say about monetary policy? On February 25th she found herself describing to Richard Clarida, vice-chairman of the Federal Reserve, the problems her customers face, including "how do you cut open a butternut squash if you don't have a sharp knife?"

The event was the first of many "Fed Listens" sessions, part of an official review of the Fed's monetary-policy framework. In addition to the likes of Ms Gorath, the Fed will hear from business and trade-union leaders, as well as academics. If the economy were a squash, monetary policymakers want advice on how to carve it.

Key questions will include whether the Fed should expand its toolkit and improve its communication. Also up for discussion is whether there might be better ways to meet its 2% inflation target (the level of the target itself will be taken as given). Perhaps, for example, rather than aiming for 2% regardless of recent history, policymakers should try to make up for past misses and aim for an average of 2% instead?

One could ask why the review is happening now; economists have argued over the Fed's framework for years. The first official answer is that economic conditions are ripe for some chin-stroking, with unemployment at its lowest level in decades and inflation close to target. Now is as good a time as any for the Fed to take stock.

The second relates to the decline in interest rates around the world over the past decade, which could merit a change in the ►►

way monetary policymakers operate. Although central bankers should still be able to hit their inflation target in good times, when recessions strike they will find interest rates increasingly stuck at the lower bound of zero, with no room to cut them when the economy needs stimulating.

The fear is that this downward drift blunts central bankers' tools. If inflation hits the target in good times, but undershoots it in bad, inflation expectations could drift downwards. Since these expectations then influence wage and pricing decisions, they would in turn have an impact on actual inflation, making it harder to achieve the inflation target.

Average-inflation targeting would mean that interest rates would be lower for longer after an inflation-sapping recession, as policymakers aim for a temporary overshoot. A shift in the framework could signal to investors and the public that the Fed would use monetary policy more aggressively to stimulate the economy in a recession, generating the sort of self-fulfilling confidence that could help a recovery.

It might not work, of course, if no one believed that the Fed would be able to resist tightening policy when the economy did get going. It could also backfire. What if, in the process of temporary overshooting, inflation expectations began drifting above the target? On February 26th Pat Toomey, an American senator, sternly reminded Jerome Powell, the Fed's chairman, that a period of overshooting would be a period without price stability.

Cynics will dismiss the review as window-dressing. Even if Ms Gorath's food bank contributes to her community, she had a point when she questioned her ability to inform monetary policymakers. And the bar for change seems high. The review's unofficial context is a decade of the Fed struggling to hit its inflation target and a labour market that was too lousy for too long. Even after that, Mr Clarida reckons the existing framework has "served us well".

Defenders could point out that central banks are hardly nimble creatures. If a reform of the Fed's framework were in the offing, this is the sort of process you might expect to precede it. The idea of a rethink certainly has some senior supporters. On February 22nd John Williams, the head of the New York Fed, said that the risk of slipping inflation expectations called for a reconsideration of the "dominant inflation-targeting framework".

Even if, as most expect, there is no formal change, the discussion could still lead to a greater tolerance of temporary overshooting after periods of limpness. Interest-rate rises are on hold for now, which could be evidence that the Fed is rethinking its carving technique. But with inflation still hovering around its target, it has not yet made a mark. ■

Alternative data

Under the hood

Ways to cross-check Elon Musk's tweets

"GO STRAIGHT TO THE SOURCE" is a useful rule for anyone seeking accurate information. It suggests that equity investors can best glean insight into a firm by quizzing its chief executive. But bosses are not always reliable narrators. Their position encourages them to be overly optimistic about their company's outlook. Sometimes they are clueless. And occasionally they are careless about what they tweet.

On February 25th the Securities and Exchange Commission (SEC), America's financial-market regulator, asked a federal judge to hold Elon Musk, the chief executive of Tesla, a carmaker, in contempt. Mr Musk's troubles with the SEC began in August when his tweet claiming that he had secured funding to take Tesla private caused the firm's share price to soar. When the claim proved false, the SEC sued him for securities fraud. They settled in October, when Mr Musk stood down as Tesla's chairman (he remains chief executive), paid a \$20m fine and agreed to have his tweets approved by Tesla's lawyers. He violated that last condition on February 20th by tweeting that Tesla would produce 500,000 vehicles this year—a claim he later had to clarify—without consulting the firm.

Regulators are not the only ones frustrated by Mr Musk's antics. Investors have long clamoured for more insight into Tesla's operations. Happily for investors, new methods of data-gathering present a solution. A growing number of providers now sell "alternative data"—a catch-all term for measures found beyond financial statements and other typical sources. J.P. Morgan, a bank, reckons that asset managers spend up to \$3bn a year on such data.

An investor keen to know how many cars Tesla is selling need no longer ask Mr Musk. "When you buy a car, you also buy insurance," says Tammer Kamel of Quandl, a data provider. His firm asks insurance companies for access to (anonymous versions of) their policy databases. Once Quandl knows how many policies on Tesla cars are being taken out, it can work out how many are hitting the road.

Faced with competition from firms like Quandl, incumbents are doing more. Bloomberg, a data provider, for example, now offers a Tesla-production tracker. This looks at the issuance of Vehicle Identification Numbers (VINS), which every car made in America must have. Output is estimated based on how many VINS Tesla registers.

Investment banks, which often offer research to their clients, are also branching out. In 2014 UBS, a bank, set up Evidence Lab, a research team. It has taken apart a Tesla Model 3, a Chevy Bolt and a BMW i3 to compare their component parts. "If you don't know what these vehicles cost," says Barry Hurewitz of Evidence Lab, "you can't know when they become profitable." The team found that Tesla's battery was superior, but its production quality was poorer, and build costs higher, than expected.

Alternative data's early consumers were mostly quantitative hedge funds, which could easily process the extra information. But as more measures have become available, other investors have become interested. This shifts the power dynamic between companies and their shareholders. If a firm refuses to disclose information, alternative data might fill the gap. Instead of gauging an executive's tone during an earnings call, investors can assess data on the firm's job postings. Its hiring plans might better reflect management's sentiment.

Misleading statements, too, might be caught more quickly. Investors surprised by Mr Musk's tweet that Tesla would build 500,000 cars can check with other sources. The SEC may struggle to stop Mr Musk making misleading comments, but investors can more easily see through them. ■





India's economy

Modifications

Despite high expectations, Narendra Modi's economic policies have not made a decisive break with the past

NARENDRA MODI, India's prime minister, stormed to power so decisively in 2014 that it is difficult now to imagine any other outcome. But try. Imagine that the United Progressive Alliance (UPA), a tired coalition led (if that is the word) by the Congress party, had limped to victory instead. What economic policies might it have pursued in a third term? This is not an entirely idle question. Any assessment of Mr Modi's economic record in his first stint as prime minister requires a counterfactual scenario against which to measure it. A third UPA government is one such baseline.

A Congress-led government would no doubt have built on some of its existing pet initiatives, such as a job guarantee, providing employment on public works to rural households, and an identification scheme, giving every Indian a unique identity number based on a fingerprint or an iris scan. It presumably would have allowed the central bank to continue to fight against inflation, aided by a drop in oil prices.

A third UPA government would surely have shied away from reforming India's onerous labour laws or privatising poorly run public enterprises, like Air India. It probably would also have dallied with resolving the banking system's bad loans, fearing it might otherwise be condemned for bailing out crony companies.

As the next election approached, the UPA government would no doubt have indulged in giveaways to farmers (as in previous political cycles) and disguised its fail-

ure to hit fiscal targets through budgetary tricks. GDP growth and job creation would probably have improved little.

The UPA never, of course, got this third bite of the cherry. It lost instead to Mr Modi, who promised a radical alternative to this steady-as-she-goes approach. But despite these bold pledges, Mr Modi's first term in charge of the economy has proved to be rather similar to the hypothetical third UPA term described above. Much of what probably would have happened if Mr Modi had somehow lost also happened after he won.

The parallels loom large. GDP growth has averaged about 7%, quicker than any other big economy but little different from the average for the five years before Mr Modi entered office. There have been no big

reforms of land or labour markets; no junking of the employment guarantee or the identity scheme; and a costly delay in tackling banks' bad loans. The government's proudest economic feat was to implement a nationwide value-added tax that Congress had previously proposed.

This continuity should not be a surprise. Although Mr Modi's party won a rare majority in parliament, India's political system still imposes checks on his power through the upper house, the courts, public auditors and the states, which have sole or joint responsibility for many of the reforms India needs. And although the Modi vote was a plea for more jobs and fewer scams, it was not a vote for liberal economics per se. Capitalism in India remains "stigmatised", notes Arvind Subramanian, a former economic adviser to the government, in his new book, "Of Counsel".

Mr Modi did manage some departures from the baseline. It is hard to imagine the UPA cutting red tape as zealously (India has risen 65 places in the World Bank's rankings of the ease of doing business since 2014) or courting foreign-direct investment (FDI) as assiduously. He contributed to the conquest of inflation by removing some fuel subsidies and limiting increases in the minimum prices for crops. His government helped open bank accounts for the poor and passed a welcome new bankruptcy law for firms. Corruption has been reduced.

Sadly, fertiliser subsidies persist, minimum crop prices have jumped again, and the new bankruptcy system will take about six years to clear the backlog of cases at its present pace, reckons Mr Subramanian. Planned changes to e-commerce rules could hobble foreign firms operating in the country, such as Amazon and Walmart.

Mr Modi's most innovative decision was also his worst: the abrupt cancellation of high-denomination banknotes. The aim was to wipe out "black money", piles of ill-gotten cash stashed outside the banking system. The government was therefore surprised when most of the notes were returned to the banks, before they expired, by long queues of depositors. It is a miracle the stunt did little lasting harm to the economy, if official data are to be believed.

And that, sadly, is a real question. The government's other alarming innovation has been to discontinue, revise or delay some official data that do not flatter it. It tried to prevent publication of a new report on employment, prompting two members of the country's statistical-oversight body to resign. They also objected to the manner in which revised GDP data were released (see chart). The world will never know what would have happened under a third UPA government. And with less reliable official statistics, it will be harder to know what has happened under Mr Modi, too. ■

Revising history

India, GDP, % increase on a year earlier



Sources: Morgan Stanley Research; Central Statistics Office

Free exchange | A familiar cycle

Why a global manufacturing recession is a recurring threat

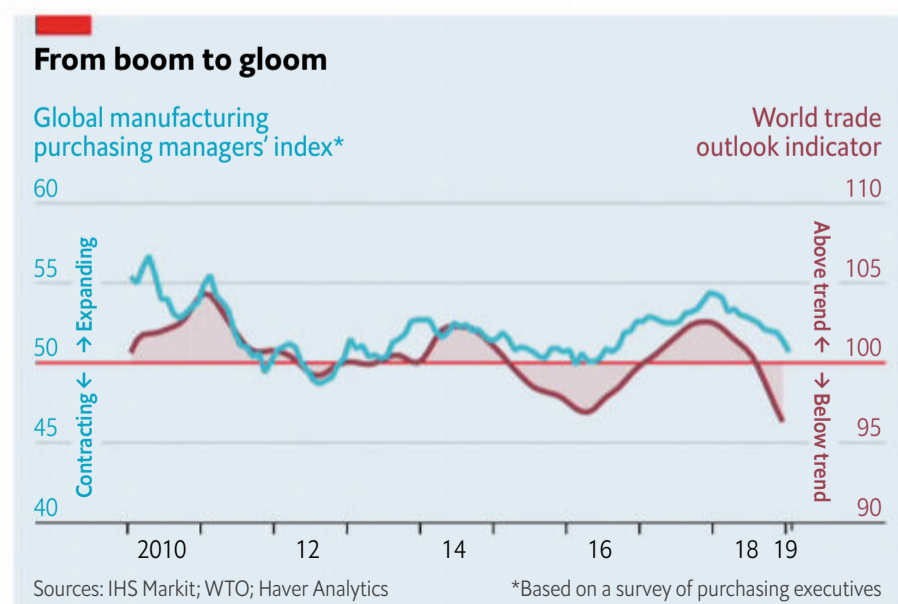
THE GLOBAL economy had an inauspicious start to 2019. Markets went into a tailspin and America's government was locked in a seemingly interminable shutdown. But matters have not played out as dismally as they might have. The government in Washington is open again. America and China appear close to a trade deal which, although modest in its achievements, would nonetheless reflect a welcome easing of tension between the world's two biggest economies. Markets have smiled on these developments: the MSCI index of global shares has risen by 10% so far this year.

Good news notwithstanding, many economic indicators have undergone a remarkable downward shift since early 2018. Back then economists were celebrating the emergence of a broad-based expansion. When it assessed the world economy in January last year, the IMF hailed the "broadest synchronised global growth upsurge since 2010". Now the progress on trade talks is occurring against a darker economic backdrop.

Global manufacturing activity has slowed (see chart). Economies that are especially reliant on trade, such as Germany and Japan, have suffered. Industrial production in the euro area has fallen over the past year. Both Japan and South Korea reported tumbling exports in January. The World Trade Organisation's global trade outlook index has been falling for the past year. In February it dipped to its lowest level since 2010. America's economy, which is less trade-dependent, has been relatively less harmed, though industrial production contracted in January. Why does the world's manufacturing upswing appear to have flopped?

It is tempting to blame President Donald Trump for the reversal. America has spent the past year ratcheting up its confrontation with China. The deceleration in manufacturing activity began around the time Mr Trump raised tariffs on washing machines and solar panels. It continued as America slapped tariffs first on steel imports and then on a range of Chinese goods, and as it restricted the involvement of Chinese technology firms in its economic affairs. A clash between the world's two largest economies could not help but undermine global economic confidence.

But there is more to the manufacturing swoon than Mr Trump's trade war. The downturn bears a striking resemblance to the bout of economic trouble that began in 2015. Then, too, global manufacturing activity faltered. That was partly due to the bust that followed America's extraordinary shale-oil boom. But China was also a big influence on exporters' fortunes. Germany, for instance, has come to rely on China's voracious appetite for its capital goods.



Once they had hauled the economy through the global financial crisis of 2007-08, on the back of massive stimulus, China's leaders pivoted towards economic reform in 2015. They sought to wean the economy off credit, which had grown at mind-boggling rates in 2009-14. They also took steps to open up China's financial markets. The measures turned out to be premature: as constraints on capital movement were loosened, money fled the country and stock prices crashed. Financial turmoil radiated outwards, threatening to tip large swathes of the world economy into recession.

The downward spiral was quickly halted. China put its plans to lift capital controls on ice; the stimulus taps were turned back on. The government eased monetary policy and began spending with gusto. Officially, China's fiscal deficit expanded only modestly in 2015 and 2016, to just under 4% of GDP. But the government is adept at using special financing vehicles, primarily at the local-government level, to borrow and to direct funds to projects; these do not affect the official deficit figures. Researchers at Goldman Sachs, an investment bank, estimate that China's "augmented" budget deficit, which includes such tactics, rose to around 15% of GDP in early 2017. The explosion of borrowing did the trick. By the end of 2017, the world was on the road to a synchronised upsurge.

Having survived that close call, China's leaders focused again on the economy's dismaying reservoirs of red ink. They restricted lending to over-indebted firms and embarked on a bout of fiscal belt-tightening that would make even the prudent Germans blush. China's augmented budget deficit has narrowed by about six percentage points of GDP since the beginning of 2017. Domestic demand has consequently weakened. As Brad Setser, an economist at the Council on Foreign Relations, a think-tank, has recently pointed out, China's imports of manufactures for domestic use have fallen by more than its "processing imports", or inputs into the products that China makes and exports. Its purchases of American goods have tumbled; imports from the rest of the world have fallen too. Although the trade war has played a role, the world economy's recent ups and downs are more closely related to China's on-and-off struggle to reform its economy and curb unruly borrowing.

Credit where it's due

China should not matter so much. Its tight capital controls ensure that its financial links with the rest of the world remain modest. It is not yet the engine of global demand in the way that America is: Mr Setser notes that China's manufacturing imports for its own consumption are only about a third as large as America's (though recent growth in Chinese imports has been an important driver of manufacturing demand for some countries, such as Germany). The problem is not so much that the headwinds from China are powerful, but that the rest of the world is so poorly prepared to lean against them. Interest rates remain extraordinarily low. If the global manufacturing malaise worsens, America will have precious little room to cut rates in response; Europe and Japan will have none. Fiscal policy could pick up the slack. Advanced economies could badly use a dose of deficit-financed public investment. But neither the euro area nor America seem keen to build.

Such policy debates may be inconsequential this time. In the last few weeks China has begun turning on the stimulus taps yet again, propping up sentiment there. The world's manufacturing slowdown may well prove as fleeting as that of 2015. Both episodes show that the rich world has chosen to put itself at the mercy of the fiscal management of the Chinese Communist Party. That is a curious decision—but not an unprecedented one. ■



Live at Television Centre

The restaurants are open.
The studios are recording.
The gym is buzzing.

And the apartments are completed, ready for living in White City, London W12.

Apartments from £785,000*

Premium apartments and penthouses from £2,500,000*

020 8003 1515
televisioncentre.com






TELEVISION CENTRE



*prices correct at time of going to press




AUCTION


BID 22-28 MARCH | AMANPURI, PHUKET, THAILAND

Currently \$35M. Selling At or Above \$17.75M.

Set overlooking the turquoise waters of the Andaman Sea, Villa 35 at Amanpuri has all the beauty, simplicity, and service of an Aman resort, paired with the comfort and seclusion of a private home.

ConciergeAuctions.com | +66 6-1779-3450

Concierge Auctions, LLC is a marketing services provider for auctions and is not a licensed Real Estate broker - 807 South Street, Suite 230, Austin TX 78701, +1 (214) 252-7745. The services referred to herein are not available for residents of any state where prohibited by applicable state law. Concierge Auctions, LLC, its agents and affiliates, broker partners, auctioneers, and sellers do not warrant or guarantee the accuracy or completeness of any information and shall have no liability for errors or omissions or inaccuracies under any circumstances in this or any other property listings or advertisements, promotional or public statements and materials. This is not meant as a solicitation for listings. Brokers are protected and encouraged to participate. Equal Housing Opportunity. See Auction Terms and Conditions for full details.



Chateau in Normandy, France For Sale

18th century French chateau in the heart of Calvados - Normandy, France, set within 12 acres (4.8 hectares) of walled parkland.

The grounds feature a fountain, well-manicured lawns, flower gardens, woods and tennis court.

The chateau is comprised of 9 bedrooms, 8 bathrooms and 3 living rooms, with listed hand painted wall murals. The estate is in perfect living condition.

Facilities are in place both inside and outside to host weddings and events.

Additionally there are numerous outbuildings, including a 3 bedroom guest cottage, two 1 bedroom apartments and office space.

The property is surrounded by fields, and is 30 minutes from the sea, 2.5 hours from Paris, and 40 minutes away from both Caen and Deauville international airports.

<http://www.lemesnildo.fr/>
Please contact Guillaume for pricing and all other information
+447532003972
guichaba@gmail.com



ABAMA

LUXURY RESIDENCES
TENERIFE, SPAIN

Europe's most outstanding resort in the world's best year-round climate

www.abamaluxuryresidences.com · info@abamaluxuryresidences.com



MONTICELLO

A NEW WAY OF LIVING

A private community of just 63 beautifully-designed villas and apartments with 24-hour concierge and security situated only moments from the heart of Rome

PHONE +44 (0) 20 7205 4813
EMAIL info@monticelloroma.it
WEB www.monticellorome.com



The periodic table of the elements

1
H
 1.01
 Atomic number
 Chemical symbol
 Atomic weight

Alkali metals
 Alkaline earths
 Lanthanides and actinides
 Transition metals
 Post-transition metals
 Metalloids
 Non-metals
 Noble gases
 Halogen group

1																											2				
H																											He				
1.01																											4.00				
3	4															5	6	7	8	9	10										
Li	Be															B	C	N	O	F	Ne										
6.94	9.01															10.8	12.0	14.0	16.0	19.0	20.2										
11	12															13	14	15	16	17	18										
Na	Mg															Al	Si	P	S	Cl	Ar										
23.0	24.3															27.0	28.1	31.0	32.1	35.5	39.9										
19	20															21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
K	Ca															Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
39.1	40.1															45.0	47.9	50.9	52.0	54.9	55.8	58.9	58.7	63.5	65.4	69.7	72.6	74.9	79.0	79.9	83.8
37	38															39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Rb	Sr															Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
85.5	87.6															88.9	91.2	92.9	96.0	(97)	101.0	102.9	106.4	107.9	112.4	114.8	118.8	121.8	127.6	126.9	131.3
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
132.9	137.3	138.9	140.1	140.9	144.2	(145)	150.4	152.0	157.3	158.9	162.5	164.9	167.3	168.9	173.0	175.0	178.5	180.9	183.8	186.2	190.2	192.2	195.1	197.0	200.6	204.4	207.2	209.0	(209)	(210)	(222)
87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og
(223)	(226)	(227)	232.0	231.0	238.0	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(262)	(267)	(270)	(269)	(270)	(270)	(278)	(281)	(281)	(285)	(286)	(289)	(289)	(293)	(293)	(294)

The periodic table

The heart of the matter

One of science's greatest creations is 150 years old this week. How it was created is a perfect illustration of the process of scientific progress

LA *république n'a pas besoin de savants Lni de chimistes.* With that curt dismissal a court in revolutionary France cut short the life of Antoine-Laurent de Lavoisier, argued by some to be the greatest chemist of all. Lavoisier's sin was tax farming. He had been a member of the firm that collected the monarchy's various imposts and then, having taken its cut, passed what remained on to the royal treasury. That he and many of his fellow farmers met their ends beneath a guillotine's blade is no surprise. What had distinguished Lavoisier from his fellows, though, was what he chose to spend his income on. For much of it went to create the best-equipped chemistry laboratory in Europe.

Nothing comes of nothing. Where the story of the periodic table of the elements really starts is debatable. But Lavoisier's laboratory is as good a place as any to begin, for it was Lavoisier who published the first putatively comprehensive list of chemical elements—substances incapable of being broken down by chemical reactions into other substances—and it was Lavoisier and his wife Marie-Anne who pioneered the technique of measuring quantitatively what went into and came out of a chemical reaction, as a way of getting to the heart of what such a reaction really is.

Lavoisier's list of elements, published in 1789, five years before his execution, had

33 entries. Of those, 23—a fifth of the total now recognised—have stood the test of time. Some, like gold, iron and sulphur, had been known since ancient days. Others, like manganese, molybdenum and tungsten, were recent discoveries. What the list did not have was a structure. It was, *avant la lettre*, a stamp collection. But the album was missing.

Creating that album, filling it and understanding why it is the way it is took a century and a half. It is now, though, a familiar feature of every high-school science laboratory. Its rows and columns of rectangles, each containing a one- or two-letter abbreviation of the name of an element, together with its sequential atomic number, represent an order and underlying structure to the universe that would have astonished Lavoisier. It is little exaggeration to say that almost everything in modern science is connected, usually at only one or two removes, to the periodic table.

The mighty atom

The Lavoisiers' careful measurements had discovered something now thought commonplace—the law of conservation of matter. Chemistry transforms the nature of substances, but not their total mass. That fact established, another Frenchman, Louis-Joseph Proust, extended the idea with the law of definite proportions. This

law, published in 1794, the year of Antoine Lavoisier's execution, states that the ratio by weight of the elements in a chemical compound is always the same. It does not depend on that compound's method of preparation. From there, it might have been a short step for Proust to arrive at the idea of compounds being made of particles of different weights, each weight representing a specific element. But he did not take it. That insight had to wait for John Dalton, a man who was the polar opposite of the aristocratic bon vivant Lavoisier. Dalton's parents were so poor that he had been put to work at the age of ten. The man himself was an ascetic, colour-blind Quaker. And he was English.

Dalton lived in Manchester, at a time when it was the world's largest industrial city. He made a modest living tutoring, but spent most of his energy on scientific research, including into colour-blindness, a condition still sometimes referred to as Daltonism. That inquiry came to nothing. But during the first decade of the 19th century he took Proust's concept and showed not only that elements reacted in fixed proportions by weight, but also that those proportions were ratios of small whole numbers. The simplest way to explain this—and indeed the way that Dalton lit upon—was to suppose each element to be composed of tiny, indivisible particles, all of the same weight. The Greek word for indivisible is "atomos". Thus was the atom born.

Dalton based his system of relative atomic weights on hydrogen, the atoms of which he found to be the lightest. And it was quickly picked up by someone who, though less famous than Lavoisier, perhaps because of his grizzly end, was arguably the greater man. Jacob Berzelius, a Swede, furnished chemistry with its lan- ▶▶

guage. It was he who came up with the idea of the abbreviations that now occupy the periodic table's rectangles. It was he who combined those abbreviations with numbers, indicating the proportions involved, to make formulae for chemical compounds: H_2O (water), H_2SO_4 (sulphuric acid), $NaCl$ (table salt). And it was he who used these formulae to describe reactions: $H_2SO_4 + Zn \rightarrow ZnSO_4 + H_2$ (sulphuric acid plus zinc becomes zinc sulphate plus hydrogen). Though Dalton invented atomic theory, it was Berzelius who embedded it at the heart of the subject.

And Berzelius did more. He used Alessandro Volta's recently invented battery, which created electricity from a chemical reaction, to do the reverse. He employed electricity to drive chemical reactions in solutions (for example, releasing metallic copper from a solution of copper sulphate), a process called electrolysis.

Back in England, Humphry Davy, inventor of the miner's safety lamp, picked up the idea of electrolysis and supercharged it. He employed a more powerful version of Volta's battery to decompose molten materials, rather than solutions. In this way he discovered sodium and potassium in 1807 and magnesium, calcium, strontium, barium and boron in 1808. He also showed that chlorine, previously thought to be a compound of oxygen, was actually an element.

After Davy's work new elements began to flow in thick and fast. Iodine (1811). Cadmium and selenium (1817). Lithium (1821). Silicon (1823). Aluminium and bromine (1825). By then there were enough of them for the next step on the journey to be taken.

It had been apparent from the time of their discovery that sodium and potassium were similar, as were calcium, strontium and barium. Lithium, when discovered, proved similar to sodium and potassium. Likewise, bromine and iodine proved similar to chlorine. In 1829 Johann Dobereiner, a German, noticed a curiosity about these trios (members of groups now known, respectively, as alkali metals, alkaline earths and halogens), and also another triplet that shared similar properties: sulphur, selenium and tellurium. In each case, if the members were arranged in order of atomic weight, the middle element (sodium, strontium, bromine, selenium) had a weight that was the average of the lightest and the heaviest of the three. Dobereiner called this the law of triads. It was the first hint of some underlying pattern.

The stamp collection continued to grow. Thorium was discovered in 1829 (by Berzelius, as it happened). Lanthanum followed in 1838, erbium in 1843 and ruthenium in 1844. Then, in 1860, Robert Bunsen, inventor of the burner that bears his name, showed how new elements could be recognised from brightly coloured lines in the spectra obtained when materials contain-

ing them were heated in a flame. This approach was an instant success. Bunsen and his colleague Gustav Kirchhoff added caesium (1860) and rubidium (1861) to the list. Others, copying them, added thallium (1861) and indium (1863). Spectroscopic analysis's greatest triumph, though, was helium (1868). This was recognised not from a sample in the flame of a Bunsen burner but in the spectrum of the sun.

As more and more elements turned up, so the search for order intensified. In 1864 John Newlands, a Briton, almost got it. He published what he called the law of octaves. Arranging the known elements in order of atomic weight, he believed he had discerned that, like a musical scale, every eighth element "rhymed" in the ways that sodium rhymed with potassium, and chlorine with bromine.

The trouble with Newlands' scheme was that an awful lot of the rhymes were forced. A glance at a modern periodic table shows why. For the tall, outer columns (and discounting hydrogen, which is a law unto itself) Newlands' octaves work perfectly for the lightest elements then known. From the row beginning with potassium (K, from the Latin *kalium*, meaning potash), however, the tall outer columns are split asunder by the intrusion of ten other, shorter ones known as the transition metals. To deal with that intrusion using data then available required a mixture of luck and genius. And a few years after Newlands published, a lucky genius wrestled with the question in his study in St Petersburg.

Mendeleev

Albert Einstein, dapper in his youth, cultivated a waywardness of appearance in old age that has contributed to the trope of the mad professor. Dmitri Mendeleev (pictured overleaf) looked like that from the beginning—having his hair cut just once a year by a shepherd, using wool shears. He

also behaved like a mad professor. He was prone to dancing rages that put one biographer in mind of the protagonist of "Rumpelstiltskin", a children's fairy tale. Also like Rumpelstiltskin he proved, metaphorically at least, able to spin straw into gold.

For a time, Mendeleev had worked in Germany with Bunsen and Kirchhoff, but he had fallen out with them and returned home. In 1869 he was professor of general chemistry at the University of St Petersburg and was writing a Russian-language textbook on the subject. On February 14th of the Julian calendar then in use in Russia (February 26th by the Gregorian calendar employed in most of the rest of Europe), having addressed halogens and alkali metals, he was racking his brains for an organising principle to act as a template for the rest. The 14th was a Friday, and the problem obsessed him more and more over the weekend. But on Monday 17th, while waiting for a sleigh to take him to the railway station for a trip to an estate he had bought in the countryside, he had a brainwave.

Mendeleev was an inveterate player of patience. His brainwave was to recognise that, just as games of patience require the player to organise the pack as a grid of suits in order of the value of the cards, so the elements might be arranged by their atomic weights in "suits" that shared chemical and physical properties. By making his own pack, with each card representing one of the 63 then-known elements, he was able to embark on what was arguably the most important game of patience ever played.

He claimed subsequently that the answer had come to him in a dream. Perhaps. But after having worked for four days on the problem without much rest, the boundary between sleep and wakefulness must have been pretty blurred. Whatever the details, the result was a grid of cards that arranged the elements in a pattern (see picture). He published it two weeks later.

His grid was not perfect. Indeed, it was full of holes. But those holes (some of them, anyway) turned out to be keystones. Though there was no reason, in the 1860s, to believe that all the elements had been discovered, Newlands had behaved as though they had been. Mendeleev had enough confidence to leave gaps in order to make the pattern work. At the time, some took this as a sign of weakness. In fact, it was a sign of strength—the more so because, for several of the gaps, he described in detail the properties of the elements he predicted would fill them, and these predictions were, by and large, fulfilled.

Similarly, there are places in Mendeleev's original table where it works only by cheating—that is, by swapping two adjacent elements between the places to which their atomic weights assign them. Here, Mendeleev argued that the accepted weights were incorrect, and needed re- ▶▶

ОПЫТЪ СИСТЕМЫ ЭЛЕМЕНТОВЪ.

ОСНОВАННОЙ НА ВѢСЪ АТОМНОМЪ ВѢСѢ И ХИМИЧЕСКОМЪ СХОДСТВѢ.

		Ti=50	Zr=90	?=180.	
		V=51	Nb=94	Ta=182.	
		Cr=52	Mo=96	W=186.	
		Mn=55	Rh=104,4	Pt=197,4	
		Fe=56	Ru=104,4	Ir=198.	
		Ni=Co=59	Pd=106,4	Os=198.	
		Cu=63,4	Ag=108	Hg=200.	
H=1	Be=9,4	Mg=24	Zn=65,4	Cd=112	
	B=11	Al=27,4	?=68	U=116	Au=197,7
	C=12	Si=28	?=70	Sn=118	
	N=14	P=31	As=75	Sb=122	Bi=210,7
	O=16	S=32	Se=78,4	Te=128,2	
	F=19	Cl=35,4	Br=80	I=127	
Li=7	Na=23	K=39	Rb=85,4	Cs=133	Tl=204.
		Ca=40	Sr=87,4	Ba=137	Pb=207.
		?=45	Ce=92		
		?Er=56	La=94		
		?Yt=60	Di=95		
		?In=75,4	Th=118,7		

Д. Менделѣевъ

Mendeleev's dream

▶ measuring. Sometimes, he turned out to be correct about this, too. But not always. A few such pairs, cobalt and nickel for example (which actually share a slot in the published table), remained stubbornly out of kilter, providing evidence that atomic weight was really a proxy for some deeper structural principle

Crucially, Mendeleev was not constrained, as Newlands had been, by preconceptions about how things ought to be. At points where the octave rule did not work, he let the grid burst out of its corset. This can be seen at both the top and the bottom of the published table.

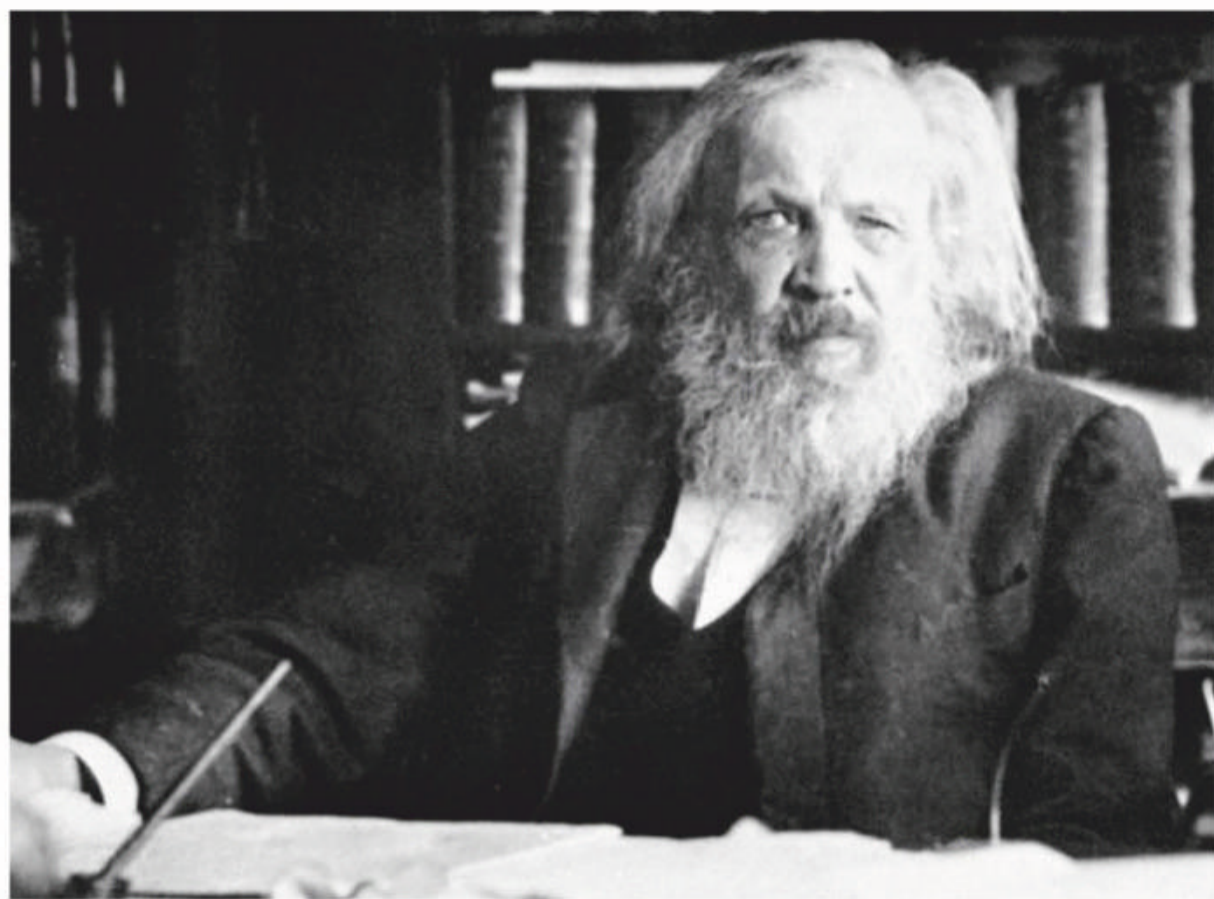
The upper-right-hand extension contains the transition metals. Here, subsequent discoveries have proved Mendeleev more or less correct in his insights. The lower-left-hand one is more problematic. Its contents are a grab bag, though it does contain all of the then-known members of the set of elements called lanthanides. Arguably, Mendeleev was lucky that by 1869 only three lanthanides had been discovered. In a modern table there are 15 and, together with the actinides below them, they form an awkward interpolation that is often relegated to the bottom as an asterisked footnote. Whether Mendeleev's game of chemical patience would have been helped or hindered by having more lanthanides in the pack is an intriguing question.

There was also an invisible gap, the filling of which was one of the table's greatest triumphs. Helium, which Mendeleev ignored because its atomic weight could not be established, turned out to be the lightest member of a whole, new row (or column, in a modern table). These are the noble gases, undiscovered previously because they are chemically inert. The others are neon, argon, krypton, xenon and radon.

Like Davy's discoveries, the noble gases came all of a tumble. All but radon were the work of William Ramsay, a Briton. With various collaborators, Ramsay isolated argon in 1894, helium in 1895 and neon, krypton and xenon in 1898. Instead of chemistry, he used physical processes. All except helium were products of the newly developed technology of cryogenics, which he used to liquefy air and then separate it into its components, according to their boiling points. Helium, he found by heating a mineral called cleveite.

The transmutation of the elements

The 1890s also saw the first inklings that atoms themselves might not, despite the meaning of their name, be truly indivisible. The initial evidence that atoms could spin off parts of themselves, and must therefore have smaller components, came in 1896. That was when Henri Becquerel, who was investigating the nature of phosphorescence, wrapped some uranium salts in photographic paper and found that the



There's antimony, arsenic, aluminum, selenium. And hydrogen and oxygen and...

paper got fogged. Thus did Becquerel discover radioactivity.

The following year, J.J. Thomson worked out that "cathode rays" emitted into a vacuum by a negative electrode were electrically charged particles that weighed far less than any atom. Then, in 1899, Ernest Rutherford, a former student of Thomson's, showed that Becquerel's radiation had two components, which he dubbed "alpha" (heavy, positively charged particles) and "beta" (light, negatively charged ones).

Becquerel himself, in 1900, showed that beta particles were the same as Thomson's cathode rays. Seven years later, Rutherford demonstrated that alpha particles were helium ions (thus incidentally explaining why cleveite, which is an ore of uranium, is also a source of helium). The stage was now set for some of the most important experiments in history: Rutherford's attempts to find out what atoms looked like.

One previous guess had been that they were vortices in the luminiferous aether through which light and radio waves were thought to propagate. That hypothesis, however, died with the aether itself, when the latter's existence was disproved experimentally in the 1890s. Rutherford's experiments, conducted between 1908 and 1910, probed matter by firing alpha particles at gold foil. Most sailed through, to be recorded by a scintillation screen beyond the foil. But a few were deflected from their courses, to be recorded by other screens, including one behind the source. This screen's recording of alpha particles returning whence they had come was described by Rutherford as being "almost as incredible as if you fired a 15-inch shell at a piece of tissue paper and it came back and

hit you". His explanation, now abundantly proved true, was that the atoms in the foil had tiny, positively charged nuclei, which were reflecting the positively charged alpha particles, and that these nuclei were surrounded by electrons.

Regardless of an atom's exact nature, losing alpha and beta particles necessarily changes it. Such radioactive decay proved a source of yet more members of the periodic table. Polonium and radium—decay products of uranium—were found in 1898 by Pierre and Marie Curie. Actinium, the lightest actinide, followed in 1899. Radon was recognised in 1900. Protactinium in 1913.

Models of the atom also became more sophisticated. In 1913, Rutherford and a Danish colleague, Niels Bohr, suggested electrons orbit the nucleus as planets orbit the sun, with electrical attraction playing the role of gravity. In the same year Henry Moseley, another of Rutherford's confrères, found a mathematical relationship between an element's x-ray spectrum when bombarded with electrons and its atomic number in the table. In pairs like cobalt and nickel, where the table had been fudged, Moseley confirmed the fudges to be correct. He tidied up the lanthanides, predicting missing elements as Mendeleev had done. He also predicted two new transition metals, with atomic numbers 72 and 75, which duly turned up in 1923 (hafnium) and 1925 (rhenium).

Moseley's x-ray spectra demonstrated that an element's atomic number does not depend directly on its atomic weight. Rutherford soon showed that the atomic number is actually the number in a nucleus of a positively charged particle that came to be known as a proton. Even though protons ▶▶

weigh almost 2,000 times as much as electrons, the two have equal (though opposite) charges. An atom, which has equal numbers of both, is therefore electrically neutral. Protons are not, though, heavy enough to account for measured atomic weights. That requires a second, electrically neutral particle, the neutron. This was discovered in 1932. Neutrons are also the reason that an element can have atoms of different atomic weights, known as isotopes. These isotopes have different numbers of neutrons.

The Bohr-Rutherford model of the atom had a problem, though. Electrostatic forces should pull the electrons into the nucleus rather than keeping them in orbit. Here, the new science of quantum mechanics came to the rescue. Quantum theory requires objects to be both particles and waves. The wavelike aspect of electrons means that when they circle an atomic nucleus they settle into self-reinforcing three-dimensional standing waves, called orbitals. The stability of these standing waves stops the electrons being drawn into the nucleus. And here, at last, is the explanation for why the periodic table is the way that it is.

Spdfg

For reasons deep in the heart of quantum mechanics, each orbital can have either one or two electrons in it, but not more. The orbitals themselves come in different types (see diagram) and these are arranged in shells around a nucleus. The first shell has one type “s” orbital, for a maximum of two electrons. The second, a type s and three type p, for a maximum of eight. The third has one s, three p and five d, for a maximum of 18. The fourth, one s, three p, five d and seven f, for a maximum of 32. Et cetera. The names are derived from the spectral lines seen by Bunsen and his followers. The colours of these lines represent energy released as light by electrons moving between orbitals.

It is the shells that define the table's rows. In the first row, which consists of hydrogen (one electron) and helium (two), the first shell is filled up. In the second row, from lithium to neon, the second shell is filled. The third row, from sodium to argon, fills the s and p orbitals of the third shell. The fourth, from potassium to krypton, fills the s and p orbitals of the fourth shell and the d of the third shell (which has ten electrons altogether, for the ten columns of transition metals).

Compounds are created either by unpaired electrons from different atoms forming joint orbitals called covalent bonds, or by the complete transfer of unpaired electrons between atoms, to create paired orbitals in the recipients. When this happens, the resulting positive and negative ions are held together by electrostatic

forces—a process called ionic bonding. The repetitive order in which the shells are filled in each row means that elements in each column of the table have the same combination of unpaired electrons, and thus similar properties. For example, the noble gases are inert because they have no unpaired electrons. Further analysis showed, moreover, that the difference between metals and non-metals depends on how easy an atom's outer electrons are to detach (if easily detached, they can flow as an electric current, reflect light in the way that makes metals shiny, and confer ductility on the solid form of the element). And that, essentially, is chemistry solved.

It is not quite, however, the end of the story. In the 1930s physicists discovered that radioactivity could, in essence, be reversed by bombarding atoms with subatomic particles to increase their atomic numbers. This way, new elements can be produced. Technetium, created in 1937, was the first such. Two years later francium, the last to be discovered in nature, was isolated as a decay product of actinium. From that moment the extension of the periodic table became work for physicists, not chemists.

Technetium is strange. Despite its low atomic number (43) it has no stable isotopes, and is thus found only transiently in nature. This is a quirk of the physics of protons and neutrons that it shares with promethium (61). But at the heavy end of the table, beyond lead (82), radioactivity is compulsory for all. And beyond uranium (92) it is so compulsory that “transuranics” were once thought not to occur in nature.

This part of the periodic table was the playground of Glenn Seaborg, an American physicist. In 1940 Seaborg was part of a group at the University of California, Berkeley, that made neptunium (93). When the group's head left later that year, Seaborg took over. On his watch americium (95), curium (96), berkelium (97), californium (98), einsteinium (99), fermium (100), mendelevium (101) and nobelium (102) were all created. But his first discovery, plutonium (94, in 1941), was the most important. On

July 16th 1945, the first atom bomb, a plutonium-implosion device, was tested at Alamogordo, New Mexico. On August 9th of that year another of the same design destroyed Nagasaki, in Japan.

Americium has its uses, too. Since it was a synthetic product, it was patentable, and Seaborg did, indeed, patent it. It was (and is) employed in smoke detectors, and he drew a tidy income from that fact for many years. Beyond 95, though, the practical point of extending the table became less and less obvious as elements became less and less stable.

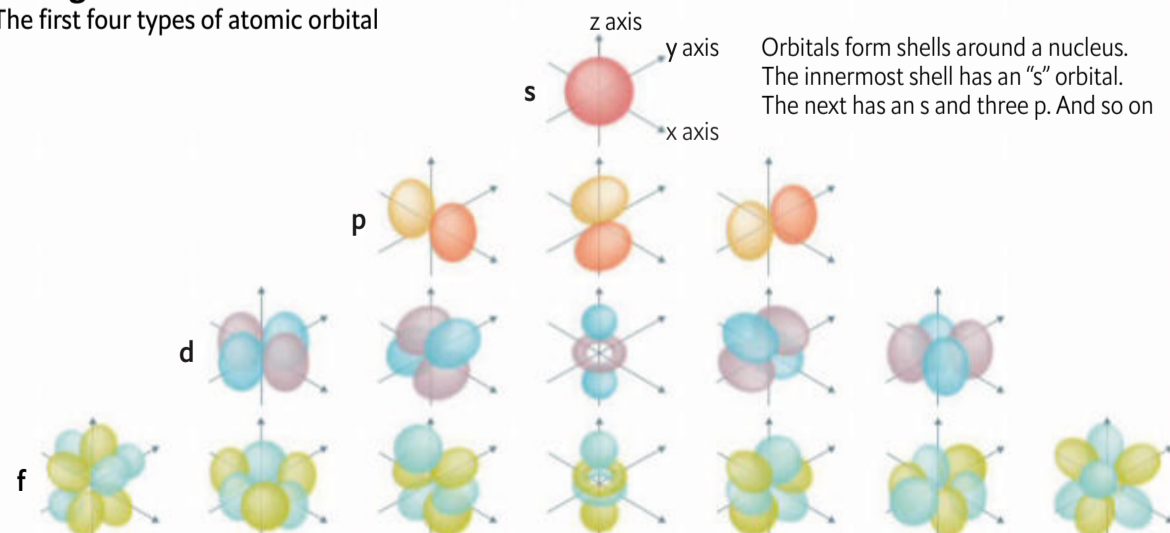
Efforts to make new elements slowed down after 1955, though there was a pick up again in the mid 1990s. Neither chemistry nor the wider world, however, reverberated with excitement at the creation of darmstadtium (110), roentgenium (111), copernicium (112) and nihonium (113) in the way that they had with the discovery of potassium, or helium, or radium or plutonium. What started as stamp collecting has returned to its roots—except in one regard. This is that, thanks to Mendeleev's brilliance, element-hunters now have an album in which to stick their discoveries.

The heaviest element of all, oganesson (118), was created in 2002, though named only in 2016. Oganesson completes the table's seventh row. Chemically, it should be a noble gas. But, with only a few atoms of it to play with at a time, and with those atoms having lifetimes measured in milliseconds, it seems improbable anyone will ever know for sure.

Despite physicists' best efforts, then, the eighth row has not been reached. But as Mendeleev himself said, “To conceive, understand and grasp the whole symmetry of the scientific edifice, including its unfinished portions, is equivalent to tasting that enjoyment only conveyed by the highest forms of beauty and truth.” For those who share this view, and see in the periodic table a supreme example of nature's poetry, the row-completing, album-filling addition of oganesson may seem as good a place as any to stop. ■

Shell game

The first four types of atomic orbital





 → Also in this section

69 The Cleveland Orchestra

70 Searching for Doggerland

70 Hungarian fiction

71 Johnson: Grammar guides

Crime

American scourge

Mass shootings get plenty of attention. But ordinary violence causes far more damage to the most vulnerable people

WALK THROUGH Bronzeville on Chicago's South Side and there is plenty to suggest that a once-troubled neighbourhood is on the up. A supermarket has replaced a housing project, the Ida B. Wells Homes, that was notorious for gangs, drugs and murder. In Peach's, a bustling corner restaurant, a customer who is tucking into breaded catfish and collard greens talks of a local revival. He marvels that brownstone houses nearby used to go for a song, when many were boarded up and abandoned. Now they sell for \$1m or more.

Some locals fear gentrification, or the loss of a proud black history. In the 1950s over 110,000 African-Americans called Bronzeville home. Artists such as Louis Armstrong, Duke Ellington and Josephine Baker would play and party on 47th Street. As the neighbourhood smartens, incoming white and Hispanic residents put a welcome dent in segregation. But poorer blacks are being squeezed out, as they are elsewhere in Chicago. The city has lost over 230,000 black residents so far this century, most from the South Side.

Above all, crime festers. Although Bronzeville has become safer in the past few years, it still endures levels of crime unthinkable in richer (and whiter) places. The

An American Summer: Love and Death in Chicago. By Alex Kotlowitz. *Doubleday*; 304 pages; \$27.95

number of homicides in Chicago as a whole has dropped since 1991, when 927 people were killed. The city nonetheless sees more of them (538 last year) than more-populous New York and Los Angeles combined. As many as 4,000 people are shot and wounded yearly, one every two hours. Many of them are paralysed.

Some observers liken the neglected districts in the South and West Sides of the city to war zones. The term "Chi-raq" (a combination of Chicago and Iraq) has grown popular in recent years, adopted by rappers, T-shirt makers and the film-maker Spike Lee. Once acquired, such a reputation is terribly hard to shake. Take the word of Eddie Bocanegra for that. He is a former gang member who tries to steer youngsters away from violent crime. At a recent meeting in a red-brick YMCA in Bronzeville, he spoke of how his brother, a soldier who just ended a tour in Syria, refuses to move to Chicago because of its lawlessness.

How people confront that violence and deal with its consequences is the subject of

Alex Kotlowitz's new book. His first, "There Are No Children Here", was published at the peak of killings, in the early 1990s. It remains a model of powerful writing on a painful subject. For years Mr Kotlowitz, a journalist and author who lives in the city, immersed himself in the lives of two brothers, Lafayette and Pharaoh, as they became young teenagers. His book tells, in intimate detail, of their growing up in public housing, threatened by gangs and guns.

In his new book, "An American Summer", Mr Kotlowitz returns a generation later to the same topic. Depressingly, much continues as before. In the past 20 years over 14,000 people have been murdered in the city. Again he sets out how sudden deaths, injuries and constant dread cut apart the already fragile lives of the most deprived. Mr Kotlowitz spent four years among some 200 interviewees. He tells some of their stories, set in the hot months of 2013 as a surge in killings occurs. "Sun's out, guns out," as sardonic locals say.

He tells Mr Bocanegra's story, describing his persistent sense of guilt for killing a rival when a teenager, how he served his sentence and has since tried to make amends by counselling others to prevent more violence. More distressing are the profiles of near-random victims, such as a girl hit by a stray bullet from a shoot-out. She died in her living room while dancing at her 11th birthday party. Mr Kotlowitz notes how many parents "take out life insurance policies on their children", fearing the cost of a funeral.

Mr Kotlowitz is a sympathetic, fluent writer. He is not one for policy prescriptions, but the accumulating accounts of ►►

▶ suffering serve to condemn the city for letting the violence drag on. The author meets a quadriplegic man in his 20s who can find care only in a dementia home. Victims who survive are among the likeliest to become perpetrators, or victims again. The law is hardly a deterrent: only one in ten shootings leads to even a charge. Many witnesses to murders are terrified or set on revenge; few are willing to testify. Though Mr Kotlowitz does not dwell on it, relations with police are often tense. Barely a quarter of murders are cleared up.

The shifting nature of violence is also troubling. Mr Kotlowitz picks out two trends. First, many killings today seem purposeless. Although he does not romanticise the criminal past, he notes that a few well-structured gangs such as the Gangster Disciples and Vice Lords used to fight to control territory and Chicago's drug trade. Then, many killings could at least be understood as part of those clashes.

Since the police broke the large gangs, hundreds of tiny cliques—police estimate 625—have risen. These can have as few as ten members, often young teenagers on a residential block. Such boys are anxious to prove themselves fearless to peers. All have easy access to guns. The cliques quickly turn to violence after a petty spat, or to assert status on the street. “People get into it over nothing”, “just because”, as one miserable teenager explains.

In your face

A second change adds to the trauma. In the past many killings were somewhat hidden. They took place in dark corners of enormous public-housing towers where gangs battled. Many such buildings have been demolished in the past few decades. Another writer, Ben Austen, last year published “High-Risers”, a gripping account of the rise and fall of Cabrini Green, one of the most notorious of such complexes.

The removal of towers that concentrated poverty, dysfunction and mayhem is welcome—it is part of what lets neighbourhoods like Bronzeville begin to recover. But a side-effect is that violence now occurs more often on ordinary residential streets where youngsters play or chat. Some murders are even streamed on social media by bragging rivals. As Mr Kotlowitz writes: “The thing about Chicago's violence is it's public—very public—and so each shooting or its aftermath is witnessed by many, children and adults alike.”

Where will all this end? Hopeful evidence from neighbourhoods like Bronzeville (or cities like New York) shows that economic rejuvenation, better policing and training for young people can all bring violence down. More worrying is that such facts have long been known, but officials and others have done far too little. In the face of inaction, tragedy is inevitable. ■

Classical music

Steel and strings

CLEVELAND

Orchestral music is thriving in a rock'n'roll city

WHEN THE Cleveland Orchestra moved into Severance Hall in 1931, the state-of-the-art design let well-heeled patrons call their cars from their boxes and be whisked home without having to linger in the cold midwestern air. By 1963 its music director, George Szell, was on the cover of *Time* and its albums were bestsellers. But after the imperious Szell died in 1970, the orchestra, now in its centennial season, came to lack a distinct identity. “We give a great concert and Szell gets a great review,” griped a former music director in 1997.

The trajectory reflected the decline of the city itself. Once the fifth-largest in America, a steelmaking hub and sports powerhouse, Cleveland for decades was known mostly for losing games, money and people—shedding half its population in a generation. What is now the 51st-largest city in the country is an unlikely home for a top-tier orchestra. In the late 20th century Cleveland was more associated with rock'n'roll (a term coined by a local DJ in the 1950s). A museum celebrating that sound opened in 1995, and seemed poised to oust Severance Hall as the centre of the city's musical life.

Yet the 21st century has seen—and heard—a revival of the orchestra's glory. Both financially and artistically, the outfit is stronger than ever. Much of its success can be credited to the latest music director, Franz Welser-Möst. The Austrian-born conductor arrived in 2002 and began re-

shaping the band. One Cleveland board member confides that he was chosen over more famous conductors because he pledged to upend the status quo: “Franz was the only one who said, ‘There's something different I'd like to do.’”

Absolute precision has been the orchestra's hallmark since Szell. Mr Welser-Möst prefers a lighter touch. “You can't have total control,” he says. “Szell would tell the English horn player which optician to go to. That doesn't work any more.” Now the music breathes more. Before his current job he endured a rocky stint with the London Philharmonic Orchestra, but in Cleveland he is well-liked by both his players and the wider community. When the orchestra visits local schools or plays at pop concerts on holidays, he goes too. “It makes a difference to people if they see you and say: ‘I know this guy.’”

More Clevelanders are indeed getting to know him: subscriptions and attendance are rising. The audience is the youngest for any American orchestra, with more than a fifth of classical concert-goers aged 25 or under. Just as important, the patrons are charitable. Statutory funding for the arts is less munificent than in bigger cities and more left-leaning states, but Cleveland's long tradition of private giving is holding up—crucially, since the institution's endowment covers only a fraction of the operating budget. Last year the orchestra raised almost \$25m; it has managed more than \$20m for the past five years.

That is a handsome haul for any arts organisation, especially one in a mid-tier city. Concert-goers seem to take pride in the underdog character of their musicians. “It's not a huge population here, but it's a very generous community,” says André Gremillet, the orchestra's executive director. “They're proud that north-east Ohio can produce great American culture.” ■



Poco a poco crescendo

The past returns

Fragments and ruins

Time Song: Searching for Doggerland. By Julia Blackburn. Illustrated by Enrique Brinkmann. *Jonathan Cape*; 304 pages; £25. To be published in America by Pantheon in August; \$26.95

TO LIVE BESIDE the sea is to be reminded of absences. Bones, mammoth tusks, fossilised creatures and even ghostly footprints are washed up on the beach or uncovered under layers of sand, hinting at generations of bygone residents, human and animal. The coastline of East Anglia in England has inspired many writers, notably W.G. Sebald, a German who walked and meditated on its history. That stretch of shore is also one of the places where evidence of Doggerland—the huge area of forests and plains that connected Britain to mainland Europe before it was submerged by the rising sea—has recently appeared.

A search for traces of Doggerland is the starting point for “Time Song” by Julia Blackburn, a writer and poet who lives in Suffolk. Blending nature writing with memoir and poetry, her book is an unconventional attempt to “learn prehistory hand to mouth”. The result is a meditation on the Mesolithic and what people are truly looking for when they turn to the past.

Like many of the people in the book—a Dutch customs inspector with an interest in mammoth bones, a young British fossil-hunter—Ms Blackburn is a collector with an eye for minutiae. Like an archaeologist’s shelf, her writing is filled with detail. A friend has a “wonderful breathing bellow of a laugh”; a row of bungalows resembles biscuits in a tin. She relays what the experts

she meets say and do, but also notes the muffins they eat, and her nervous chuckle when one of them comments on her untidy handwriting. These mildly eccentric folk, and Ms Blackburn’s responses to them, strike a humorous note rarely found in nature writing.

But it is in her descriptions of the sea and her imaginings of the land it submerged that Ms Blackburn’s book is most arresting. In her evocation of Doggerland, and how it may have looked or felt before being flooded by rising seas around 8,000 years ago, she is quick to see a parallel with modern climate change:

I have watched starlings thickening the evening sky, seals gathered in their breeding colonies, an exodus of toads too numerous to count; but every year there is less to see and my memory tries its best to forget what it has known, for fear of being made too sad by the reality of that loss. We learn to grow accustomed to the absences, because it seems we have no choice.

“Time Song” is not overtly political. Brexit is mentioned only briefly, despite the obvious echo of Britain once again trying to sever connections with the adjacent landmass. But it is deeply concerned about the environment, and how people treat and remember the landscape.

And with another, more personal loss: of Ms Blackburn’s second husband, Herman Makkink, a Dutch artist. As Ms Blackburn searches for the elusive Doggerland, his absence becomes palpable, too. Her journeys back and forth between Britain and the Netherlands recall earlier trips they made together. In the face of the Tollund Man, the prehistoric body found in a bog in Denmark in 1950, she catches a glimpse of her husband’s features as he died: “They had the same pattern of lines across the forehead, the same arch of the nose, the same inward smile.”

Ms Blackburn’s poetry, interspersed throughout, is less compelling than her

lyrical prose. Yet the combination of wry observations and personal reflections makes “Time Song” gripping. In searching for a landscape she can never fully grasp, much as she reaches out for her husband’s hand in the night to find it missing, she discovers a sort of comfort. The book arrives at an acceptance of loss—of small personal sorrows, if not larger environmental ones. The director of the museum that houses the Tollund Man tells Ms Blackburn that seeing the shrunken, preserved body each day made him realise that “death is not so bad; it is nothing to be afraid of”. ■

Hungarian fiction

Ghosts of Budapest

Katalin Street. By Magda Szabo. Translated by Len Rix. *NYRB Classics*; 248 pages; \$15.95. *MacLehose Press*; £12.99

THE HUNGARIAN writer Magda Szabo, who died in 2007, knew from personal experience what it meant to have dreams smashed by arbitrary power. As a young poet she won her country’s chief literary honour, the Baumgarten prize, in 1949. On the same day, the communist regime cancelled this award to a “class enemy”. She lost her civil-service job, went to teach in a primary school, and only began to publish novels a decade later as a thaw began.

Her fiction shows the travails of modern Hungarian history from oblique but sharply illuminating angles. In novels such as “The Door” and “Iza’s Ballad”, intimate dramas are entangled with public upheavals: the repressive governments and Nazi occupation of the 1930s and 1940s; the sudden annihilation of Hungary’s Jews; the soul-sapping compromises and betrayals of the Stalinist era. In “Katalin Street”, published in 1969 but only now translated into supple, graceful English by Len Rix, three neighbouring families live through the shocks that batter Budapest between 1934 and 1968.

Readers meet the upright, naive headmaster Mr Elekes, who will see his obedience to authority traduced by two kinds of tyranny, and his wife and daughters: sensible, thoughtful Iren, who narrates part of the story, and scatty, lovable Blanka. Next door lives the affable Jewish dentist Mr Held, with his wife Anna and dreamy daughter Henriette. On the other side resides the kind-hearted warrior Major Biro with his housekeeper-mistress Mrs Temes and son, Balint. The fate of this tarnished golden boy, a mediocre but weirdly charming medic, anchors a plot that jumps back and forth through the decades. ▶▶



The shallow blue sea

▶ To these adjacent households on a quiet street between the Danube and the castle, public tumult often feels as remote as the distant sounds of unrest that reach survivors during the anti-communist uprising of 1956. They dwell most happily in memory, in longing, even in fantasy. Their pasts haunt their present: “The dead are not dead,” Szabo writes, “but continue living in this world.”

Devoted to order and ritual, headmaster Elekes seeks to “impose stability on the uncertainties of life”. History, with its “concentrated unreality” of cruelty and absur-

dity, will wreck all such hopes. Szabo summons the cosy, closed world of the three clans with a lyrical, quicksilver touch. That makes the thuggish intrusions of despotic power—the Helds’ deportation, the shooting of Henriette—all the more wrenching. In a striking departure from her usual delicate realism, the author makes the dead girl return as a phantom witness to later events. The post-war years see persecution, exile, grief and eviction fray or snap this tight circle of allies. Symbolised by the ghostly Henriette, former times shadow the new, with “the living ex-

perience and the old memory sitting neatly side by side”.

Szabo is no nostalgic sentimentalist. The pre-war bourgeois idyll between river and castle had defects aplenty. Yet gilded recollection fortifies and binds the families; Iren and Balint, tetchily married in the end, have both “seen the same blue sky shining, before the thunder broke”. That thunder blew trust and justice out of daily life. Now, only force and chance hold sway. “Life isn’t a schoolroom,” Balint says when the mercurial Blanka defects to the West. “There aren’t any rules.” ■

Johnson Laying down the law



What to look for in a usage and grammar guide

WHY DO PEOPLE buy books on English usage? The obvious answer, “for authoritative advice”, doesn’t square with what people actually buy. For decades the best-selling grammar book in the English-speaking world, by far, has been William Strunk and E.B. White’s “Elements of Style”. It is breezily readable, but neither comprehensive—a recent edition is 95 small pages—nor even always reliable.

It is not the only book in that category. Lynne Truss had a mega-seller with “Eats, Shoots and Leaves: a Zero Tolerance Guide to Punctuation”. Never mind that “zero-tolerance” needs a hyphen; Ms Truss’s style—sometimes crisp humour, sometimes camped-up outrage—was the real selling-point. A gentler humour is on offer in Gyles Brandreth’s contribution, “Have You Eaten Grandma?”, which follows Ms Truss in making a joke of a missing comma. It calls “Most of the time” a subordinate clause, among other lapses. But it too has sold well. It seems that people prize attitude over expertise.

At the other end of the spectrum lie venerable reference books. The “Chicago Manual of Style”, in its 17th edition, is a bible for American copy editors. Bryan Garner, a lawyer and lexicographer, produces well-researched tomes. “Merriam-Webster’s Dictionary of English Usage” is one of the best in the business. But these hefty books cannot be zipped through like those of Ms Truss or Mr Brandreth.

Some journalistic outfits, including the Associated Press, the *New York Times* and *The Economist*, offer advice in a smaller package. And a few individual writers have done the same in recent years, with “Accidence Will Happen” by Oliver Kamm (the language columnist for the *Times* of London), “The Joy of



Syntax” by June Casagrande (a copy editor and columnist) and “The Sense of Style” by Steven Pinker (a Harvard psychologist). All three are natives, not tourists, in the study of language, but their books can be read for fun. And so can “Dreyer’s English”, the newest entry. Published only last month in America, it is already in its fifth printing—quite an achievement for a 60-year-old first-time author with strong opinions on the en-dash.

Benjamin Dreyer is the copy chief at Random House, a New York publisher. For four decades he improved others’ prose without showcasing his own. His experience and good sense are established as early as page 9, where he dispels what he calls “the big three” unkillable myths—that you can’t start a sentence with a conjunction, end one with a preposition or split an infinitive. Do all three, says Mr Dreyer. “You’ll have a certain percentage of the reading and online-commenting populace up your fundament to tell you you’re subliterate. Go ahead and break them anyway. It’s fun, and I’ll back you up.”

Although he enjoys killing off bogus

rules, Mr Dreyer is more concerned with injunctions you should follow than with ones you should discard. In some places he is conservative (singular *they* is on the rise, but he can’t quite endorse it). In others he is unconventional (he does not use question-marks with so-called tag questions, which can jar, can’t it). But on every page, the serious stuff is spiced with his distinctive humour.

On some, the serious-to-spice ratio is reversed. The section on proper nouns is heavy on Broadway. The section on redundancies probably didn’t need “ass-less chaps” (“chaps are by definition assless. Look at a cowboy. From behind”). But these digressions are delivered with a wink. One reviewer called the book “for the 1%”, but that missed the point, and the percentage. This book is not for a financial upper crust, but an intellectual one, and not just a slim sliver. It is a democratic and liberal-minded book for readers who care for grammar, usage and a good read at the same time. Judging from the book’s sales, more than 1% might want that. All the better that it is informed by decades of dealing with subtleties, edge cases, language change and the rest. Where Mr Dreyer delivers a sharp “do this, not that” on a matter of dispute, he admits that you are getting his opinion, not some unchanging rule on stone tablets.

Mr Dreyer says he considered calling the book “The Last Word”, but decided against: “There’s no rule without an exception (well, mostly), there’s no thought without an afterthought (at least for me), there’s always something you meant to say but forgot to say. There’s no last word, only the next word.” This is what to look for in a language book: authority without arrogance. There is always more to learn.

Economic data

	Gross domestic product			Consumer prices		Unemployment rate		Current-account balance		Budget balance		Interest rates		Currency units			
	% change on year ago latest	quarter*	2018†	% change on year ago latest	2018†	%		% of GDP, 2018†	% of GDP, 2018†	10-yr gov't bonds latest,%	change on year ago, bp	per \$ Feb 27th	% change on year ago				
United States	3.0	Q3	3.4	2.9	1.6	Jan	2.4	4.0	Jan	-2.4		-3.8	2.7	-20.0	-		
China	6.4	Q4	6.1	6.6	1.7	Jan	1.9	3.8	Q4\$	0.3		-4.0	3.0	\$\$	-77.0	6.68	-5.5
Japan	nil	Q4	1.4	0.7	0.2	Jan	1.0	2.4	Dec	3.5		-3.2	nil		-9.0	111	-3.0
Britain	1.3	Q4	0.7	1.4	1.8	Jan	2.3	4.0	Nov††	-4.2		-1.3	1.2		-36.0	0.75	-4.0
Canada	2.1	Q3	2.0	2.1	1.4	Jan	2.3	5.8	Jan	-2.8		-2.2	1.9		-35.0	1.31	-2.3
Euro area	1.2	Q4	0.8	1.9	1.4	Jan	1.7	7.9	Dec	3.5		-0.7	0.2		-51.0	0.88	-6.8
Austria	2.2	Q3	-1.9	2.7	1.7	Jan	2.1	4.7	Dec	2.1		-0.2	0.5		-38.0	0.88	-6.8
Belgium	1.2	Q4	1.2	1.4	2.2	Feb	2.3	5.5	Dec	0.5		-1.0	0.6		-33.0	0.88	-6.8
France	0.9	Q4	1.0	1.5	1.2	Jan	2.1	9.1	Dec	-0.8		-2.6	0.5		-40.0	0.88	-6.8
Germany	0.6	Q4	0.1	1.5	1.4	Jan	1.9	3.3	Dec‡	7.5		1.4	0.2		-51.0	0.88	-6.8
Greece	2.4	Q3	4.3	2.1	0.4	Jan	0.6	18.5	Nov	-2.9		-0.1	3.7		-68.0	0.88	-6.8
Italy	0.1	Q4	-0.9	0.8	0.9	Jan	1.2	10.3	Dec	2.6		-1.9	2.8		69.0	0.88	-6.8
Netherlands	2.0	Q4	1.8	2.5	2.2	Jan	1.6	4.5	Jan	10.3		1.2	0.2		-47.0	0.88	-6.8
Spain	2.4	Q4	2.8	2.5	1.0	Jan	1.7	14.3	Dec	0.9		-2.7	1.2		-35.0	0.88	-6.8
Czech Republic	2.4	Q3	4.1	2.9	2.5	Jan	2.2	2.2	Dec‡	0.6		1.2	1.9		-2.0	22.5	-7.8
Denmark	2.4	Q3	3.2	0.9	1.3	Jan	0.8	3.8	Dec	6.1		-0.4	0.3		-48.0	6.56	-7.3
Norway	1.7	Q4	1.9	1.7	3.1	Jan	2.8	3.7	Dec††	7.5		7.0	1.7		-25.0	8.53	-7.7
Poland	5.7	Q3	7.0	5.1	0.9	Jan	1.7	6.1	Jan\$	-0.5		-0.9	2.9		-47.0	3.79	-10.0
Russia	1.5	Q3	na	1.7	5.0	Jan	2.9	4.9	Jan\$	6.6		2.7	8.5		134	65.9	-14.6
Sweden	1.7	Q3	-0.9	2.2	1.9	Jan	2.0	6.5	Jan\$	2.0		0.8	0.3		-51.0	9.25	-11.0
Switzerland	2.4	Q3	-0.9	2.6	0.6	Jan	0.9	2.4	Jan	9.6		0.9	-0.3		-38.0	1.00	-6.0
Turkey	1.6	Q3	na	3.1	20.4	Jan	16.3	12.3	Nov\$	-3.6		-1.9	14.9		306	5.31	-28.3
Australia	2.8	Q3	1.0	3.0	1.8	Q4	2.0	5.0	Jan	-2.4		-0.6	2.1		-69.0	1.40	-8.6
Hong Kong	1.3	Q4	-1.4	3.4	2.5	Jan	2.4	2.8	Jan††	3.0		2.0	1.8		-22.0	7.85	-0.3
India	7.1	Q3	3.3	7.3	2.0	Jan	4.0	7.1	Jan	-2.7		-3.6	7.7		nil	71.2	-8.9
Indonesia	5.2	Q4	na	5.2	2.8	Jan	3.2	5.3	Q3\$	-2.8		-1.9	7.8		135	14,030	-2.5
Malaysia	4.7	Q4	na	4.7	-0.7	Jan	1.0	3.3	Dec\$	2.2		-3.7	3.9		-15.0	4.07	-3.9
Pakistan	5.4	2018**	na	5.4	7.2	Jan	5.1	5.8	2018	-5.3		-5.1	13.1	†††	432	139	-20.5
Philippines	6.1	Q4	6.6	6.2	4.4	Jan	5.3	5.1	Q4\$	-2.8		-2.8	6.4		-37.0	51.9	0.2
Singapore	1.9	Q4	1.4	3.2	0.4	Jan	0.4	2.2	Q4	17.7		0.4	2.2		-14.0	1.35	-2.2
South Korea	3.2	Q4	3.9	2.7	0.8	Jan	1.5	4.5	Jan\$	4.9		1.1	2.0		-74.0	1,119	-4.3
Taiwan	1.8	Q4	1.5	2.6	0.2	Jan	1.4	3.7	Jan	12.7		-0.6	0.8		-21.0	30.8	-5.1
Thailand	3.7	Q4	3.3	4.1	0.3	Jan	1.1	0.9	Dec\$	6.9		-3.0	2.2		-26.0	31.4	-0.1
Argentina	-3.5	Q3	-2.7	-2.0	48.9	Jan	34.3	9.0	Q3\$	-6.0		-5.7	11.3		562	38.8	-48.0
Brazil	1.3	Q3	3.1	1.2	3.8	Jan	3.7	12.0	Jan\$	-0.8		-7.1	7.1		-133	3.74	-13.1
Chile	2.8	Q3	1.1	4.0	1.8	Jan	2.4	6.7	Dec\$††	-2.5		-2.0	4.1		-45.0	651	-9.3
Colombia	2.6	Q3	0.9	2.6	3.1	Jan	3.2	9.7	Dec\$	-3.2		-2.4	6.6		5.0	3,072	-6.9
Mexico	1.7	Q4	1.0	2.0	4.4	Jan	4.9	3.5	Jan	-1.7		-2.0	8.2		54.0	19.2	-2.2
Peru	4.8	Q4	11.4	3.9	2.1	Jan	1.3	8.0	Jan\$	-2.0		-2.5	5.6		64.0	3.31	-1.8
Egypt	5.5	Q4	na	5.3	12.7	Jan	14.4	8.9	Q4\$	-2.2		-9.5	na		nil	17.5	0.6
Israel	2.8	Q4	3.1	3.2	1.2	Jan	0.8	4.3	Jan	1.7		-3.0	2.0		16.0	3.62	-3.9
Saudi Arabia	2.2	2018	na	1.5	-1.9	Jan	2.5	6.0	Q3	6.1		-5.3	na		nil	3.75	nil
South Africa	1.1	Q3	2.2	0.9	4.0	Jan	4.5	27.1	Q4\$	-3.4		-3.9	8.7		56.0	13.9	-15.8

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. \$Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. †††3-month moving average. §§5-year yield. ††††Dollar-denominated bonds.

Markets

In local currency	Index Feb 27th	% change on:	
		one week	Dec 31st 2018
United States S&P 500	2,792.4	0.3	11.4
United States NAScomp	7,554.5	0.9	13.9
China Shanghai Comp	2,953.8	7.0	18.4
China Shenzhen Comp	1,540.9	6.4	21.5
Japan Nikkei 225	21,556.5	0.6	7.7
Japan Topix	1,620.4	0.4	8.5
Britain FTSE 100	7,107.2	-1.7	5.6
Canada S&P TSX	16,074.3	0.3	12.2
Euro area EURO STOXX 50	3,282.8	0.7	9.4
France CAC 40	5,225.4	0.6	10.5
Germany DAX*	11,487.3	0.7	8.8
Italy FTSE/MIB	20,498.8	1.0	11.9
Netherlands AEX	540.3	nil	10.7
Spain IBEX 35	9,211.7	0.3	7.9
Poland WIG	59,969.6	-0.7	4.0
Russia RTS, \$ terms	1,191.0	-0.3	11.7
Switzerland SMI	9,412.2	1.0	11.7
Turkey BIST	104,141.0	2.1	14.1
Australia All Ord.	6,233.6	0.9	9.2
Hong Kong Hang Seng	28,757.4	0.9	11.3
India BSE	35,905.4	0.4	-0.5
Indonesia IDX	6,525.7	0.2	5.3
Malaysia KLSE	1,713.5	-0.7	1.4

	index Feb 27th	% change on:	
		one week	Dec 31st 2018
Pakistan KSE	38,692.7	-3.9	4.4
Singapore STI	3,250.0	-0.9	5.9
South Korea KOSPI	2,234.8	0.2	9.5
Taiwan TWI	10,389.2	1.1	6.8
Thailand SET	1,665.3	1.2	6.5
Argentina MERV	35,345.5	-3.2	16.7
Brazil BVSP	97,307.3	0.8	10.7
Mexico IPC	43,311.2	0.3	4.0
Egypt EGX 30	14,772.3	-2.9	13.3
Israel TA-125	1,425.2	-0.8	6.9
Saudi Arabia Tadawul	8,472.5	-1.1	8.3
South Africa JSE AS	56,298.0	1.1	6.8
World, dev'd MSCI	2,092.1	0.4	11.1
Emerging markets MSCI	1,061.3	1.1	9.9

US corporate bonds, spread over Treasuries

	Basis points	
	latest	Dec 31st 2018
Investment grade	171	190
High-yield	471	571

Sources: Datastream from Refinitiv; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

The Economist commodity-price index

2005=100	Feb 19th		Feb 26th*		% change on	
			month	year		
Dollar Index						
All Items	139.1	139.5	0.8	-10.1		
Food	145.7	143.5	-1.8	-8.6		
Industrials						
All	132.2	135.3	3.7	-11.6		
Non-food agriculturals	123.8	124.9	1.2	-12.3		
Metals	135.7	139.8	4.7	-11.3		
Sterling Index						
All items	194.1	191.6	0.1	-5.7		
Euro Index						
All items	152.5	152.7	1.3	-3.1		
Gold						
\$ per oz	1,337.8	1,328.6	1.4	0.8		
West Texas Intermediate						
\$ per barrel	56.1	55.5	4.1	-11.9		

Sources: CME Group; Cotlook; Darmann & Curl; Datastream from Refinitiv; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

For more countries and additional data, visit Economist.com/indicators

No longer a tastemaker

The Academy's influence peaked half a century ago

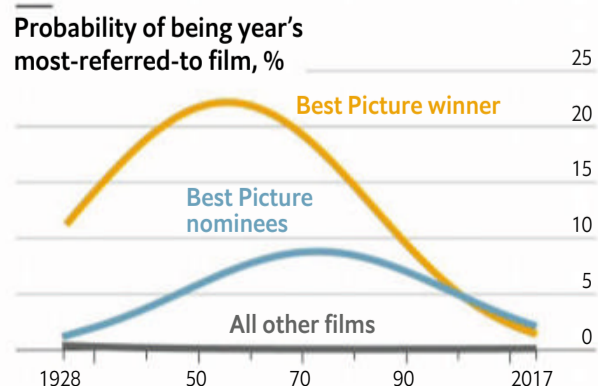
“GREEN BOOK”? Critics sneered when Academy Award voters named this saccharine tale of a friendship between a black pianist and his white, tough-guy chauffeur the Best Picture of 2018. Yet rather than being a rare injustice, the award reinforced a trend. The top Oscar has increasingly gone to films that are soon forgotten.

A film's quality is in the eye of the beholder. Its influence, however, can be measured more objectively. IMDb, a crowd-sourced online database, contains a list of references to every film in subsequent films and TV shows. For example, “Casablanca” has over 1,600 references, including a discussion in “When Harry Met Sally” and a poster in “True Romance”.

The data are spotty: films from the 1980s get four times as many references as those from the 1940s. However, the same bias presumably applies to all films made in a given year. So a rough proxy for a movie's cultural influence is to count how many times it was referred to in subsequent years, and then compare its tally with those of all other films made in the same year.

Decades ago, Best Picture nominees were regularly among the most influential films. Fully 68% of references to films made in 1939 are to “Gone with the Wind” (a winner) and “The Wizard of Oz” (nominated). A statistical model shows that in the 1950s, Best Picture winners had a 20% chance of being the most-referred-to film.

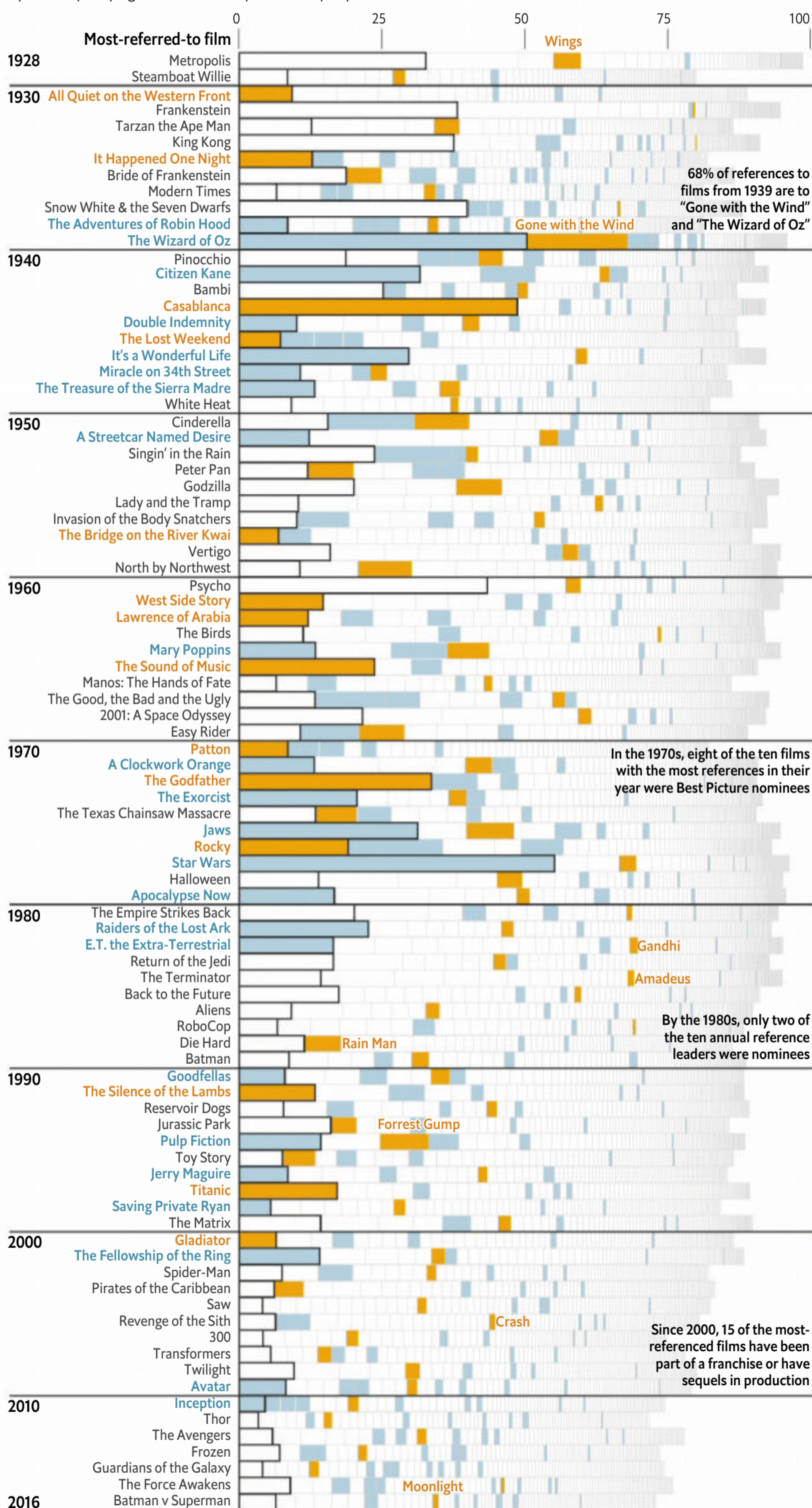
That changed with the advent of “Star Wars”, summer blockbusters and sequels. Since the 1970s the films most referred to have been commercial flicks. Oscar voters usually spurn such movies; the ones they do like have become commercially less successful, and thus less culturally relevant. Best Picture winners today have just a 2% chance of leading the references table. By snubbing “Black Panther” (which already has 151 references) and the art film “Roma”, this year's voters scoffed at both cultural influence and critical acclaim. ■



Best Picture winners have grown less memorable since the 1970s

Share of references* (in other films and TV shows) to films made in each year, %
By Oscar-qualifying release date†, top 100 films per year

Best Picture winners
Best Picture nominees
Other films



68% of references to films from 1939 are to “Gone with the Wind” and “The Wizard of Oz”

In the 1970s, eight of the ten films with the most references in their year were Best Picture nominees

By the 1980s, only two of the ten annual reference leaders were nominees

Since 2000, 15 of the most-referred films have been part of a franchise or have sequels in production

*Mentions, homages, quotes and other visual and musical references
†Release dates span two years before 1934



A thorn in their side

Li Rui, secretary to Mao and an outspoken advocate of freedom in China, died on February 16th, aged 101

THE SUMMONS was one Li Rui could not ignore. Nor did he want to. When Mao Zedong sent a plane to fetch him to their first private meeting, in 1958, he was 41 and rising fast. His position as deputy head of the Ministry of Water Resources made him the youngest vice-minister in the still-young Chinese republic. Even better, he was the first director of Joint Factory 718, an electronics venture with East Germany that employed 10,000 workers, offered furnished living quarters, sports teams, a hospital and an orchestra, and was bound for success.

All the same, doubts niggled. His last effort to join Mao had turned sour. After his hard, keen trek on foot at the end of the 1930s from his home province, Hunan, to Yanan, Mao's rebel stronghold, he had started writing editorials in the revolutionary newspaper *Liberation*. But these were so spikily revealing about both sides ("Rui" meant "sharp", and he lived up to that) that he was thrown in prison as a spy, needing "rectification". His mother had told him tearfully, as he left home, "The Communists are good, but you might get killed." Or, apparently, trashed by his own side.

Now Mao was ruler, and he was being called to discuss the Three Gorges Dam, a giant power project proposed for the Yangzi river. He and Mao did not agree about it. As a trained engineer, he fiercely opposed it, whereas Mao in a poem had already imagined himself swimming in its shadow, admiring its "walls of stone" and "smooth lake rising". Oddly, though, Mao liked the way he argued; seemed to like him too, despite, as a peasant, loathing intellectuals; and asked him to be his secretary for industrial affairs.

It lasted barely a year. Mao brooked no dissent, insisting on controlling everybody's minds; he often claimed to be a terrifying blend of Marx and the first Qin emperor, a brutal unifying warlord of ancient times. Since his new secretary was the straight-talking sort, he was soon purged for daring to criticise openly the Great Leap Forward, the economic enormity which led China into savage

famine. After that, he was in jail and exile in the northern mountains for the best part of 20 years. But that brief closeness to the chain-smoking Great Helmsman gave him insights that seared him. It also gave him enough standing in the party, when times were calmer, to barrack other leaders continually to leave Maoist methods alone. For as long as the party kept flirting with autocracy, where government, leader and ideology made one unchecked force, China would never reform or truly advance.

Eventually he wrote five books on Mao, from birth to death, turning himself into a valued historian of those years. Yet the point of history was to learn from it and face up to it, and the party would not. Each leader, from more open-minded Deng Xiaoping onwards, was battered with his opinions and demands. They were drafted in his centre of operations, a study in which it was impossible to cram any more books, and from which he angrily shooed away anyone who filmed what he was writing. Sometimes they took the form of open letters, sometimes interjections at Communist Party congresses. He spoke out even against Tiananmen, that unmentionable massacre, stating simply but emphatically that the students were right and the leadership was wrong. As "the veteran liberal member", he was usually met with silence, sometimes humoured, and ignored. He harassed Xi Jinping over dinner when the future leader was just party secretary in Zhejiang, a poorly educated hack in his view, not a patch on his admirable father. He was horrified to see how autocratic the man became, once in power.

His political wishlist was not long. First, free speech: the party had to listen to the people. Second, freedom to publish. He had been a proper investigative journalist, as well as a trenchant writer; but his Mao books were banned on the mainland, and the journal *Yanhuang Chunqiu*, which he strongly backed in its unofficial reappraisals of Chinese history, had been made anodyne and the editor sacked. Top of the list, he sought constitutional and democratic governance, with the party reframed as a socialist party in the west European style. That thought was so subversive, so unChinese, that in 2013 it was officially, though secretly, condemned. But a man who had got through nine years of solitary by running on the spot, practising *qigong* and writing 400 poems, in gentian violet, in the margins of Marx's collected works would not be cowed by that. True to his name, he stayed thorn-sharp.

The colour red

All the same, what could be done with China's Communist Party, and what would it become? The question was on his lips even in his last days, which were spent in a first-rate hospital reserved for party officials. For he had never left the party, or even toyed with that. It was his life, ever since he had joined it secretly, at 20, in 1937; ever since, as a student, he had been jailed by the Kuomintang for eagerly thrusting Marxist textbooks into people's hands. Mao had expelled him and, in the name of the party, destroyed his first marriage and almost killed him; but that groupthink party of red books and red scarves was not the one he had raced to as a patriotic young rebel, urgent to rid China of warlords and invading Japanese. When he was readmitted under Deng in the 1980s he hoped for a party of brotherhood and social justice, but of freedom too. Instead, as he wrote in a poem, he found arrogance, ignorance, shamelessness, lawlessness. He wore red—as he wore his loyalty—but he had also grown to loathe it. Everything was red, red, red.

Red was naturally the colour of the flag that was to drape his coffin once he was inside it. That, as well as burial at the Babaoshan Revolutionary Cemetery in Beijing, was his privilege as a senior party member. Asked whether he wanted that, he merely said he would prefer to be buried with his parents in Hunan. He felt bad that he had not cared for his mother in her old age. It made him sigh to recall those simple words of hers, "The Communists are good."

When his funeral took place, everything was as the party wanted. No media were allowed. Mr Xi, rid of his most vexing thorn, sent a nice wreath of flowers. ■

WORLD OCEAN SUMMIT

Building bridges

March 5th-7th 2019

Abu Dhabi, UAE

15% off the current rate with code PR1801

Register today, only a few days left!

Speakers include:



ENRIC SALA
Explorer-in-residence
National Geographic



SHIZUO TAKAHASHI
Executive vice-president and
chief information officer
Mitsui OSK Lines



SUSI PUDJIASTUTI
Minister of marine
affairs and fisheries
Indonesia



EMMA NAVARRO
Vice-president
European Investment Bank

Time is running out. Overfishing, unregulated waste management, pollution and lax governance continue to take their toll on the seas. The World Ocean Summit is part of the fight to change things. Join *The Economist* and 600+ delegates and experts to bring about progress towards a sustainable blue economy. If not now, when?

Join us in a few days on March 5-7th 2019 at St Regis Saadiyat Island Resort, Abu Dhabi, UAE.

Register to attend:
+44 (0)20 7576 8131
oceansummit@economist.com

oceansummit.economist.com





 @Economist_WOI
#OceanSummit

Official hosts



Founding supporter



Diamond sponsors



Platinum sponsor



Gold sponsors



Silver sponsor



Bronze sponsors



Willis Towers Watson



Exhibitor supporters



Destination and Cultural Sponsor



Official airline

